SAR Test Report

Report No.: AGC12776221102FH01

FCC ID	:	2A82D-NX15V2I
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	15.6inch Notebook
BRAND NAME	:	THOMSON
MODEL NAME	:	WWN15V2I38BK256, WWN15V2I38SL256, WWX15V2I58BK512, WWX15V2I58T512, WWN15V2I38T256, WWN15V2I38SL512, WWX15V2I58SL512, WWX15V2I58BK256, WWX15V2I58T256, WWX15V2I58SL256
APPLICANT	:	Metavisio SA
DATE OF ISSUE	:	Dec. 15, 2022
STANDARD(S)	:	IEEE Std. 1528:2013 FCC 47 CFR Part 2§2.1093 IEEE Std C95.1 ™-2005 IEC 62209-1: 2016
REPORT VERSION	:	V1.0

Attestation of Global Compliance(Shenzhen) Co., Ltd.

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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Dec. 15, 2022	Valid	Initial Release

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Test Report

Applicant Name	Metavisio SA
Applicant Address	80/84 ROUTE DE LA LIBERATION 77340 PONTAULT COMBAULT France
Manufacturer Name	Shenzhen Weihejia Electronic Technology Co., LTD
Manufacturer Address	Block 102, Building 9, Xihu Industrial park, Xikeng community, Yuanshan street, Longgang district, Shenzhen
Factory Name	Shenzhen Weihejia Electronic Technology Co., LTD
Factory Address	Block 102, Building 9, Xihu Industrial park, Xikeng community, Yuanshan street, Longgang district, Shenzhen
Product Designation	15.6inch Notebook
Brand Name	THOMSON
Model Name	WWN15V2I38BK256
Series Model	WWN15V2I38SL256, WWX15V2I58BK512, WWX15V2I58T512, WWN15V2I38T256, WWN15V2I38SL512, WWX15V2I58SL512, WWX15V2I58BK256, WWX15V2I58T256, WWX15V2I58SL256
Different Description	Refer to page 7 of the report.
EUT Voltage	DC 7.7V by battery
Applicable Standard	IEEE Std. 1528:2013 FCC 47 CFR Part 2§2.1093 IEEE Std C95.1 ™-2005 IEC 62209-1: 2016
Date of receipt of test item	Nov. 23, 2022
Test Date	Dec. 01, 2022 to Dec. 06, 2022
Report Template	AGCRT-US-4G/SAR (2021-04-20)

Note: The results of testing in this report apply to the product/system which was tested only.

Prepared By	Thea Huang Thea Huang (Project Engineer)	Dec. 15, 2022
Reviewed By	Calvin Liu Calvin Liu (Reviewer)	Dec. 15, 2022
Approved By	Max Zhang Max Zhang (Authorized Officer)	Dec. 15, 2022

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1. SUMMARY OF MAXIMUM SAR VALUE

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

Frequency Band	Highest Reported 1g-SAR(W/kg) Body-worn(with 0mm separation)	SAR Test Limit (W/kg)
2.4 GHz WIFI Antenna 1	0.928	1.6
2.4 GHz WIFI Antenna 2	1.196	
5.2 GHz WIFI Antenna 1	0.625	
5.2 GHz WIFI Antenna 2	0.729	
5.3 GHz WIFI Antenna 1	1.035	
5.3 GHz WIFI Antenna 2	0.795	
5.6 GHz WIFI Antenna 1	1.185	
5.6 GHz WIFI Antenna 2	0.979	
5.8 GHz WIFI Antenna 1	0.872	
5.8 GHz WIFI Antenna 2	0.946	
Bluetooth (BR/EDR)	0.183	
Bluetooth (BLE)	0.188	
SAR Test Result	PASS	

This device is compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6W/kg) specified in IEEE Std. 1528:2013; FCC 47CFR § 2.1093; IEEE/ANSI C95.1:2005 and the following specific FCC Test Procedures:

- KDB 447498 D04 General RF Exposure Guidance v01
- KDB 865664 D01 SAR Measurement 100MHz to 6GHz v01r04
- KDB 248227 D01 802 11 Wi-Fi SAR v02r02
- KDB 616217 D04 SAR evaluation requirements for laptop, notebook, notebook and tablet computers

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2. GENERAL INFORMATION

2.1. EUT Description

General Information	
Product Designation	15.6inch Notebook
Test Model	WWN15V2I38BK256
Hardware Version	IP3_CN1G_MB_V32_202110129A
Software Version	win11home 22H2
Device Category	Portable
RF Exposure Environment	Uncontrolled
Antenna Type	Internal
2.4GHz WIFI	
WIFI Specification	☐802.11a ☒802.11b ☒802.11g ☒802.11n(20) ☒802.11n(40)
Operation Frequency	2412~2462MHz
Avg. Burst Power	Ant.1: 12.82dBm; Ant.2: 12.67dBm; MIMO: 14.82dBm;
Antenna Gain	Ant.1: 3.85dBi; Ant.2: 3.65dBi;
5 GHz WIFI	
WIFI Specification	☒802.11a ☒802.11n20 ☒802.11n40 ☒802.11ac20 ☒802.11ac40 ☐802.11ac80
Operation Frequency	U-NII-1: 5180MHz~5240MHz; U-NII-2A: 5260MHz~5320MHz; U-NII-2C: 5470MHz~5725MHz;U-NII-3: 5745MHz~5825MHz
Max. conducted Power	Ant.1: U-NII-1: 12.31dBm; U-NII-2A: 11.92dBm; U-NII-2C: 11.06dBm; U-NII-3: 9.64dBm; Ant.2: U-NII-1: 12.46dBm; U-NII-2A: 11.84dBm; U-NII-2C: 11.41dBm; U-NII-3: 10.33dBm; MIMO: U-NII-1: 14.96dBm; U-NII-2A: 14.36dBm; U-NII-2C: 13.79dBm; U-NII-3: 12.79dBm;
Antenna Gain	Ant.1: 4.52dBi; Ant.2: 5.85dBi;
Bluetooth	
Operation Frequency	2402~2480MHz
Antenna Gain	3.85dBi
Bluetooth Version	V4.2
Type of modulation	**BR/EDR**: GFSK, Π/4-DQPSK, 8-DPSK; **BLE:** GFSK
EIRP	**BR/EDR**: 8.869dBm; **BLE:** 5.066dBm
Accessories	
Battery	Brand name: N/A Model No. : SIM-327890-2P2S Voltage and Capacitance: 7.7V & 8500mAh

Note: 1. CMU200 can measure the average power and Peak power at the same time
2. The sample used for testing is end product.
3. The test sample has no any deviation to the test method of standard mentioned in page 1.

Product	Type	
	☒ Production unit	☐ Identical Prototype

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Different Description:

Model	Storage capacity
WWN15V2I38BK256	256GB
WWN15V2I38SL256	256GB
WWX15V2I58BK512	512GB
WWX15V2I58T512	512GB
WWN15V2I38T256	256GB
WWN15V2I38SL512	512GB
WWX15V2I58SL512	512GB
WWX15V2I58BK256	256GB
WWX15V2I58T256	256GB
WWX15V2I58SL256	256GB

Note: All the same except for the model name and storage capacity

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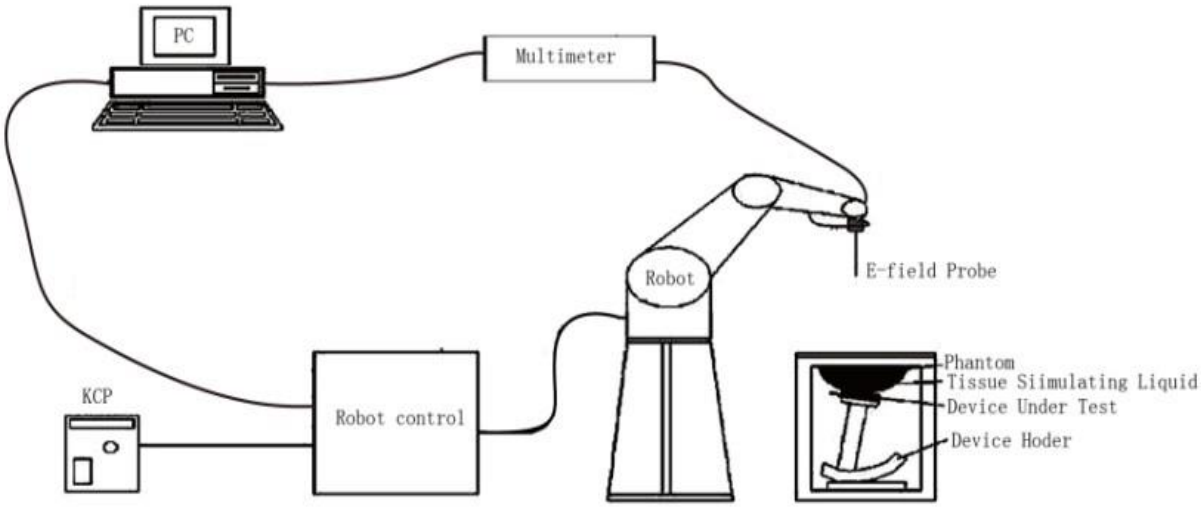
3. SAR MEASUREMENT SYSTEM

3.1. The SATIMO system used for performing compliance tests consists of following items



The COMOSAR system for performing compliance tests consists of the following items:

- The PC. It controls most of the bench devices and stores measurement data.A computer running WinXP and the Opensar software.
- The E-Field probe. The probe is a 3-axis system made of 3 distinct dipoles. Each dipole returns a voltage in function of the ambient electric field.
- The Keithley multimeter measures each probe dipole voltages.
- The SAM phantom simulates a human head. The measurement of the electric field is made inside the phantom.
- The liquids simulate the dielectric properties of the human head tissues.
- The network emulator controls the mobile phone under test.
- The validation dipoles are used to measure a reference SAR. They are used to periodically check the bench to make sure that there is no drift of the system characteristics over time.
- The phantom, the device holder and other accessories according to the targeted measurement.

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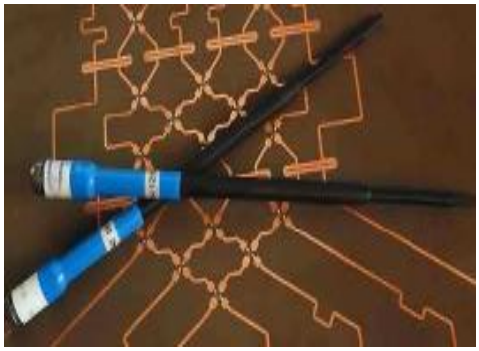
3.2. COMOSAR E-Field Probe

The SAR measurement is conducted with the dosimetric probe manufactured by SATIMO. The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. SATIMO conducts the probe calibration in compliance with international and national standards (e.g. IEEE 1528 and relevant KDB files.) The calibration data are in Appendix D.

Isotropic E-Field Probe Specification

Model	SSE2	
Manufacture	MVG	
Identification No.	SN 13/22 EPGO368	
Frequency	0.15GHz-6GHz Linearity:±0.09dB(0.15GHz-6GHz)	
Dynamic Range	0.01W/kg-100W/kg Linearity:±0.09dB	
Dimensions	Overall length:330mm Length of individual dipoles:2mm Maximum external diameter:8mm Probe Tip external diameter:2.5mm Distance between dipoles/ probe extremity:1mm	
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precisin of better 30%.	

3.3. Robot

The COMOSAR system uses the KUKA robot from SATIMO SA (France).For the 6-axis controller COMOSAR system, the KUKA robot controller version from SATIMO is used. The XL robot series have many features that are important for our application: □ High precision (repeatability 0.02 mm) □ High reliability (industrial design) □ Jerk-free straight movements □ Low ELF interference (the closed metallic construction shields against motor control fields) □ 6-axis controller	

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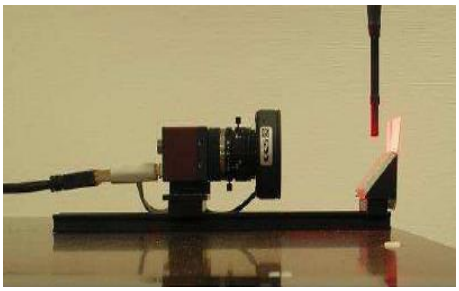
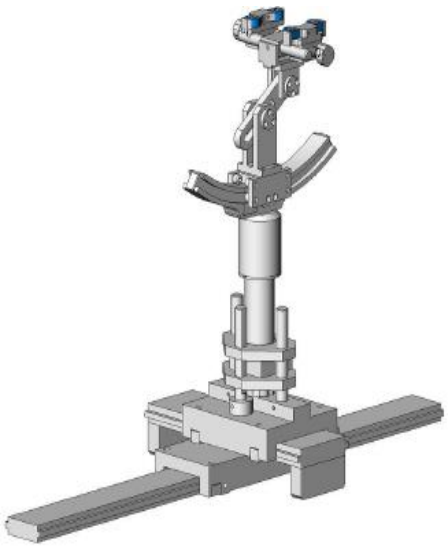
3.4. Video Positioning System

The video positioning system is used in OpenSAR to check the probe. Which is composed of a camera, LED, mirror and mechanical parts.The camera is piloted by the main computer with firewire link. During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, such that the robot coordinates are valid for the probe tip. The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.	

3.5. Device Holder

The COMOSAR device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation center for both scales is the ear reference point (EPR). Thus the device needs no repositioning when changing the angles. The COMOSAR device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity εr =3 and loss tangent δ = 0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.	

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3.6. ELLI39 Phantom

ELLI39 Phantom

The Flat phantom is a fiberglass shellphantom with 2mm+/- 0.2 mm shell thickness. It has only one measurement area for Flat phantom	

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4. SAR MEASUREMENT PROCEDURE

4.1. Specific Absorption Rate (SAR)

SAR is related to the rate at which energy is absorbed per unit mass in 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 occupational/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

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

$$\mathrm{SAR} = \frac{\mathrm{d}}{\mathrm{d}t}\left(\frac{\mathrm{d}W}{\mathrm{d}m}\right) = \frac{\mathrm{d}}{\mathrm{d}t}\left(\frac{\mathrm{d}W}{\rho \mathrm{d}V}\right)$$

SAR is expressed in units of Watts per kilogram (W/kg)
SAR can be obtained using either of the following equations:

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

$$\mathrm{SAR} = c_h \left.\frac{\mathrm{d}T}{\mathrm{d}t}\right|_{t=0}$$

Where

SAR	is the specific absorption rate in watts per kilogram;
E	is the r.m.s. value of the electric field strength in the tissue in volts per meter;
σ	is the conductivity of the tissue in siemens per metre;
ρ	is the density of the tissue in kilograms per cubic metre;
c_h	is the heat capacity of the tissue in joules per kilogram and Kelvin;
$\frac{\mathrm{dT}}{\mathrm{dt}} \mid \mathrm{t} = 0$	is the initial time derivative of temperature in the tissue in kelvins per second

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4.2. SAR Measurement Procedure

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurement are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface is 2.7mm This distance cannot be smaller than the distance os sensor calibration points to probe tip as `defined in the probe properties,

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in SATIMO software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in db) is specified in the standards for compliance testing. For example, a 2db range is required in IEEE Standard 1528 and IEC62209 standards, whereby 3db is a requirement when compliance is assessed in accordance with the ARIB standard (Japan) If one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximum are detected, the number of Zoom Scan has to be increased accordingly.

Area Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100MHz to 6GHz

	≤ 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.	

Step 3: Zoom Scan

Zoom Scan are used to assess the peak spatial SAR value within a cubic average volume containing 1g abd 10g of simulated tissue. The Zoom Scan measures points(refer to table below) within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1g and 10g and displays these values next to the job's label.

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Zoom Scan Parameters extracted from KDB865664 d01 SAR Measurement 100MHz to 6GHz

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.

Step 4: Power Drift Measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the same settings. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

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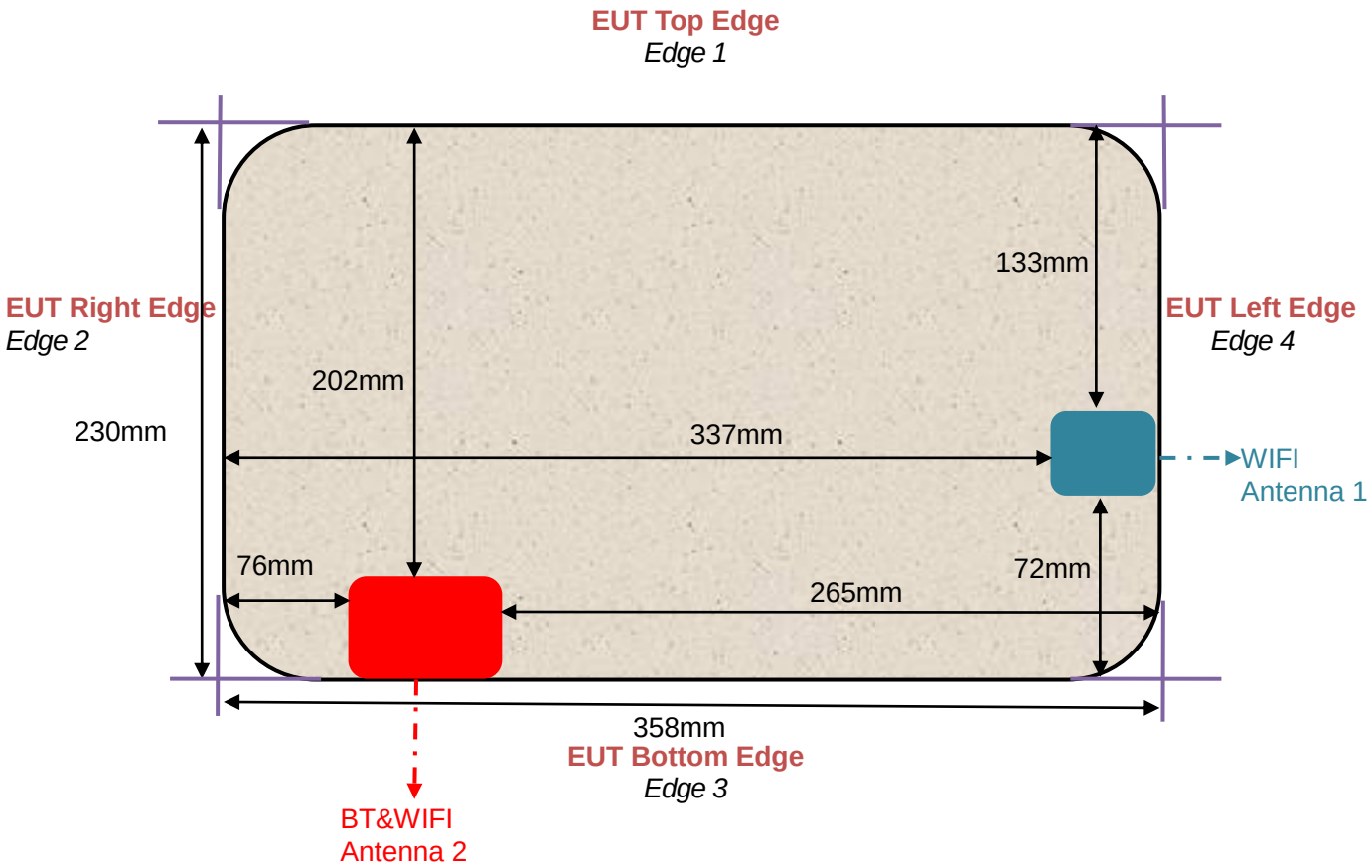
4.3. RF Exposure Conditions

Test Configuration and setting:

The device is a 15.6inch Notebook which supports 2.4GHz & 5G Wifi, Bluetooth; There are two antennas.

For SAR testing, the EUT is configured with the WLAN continuous TX tool through qualcomm software.

Antenna Location: (the back view)



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SAR Test Exclusion Consideration for Adjacent Edges
Per KDB 447498 D04 Appendix B:

B.3 MPE-based Exemption: For mobile devices that are not exempt per Table B.1 [Table 1 of § 1.1307(b)(1)(i)(C)] at distances from 20 cm to 40 cm and in 0.3 GHz to 6 GHz, evaluation of compliance with the exposure limits in § 1.1310 is necessary if the ERP of the device is greater than ERP20cm in Formula (B.1) [repeated from § 2.1091(c)(1) and § 1.1307(b)(1)(i)(B)].

$$P_{\text{th}}\ (\text{mW}) = ERP_{20\ \text{cm}}\ (\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases} \qquad \text{(B.1)}$$

B.4 SAR-based Exemption: This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). Pth is given by Formula (B.2).

11/29/2021

$$P_{\text{th}}\ (\text{mW}) = \begin{cases} ERP_{20\ \text{cm}}(d/20\ \text{cm})^x & d \le 20\ \text{cm} \\ ERP_{20\ \text{cm}} & 20\ \text{cm} < d \le 40\ \text{cm} \end{cases} \qquad \text{(B.2)}$$

where

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

and f is in GHz, d is the separation distance (cm), and $ERP_{20\text{cm}}$ is per Formula (B.1).
The example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)									
	5	10	15	20	25	30	35	40	45	50
300	39	65	88	110	129	148	166	184	201	217
450	22	44	67	89	112	135	158	180	203	226
835	9	25	44	66	90	116	145	175	207	240
1900	3	12	26	44	66	92	122	157	195	236
2450	3	10	22	38	59	83	111	143	179	219
3600	2	8	18	32	49	71	96	125	158	195
5800	1	6	14	25	40	58	80	106	136	169

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1-g SAR test exclusion thresholds for WWAN- Antenna 1					
Test Mode	Test position	Edge 1 (133mm)	Edge 2 (337mm)	Edge 3 (72mm)	Edge 4 (5mm)
2.4G WIFI	SAR Max. Avg. Burst Power(mW)	18.493	18.493	18.493	18.493
	SAR test exclusion thresholds(mW)	1411	3060	440	3
	SAR required (Yes/No)	No	No	No	Yes
5.2G WIFI	SAR Max. Avg. Burst Power(mW)	17.620	17.620	17.620	17.620
	SAR test exclusion thresholds(mW)	1317	3060	371	2
	SAR required (Yes/No)	No	No	No	Yes
5.3G WIFI	SAR Max. Avg. Burst Power(mW)	15.276	15.276	15.276	15.276
	SAR test exclusion thresholds(mW)	1315	3060	369	1
	SAR required (Yes/No)	No	No	No	Yes
5.6G WIFI	SAR Max. Avg. Burst Power(mW)	13.836	13.836	13.836	13.836
	SAR test exclusion thresholds(mW)	1309	3060	365	1
	SAR required (Yes/No)	No	No	No	Yes
5.8G WIFI	SAR Max. Avg. Burst Power(mW)	10.789	10.789	10.789	10.789
	SAR test exclusion thresholds(mW)	1305	3060	362	1
	SAR required (Yes/No)	No	No	No	Yes

1-g SAR test exclusion thresholds for WWAN- Antenna 2					
Test Mode	Test position	Edge 1 (202mm)	Edge 2 (76mm)	Edge 3 (5mm)	Edge 4 (265mm)
BT (BR/EDR)	SAR Max. Avg. Burst Power(mW)	7.707	7.707	7.707	7.707
	SAR test exclusion thresholds(mW)	3060	487.851	3	3060
	SAR required (Yes/No)	No	No	Yes	No
BT (BLE)	SAR Max. Avg. Burst Power(mW)	3.211	3.211	3.211	3.211
	SAR test exclusion thresholds(mW)	3060	487.851	3	3060
	SAR required (Yes/No)	No	No	Yes	No
2.4G WIFI	SAR Max. Avg. Burst Power(mW)	19.143	19.143	19.143	19.143
	SAR test exclusion thresholds(mW)	3060	487.851	3	3060
	SAR required (Yes/No)	No	No	Yes	No
5.2G WIFI	SAR Max. Avg. Burst Power(mW)	17.022	17.022	17.022	17.022
	SAR test exclusion thresholds(mW)	3060	414.700	1.502	3060
	SAR required (Yes/No)	No	No	Yes	No
5.3G WIFI	SAR Max. Avg. Burst Power(mW)	15.560	15.560	15.560	15.560
	SAR test exclusion thresholds(mW)	3060	413.044	1.5	3060
	SAR required (Yes/No)	No	No	Yes	No
5.6G WIFI	SAR Max. Avg. Burst Power(mW)	12.764	12.764	12.764	12.764
	SAR test exclusion thresholds(mW)	3060	408.293	1	3060
	SAR required (Yes/No)	No	No	Yes	No
5.8G WIFI	SAR Max. Avg. Burst Power(mW)	9.204	9.204	9.204	9.204
	SAR test exclusion thresholds(mW)	3060	405.294	1	3060
	SAR required (Yes/No)	No	No	Yes	No

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5. TISSUE SIMULATING LIQUID

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 15cm. For head SAR testing the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15cm For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15cm.The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 10% are listed in 6.2

5.1. The composition of the tissue simulating liquid

Ingredient (% Weight) / **Frequency** (MHz)	**Water**	**Nacl**	**Polysorbate 20**	**DGBE**	**1,2-Propanediol**	**Triton X-100**	**Diethylen glycol monohex ylether**
2450 Head	71.88	0.16	0.0	7.99	0.0	19.97	0.0
5000 Head	65.52	0.0	0.0	0.0	0.0	17.24	17.24

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5.2. Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEC 62209-1 have been incorporated in the following table. The body tissue dielectric parameters recommended by the IEC 62209-2 have been incorporated in the following table.

Target Frequency (MHz)	head		body	
	εr	σ (S/m)	εr	σ (S/m)
2450	**39.2**	**1.80**	**39.2**	**1.80**
2600	39.0	1.96	39.0	1.96
3000	38.5	2.40	38.5	2.40
5200	**36.0**	**4.66**	**36.0**	**4.66**
5300	**35.9**	**4.76**	**35.9**	**4.76**
5600	**35.5**	**5.07**	**35.5**	**5.07**
5800	**35.3**	**5.27**	**35.3**	**5.27**

(εr = relative permittivity, σ = conductivity and ρ = 1000 kg/m3

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5.3. Tissue Calibration Result

The dielectric parameters of the liquids were verified prior to the SAR evaluation using SATIMO Dielectric Probe Kit and R&S Network Analyzer ZVL6.

Tissue Stimulant Measurement for 2450MHz					
	Fr. (MHz)	Dielectric Parameters (±10%)		Tissue Temp [°C]	Test time
		εr39.2(35.28-43.12)	δ[s/m]1.80(1.62-1.98)		
Head	2412	40.02	1.74	21.2	Dec. 03, 2022
	2437	39.89	1.75		
	2440	39.78	1.76		
	2441	39.78	1.76		
	2450	39.64	1.77		
	2462	39.52	1.78		

Tissue Stimulant Measurement for 5200MHz					
	Fr. (MHz)	Dielectric Parameters (±10%)		Tissue Temp [°C]	Test time
		εr 36.0(32.4-39.6)	δ[s/m] 4.66(4.194 -5.126)		
Head	5180	36.12	4.72	19.9	Dec. 05, 2022
	5200	35.95	4.73		
	5220	35.78	4.74		
	5240	35.54	4.75		

Tissue Stimulant Measurement for 5300MHz					
	Fr. (MHz)	Dielectric Parameters (±10%)		Tissue Temp [°C]	Test time
		εr 35.9(32.31-39.49)	δ[s/m] 4.76(4.284-5.236)		
Head	5260	36.75	4.79	20.1	Dec. 01, 2022
	5280	36.56	4.80		
	5300	36.28	4.81		
	5320	36.03	4.82		

Tissue Stimulant Measurement for 5600MHz					
	Fr. (MHz)	Dielectric Parameters (±10%)		Tissue Temp [°C]	Test time
		Er 35.5 (31.95-39.05)	δ[s/m] 5.07(4.563 -5.577)		
Head	5500	34.72	5.14	20.9	Dec. 02, 2022
	5600	34.58	5.15		
	5700	34.23	5.16		

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Tissue Stimulant Measurement for 5800MHz					
	Fr. (MHz)	Dielectric Parameters (±10%)		Tissue Temp [°C]	Test time
		εr 35.3 (31.77-38.83)	δ[s/m] 5.27 (4.743-5.797)		
Head	5745	36.35	5.31	21.3	Dec. 06, 2022
	5785	36.10	5.32		
	5800	35.86	5.33		
	5825	35.64	5.34		

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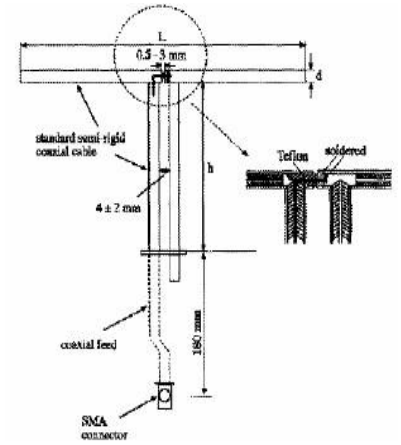
6. SAR SYSTEM CHECK PROCEDURE

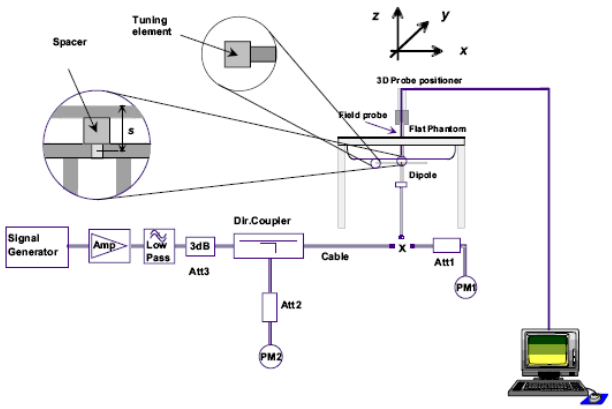
6.1. SAR System Check Procedures

SAR system check is required to confirm measurement accuracy, according to the tissue dielectric media, probe calibration points and other system operating parameters required for measuring the SAR of a test device. The system verification must be performed for each frequency band and within the valid range of each probe calibration point required for testing the device. The same SAR probe(s) and tissue-equivalent media combinations used with each specific SAR system for system verification must be used for device testing. When multiple probe calibration points are required to cover substantially large transmission bands, independent system verifications are required for each probe calibration point. A system verification must be performed before each series of SAR measurements using the same probe calibration point and tissue-equivalent medium. Additional system verification should be considered according to the conditions of the tissue-equivalent medium and measured tissue dielectric parameters, typically every three to four days when the liquid parameters are remeasured or sooner when marginal liquid parameters are used at the beginning of a series of measurements.

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

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





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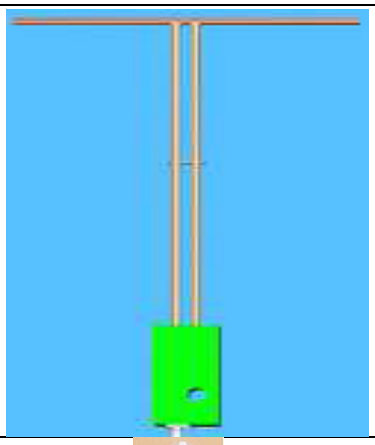
6.2. SAR System Check

6.2.1. Dipoles

	The dipoles used is based on the IEEE-1528 standard, and is complied with mechanical and electrical specifications in line with the requirements of IEEE. the table below provides details for the mechanical and electrical Specifications for the dipoles.
	The wave guide is based on the IEEE-1528 standard, and is complied with mechanical and electrical specifications in line with the requirements of IEEE. The table below provides details for the mechanical and electrical specifications for the wave guide.

Frequency	L (mm)	h (mm)	d (mm)
2450MHz	51.5	30.4	3.6
5000MHz	20.6	40.3	3.6

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6.2.2. System Check Result

System Performance Check at 2450MHz& 5000MHz for Head								
Validation Kit: SN 29/15 DIP 2G450-393& SN 17/22 DIP 5G000-671								
Frequency [MHz]	Target Value(W/kg)		Reference Result (± 10%)		Tested Value(W/kg)		Tissue Temp. [°C]	Test time
	1g	10g	1g	10g	1g	10g		
2450	54.32	24.25	48.888-59.752	21.825-26.675	53.60	23.97	21.2	Dec. 03, 2022
5200	73.43	21.83	66.087-80.773	19.647-24.013	73.20	22.94	19.9	Dec. 05, 2022
5200	78.43	23.90	70.587-86.020	21.510-26.290	77.92	23.87	20.1	Dec. 01, 2022
5600	78.20	24.12	70.380-86.02	21.708-26.532	83.30	25.31	20.9	Dec. 02, 2022
5800	75.69	22.44	68.121-83.259	20.196-24.684	78.32	24.28	21.3	Dec. 06, 2022

Note:
(1) We use a CW signal of 18dBm&10dBm for system check, and then all SAR value are normalized to 1W forward power. The result must be within ±10% of target value.

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7. EUT TEST POSITION

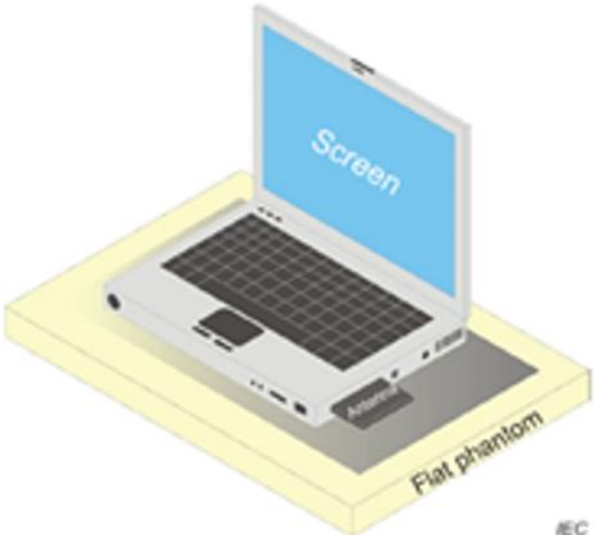
This EUT was tested in **Body back, Body front, edge3 and edge4.**

7.1. Body Worn Position

(1) To position the EUT parallel to the phantom surface.

(2) To adjust the EUT parallel to the flat phantom.

(3) To adjust the distance between the EUT surface and the flat phantom to **0mm.**



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8. SAR EXPOSURE LIMITS

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

Type Exposure	Uncontrolled Environment Limit (W/kg)
Spatial Peak SAR (1g cube tissue for brain or body)	1.60
Spatial Average SAR (Whole body)	0.08
Spatial Peak SAR (Limbs)	4.0

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9. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Designation Number	CN1259
FCC Test Firm Registration Number	975832
A2LA Cert. No.	5054.02
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA

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10. TEST EQUIPMENT LIST

Equipment description	Manufacturer/ Model	Identification No.	Software version	Current calibration date	Next calibration date
SAR Probe	MVG	SN 13/22 EPGO368	N/A	Apr. 13, 2022	Apr. 12, 2023
Phantom	SATIMO	SN_2316_ELLI39	N/A	Validated. No cal required.	Validated. No cal required.
Liquid	SATIMO	N/A	N/A	Validated. No cal required.	Validated. No cal required.
Multimeter	Keithley 2000	4114939	N/A	Aug. 06, 2022	Aug. 05, 2023
SAR Software	MVG-OpenSAR	N/A	OpenSAR V4_02_35	N/A	N/A
Dipole	SATIMO SID2450	SN 29/15 DIP 2G450-393	N/A	Apr. 28, 2022	Apr. 27, 2025
Dipole	SATIMO SID5000	SN 17/22 DIP 5G000-671	N/A	Apr. 28, 2022	Apr. 27, 2025
Signal Generator	Agilent-E4438C	US41461365	V5.03	Aug. 03, 2022	Aug. 02, 2023
Vector Analyzer	Agilent / E4440A	MY44303916	N/A	Mar. 28, 2022	Mar. 27, 2023
Network Analyzer	Rhode & Schwarz ZVL6	N/A	3.2	Oct. 17, 2022	Oct. 16, 2023
Attenuator	Warison /WATT-6SR1211	S/N:WRJ34AYM2F1	N/A	June 08, 2022	June 07, 2023
Attenuator	Mini-circuits / VAT-10+	31405	N/A	June 08, 2022	June 07, 2023
Amplifier	AS0104-55_55	1004793	N/A	June 09, 2022	June 08, 2023
Directional Couple	Werlatone/ C5571-10	SN99463	N/A	Mar. 10, 2022	Mar. 09, 2024
Directional Couple	Werlatone/ C6026-10	SN99482	N/A	Mar. 10, 2022	Mar. 09, 2024
Power Sensor	NRP-Z21	1137.6000.02	N/A	Sep. 06, 2022	Sep. 05, 2023
Power Sensor	NRP-Z23	100323	N/A	Feb. 16, 2022	Feb. 15, 2023
Power Viewer	R&S	V2.3.1.0	N/A	N/A	N/A
Calibration standard parts for network sub - port	R&S/ ZV-Z132	N/A	V2.3.1.0	Dec. 07, 2021	Dec. 06, 2022

Note: Per KDB 865664 Dipole SAR Validation, AGC Lab has adopted 3 years calibration intervals. On annual basis, every measurement dipole has been evaluated and is in compliance with the following criteria:
1. There is no physical damage on the dipole;
2. System validation with specific dipole is within 10% of calibrated value;
3. Return-loss is within 20% of calibrated measurement;
4. Impedance is within 5Ω of calibrated measurement.

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11. MEASUREMENT UNCERTAINTY

SATIMO Uncertainty- SN 13/22 EPGO368 Measurement uncertainty for DUT averaged over 1 gram / 10 gram.									
Uncertainty Component	Sec.	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	vi
Measurement System									
Probe calibration	E.2.1	7.000	N	1	1	1	7.000	7.000	∞
Axial Isotropy	E.2.2	0.175	R	$\sqrt{3}$	√0.5	√0.5	0.071	0.071	∞
Hemispherical Isotropy	E.2.2	0.175	R	$\sqrt{3}$	√0.5	√0.5	0.071	0.071	∞
Boundary effect	E.2.3	1.000	R	$\sqrt{3}$	1	1	0.577	0.577	∞
Linearity	E.2.4	0.990	R	$\sqrt{3}$	1	1	0.572	0.572	∞
System detection limits	E.2.4	1.000	R	$\sqrt{3}$	1	1	0.577	0.577	∞
Modulation response	E2.5	3.000	R	$\sqrt{3}$	1	1	1.732	1.732	∞
Readout Electronics	E.2.6	0.021	N	1	1	1	0.021	0.021	∞
Response Time	E.2.7	0.000	R	$\sqrt{3}$	1	1	0.000	0.000	∞
Integration Time	E.2.8	1.400	R	$\sqrt{3}$	1	1	0.808	0.808	∞
RF ambient conditions-Noise	E.6.1	3.000	R	$\sqrt{3}$	1	1	1.732	1.732	∞
RF ambient conditions-reflections	E.6.1	3.000	R	$\sqrt{3}$	1	1	1.732	1.732	∞
Probe positioner mechanical tolerance	E.6.2	1.400	R	$\sqrt{3}$	1	1	0.808	0.808	∞
Probe positioning with respect to phantom shell	E.6.3	1.400	R	$\sqrt{3}$	1	1	0.808	0.808	∞
Extrapolation, interpolation, and integrations algorithms for max. SAR evaluation	E.5	2.300	R	$\sqrt{3}$	1	1	1.328	1.328	∞
Test sample Related									
Test sample positioning	E.4.2	2.6	N	1	1	1	2.600	2.600	∞
Device holder uncertainty	E.4.1	3	N	1	1	1	3.000	3.000	∞
Output power variation—SAR drift measurement	E.2.9	5	R	$\sqrt{3}$	1	1	2.887	2.887	∞
SAR scaling	E.6.5	5	R	$\sqrt{3}$	1	1	2.887	2.887	∞
Phantom and tissue parameters									
Phantom shell uncertainty—shape, thickness, and permittivity	E.3.1	4	R	$\sqrt{3}$	1	1	2.309	2.309	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	E.3.2	1.9	N	1	1	0.84	1.900	1.596	∞
Liquid conductivity measurement	E.3.3	4	R	$\sqrt{3}$	0.78	0.71	3.120	2.840	∞
Liquid permittivity measurement	E.3.3	5	N	1	0.78	0.71	1.150	1.300	M
Liquid conductivity—temperature uncertainty	E.3.4	2.5	R	$\sqrt{3}$	0.23	0.26	1.126	1.025	∞
Liquid permittivity—temperature uncertainty	E.3.4	2.5	N	1	0.23	0.26	0.332	0.375	M
Combined Standard Uncertainty			RSS				10.529	10.344	
Expanded Uncertainty (95% Confidence interval)			K=2				21.058	20.688	

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SATIMO Uncertainty- SN 13/22 EPGO368 System Validation uncertainty for DUT averaged over 1 gram / 10 gram.									
Uncertainty Component	Sec.	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	vi
Measurement System									
Probe calibration	E.2.1	7.000	N	1	1	1	7.000	7.000	∞
Axial Isotropy	E.2.2	0.175	R	$\sqrt{3}$	1	1	0.101	0.101	∞
Hemispherical Isotropy	E.2.2	0.175	R	$\sqrt{3}$	0	0	0.000	0.000	∞
Boundary effect	E.2.3	1.000	R	$\sqrt{3}$	1	1	0.577	0.577	∞
Linearity	E.2.4	0.990	R	$\sqrt{3}$	1	1	0.572	0.572	∞
System detection limits	E.2.4	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Modulation response	E2.5	3.0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Readout Electronics	E.2.6	0.021	N	1	1	1	0.021	0.021	∞
Response Time	E.2.7	0.0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Integration Time	E.2.8	1.4	R	$\sqrt{3}$	0	0	0.00	0.00	∞
RF ambient conditions-Noise	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
RF ambient conditions-reflections	E.6.1	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner mechanical tolerance	E.6.2	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Probe positioning with respect to phantom shell	E.6.3	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Extrapolation, interpolation, and integrations algorithms for max. SAR evaluation	E.5	2.3	R	$\sqrt{3}$	1	1	1.33	1.33	∞
System validation source									
Deviation of experimental dipole from numerical dipole	E.6.4	5.0	N	1	1	1	5.00	5.00	∞
Input power and SAR drift measurement	8,6.6.4	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Dipole axis to liquid distance	8,E.6.6	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Phantom and set-up									
Phantom shell uncertainty—shape, thickness, and permittivity	E.3.1	4.0	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	E.3.2	1.9	N	1	1	0.84	1.90	1.60	∞
Liquid conductivity（temperature uncertainty）	E.3.3	2.5	R	$\sqrt{3}$	0.78	0.71	1.13	1.02	∞
Liquid conductivity（measured）	E.3.3	4	N	1	0.78	0.71	3.12	2.84	M
Liquid permittivity（temperature uncertainty）	E.3.4	2.5	R	$\sqrt{3}$	0.23	0.26	0.33	0.38	∞
Liquid permittivity（measured）	E.3.4	5	N	1	0.23	0.26	1.15	1.30	M
Combined Standard Uncertainty			RSS				10.462	10.276	
Expanded Uncertainty (95% Confidence interval)			K=2				20.924	20.551	

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SATIMO Uncertainty- SN 13/22 EPGO368 System Check uncertainty for DUT averaged over 1 gram / 10 gram.									
Uncertainty Component	Sec.	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	vi
Measurement System									
Probe calibration drift	E.2.1.3	0.500	N	1	1	1	0.50	0.50	∞
Axial Isotropy	E.2.2	0.175	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Hemispherical Isotropy	E.2.2	0.175	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Boundary effect	E.2.3	1.000	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Linearity	E.2.4	0.990	R	$\sqrt{3}$	0	0	0.00	0.00	∞
System detection limits	E.2.4	1.0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Modulation response	E2.5	3.0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Readout Electronics	E.2.6	0.021	N	1	0	0	0.00	0.00	∞
Response Time	E.2.7	0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Integration Time	E.2.8	1.4	R	$\sqrt{3}$	0	0	0.00	0.00	∞
RF ambient conditions-Noise	E.6.1	3.0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
RF ambient conditions-reflections	E.6.1	3.0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Probe positioner mechanical tolerance	E.6.2	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Probe positioning with respect to phantom shell	E.6.3	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Extrapolation, interpolation, and integrations algorithms for max. SAR evaluation	E.5	2.3	R	$\sqrt{3}$	0	0	0.00	0.00	∞
System check source (dipole)									
Deviation of experimental dipoles	E.6.4	2.0	N	1	1	1	2.00	2.00	∞
Input power and SAR drift measurement	8,6.6.4	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Dipole axis to liquid distance	8,E.6.6	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Phantom and tissue parameters									
Phantom shell uncertainty—shape, thickness, and permittivity	E.3.1	4	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	E.3.2	1.9	N	1	1	0.84	1.90	1.60	∞
Liquid conductivity measurement	E.3.3	4	R	$\sqrt{3}$	0.78	0.71	3.12	2.84	∞
Liquid permittivity measurement	E.3.3	5	N	1	0.78	0.71	1.15	1.30	M
Liquid conductivity—temperature uncertainty	E.3.4	2.5	R	$\sqrt{3}$	0.23	0.26	1.13	1.02	∞
Liquid permittivity—temperature uncertainty	E.3.4	2.5	N	1	0.23	0.26	0.33	0.38	M
Combined Standard Uncertainty			RSS				5.562	5.203	
Expanded Uncertainty (95% Confidence interval)			K=2				11.124	10.406	

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12. CONDUCTED POWER MEASUREMENT

2.4 GHz WIFI-ANT 1

Mode	Data Rate (Mbps)	Channel	Frequency(MHz)	Avg. Burst Power(dBm)
802.11b	1	01	2412	12.46
		06	2437	12.74
		11	2462	**12.82**
802.11g	6	01	2412	11.69
		06	2437	11.76
		11	2462	11.91
802.11n(20)	6.5	01	2412	11.44
		06	2437	11.59
		11	2462	11.80
802.11n(40)	13.5	03	2422	10.74
		06	2437	10.81
		09	2452	10.87

2.4 GHz WIFI-ANT 2

Mode	Data Rate (Mbps)	Channel	Frequency(MHz)	Avg. Burst Power(dBm)
802.11b	1	01	2412	12.66
		06	2437	**12.67**
		11	2462	12.44
802.11g	6	01	2412	11.66
		06	2437	11.91
		11	2462	11.98
802.11n(20)	6.5	01	2412	11.59
		06	2437	11.77
		11	2462	11.81
802.11n(40)	13.5	03	2422	10.68
		06	2437	10.78
		09	2452	10.71

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2.4 GHz WIFI -MIMO

Mode	Data Rate (Mbps)	Channel	Frequency(MHz)	Avg. Burst Power(dBm)
802.11n(20)	6.5	01	2412	14.53
		06	2437	14.69
		11	2462	**14.82**
802.11n(40)	13.5	03	2422	13.72
		06	2437	13.81
		09	2452	13.80

Bluetooth_V4.2(BR/EDR)

Modulation	Channel	Frequency(MHz)	Peak Power (dBm)
GFSK	0	2402	8.109
	39	2441	5.027
	78	2480	**8.869**
π /4-DQPSK	0	2402	6.077
	39	2441	5.339
	78	2480	5.350
8-DPSK	0	2402	6.297
	39	2441	5.595
	78	2480	5.555

Bluetooth_V4.2(BLE)

Modulation	Channel	Frequency(MHz)	Peak Power (dBm)
GFSK 1M	0	2402	**5.066**
	19	2440	4.143
	39	2480	4.088
GFSK 2M	0	2402	5.058
	19	2440	4.173
	39	2480	4.137

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5GHz WIFI-ANT 1

Mode	channel	Frequency	Power(dBm)							
			Data Rate(bps)							
			6M	9M	12M	18M	24M	36M	48M	54M
802.11a	36	5180	12.16	12.01	11.94	11.85	11.70	11.61	11.49	11.40
	40	5200	**12.31**	12.18	12.05	11.99	11.88	11.79	11.62	11.58
	44	5220	12.28	12.18	12.00	11.93	11.86	11.71	11.60	11.53
	48	5240	11.91	11.79	11.64	11.57	11.47	11.38	11.28	11.14
	52	5260	**11.92**	11.83	11.69	11.56	11.48	11.37	11.25	11.20
	56	5280	11.88	11.78	11.66	11.51	11.42	11.36	11.20	11.14
	60	5300	11.03	10.87	10.79	10.70	10.56	10.44	10.38	10.27
	64	5320	11.07	10.94	10.86	10.75	10.60	10.50	10.38	10.32
	100	5500	10.16	10.01	9.91	9.81	9.70	9.58	9.48	9.44
	104	5520	10.25	10.13	9.98	9.86	9.85	9.73	9.60	9.52
	108	5540	10.46	10.32	10.23	10.10	9.97	9.89	9.82	9.71
	112	5560	10.67	10.59	10.46	10.32	10.21	10.14	10.04	9.90
	116	5580	10.71	10.60	10.51	10.38	10.27	10.16	10.02	9.96
	120	5600	10.85	10.70	10.63	10.54	10.39	10.30	10.18	10.09
	124	5620	10.91	10.78	10.65	10.59	10.48	10.39	10.22	10.18
	128	5640	10.74	10.64	10.46	10.39	10.32	10.17	10.06	9.99
	132	5660	10.85	10.73	10.58	10.51	10.41	10.32	10.22	10.08
	136	5680	10.93	10.84	10.70	10.57	10.49	10.38	10.26	10.21
	140	5700	**11.06**	10.96	10.84	10.69	10.60	10.54	10.38	10.32
	149	5745	8.97	8.81	8.73	8.64	8.50	8.38	8.32	8.21
	157	5785	8.95	8.82	8.74	8.63	8.48	8.38	8.26	8.20
	165	5825	9.44	9.29	9.19	9.09	8.98	8.86	8.76	8.72

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Mode	channel	Frequency	Power(dBm)							
			Data Rate(bps)							
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (20)	36	5180	11.76	11.61	11.54	11.45	11.30	11.21	11.09	11.00
	40	5200	11.65	11.52	11.39	11.33	11.22	11.13	10.96	10.92
	44	5220	11.33	11.23	11.05	10.98	10.91	10.76	10.65	10.58
	48	5240	11.28	11.16	11.01	10.94	10.84	10.75	10.65	10.51
	52	5260	11.12	11.03	10.89	10.76	10.68	10.57	10.45	10.40
	56	5280	11.05	10.95	10.83	10.68	10.59	10.53	10.37	10.31
	60	5300	11.17	11.01	10.93	10.84	10.70	10.58	10.52	10.41
	64	5320	10.92	10.79	10.71	10.60	10.45	10.35	10.23	10.17
	100	5500	10.18	10.03	9.93	9.83	9.72	9.60	9.50	9.46
	104	5520	10.25	10.13	9.98	9.86	9.85	9.73	9.60	9.52
	108	5540	10.33	10.19	10.10	9.97	9.84	9.76	9.69	9.58
	112	5560	10.47	10.39	10.26	10.12	10.01	9.94	9.84	9.70
	116	5580	10.52	10.41	10.32	10.19	10.08	9.97	9.83	9.77
	120	5600	10.68	10.53	10.46	10.37	10.22	10.13	10.01	9.92
	124	5620	10.47	10.34	10.21	10.15	10.04	9.95	9.78	9.74
	128	5640	10.28	10.18	10.00	9.93	9.86	9.71	9.60	9.53
	132	5660	10.43	10.31	10.16	10.09	9.99	9.90	9.80	9.66
	136	5680	10.65	10.56	10.42	10.29	10.21	10.10	9.98	9.93
	140	5700	10.79	10.69	10.57	10.42	10.33	10.27	10.11	10.05
	149	5745	8.95	8.79	8.71	8.62	8.48	8.36	8.30	8.19
	157	5785	9.05	8.92	8.84	8.73	8.58	8.48	8.36	8.30
	165	5825	**9.64**	9.49	9.39	9.29	9.18	9.06	8.96	8.92
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (40)	38	5190	11.31	11.16	11.09	11.00	10.85	10.76	10.64	10.55
	46	5230	10.81	10.68	10.55	10.49	10.38	10.29	10.12	10.08
	54	5270	10.83	10.73	10.55	10.48	10.41	10.26	10.15	10.08
	62	5310	10.07	9.95	9.80	9.73	9.63	9.54	9.44	9.30
	102	5510	9.94	9.85	9.71	9.58	9.50	9.39	9.27	9.22
	110	5550	10.25	10.15	10.03	9.88	9.79	9.73	9.57	9.51
	118	5590	10.71	10.55	10.47	10.38	10.24	10.12	10.06	9.95
	126	5630	10.43	10.30	10.22	10.11	9.96	9.86	9.74	9.68
	134	5670	10.64	10.49	10.39	10.29	10.18	10.06	9.96	9.92
	151	5755	8.62	8.50	8.35	8.23	8.22	8.10	7.97	7.89
	159	5795	8.49	8.35	8.26	8.13	8.00	7.92	7.85	7.74

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Mode	channel	Frequency	Power(dBm)							
			Data Rate(bps)							
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11ac (20)	36	5180	10.82	10.67	10.60	10.51	10.36	10.27	10.15	10.06
	40	5200	10.99	10.86	10.73	10.67	10.56	10.47	10.30	10.26
	44	5220	10.88	10.78	10.60	10.53	10.46	10.31	10.20	10.13
	48	5240	10.64	10.52	10.37	10.30	10.20	10.11	10.01	9.87
	52	5260	9.93	9.84	9.70	9.57	9.49	9.38	9.26	9.21
	56	5280	9.74	9.64	9.52	9.37	9.28	9.22	9.06	9.00
	60	5300	9.66	9.50	9.42	9.33	9.19	9.07	9.01	8.90
	64	5320	9.13	9.00	8.92	8.81	8.66	8.56	8.44	8.38
	100	5500	9.33	9.18	9.08	8.98	8.87	8.75	8.65	8.61
	104	5520	9.25	9.13	8.98	8.86	8.85	8.73	8.60	8.52
	108	5540	9.65	9.51	9.42	9.29	9.16	9.08	9.01	8.90
	112	5560	9.81	9.73	9.60	9.46	9.35	9.28	9.18	9.04
	116	5580	10.02	9.91	9.82	9.69	9.58	9.47	9.33	9.27
	120	5600	10.38	10.23	10.16	10.07	9.92	9.83	9.71	9.62
	124	5620	10.24	10.11	9.98	9.92	9.81	9.72	9.55	9.51
	128	5640	10.17	10.07	9.89	9.82	9.75	9.60	9.49	9.42
	132	5660	10.07	9.95	9.80	9.73	9.63	9.54	9.44	9.30
	136	5680	10.05	9.96	9.82	9.69	9.61	9.50	9.38	9.33
	140	5700	10.01	9.91	9.79	9.64	9.55	9.49	9.33	9.27
	149	5745	9.01	8.85	8.77	8.68	8.54	8.42	8.36	8.25
	157	5785	8.83	8.70	8.62	8.51	8.36	8.26	8.14	8.08
	165	5825	9.41	9.26	9.16	9.06	8.95	8.83	8.73	8.69
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11ac (40)	38	5190	10.43	10.28	10.21	10.12	9.97	9.88	9.76	9.67
	46	5230	9.73	9.60	9.47	9.41	9.30	9.21	9.04	9.00
	54	5270	9.71	9.61	9.43	9.36	9.29	9.14	9.03	8.96
	62	5310	9.13	9.01	8.86	8.79	8.69	8.60	8.50	8.36
	102	5510	9.57	9.48	9.34	9.21	9.13	9.02	8.90	8.85
	110	5550	9.78	9.68	9.56	9.41	9.32	9.26	9.10	9.04
	118	5590	10.02	9.86	9.78	9.69	9.55	9.43	9.37	9.26
	126	5630	9.95	9.82	9.74	9.63	9.48	9.38	9.26	9.20
	134	5670	10.04	9.89	9.79	9.69	9.58	9.46	9.36	9.32
	151	5755	8.53	8.41	8.26	8.14	8.13	8.01	7.88	7.80
	159	5795	8.50	8.36	8.27	8.14	8.01	7.93	7.86	7.75
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11ac (80)	42	5210	9.73	9.58	9.51	9.42	9.27	9.18	9.06	8.97
	58	5290	9.45	9.32	9.19	9.13	9.02	8.93	8.76	8.72
	106	5530	9.18	9.08	8.90	8.83	8.76	8.61	8.50	8.43
	122	5610	9.50	9.38	9.23	9.16	9.06	8.97	8.87	8.73
	138	5690	8.52	8.43	8.29	8.16	8.08	7.97	7.85	7.80
	155	5775	8.24	8.14	8.02	7.87	7.78	7.72	7.56	7.50

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5GHz WIFI-ANT 2

Mode	channel	Frequency	Power(dBm)							
			Data Rate(bps)							
			6M	9M	12M	18M	24M	36M	48M	54M
802.11a	36	5180	12.34	12.19	12.12	12.03	11.88	11.79	11.67	11.58
	40	5200	**12.46**	12.33	12.20	12.14	12.03	11.94	11.77	11.73
	44	5220	12.33	12.23	12.05	11.98	11.91	11.76	11.65	11.58
	48	5240	12.24	12.12	11.97	11.90	11.80	11.71	11.61	11.47
	52	5260	**11.84**	11.75	11.61	11.48	11.40	11.29	11.17	11.12
	56	5280	11.62	11.52	11.40	11.25	11.16	11.10	10.94	10.88
	60	5300	11.54	11.38	11.30	11.21	11.07	10.95	10.89	10.78
	64	5320	11.36	11.23	11.15	11.04	10.89	10.79	10.67	10.61
	100	5500	10.57	10.42	10.32	10.22	10.11	9.99	9.89	9.85
	104	5520	10.62	10.50	10.35	10.23	10.22	10.10	9.97	9.89
	108	5540	10.78	10.64	10.55	10.42	10.29	10.21	10.14	10.03
	112	5560	10.82	10.74	10.61	10.47	10.36	10.29	10.19	10.05
	116	5580	10.99	10.88	10.79	10.66	10.55	10.44	10.30	10.24
	120	5600	**11.41**	12.19	12.12	12.03	11.88	11.79	11.67	11.58
	124	5620	11.08	10.93	10.86	10.77	10.62	10.53	10.41	10.32
	128	5640	10.99	10.86	10.73	10.67	10.56	10.47	10.30	10.26
	132	5660	10.75	10.65	10.47	10.40	10.33	10.18	10.07	10.00
	136	5680	10.60	10.48	10.33	10.26	10.16	10.07	9.97	9.83
	140	5700	10.58	10.49	10.35	10.22	10.14	10.03	9.91	9.86
	149	5745	10.13	10.03	9.91	9.76	9.67	9.61	9.45	9.39
	157	5785	**10.33**	10.17	10.09	10.00	9.86	9.74	9.68	9.57
	165	5825	10.19	10.06	9.98	9.87	9.72	9.62	9.50	9.44

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Mode	channel	Frequency	Power(dBm)							
			Data Rate(bps)							
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (20)	36	5180	12.13	11.98	11.91	11.82	11.67	11.58	11.46	11.37
	40	5200	11.92	11.79	11.66	11.60	11.49	11.40	11.23	11.19
	44	5220	11.74	11.64	11.46	11.39	11.32	11.17	11.06	10.99
	48	5240	11.93	11.81	11.66	11.59	11.49	11.40	11.30	11.16
	52	5260	11.57	11.48	11.34	11.21	11.13	11.02	10.90	10.85
	56	5280	11.32	11.22	11.10	10.95	10.86	10.80	10.64	10.58
	60	5300	11.01	10.85	10.77	10.68	10.54	10.42	10.36	10.25
	64	5320	11.15	11.02	10.94	10.83	10.68	10.58	10.46	10.40
	100	5500	10.32	10.17	10.07	9.97	9.86	9.74	9.64	9.60
	104	5520	10.45	10.33	10.18	10.06	10.05	9.93	9.80	9.72
	108	5540	10.52	10.38	10.29	10.16	10.03	9.95	9.88	9.77
	112	5560	10.66	10.58	10.45	10.31	10.20	10.13	10.03	9.89
	116	5580	10.71	10.60	10.51	10.38	10.27	10.16	10.02	9.96
	120	5600	10.87	10.72	10.65	10.56	10.41	10.32	10.20	10.11
	124	5620	10.65	10.52	10.39	10.33	10.22	10.13	9.96	9.92
	128	5640	10.54	10.44	10.26	10.19	10.12	9.97	9.86	9.79
	132	5660	10.47	10.35	10.20	10.13	10.03	9.94	9.84	9.70
	136	5680	10.32	10.23	10.09	9.96	9.88	9.77	9.65	9.60
	140	5700	10.21	10.11	9.99	9.84	9.75	9.69	9.53	9.47
	149	5745	9.64	9.48	9.40	9.31	9.17	9.05	8.99	8.88
	157	5785	9.95	9.82	9.74	9.63	9.48	9.38	9.26	9.20
	165	5825	9.92	9.77	9.67	9.57	9.46	9.34	9.24	9.20
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (40)	38	5190	11.92	11.77	11.70	11.61	11.46	11.37	11.25	11.16
	46	5230	11.74	11.61	11.48	11.42	11.31	11.22	11.05	11.01
	54	5270	11.13	11.03	10.85	10.78	10.71	10.56	10.45	10.38
	62	5310	10.66	10.54	10.39	10.32	10.22	10.13	10.03	9.89
	102	5510	10.08	9.99	9.85	9.72	9.64	9.53	9.41	9.36
	110	5550	10.42	10.32	10.20	10.05	9.96	9.90	9.74	9.68
	118	5590	10.79	10.63	10.55	10.46	10.32	10.20	10.14	10.03
	126	5630	10.54	10.41	10.33	10.22	10.07	9.97	9.85	9.79
	134	5670	10.35	10.20	10.10	10.00	9.89	9.77	9.67	9.63
	151	5755	9.42	9.30	9.15	9.03	9.02	8.90	8.77	8.69
	159	5795	9.60	9.46	9.37	9.24	9.11	9.03	8.96	8.85

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Mode	channel	Frequency	Power(dBm)							
			Data Rate(bps)							
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11ac (20)	36	5180	10.97	10.82	10.75	10.66	10.51	10.42	10.30	10.21
	40	5200	11.07	10.94	10.81	10.75	10.64	10.55	10.38	10.34
	44	5220	10.65	10.55	10.37	10.30	10.23	10.08	9.97	9.90
	48	5240	10.97	10.85	10.70	10.63	10.53	10.44	10.34	10.20
	52	5260	10.41	10.32	10.18	10.05	9.97	9.86	9.74	9.69
	56	5280	10.24	10.14	10.02	9.87	9.78	9.72	9.56	9.50
	60	5300	10.06	9.90	9.82	9.73	9.59	9.47	9.41	9.30
	64	5320	10.03	9.90	9.82	9.71	9.56	9.46	9.34	9.28
	100	5500	9.66	9.51	9.41	9.31	9.20	9.08	8.98	8.94
	104	5520	9.74	9.62	9.47	9.35	9.34	9.22	9.09	9.01
	108	5540	9.88	9.74	9.65	9.52	9.39	9.31	9.24	9.13
	112	5560	9.99	9.91	9.78	9.64	9.53	9.46	9.36	9.22
	116	5580	10.12	10.01	9.92	9.79	9.68	9.57	9.43	9.37
	120	5600	10.39	10.24	10.17	10.08	9.93	9.84	9.72	9.63
	124	5620	10.20	10.07	9.94	9.88	9.77	9.68	9.51	9.47
	128	5640	10.07	9.97	9.79	9.72	9.65	9.50	9.39	9.32
	132	5660	9.86	9.74	9.59	9.52	9.42	9.33	9.23	9.09
	136	5680	9.54	9.45	9.31	9.18	9.10	8.99	8.87	8.82
	140	5700	9.42	9.32	9.20	9.05	8.96	8.90	8.74	8.68
	149	5745	9.47	9.31	9.23	9.14	9.00	8.88	8.82	8.71
	157	5785	9.45	9.32	9.24	9.13	8.98	8.88	8.76	8.70
	165	5825	9.57	9.42	9.32	9.22	9.11	8.99	8.89	8.85
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11ac (40)	38	5190	10.78	10.63	10.56	10.47	10.32	10.23	10.11	10.02
	46	5230	10.64	10.51	10.38	10.32	10.21	10.12	9.95	9.91
	54	5270	10.14	10.04	9.86	9.79	9.72	9.57	9.46	9.39
	62	5310	9.67	9.55	9.40	9.33	9.23	9.14	9.04	8.90
	102	5510	9.16	9.07	8.93	8.80	8.72	8.61	8.49	8.44
	110	5550	9.05	8.95	8.83	8.68	8.59	8.53	8.37	8.31
	118	5590	9.71	9.55	9.47	9.38	9.24	9.12	9.06	8.95
	126	5630	9.62	9.49	9.41	9.30	9.15	9.05	8.93	8.87
	134	5670	9.53	9.38	9.28	9.18	9.07	8.95	8.85	8.81
	151	5755	9.03	8.91	8.76	8.64	8.63	8.51	8.38	8.30
	159	5795	9.15	9.01	8.92	8.79	8.66	8.58	8.51	8.40
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11ac (80)	42	5210	10.20	10.05	9.98	9.89	9.74	9.65	9.53	9.44
	58	5290	9.47	9.34	9.21	9.15	9.04	8.95	8.78	8.74
	106	5530	9.26	9.16	8.98	8.91	8.84	8.69	8.58	8.51
	122	5610	9.64	9.52	9.37	9.30	9.20	9.11	9.01	8.87
	138	5690	9.02	8.93	8.79	8.66	8.58	8.47	8.35	8.30
	155	5775	8.79	8.69	8.57	8.42	8.33	8.27	8.11	8.05

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5GHz WIFI -MIMO

Mode	channel	Frequency	Power(dBm)							
			Data Rate(bps)							
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (20)	36	5180	**14.96**	14.81	14.74	14.65	14.50	14.41	14.29	14.20
	40	5200	14.80	14.67	14.54	14.48	14.37	14.28	14.11	14.07
	44	5220	14.57	14.47	14.29	14.22	14.15	14.00	13.89	13.82
	48	5240	14.63	14.51	14.36	14.29	14.19	14.10	14.00	13.86
	52	5260	**14.36**	14.27	14.13	14.00	13.92	13.81	13.69	13.64
	56	5280	14.21	14.11	13.99	13.84	13.75	13.69	13.53	13.47
	60	5300	14.10	13.94	13.86	13.77	13.63	13.51	13.45	13.34
	64	5320	14.05	13.92	13.84	13.73	13.58	13.48	13.36	13.30
	100	5500	13.26	13.11	13.01	12.91	12.80	12.68	12.58	12.54
	104	5520	13.18	13.06	12.91	12.79	12.78	12.66	12.53	12.45
	108	5540	13.32	13.18	13.09	12.96	12.83	12.75	12.68	12.57
	112	5560	13.45	13.37	13.24	13.10	12.99	12.92	12.82	12.68
	116	5580	13.57	13.46	13.37	13.24	13.13	13.02	12.88	12.82
	120	5600	**13.79**	13.64	13.57	13.48	13.33	13.24	13.12	13.03
	124	5620	13.57	13.44	13.31	13.25	13.14	13.05	12.88	12.84
	128	5640	13.32	13.22	13.04	12.97	12.90	12.75	12.64	12.57
	132	5660	13.47	13.35	13.20	13.13	13.03	12.94	12.84	12.70
	136	5680	13.49	13.40	13.26	13.13	13.05	12.94	12.82	12.77
	140	5700	13.52	13.42	13.30	13.15	13.06	13.00	12.84	12.78
	149	5745	12.32	12.16	12.08	11.99	11.85	11.73	11.67	11.56
	157	5785	12.53	12.40	12.32	12.21	12.06	11.96	11.84	11.78
	165	5825	**12.79**	12.64	12.54	12.44	12.33	12.21	12.11	12.07
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (40)	38	5190	14.64	14.49	14.42	14.33	14.18	14.09	13.97	13.88
	46	5230	14.31	14.18	14.05	13.99	13.88	13.79	13.62	13.58
	54	5270	13.99	13.89	13.71	13.64	13.57	13.42	13.31	13.24
	62	5310	13.39	13.27	13.12	13.05	12.95	12.86	12.76	12.62
	102	5510	13.02	12.93	12.79	12.66	12.58	12.47	12.35	12.30
	110	5550	12.85	12.75	12.63	12.48	12.39	12.33	12.17	12.11
	118	5590	13.76	13.60	13.52	13.43	13.29	13.17	13.11	13.00
	126	5630	13.44	13.31	13.23	13.12	12.97	12.87	12.75	12.69
	134	5670	13.51	13.36	13.26	13.16	13.05	12.93	12.83	12.79
	151	5755	12.05	11.93	11.78	11.66	11.65	11.53	11.40	11.32
	159	5795	12.09	11.95	11.86	11.73	11.60	11.52	11.45	11.34

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Mode	channel	Frequency	Power(dBm)							
			Data Rate(bps)							
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11ac (20)	36	5180	13.91	13.76	13.69	13.60	13.45	13.36	13.24	13.15
	40	5200	14.04	13.91	13.78	13.72	13.61	13.52	13.35	13.31
	44	5220	14.00	13.90	13.72	13.65	13.58	13.43	13.32	13.25
	48	5240	13.82	13.70	13.55	13.48	13.38	13.29	13.19	13.05
	52	5260	13.19	13.10	12.96	12.83	12.75	12.64	12.52	12.47
	56	5280	13.03	12.93	12.81	12.66	12.57	12.51	12.35	12.29
	60	5300	12.87	12.71	12.63	12.54	12.40	12.28	12.22	12.11
	64	5320	12.61	12.48	12.40	12.29	12.14	12.04	11.92	11.86
	100	5500	12.51	12.36	12.26	12.16	12.05	11.93	11.83	11.79
	104	5520	12.60	12.48	12.33	12.21	12.20	12.08	11.95	11.87
	108	5540	12.76	12.62	12.53	12.40	12.27	12.19	12.12	12.01
	112	5560	12.95	12.87	12.74	12.60	12.49	12.42	12.32	12.18
	116	5580	13.12	13.01	12.92	12.79	12.68	12.57	12.43	12.37
	120	5600	13.40	13.25	13.18	13.09	12.94	12.85	12.73	12.64
	124	5620	13.45	13.32	13.19	13.13	13.02	12.93	12.76	12.72
	128	5640	13.52	13.42	13.24	13.17	13.10	12.95	12.84	12.77
	132	5660	13.58	13.46	13.31	13.24	13.14	13.05	12.95	12.81
	136	5680	13.65	13.56	13.42	13.29	13.21	13.10	12.98	12.93
	140	5700	12.74	12.64	12.52	12.37	12.28	12.22	12.06	12.00
	149	5745	12.26	12.10	12.02	11.93	11.79	11.67	11.61	11.50
	157	5785	12.16	12.03	11.95	11.84	11.69	11.59	11.47	11.41
	165	5825	12.50	12.35	12.25	12.15	12.04	11.92	11.82	11.78
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11ac (40)	38	5190	13.62	13.47	13.40	13.31	13.16	13.07	12.95	12.86
	46	5230	13.22	13.09	12.96	12.90	12.79	12.70	12.53	12.49
	54	5270	12.94	12.84	12.66	12.59	12.52	12.37	12.26	12.19
	62	5310	12.42	12.30	12.15	12.08	11.98	11.89	11.79	11.65
	102	5510	12.38	12.29	12.15	12.02	11.94	11.83	11.71	11.66
	110	5550	12.57	12.47	12.35	12.20	12.11	12.05	11.89	11.83
	118	5590	12.88	12.72	12.64	12.55	12.41	12.29	12.23	12.12
	126	5630	12.65	12.52	12.44	12.33	12.18	12.08	11.96	11.90
	134	5670	12.80	12.65	12.55	12.45	12.34	12.22	12.12	12.08
	151	5755	11.80	11.68	11.53	11.41	11.40	11.28	11.15	11.07
	159	5795	11.85	11.71	11.62	11.49	11.36	11.28	11.21	11.10
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11ac (80)	42	5210	12.98	12.83	12.76	12.67	12.52	12.43	12.31	12.22
	58	5290	12.47	12.34	12.21	12.15	12.04	11.95	11.78	11.74
	106	5530	12.23	12.13	11.95	11.88	11.81	11.66	11.55	11.48
	122	5610	12.58	12.46	12.31	12.24	12.14	12.05	11.95	11.81
	138	5690	12.32	12.23	12.09	11.96	11.88	11.77	11.65	11.60
	155	5775	11.53	11.43	11.31	11.16	11.07	11.01	10.85	10.79

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13. TEST RESULTS

13.1. SAR Test Results Summary

13.1.1. Test position and configuration

1. The EUT is a 15.6inch Notebook.

2. Lab use the head liquid with a separation of 0mm at flat phantom to test.

3. For SAR testing, the device was controlled by software to test at reference fixed frequency points.

13.1.2. Operation Mode

1. Per KDB 447498 D04 v01 ,for each exposure position, if the highest 1-g SAR is ⩽ 0.8 W/kg, testing for low and high channel is optional.

2. Per KDB 865664 D01 v01r04,for each frequency band, if the measured SAR is ⩾0.8W/kg, testing for repeated SAR measurement is required , that the highest measured SAR is only to be tested. When the SAR results are near the limit, the following procedures are required for each device to verify these types of SAR measurement related variation concerns by repeating the highest measured SAR configuration in each frequency band.

   (1) When the original highest measured SAR is ⩾0.8W/kg, repeat that measurement once.

   (2) 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.

   (3) Perform a third repeated measurement only if the original, first and second repeated measurement is ⩾1.5 W/kg and ratio of largest to smallest SAR for the original, first and second measurement is ⩾ 1.20.

3. Per KDB 248227 D01 v02r02 Chapter 5.2.2,when SAR measurement is required for 2.4GHz 802.11g/n OFDM configurations, the measurement and test reducing procedures for OFDM are applied. SAR is not required for the following 2.4 GHz OFDM conditions.

   (1) When KDB Publication 447498 D04 SAR test exclusion applies to the OFDM configuration.

   (2) When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is⩽1.2 W/kg,

4. Per KDB 248227 D01 v02r02 Chapter 5.3.4, SAR measurement requirements for the remaining 802.11 transmission mode configurations that have not been tested in the initial test configuration are determined separately for each standalone and aggregated frequency band, in each exposure condition, according to the maximum output power specified for production units. The initial test position procedure is applied to next to the ear, UMPC mini-tablet and hotspot mode configurations. When the same maximum output power is specified for multiple transmission modes, the procedures in 5.3.2 are applied to determine the test configuration. Additional power measurements may be required to determine if SAR measurements are required for subsequent highest output power channels in a subsequent test configuration. The subsequent test configuration and SAR measurement procedures are described in the following.

   (1) When SAR test exclusion provisions of KDB Publication 447498 D04 are applicable and SAR measurement is not required for the initial test configuration, SAR is also not required for the next highest maximum output power transmission mode subsequent test configuration(s) in that frequency band or aggregated band and exposure configuration.

   (2) When the highest reported SAR for the initial test configuration (when applicable, include subsequent highest output channels), according to the initial test position or fixed exposure position requirements, is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for that subsequent

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test configuration.

(3) When the specified maximum output power is same for both UNII 1 and UNII 2A,begin SAR measuremengs in UNII 2A with the channel with the highest measured output power.If the report SAR for UNII 2A is <1.2W/kg,SAR is nor required for UNII 1;otherwise treat the remaining bands separately and test them independently for SAR.

(4) When the specified maximum output power different between UNII 1 and UNII 2A,begin SAR with the band that has the higher specified maximum output. If the highest reported SAR for the band with the highest specified power is ≤1.2W/kg,testing for the band with the lower specicied output power is not required;otherwise test is remaining separately for SAR;

5. Per KDB616217 D04 v01r02, The antennas in tablets are typically located near the back (bottom) surface and/or along the edges of the devices; therefore, SAR evaluation is required for these configurations. Exposures from antennas through the front (top) surface of the display section of a full-size tablet, away from the edges, are generally limited to the user's hands. Exposures to hands for typical consumer transmitters used in tablets are not expected to exceed the extremity SAR limit; therefore, SAR evaluation for the front surface of tablet display screens are generally not necessary, except for tablets that are designed to require continuous operations with the hand(s) next to the antenna(s).

6. Maximum Scaling SAR in order to calculate the Maximum SAR values to test under the standard Peak Power, Calculation method is as follows:
Maximum Scaling SAR =tested SAR (Max.) ×[maximum turn-up power (mw)/ maximum measurement output power(mw)]

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13.1.3. Test Result

SAR MEASUREMENT									
Depth of Liquid (cm):>15				Relative Humidity (%): 60.1					
Product: 15.6inch Notebook									
Test Mode: 2.4GHz									
Position	**Mode**	**Ch.**	**Fr. (MHz)**	**Power Drift (<±5%)**	**SAR (1g) (W/kg)**	**Max. Tune-up Power (dBm)**	**Meas. output Power (dBm)**	**Scaled SAR (W/kg)**	**Limit (W/kg)**
802.11b Antenna 1									
Body back	DTS	6	2437	0.19	0.191	12.90	12.74	0.198	1.6
Body front	DTS	01	2412	-0.25	0.839	12.90	12.46	**0.928**	1.6
Body front	DTS	06	2437	0.22	0.825	12.90	12.74	0.856	1.6
Body front	DTS	11	2462	-0.28	**0.863**	12.90	12.82	0.879	1.6
Edge 4(Left)	DTS	6	2437	0.07	0.180	12.90	12.74	0.187	1.6
802.11b Antenna 2									
Body back	DTS	6	2437	-0.14	0.147	12.67	12.67	0.147	1.6
Body front	DTS	01	2412	0.21	1.103	12.67	12.66	1.106	1.6
Body front	DTS	06	2437	-0.25	1.026	12.67	12.67	1.026	1.6
Body front	DTS	11	2462	-0.27	**1.134**	12.67	12.44	**1.196**	1.6
Edge 3(Bottom)	DTS	6	2437	0.18	0.205	12.67	12.67	0.205	1.6

Note:
- According to KDB248227, SAR is not required for 802.11n HT20/HT40 channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding 802.11a/b channels.
- All of above “DTS” means data transmitters.
- The test separation of all above table(body part) is 0mm.
- Plots are only shown for the bold markered worst case SAR results.

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SAR MEASUREMENT								
Depth of Liquid (cm):>15					Relative Humidity (%):55.8			
Product: 15.6inch Notebook								
Test Mode: 5.2GHz WIFI								
Position	**Ch.**	**Fr. (MHz)**	**Power Drift (<±5%)**	**SAR (1g) (W/kg)**	**Max. Tune-up Power (dBm)**	**Meas. output Power (dBm)**	**Scaled SAR (W/kg)**	**Limit (W/kg)**
802.11a Antenna 1								
Body back	40	5200	0.19	0.099	12.40	12.31	0.101	1.6
Body front	40	5200	-0.02	**0.612**	12.40	12.31	**0.625**	1.6
Edge 4(Left)	40	5200	0.14	0.426	12.40	12.31	0.435	1.6
802.11a Antenna 2								
Body back	40	5200	0.16	0.150	12.50	12.46	0.151	1.6
Body front	40	5200	-0.20	**0.722**	12.50	12.46	**0.729**	1.6
Edge 3(Bottom)	40	5200	-0.04	0.587	12.50	12.46	0.592	1.6

Note:
- When the 1-g SAR is ≤ 0.8W/kg, testing for low and high channel is optional.
- The test separation of all above table(body part) is 0mm.
- Plots are only shown for the bold markered worst case SAR results

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SAR MEASUREMENT								
Depth of Liquid (cm):>15				Relative Humidity (%): 56.2				
Product: 15.6inch Notebook								
Test Mode:5.3GHz WIFI								
Position	**Ch.**	**Fr. (MHz)**	**Power Drift (<±5%)**	**SAR (1g) (W/kg)**	**Max. Tune-up Power (dBm)**	**Meas. output Power (dBm)**	**Scaled SAR (W/kg)**	**Limit (W/kg)**
802.11a Antenna 1								
Body back	56	5280	-0.26	0.149	12.00	11.03	0.186	1.6
Body front	52	5260	-0.13	0.708	12.00	11.92	0.721	1.6
Body front	56	5280	0.08	**0.828**	12.00	11.03	**1.035**	1.6
Body front	64	5320	-0.05	0.689	12.00	11.07	0.854	1.6
Edge 4(Left)	52	5260	0.17	0.662	12.00	11.03	0.828	1.6
802.11a Antenna 2								
Body back	56	5280	0.08	0.128	11.90	11.54	0.139	1.6
Body front	56	5280	-0.12	**0.732**	11.90	11.54	**0.795**	1.6
Edge 3(Bottom)	52	5260	0.11	0.472	11.90	11.54	0.513	1.6

Note:
- When the 1-g SAR is ≤ 0.8W/kg, testing for low and high channel is optional.
- The test separation of all above table(body part) is 0mm.
- Plots are only shown for the bold markered worst case SAR results

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SAR MEASUREMENT								
Depth of Liquid (cm):>15				Relative Humidity (%): 58.7				
Product: 15.6inch Notebook								
Test Mode:5.5GHz WIFI								
Position	**Ch.**	**Fr. (MHz)**	**Power Drift (<±5%)**	**SAR (1g) (W/kg)**	**Max. Tune-up Power (dBm)**	**Meas. output Power (dBm)**	**Scaled SAR (W/kg)**	**Limit (W/kg)**
802.11a Antenna 1								
Body back	120	5600	-0.18	0.219	11.10	10.85	0.232	1.6
Body front	120	5600	0.05	0.521	11.10	10.85	0.552	1.6
Edge 4(Left)	100	5500	0.16	0.954	11.10	10.16	**1.185**	1.6
Edge 4(Left)	120	5600	-0.09	**0.973**	11.10	10.85	1.031	1.6
Edge 4(Left)	140	5700	0.27	0.966	11.10	11.06	0.975	1.6
802.11a Antenna 2								
Body back	120	5600	-0.14	0.128	11.50	11.41	0.131	1.6
Body front	100	5500	0.01	0.776	11.50	10.57	0.961	1.6
Body front	120	5600	-0.15	**0.864**	11.50	11.41	0.882	1.6
Body front	140	5700	0.22	0.792	11.50	10.58	**0.979**	1.6
Edge 3(Bottom)	120	5600	0.19	0.526	11.50	11.41	0.537	1.6

Note:
- When the 1-g SAR is ≤ 0.8W/kg, testing for low and high channel is optional.
- The test separation of all above table(body part) is 0mm.
- Plots are only shown for the bold markered worst case SAR results

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SAR MEASUREMENT								
Depth of Liquid (cm):>15					Relative Humidity (%): 56.1			
Product: 15.6inch Notebook								
Test Mode: 5.8GHz WIFI								
Position	**Ch.**	**Fr. (MHz)**	**Power Drift (<±5%)**	**SAR (1g) (W/kg)**	**Max. Tune-up Power (dBm)**	**Meas. output Power (dBm)**	**Scaled SAR (W/kg)**	**Limit (W/kg)**
802.11n20 -Antenna 1								
Body back	157	5785	-0.02	0.213	9.70	9.05	0.247	1.6
Body front	157	5785	0.17	0.728	9.70	9.05	0.846	1.6
Edge 4(Left)	157	5785	0.08	**0.751**	9.70	9.05	**0.872**	1.6
802.11a -Antenna 2								
Body back	157	5785	-0.14	0.123	10.40	10.33	0.125	1.6
Body front	149	5745	0.01	0.802	10.40	10.13	0.853	1.6
Body front	157	5785	-0.17	0.839	10.40	10.33	0.853	1.6
Body front	165	5825	0.15	**0.901**	10.40	10.19	**0.946**	1.6
Edge 3(Bottom)	157	5785	0.08	0.578	10.40	10.33	0.587	1.6

Note:
- When the 1-g SAR is ≤ 0.8W/kg, testing for low and high channel is optional.
- The test separation of all above table(body part) is 0mm.
- Plots are only shown for the bold markered worst case SAR results

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SAR MEASUREMENT								
Depth of Liquid (cm):>15					Relative Humidity (%): 60.1			
Product: 15.6inch Notebook								
Test Mode: Bluetooth(BR/EDR)								
Position	**Ch.**	**Fr. (MHz)**	**Power Drift (<±5%)**	**SAR (1g) (W/kg)**	**Max. Tune-up Power (dBm)**	**Meas. output Power (dBm)**	**Scaled SAR (W/kg)**	**Limit (W/kg)**
Body back	39	2441	-0.03	0.040	6.000	5.027	0.050	1.6
Body front	39	2441	0.18	**0.146**	6.000	5.027	**0.183**	1.6
Edge 4(Left)	39	2441	0.07	0.077	6.000	5.027	0.096	1.6

Note:
- When the 1-g SAR is ≤ 0.8W/kg, testing for low and high channel is optional.
- The test separation of all above table(body part) is 0mm.
- Plots are only shown for the bold markered worst case SAR results

SAR MEASUREMENT								
Depth of Liquid (cm):>15					Relative Humidity (%): 60.1			
Product: 15.6inch Notebook								
Test Mode: Bluetooth(BLE)								
Position	**Ch.**	**Fr. (MHz)**	**Power Drift (<±5%)**	**SAR (1g) (W/kg)**	**Max. Tune-up Power (dBm)**	**Meas. output Power (dBm)**	**Scaled SAR (W/kg)**	**Limit (W/kg)**
Body back	19	2440	-0.06	0.027	5.000	4.143	0.033	1.6
Body front	19	2440	0.10	**0.154**	5.000	4.143	**0.188**	1.6
Edge 4(Left)	19	2440	0.05	0.072	5.000	4.143	0.088	1.6

Note:
- When the 1-g SAR is ≤ 0.8W/kg, testing for low and high channel is optional.
- The test separation of all above table(body part) is 0mm.
- Plots are only shown for the bold markered worst case SAR results

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Repeated SAR										
Product: 15.6inch Notebook										
Test Mode: 2.4GHz 802.11b Antenna 1&2.4GHz 802.11b Antenna 2&5.3GHz WIFI-802.11a Antenna 1&5.5GHz WIFI-802.11a Antenna 1&5.5GHz WIFI-802.11a Antenna 2&5.8GHz WIFI-802.11a Antenna 2										
Position	**Mode**	**Ch.**	**Fr. (MHz)**	**Power Drift (<±5%)**	**Once SAR (1g) (W/kg)**	**Power Drift (<±5%)**	**Twice SAR (1g) (W/kg)**	**Power Drift (<±5%)**	**Third SAR (1g) (W/kg)**	**Limit W/kg**
Body front	DTS	11	2462	-0.12	**0.860**	--	--	--	--	1.6
Body front	DTS	11	2462	0.25	**1.103**	--	--	--	--	1.6
Position		**Ch.**	**Fr. (MHz)**	**Power Drift (<±5%)**	**Once SAR (1g) (W/kg)**	**Power Drift (<±5%)**	**Twice SAR (1g) (W/kg)**	**Power Drift (<±5%)**	**Third SAR (1g) (W/kg)**	**Limit W/kg**
Body front		56	5280	0.18	**0.981**	--	--	--	--	1.6
Edge 4(Left)		120	5600	0.22	**0.908**	--	--	--	--	1.6
Body front		120	5600	-0.23	**0.894**	--	--	--	--	1.6
Body front		165	5825	-0.29	**1.090**	--	--	--	--	1.6

The second repeated SAR judge reference								
Product: PPNN								
Band	**Position**	**Mode**	**Ch.**	**Fr. (MHz)**	**Orignal SAR (1g) (W/kg)**	**First SAR (1g) (W/kg)**	**Ratio**	**Limit**
2.4GHz 802.11b Antenna 1	Body front	DTS	11	2462	0.863	0.860	1.003	＜1.2
2.4GHz 802.11b Antenna 2	Body front	DTS	11	2462	1.134	1.103	1.028	＜1.2
Band	**Position**		**Ch.**	**Fr. (MHz)**	**Orignal SAR (1g) (W/kg)**	**First SAR (1g) (W/kg)**	**Ratio**	**Limit**
5.3GHz WIFI-802.11a Antenna 1	Body front		56	5280	**0.828**	0.981	0.844	＜1.2
5.5GHz WIFI-802.11a Antenna 1	Edge 4(Left)		120	5600	**0.973**	0.908	1.072	＜1.2
5.5GHz WIFI-802.11a Antenna 2	Body front		120	5600	0.864	0.894	0.966	＜1.2
5.8GHz WIFI-802.11a Antenna 2	Body front		165	5825	0.901	1.090	0.827	＜1.2

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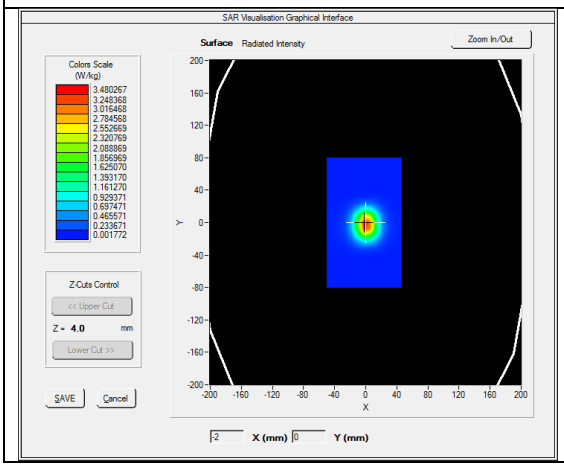
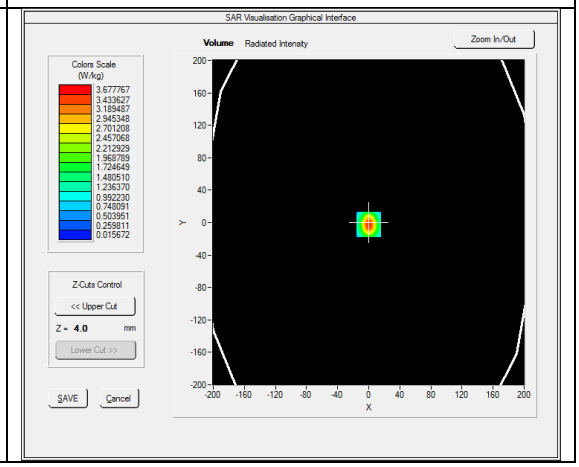
APPENDIX A. SAR SYSTEM CHECK DATA

Test Laboratory: AGC Lab **Date: Dec. 03, 2022**
System Check Head 2450 MHz
DUT: Dipole 2450 MHz Type: SID 2450
Communication System CW; Communication System Band: D2450 (2450.0 MHz); Duty Cycle: 1:1; Conv.F=1.99
Frequency: 2450 MHz; Medium parameters used: f = 2450 MHz; σ=1.77 mho/m; εr =39.64; ρ= 1000 kg/m³ ;
Phantom section: Flat Section; Input Power=18dBm
Ambient temperature (℃):21.7, Liquid temperature (℃): 21.2

SATIMO Configuration

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/System Check 2450MHz Head/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/System Check 2450MHz Head/Zoom Scan: Measurement grid: dx=5mm,dy=5mm, dz=5mm

SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=-2.00
SAR Peak: 6.40 W/kg

SAR 10g (W/Kg)	1.512483
SAR 1g (W/Kg)	3.381638

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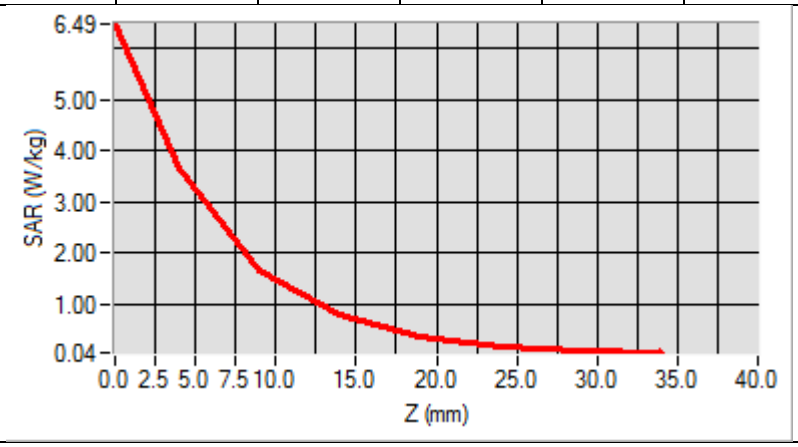
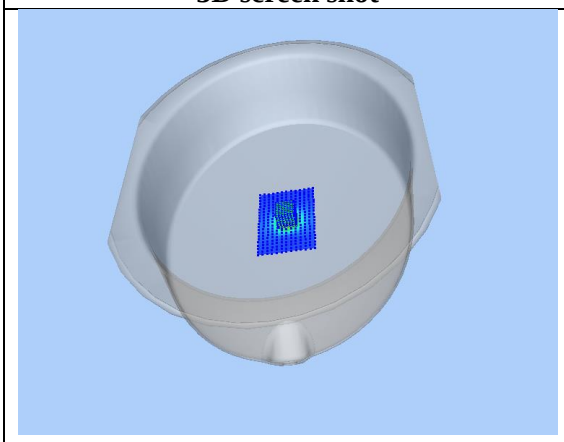
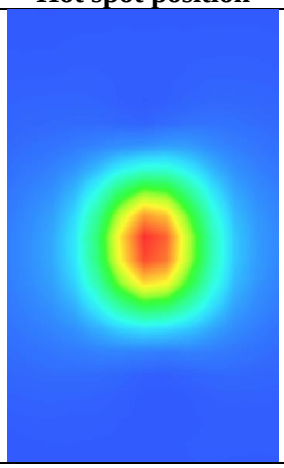
Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	6.4914	3.6778	1.6721	0.7852	0.3722	0.1773	0.0860



3D screen shot	Hot spot position
	

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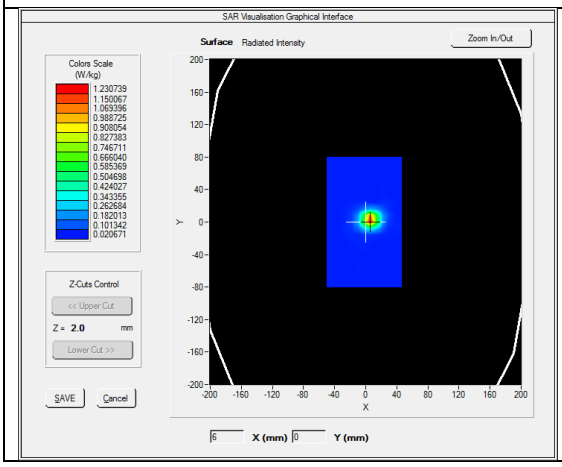
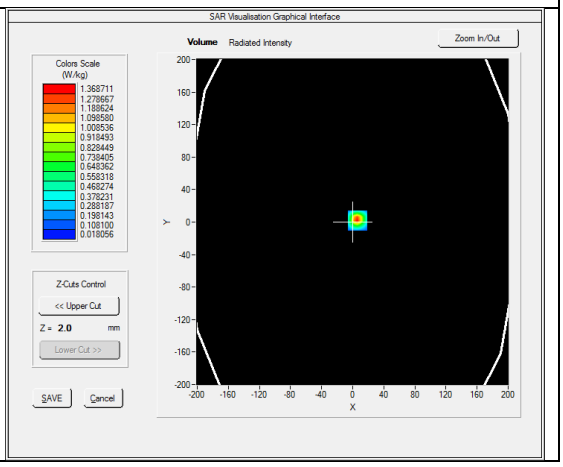
Test Laboratory: AGC Lab **Date: Dec. 05, 2022**
System Check 5200 MHz
DUT: Dipole 5000MHz Type: SWG5500
Communication System: CW; Communication System Band: D5000 (5000.0 MHz); Duty Cycle: 1:1; Conv.F=1.28
Frequency: 5200 MHz; Medium parameters used: f = 5200 MHz; σ =4.73 mho/m; εr =35.95; ρ= 1000 kg/m³ ;
Phantom section: Flat Section; Input Power=10dBm
Ambient temperature (℃): 20.1, Liquid temperature (℃): 19.9

SATIMO Configuration:
- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/System Check 5200 MHz Body/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/System Check 5200 MHz Body/Zoom Scan: Measurement grid: dx=4mm,dy=4mm, dz=2mm

SURFACE SAR	VOLUME SAR
	

Maximum location: X=6.00, Y=2.00
SAR Peak: 2.40 W/kg

SAR 10g (W/Kg)	0.229412
SAR 1g (W/Kg)	0.732015

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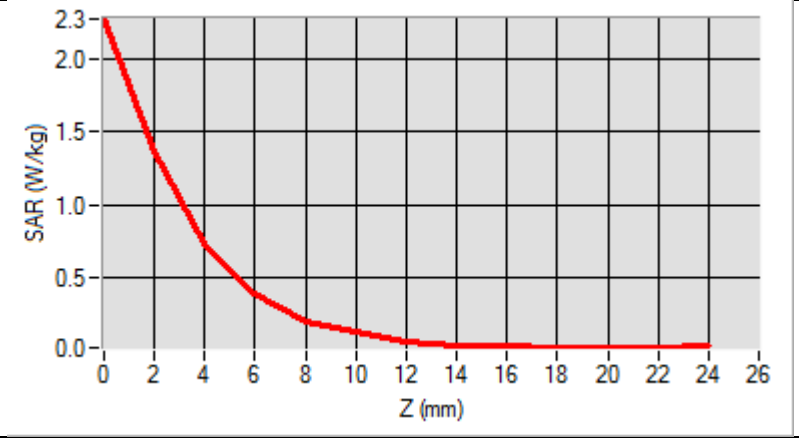
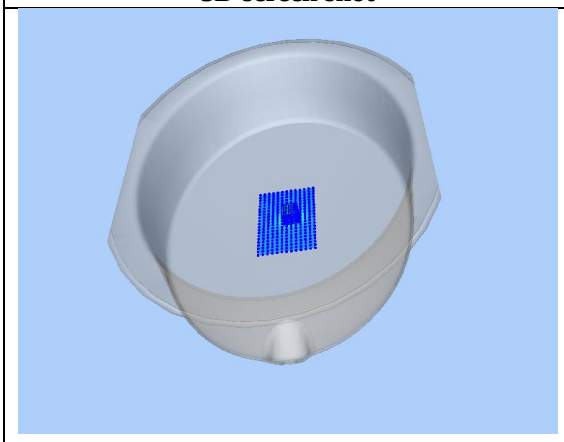
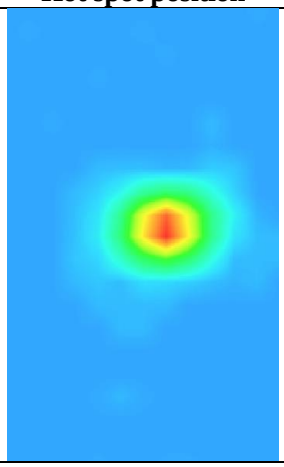
Z (mm)	0.00	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00
SAR (W/Kg)	2.2694	1.3687	0.7339	0.3936	0.1985	0.1280	0.0625	0.0395	0.0313	0.0197	0.0207	0.0209



3D screen shot	Hot spot position
	

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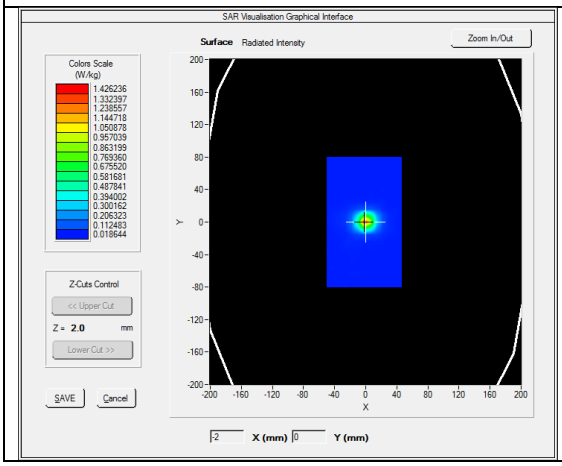
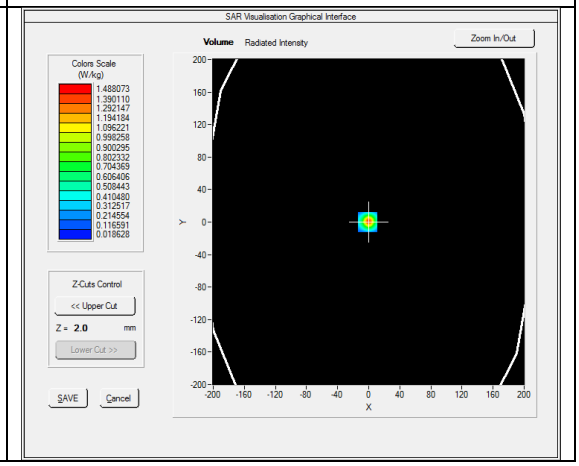
Test Laboratory: AGC Lab **Date: Dec. 01, 2022**
System Check 5200 MHz
DUT: Dipole 5000MHz Type: SWG5500
Communication System: CW; Communication System Band: D5000 (5000.0 MHz); Duty Cycle: 1:1; Conv.F=1.49
Frequency: 5200 MHz; Medium parameters used: f = 5200 MHz; σ =4.81 mho/m; εr =36.28; ρ= 1000 kg/m³ ;
Phantom section: Flat Section; Input Power=10dBm
Ambient temperature (℃): 20.9, Liquid temperature (℃): 20.1

SATIMO Configuration:
- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/System Check 5200 MHz Body/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/System Check 5200 MHz Body/Zoom Scan: Measurement grid: dx=4mm,dy=4mm, dz=2mm

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-1.00, Y=0.00
SAR Peak: 2.61 W/kg

SAR 10g (W/Kg)	0.238666
SAR 1g (W/Kg)	0.779242

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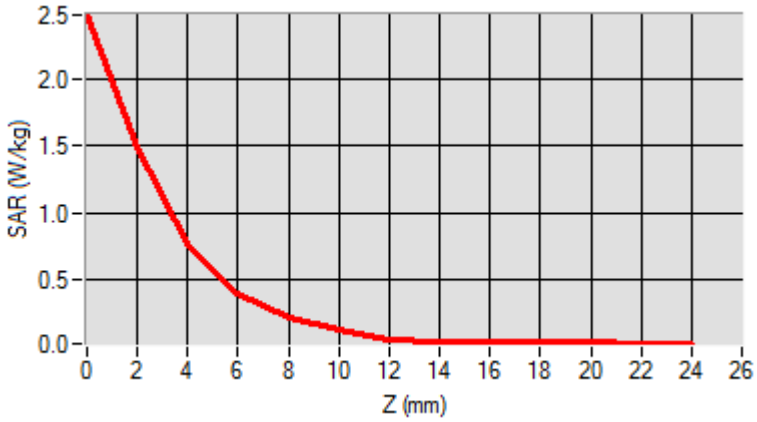
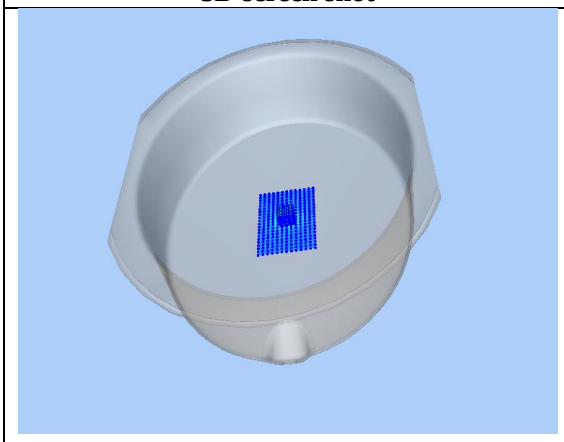
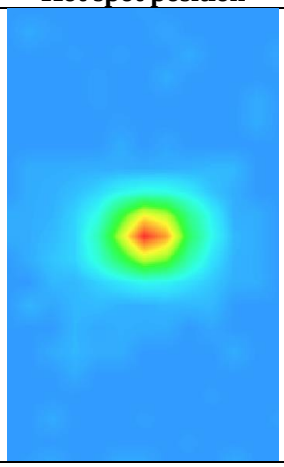
Z (mm)	0.00	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00
SAR (W/Kg)	2.4810	1.4881	0.7718	0.4006	0.2130	0.1190	0.0533	0.0326	0.0289	0.0284	0.0279	0.0190



3D screen shot	Hot spot position
	

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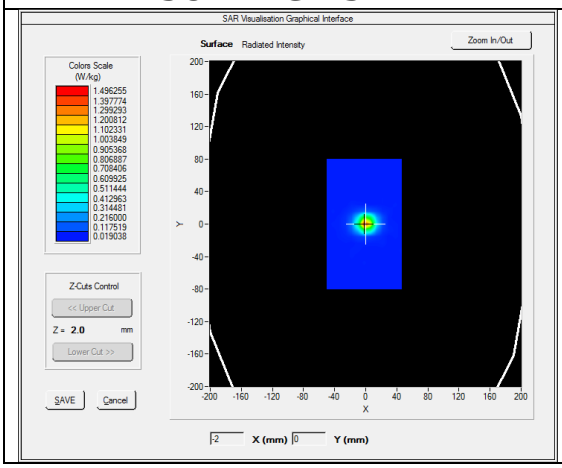
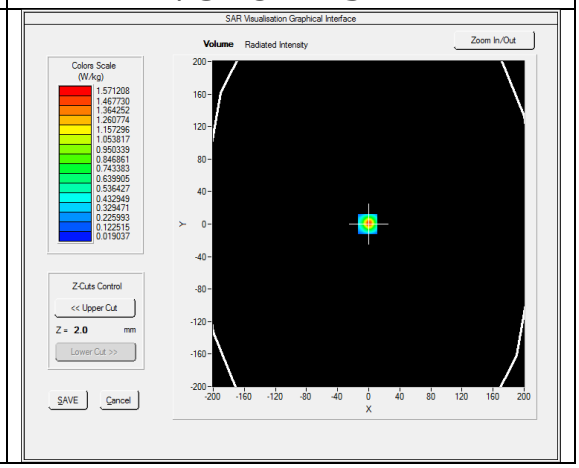
Test Laboratory: AGC Lab **Date: Dec. 02, 2022**
System Check 5600 MHz
DUT: Dipole 5000MHz Type: SWG5500
Communication System: CW; Communication System Band: D5000 (5000.0 MHz); Duty Cycle: 1:1; Conv.F=1.52
Frequency: 5600 MHz; Medium parameters used: f = 5600 MHz; σ =5.15 mho/m; εr =34.58; ρ= 1000 kg/m³ ;
Phantom section: Flat Section; Input Power=10dBm
Ambient temperature (℃): 21.2, Liquid temperature (℃): 20.9

SATIMO Configuration:
- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/System Check 5200 MHz Body/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/System Check 5200 MHz Body/Zoom Scan: Measurement grid: dx=4mm,dy=4mm, dz=2mm

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-1.00, Y=0.00
SAR Peak: 2.84 W/kg

SAR 10g (W/Kg)	0.253054
SAR 1g (W/Kg)	0.832960

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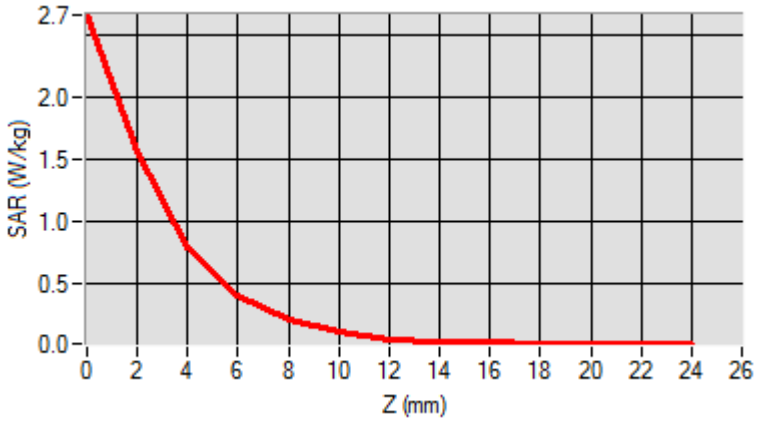
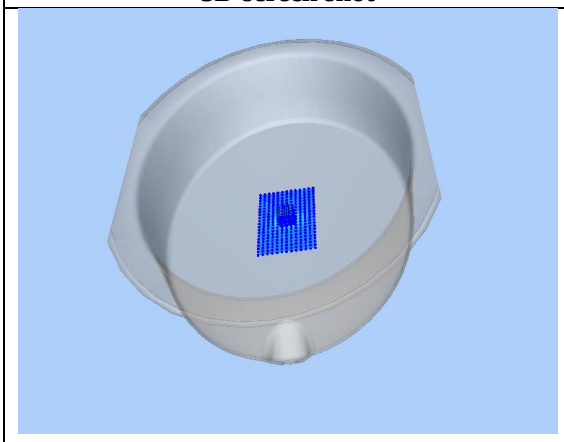
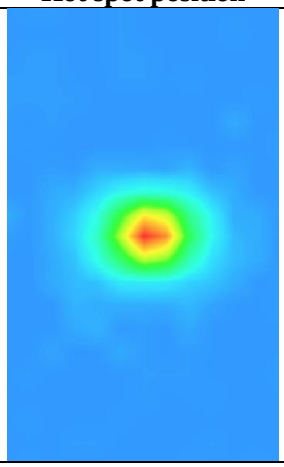
Z (mm)	0.00	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00
SAR (W/Kg)	2.6579	1.5712	0.7900	0.4047	0.2092	0.1142	0.0564	0.0369	0.0291	0.0212	0.0194	0.0192



3D screen shot	Hot spot position
	

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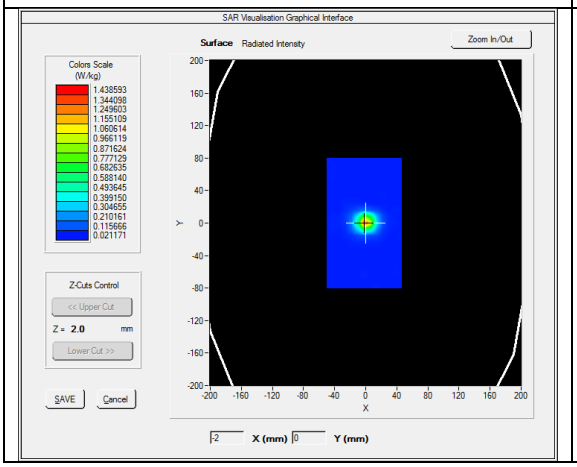
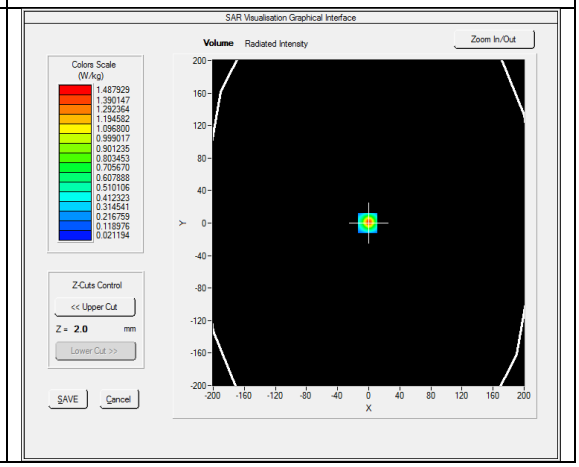
Test Laboratory: AGC Lab **Date: Dec. 06, 2022**
System Check Head 5800 MHz
DUT: Dipole 5000MHz Type: SWG5500
Communication System: CW; Communication System Band: D5000 (5000.0 MHz); Duty Cycle: 1:1; Conv.F=1.42
Frequency: 5800 MHz; Medium parameters used: f = 5800 MHz; σ =5.33 mho/m; εr =35.86; ρ= 1000 kg/m³ ;
Phantom section: Flat Section; Input Power=10dBm
Ambient temperature (℃): 21.7, Liquid temperature (℃): 21.3

SATIMO Configuration:

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/System Check 5800 MHz Head/Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/System Check 5800 MHz Head/Zoom Scan: Measurement grid: dx=4mm,dy=4mm, dz=2mm

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-1.00, Y=0.00
SAR Peak: 2.74 W/kg

SAR 10g (W/Kg)	0.242768
SAR 1g (W/Kg)	0.783239

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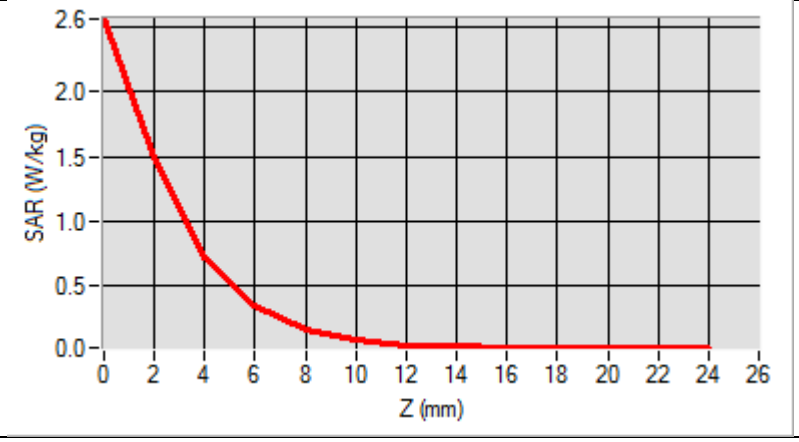
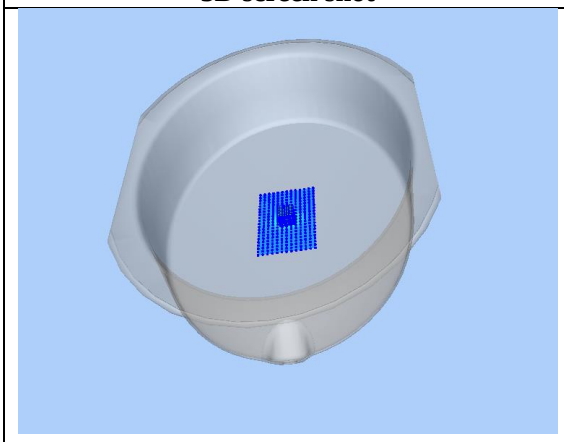
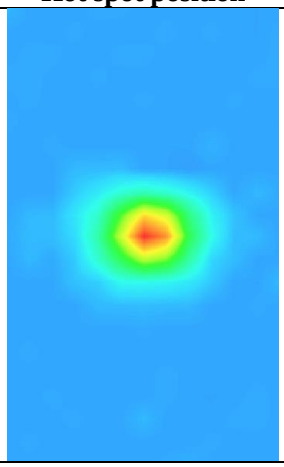
Z (mm)	0.00	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00
SAR (W/Kg)	2.5642	1.4879	0.7157	0.3500	0.1698	0.0876	0.0439	0.0360	0.0242	0.0267	0.0271	0.0267



3D screen shot	Hot spot position
	

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APPENDIX B. SAR MEASUREMENT DATA

2.4GHz WIFI MODE

Test Laboratory: AGC Lab **Date: Dec. 03, 2022**

802.11b Antenna 1 Low-Body-Worn- Front

DUT: 15.6inch Notebook; Type: WWN15V2I38BK256

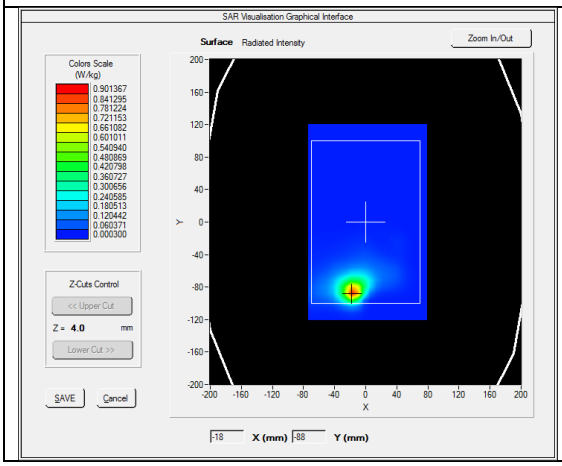
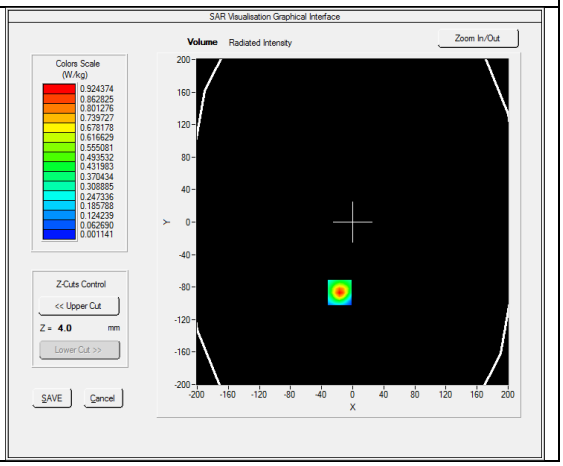
Communication System: Wi-Fi; Communication System Band: 802.11b; Duty Cycle: 1:1; Conv.F=1.99; Frequency: 2412 MHz; Medium parameters used: f = 2450 MHz; σ =1.74mho/m; εr =40.02; ρ= 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃):21.7, Liquid temperature (℃): 21.2

SATIMO Configuration:

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/802.11b Antenna 1 Low- Body- Front /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/802.11b Antenna 1 Low- Body- Front /Zoom Scan: Measurement grid: dx=5mm,dy=5mm, dz=5mm;

Area Scan	surf_sam_plan.txt, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body Front
Band	2450MHz
Channels	Low
Signal	Crest factor: 1.0

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-17.00, Y=-87.00
SAR Peak: 1.69 W/kg

SAR 10g (W/Kg)	0.346338
SAR 1g (W/Kg)	0.838760

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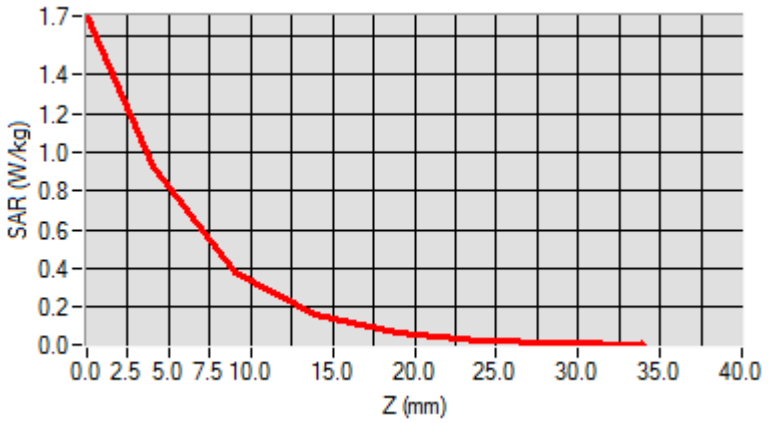
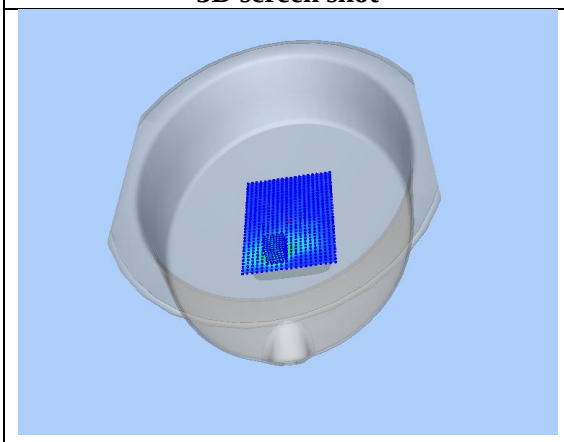
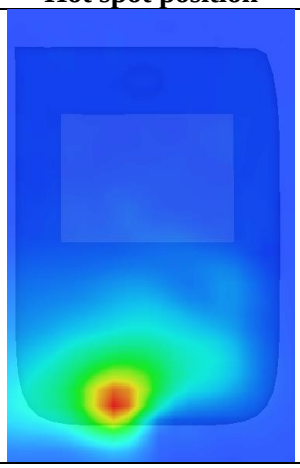
Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.7055	0.9244	0.3837	0.1627	0.0682	0.0296	0.0129



3D screen shot	Hot spot position
	

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Test Laboratory: AGC Lab **Date: Dec. 03, 2022**
802.11b Antenna 1 High-Body-Worn- Front
DUT: 15.6inch Notebook; Type: WWN15V2I38BK256

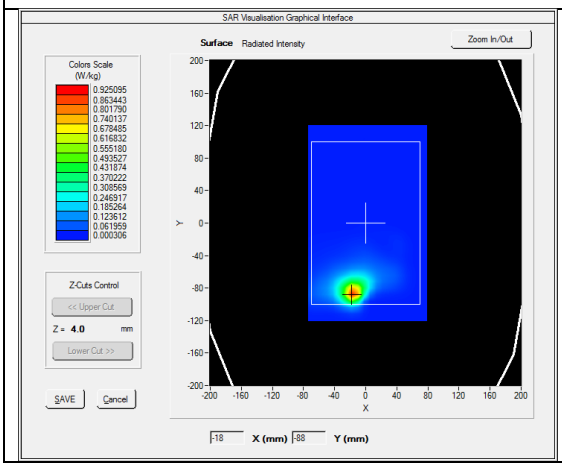
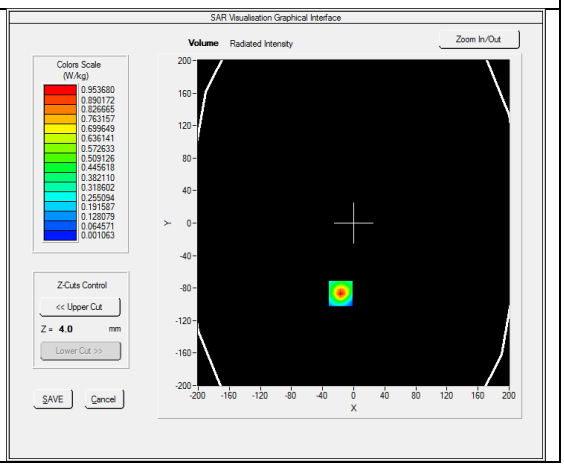
Communication System: Wi-Fi; Communication System Band: 802.11b; Duty Cycle: 1:1; Conv.F=1.99;
Frequency: 2462 MHz; Medium parameters used: f = 2450 MHz; σ =1.78mho/m; εr =39.52; ρ= 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃):21.7, Liquid temperature (℃): 21.2

SATIMO Configuration:

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/802.11b Antenna 1 High- Body- Front /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/802.11b Antenna 1 High- Body- Front /Zoom Scan: Measurement grid: dx=5mm,dy=5mm, dz=5mm;

Area Scan	surf_sam_plan.txt, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body Front
Band	2450MHz
Channels	High
Signal	Crest factor: 1.0

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-17.00, Y=-87.00
SAR Peak: 1.75 W/kg

SAR 10g (W/Kg)	0.355657
SAR 1g (W/Kg)	0.862582

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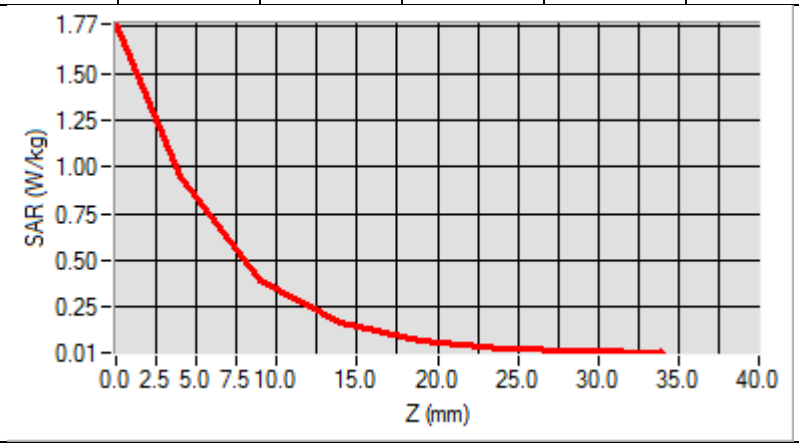
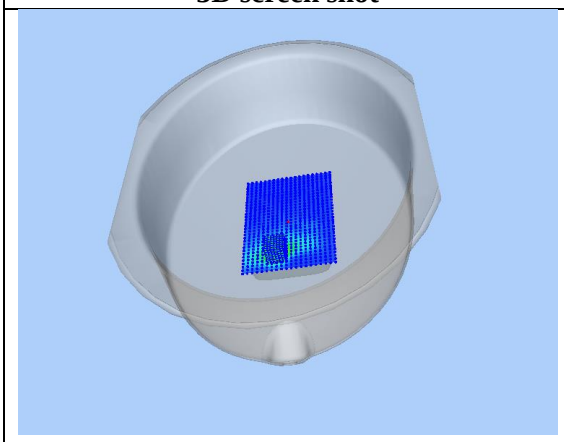
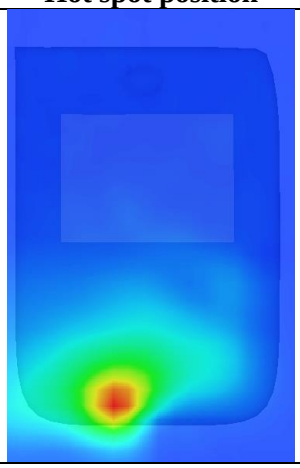
Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.7655	0.9537	0.3934	0.1670	0.0701	0.0302	0.0133



3D screen shot	Hot spot position
	

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Test Laboratory: AGC Lab **Date: Dec. 03, 2022**
802.11b Antenna 2 High-Body-Worn- Front
DUT: 15.6inch Notebook; Type: WWN15V2I38BK256

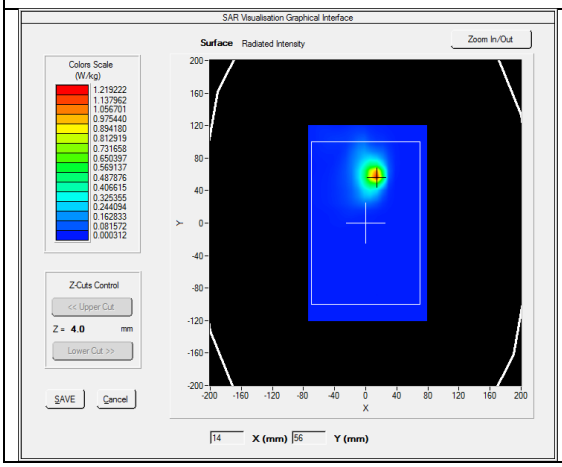
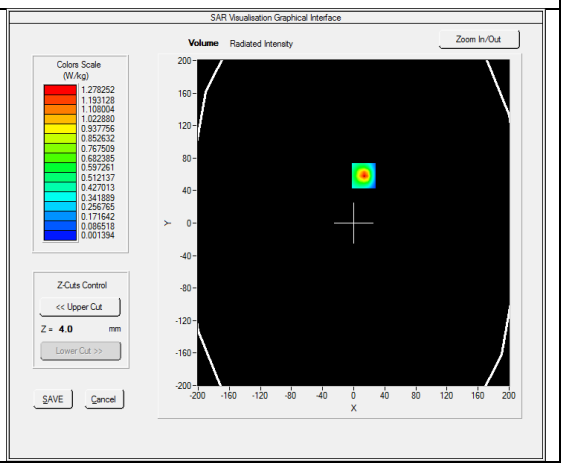
Communication System: Wi-Fi; Communication System Band: 802.11b; Duty Cycle: 1:1; Conv.F=1.99;
Frequency: 2462 MHz; Medium parameters used: f = 2450 MHz; σ =1.78mho/m; εr =39.52; ρ= 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃):21.7, Liquid temperature (℃): 21.2

SATIMO Configuration:

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/802.11b Antenna 2 High- Body- Front /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/802.11b Antenna 2 High- Body- Front /Zoom Scan: Measurement grid: dx=5mm,dy=5mm, dz=5mm;

Area Scan	surf_sam_plan.txt, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body Front
Band	2450MHz
Channels	High
Signal	Crest factor: 1.0

SURFACE SAR	VOLUME SAR
	

Maximum location: X=13.00, Y=58.00
SAR Peak: 2.44 W/kg

SAR 10g (W/Kg)	0.431619
SAR 1g (W/Kg)	1.134215

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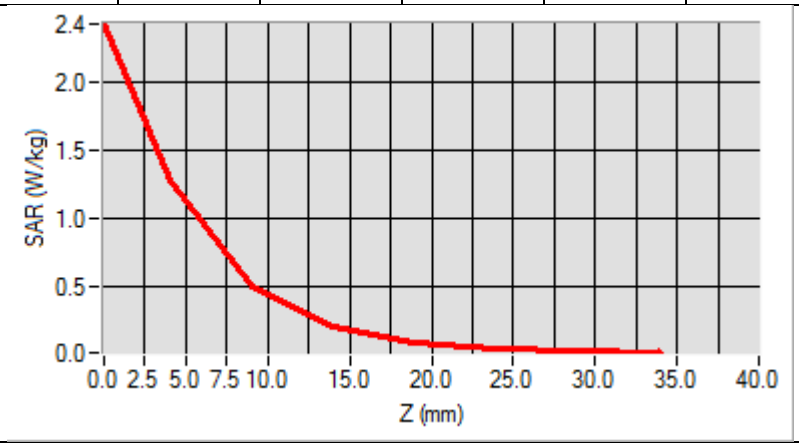
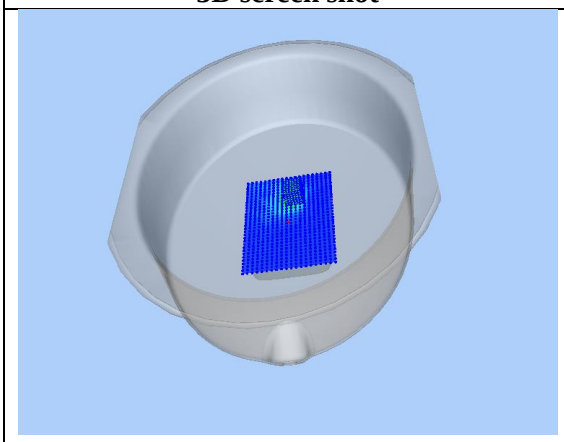
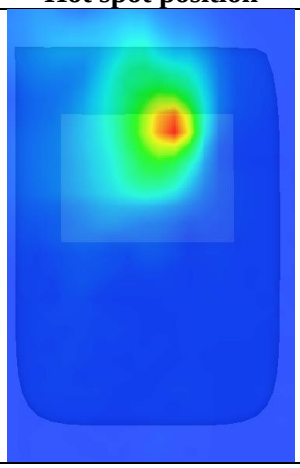
Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	2.4338	1.2783	0.4978	0.1951	0.0789	0.0324	0.0137



3D screen shot	Hot spot position
	

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WIFI 5.2GHz MODE

Test Laboratory: AGC Lab **Date: Dec. 05, 2022**
802.11a Antenna 1 - CH40-Body-Worn- Front
DUT: 15.6inch Notebook; Type: WWN15V2I38BK256

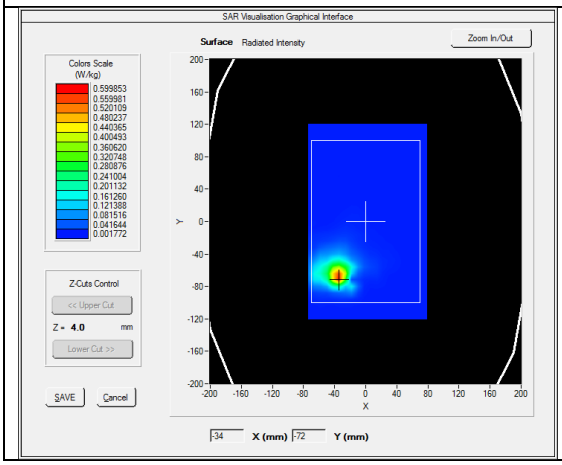
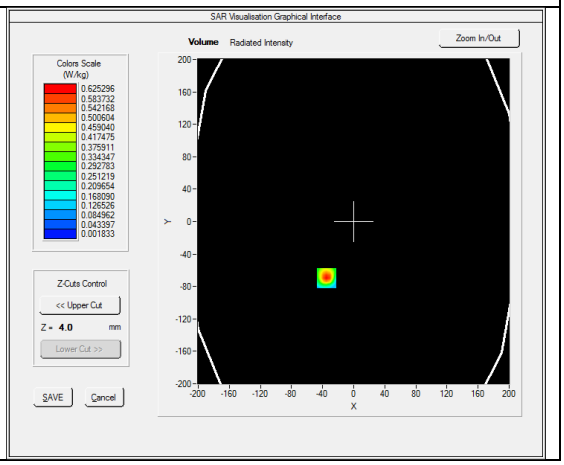
Communication System: Wi-Fi; Communication System Band: 802.11a; Duty Cycle: 1:1; Conv.F=2.35;
Frequency: 5200MHz; Medium parameters used: f = 5200 MHz; σ= 4.73mho/m; εr =35.95; ρ= 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃): 20.1, Liquid temperature (℃): 19.9

SATIMO Configuration:

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/802.11a Antenna 1 - CH40- Mid - Body- Front /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/802.11a Antenna 1 - CH40- Mid - Body- Front /Zoom Scan: Measurement grid: dx=4mm,dy=4mm, dz=2mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	7x7x12 dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Body Front
Band	5200MHz
Channels	Middle
Signal	Crest factor: 1.0

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-35.00, Y=-70.00
SAR Peak: 1.70 W/kg

SAR 10g (W/Kg)	0.207228
SAR 1g (W/Kg)	0.612288

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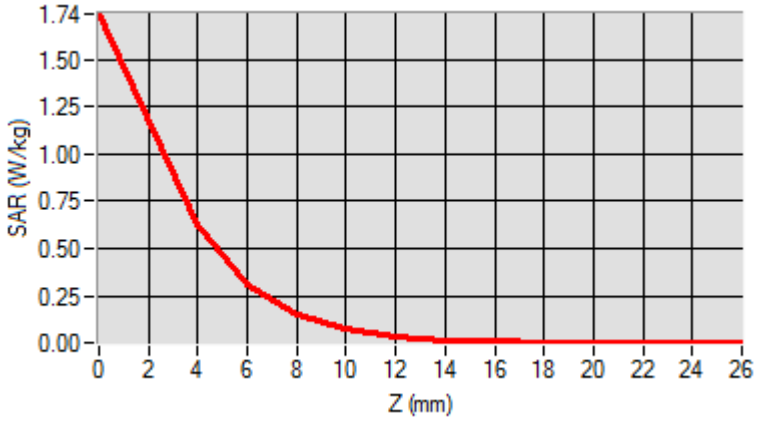
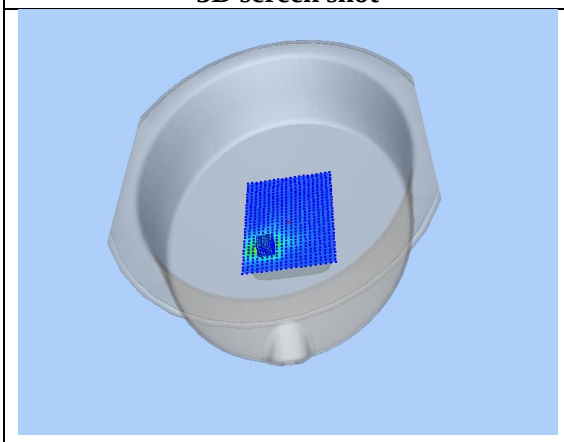
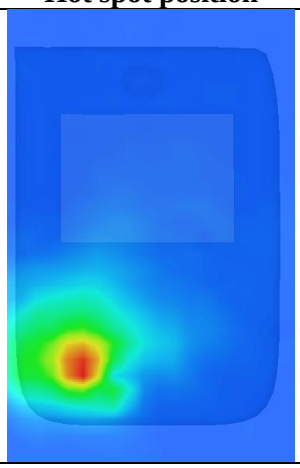
Z (mm)	0.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00
SAR (W/Kg)	1.7400	0.6253	0.3092	0.1501	0.0720	0.0351	0.0173	0.0087	0.0043	0.0029	0.0024	0.0025



3D screen shot	Hot spot position
	

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Test Laboratory: AGC Lab **Date: Dec. 05, 2022**
802.11a Antenna 2 - CH40-Body-Worn- Front
DUT: 15.6inch Notebook; Type: WWN15V2I38BK256

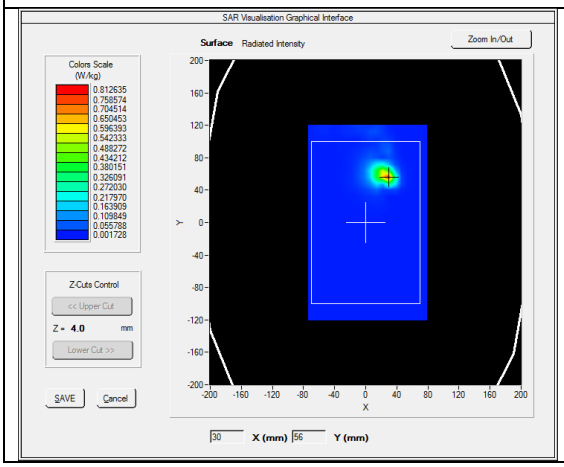
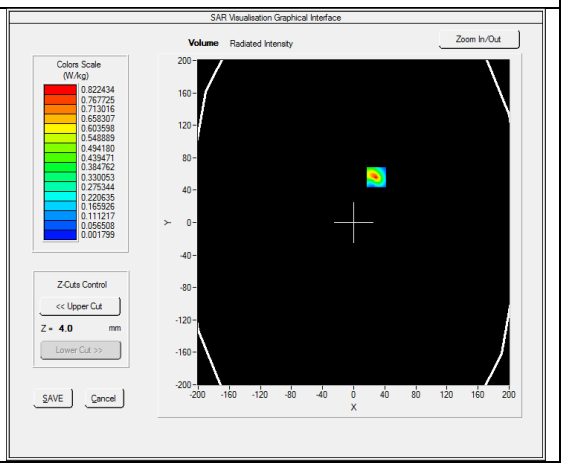
Communication System: Wi-Fi; Communication System Band: 802.11a; Duty Cycle: 1:1; Conv.F=2.35;
Frequency: 5200MHz; Medium parameters used: f = 5200 MHz; σ= 4.73mho/m; εr =35.95; ρ= 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃): 20.1, Liquid temperature (℃): 19.9

SATIMO Configuration:

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/802.11a Antenna 2 - CH40- Mid - Body- Front /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/802.11a Antenna 2 - CH40- Mid - Body- Front /Zoom Scan: Measurement grid: dx=4mm,dy=4mm, dz=2mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	7x7x12 dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Body Front
Band	5200MHz
Channels	Middle
Signal	Crest factor: 1.0

SURFACE SAR	VOLUME SAR
	

Maximum location: X=29.00, Y=56.00
SAR Peak: 2.28 W/kg

SAR 10g (W/Kg)	0.214545
SAR 1g (W/Kg)	0.722329

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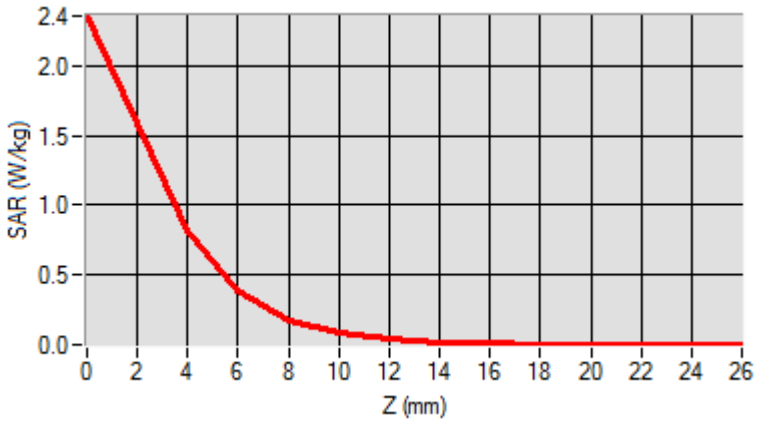
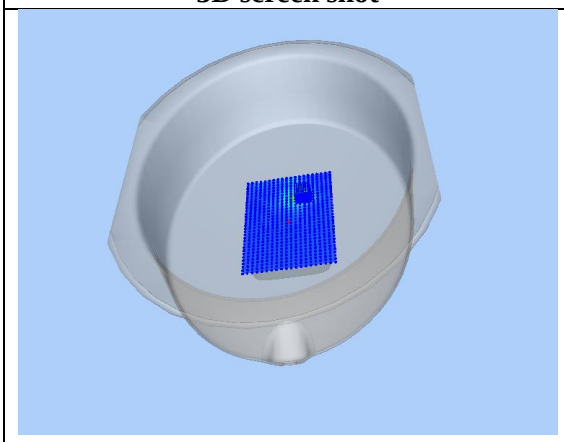
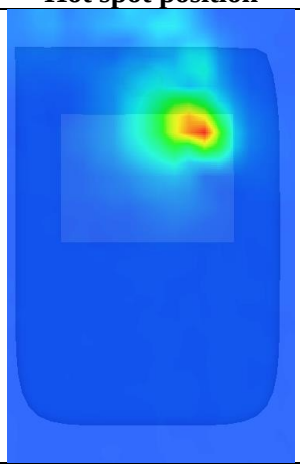
Z (mm)	0.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00
SAR (W/Kg)	2.3535	0.8224	0.3914	0.1809	0.0849	0.0400	0.0193	0.0093	0.0051	0.0034	0.0026	0.0021



3D screen shot	Hot spot position
	

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WIFI 5.3GHz MODE

Test Laboratory: AGC Lab **Date: Dec. 01, 2022**
802.11a Antenna 1-CH56-Mid - Body-Worn- Front
DUT: 15.6inch Notebook; Type: WWN15V2I38BK256

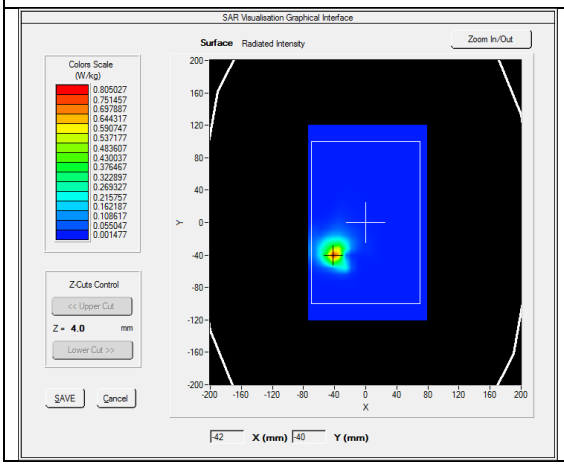
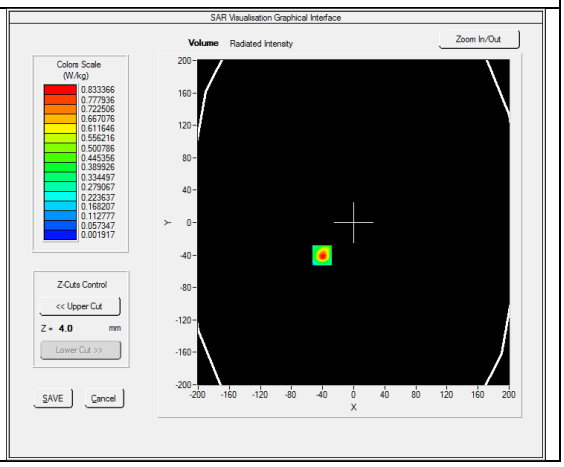
Communication System: Wi-Fi; Communication System Band: 802.11a; Duty Cycle: 1:1; Conv.F=2.35;
Frequency: 5280MHz; Medium parameters used: f = 5200 MHz; σ=4.80 mho/m; εr =36.56; ρ= 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃): 20.9, Liquid temperature (℃): 20.1

SATIMO Configuration:

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/802.11a Antenna 1-CH56-Mid - Body- Front /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/802.11a Antenna 1-CH56-Mid - Body- Front /Zoom Scan: Measurement grid: dx=4mm,dy=4mm, dz=2mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	7x7x12 dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Body Front
Band	5200MHz
Channels	Middle
Signal	Crest factor: 1.0

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-41.00, Y=-40.00
SAR Peak: 2.41 W/kg

SAR 10g (W/Kg)	0.262040
SAR 1g (W/Kg)	0.828289

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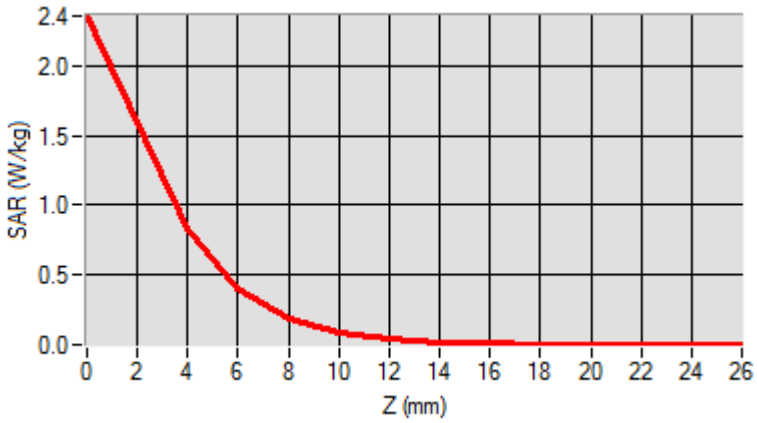
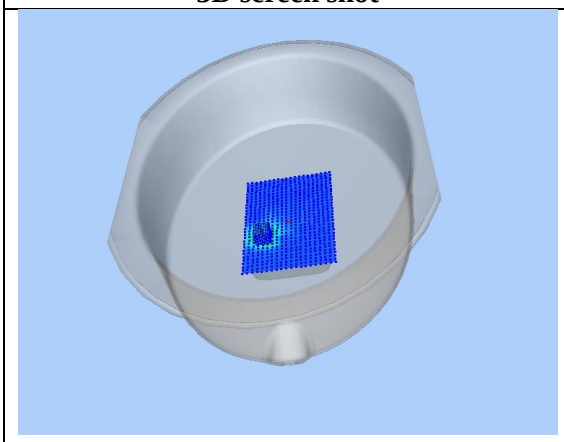
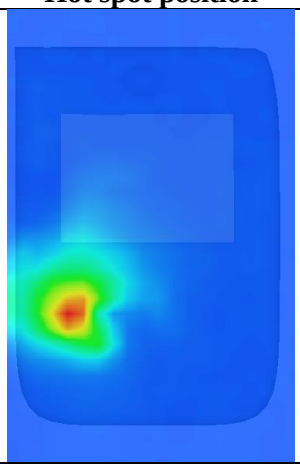
Z (mm)	0.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00
SAR (W/Kg)	2.3550	0.8334	0.4002	0.1926	0.0907	0.0441	0.0212	0.0102	0.0055	0.0034	0.0028	0.0024



3D screen shot	Hot spot position
	

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Test Laboratory: AGC Lab **Date: Dec. 01, 2022**
802.11a Antenna 2-CH56-Mid - Body-Worn- Front
DUT: 15.6inch Notebook; Type: WWN15V2I38BK256

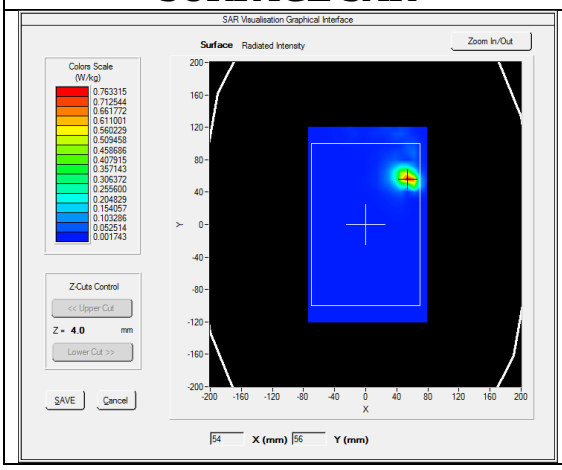
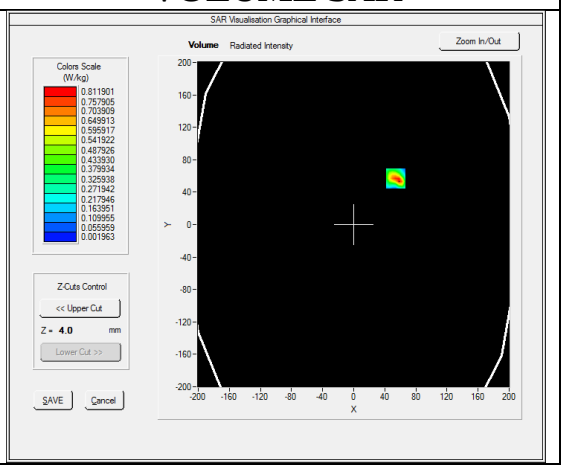
Communication System: Wi-Fi; Communication System Band: 802.11a; Duty Cycle: 1:1; Conv.F=2.35;
Frequency: 5280MHz; Medium parameters used: f = 5200 MHz; σ=4.80 mho/m; εr =36.56; ρ= 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃): 20.9, Liquid temperature (℃): 20.1

SATIMO Configuration:

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/802.11a Antenna 2-CH56-Mid - Body- Front /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/802.11a Antenna 2-CH56-Mid - Body- Front /Zoom Scan: Measurement grid: dx=4mm,dy=4mm, dz=2mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	7x7x12 dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Body Front
Band	5200MHz
Channels	Middle
Signal	Crest factor: 1.0

SURFACE SAR	VOLUME SAR
	

Maximum location: X=54.00, Y=57.00
SAR Peak: 2.39 W/kg

SAR 10g (W/Kg)	0.238156
SAR 1g (W/Kg)	0.732314

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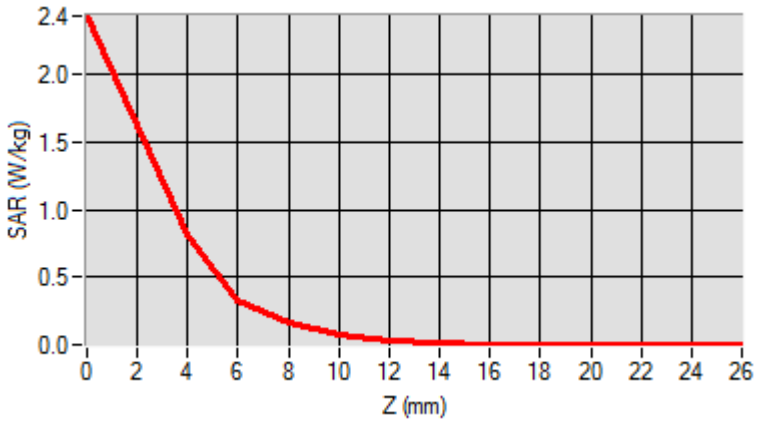
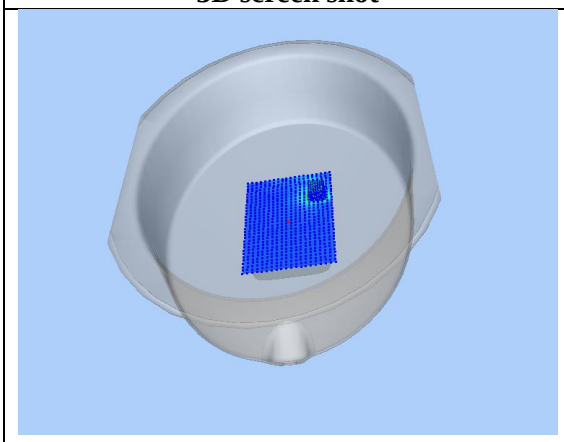
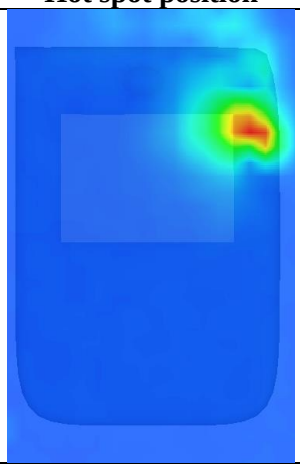
Z (mm)	0.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00
SAR (W/Kg)	2.4345	0.8119	0.3236	0.1637	0.0765	0.0344	0.0192	0.0078	0.0051	0.0035	0.0029	0.0028



3D screen shot	Hot spot position
	

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WIFI 5.6GHz MODE
Test Laboratory: AGC Lab **Date: Dec. 02, 2022**
802.11a Antenna 1 -CH100-Low –Edge4
DUT: 15.6inch Notebook; Type: WWN15V2I38BK256

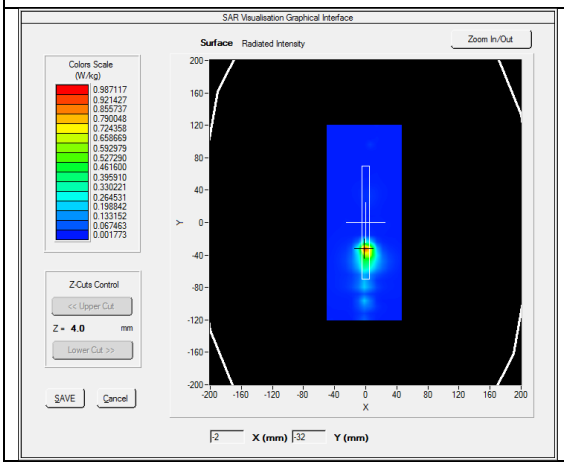
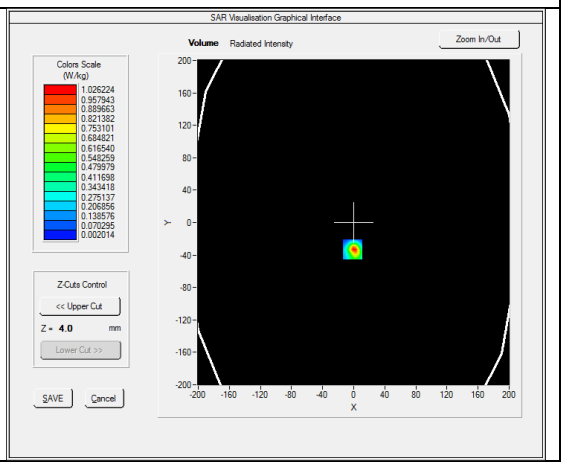
Communication System: Wi-Fi; Communication System Band: 802.11a; Duty Cycle: 1:1; Conv.F=1.52;
Frequency: 5500MHz; Medium parameters used: f = 5600 MHz; σ =5.14 mho/m; εr =34.72; ρ= 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃): 21.2, Liquid temperature (℃): 20.9

SATIMO Configuration:

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/ 802.11a Antenna 1 -CH120-Low – Edge4 /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/ 802.11a Antenna 1 -CH120-Low – Edge4 /Zoom Scan: Measurement grid: dx=4mm,dy=4mm, dz=2mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	7x7x12 dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Edge4
Band	5600MHz
Channels	Low
Signal	Crest factor: 1.0

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-1.00, Y=-33.00
SAR Peak: 2.98 W/kg

SAR 10g (W/Kg)	0.268609
SAR 1g (W/Kg)	0.954148

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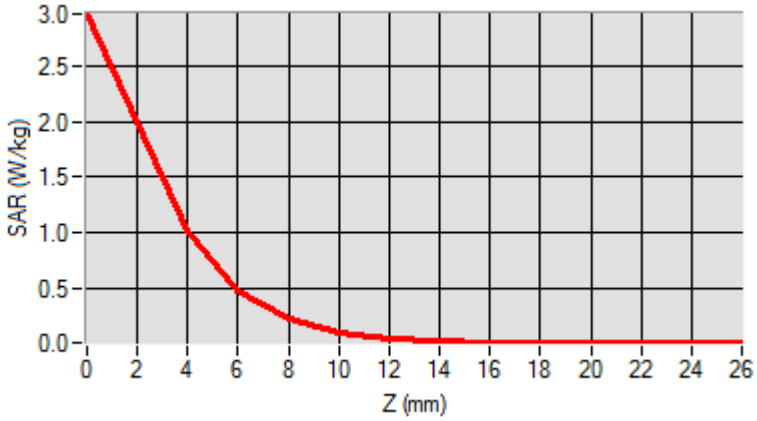
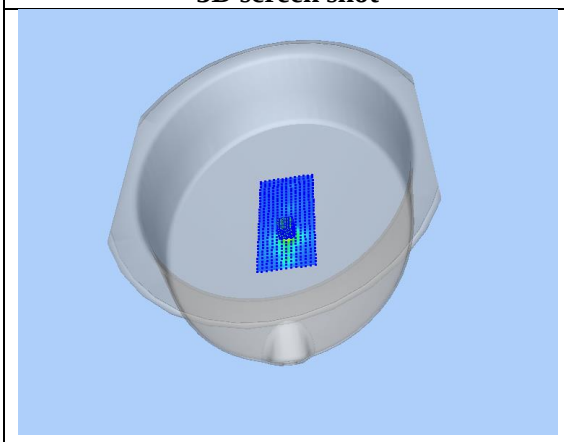
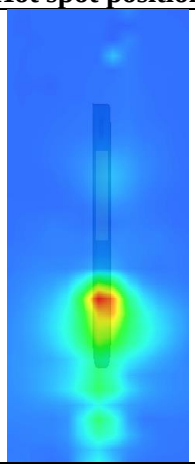
Z (mm)	0.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00
SAR (W/Kg)	2.9757	1.0262	0.4756	0.2179	0.0990	0.0450	0.0210	0.0108	0.0064	0.0047	0.0033	0.0029



3D screen shot	Hot spot position
	

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Test Laboratory: AGC Lab **Date: Dec. 02, 2022**
802.11a Antenna 1 -CH120-Mid –Edge4
DUT: 15.6inch Notebook; Type: WWN15V2I38BK256

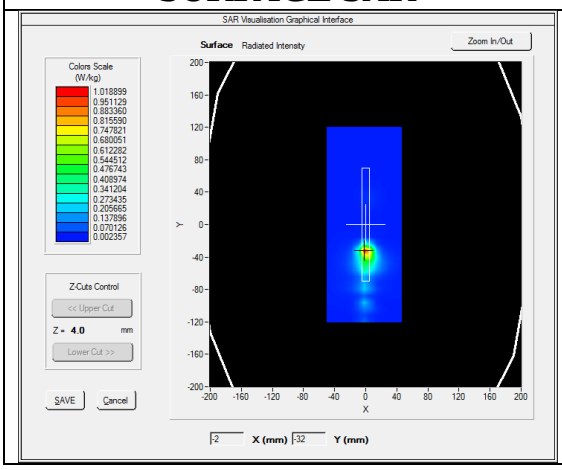
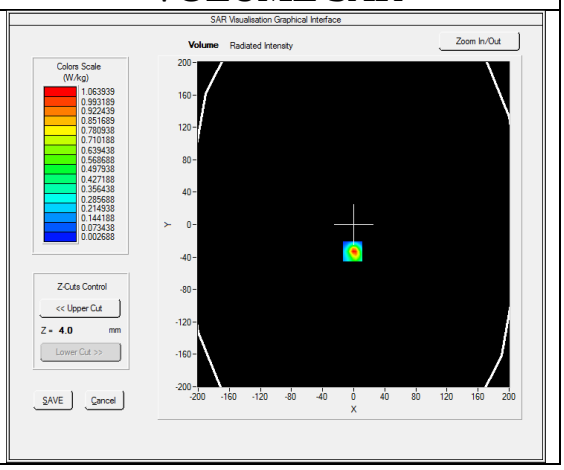
Communication System: Wi-Fi; Communication System Band: 802.11a; Duty Cycle: 1:1; Conv.F=1.52;
Frequency: 5600MHz; Medium parameters used: f = 5600 MHz; σ =5.15 mho/m; εr =34.58; ρ= 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃): 21.2, Liquid temperature (℃): 20.9

SATIMO Configuration:

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/ 802.11a Antenna 1 -CH120-Mid – Edge4 /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/ 802.11a Antenna 1 -CH120-Mid – Edge4 /Zoom Scan: Measurement grid: dx=4mm,dy=4mm, dz=2mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	7x7x12 dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Edge4
Band	5600MHz
Channels	Middle
Signal	Crest factor: 1.0

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-1.00, Y=-33.00
SAR Peak: 3.10 W/kg

SAR 10g (W/Kg)	0.271355
SAR 1g (W/Kg)	0.973445

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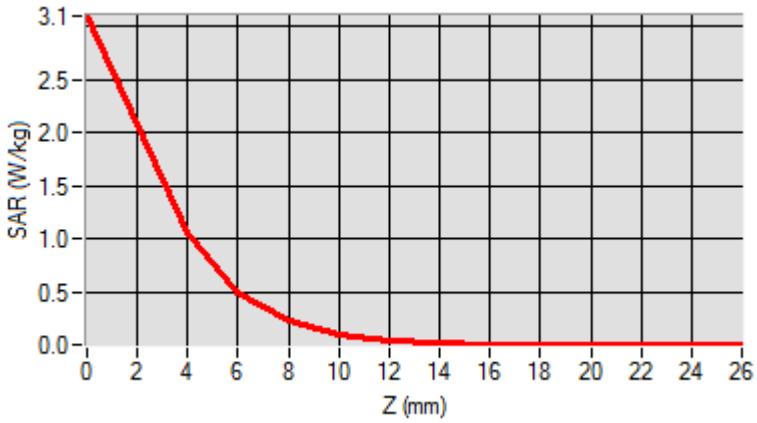
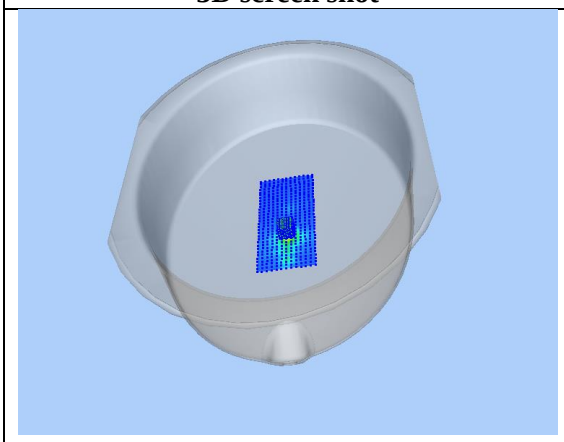
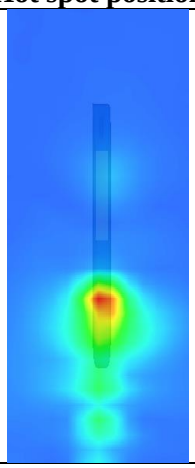
Z (mm)	0.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00
SAR (W/Kg)	3.1011	1.0639	0.4860	0.2232	0.1018	0.0474	0.0217	0.0117	0.0071	0.0048	0.0037	0.0030



3D screen shot	Hot spot position
	

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Test Laboratory: AGC Lab **Date: Dec. 02, 2022**
802.11a Antenna 2 -CH120-Mid –Body-Worn- Front
DUT: 15.6inch Notebook; Type: WWN15V2I38BK256

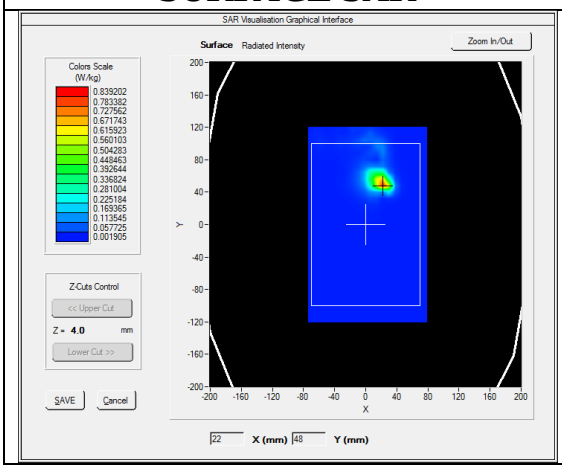
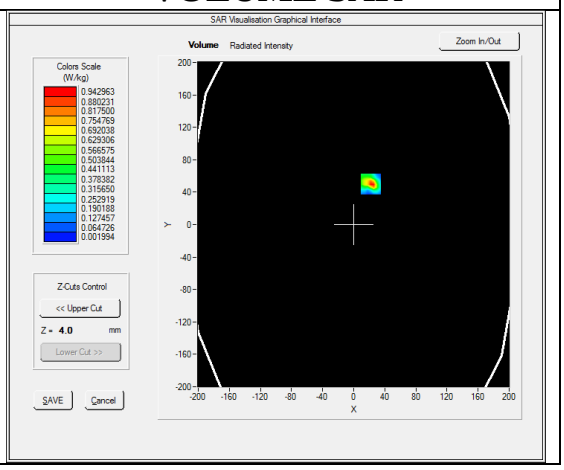
Communication System: Wi-Fi; Communication System Band: 802.11a; Duty Cycle: 1:1; Conv.F=1.52;
Frequency: 5600MHz; Medium parameters used: f = 5600 MHz; σ =5.15 mho/m; εr =34.58; ρ= 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃): 21.2, Liquid temperature (℃): 20.9

SATIMO Configuration:

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/ 802.11a Antenna 2 -CH120-Mid –Body- Front /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/ 802.11a Antenna 2 -CH120-Mid –Body- Front /Zoom Scan: Measurement grid: dx=4mm,dy=4mm, dz=2mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	7x7x12 dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Body Front
Band	5600MHz
Channels	Middle
Signal	Crest factor: 1.0

SURFACE SAR	VOLUME SAR
	

Maximum location: X=22.00, Y=50.00
SAR Peak: 2.84 W/kg

SAR 10g (W/Kg)	0.240049
SAR 1g (W/Kg)	0.863802

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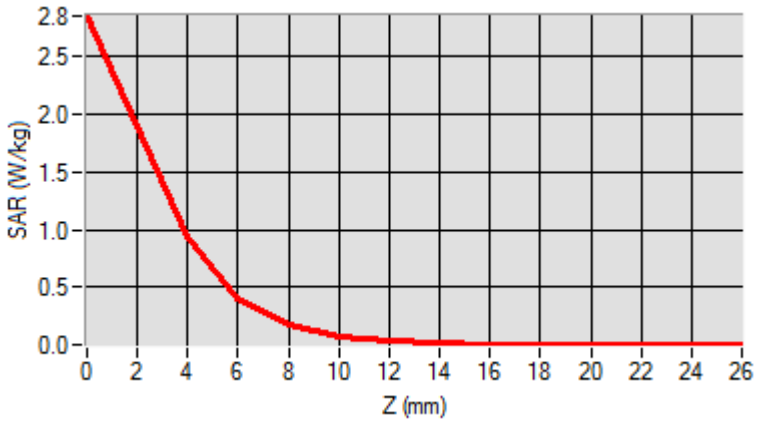
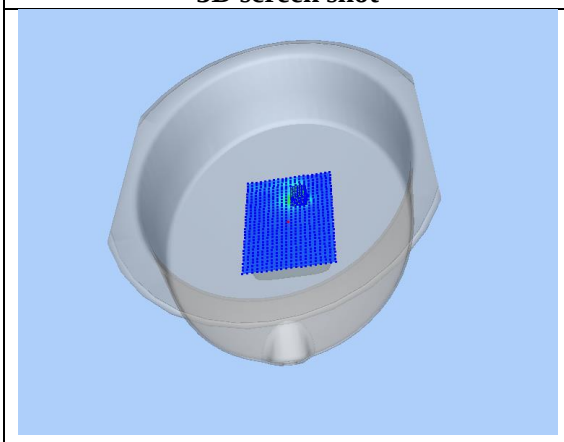
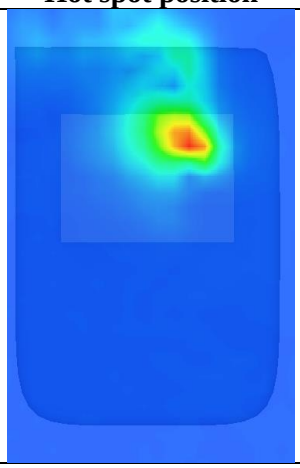
Z (mm)	0.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00
SAR (W/Kg)	2.8476	0.9430	0.3980	0.1757	0.0755	0.0336	0.0151	0.0065	0.0042	0.0032	0.0026	0.0026



3D screen shot	Hot spot position
	

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Test Laboratory: AGC Lab **Date: Dec. 02, 2022**
802.11a Antenna 2 -CH140-High –Body-Worn- Front
DUT: 15.6inch Notebook; Type: WWN15V2I38BK256

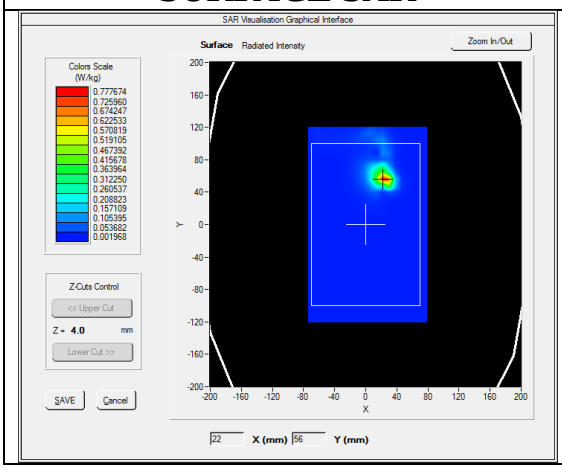
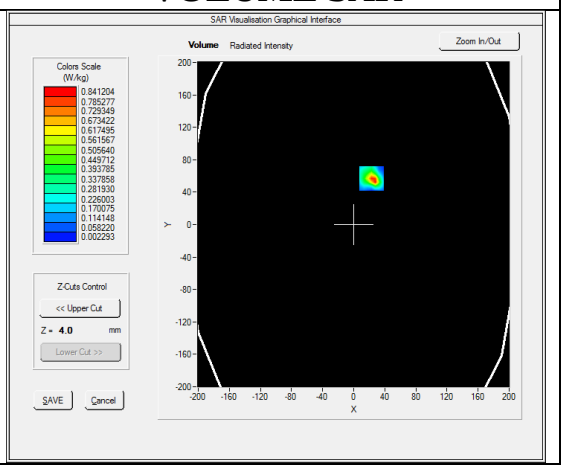
Communication System: Wi-Fi; Communication System Band: 802.11a; Duty Cycle: 1:1; Conv.F=1.52;
Frequency: 5700MHz; Medium parameters used: f = 5600 MHz; σ =5.16 mho/m; εr =34.23; ρ= 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃): 21.2, Liquid temperature (℃): 20.9

SATIMO Configuration:

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/ 802.11a Antenna 2 -CH120-High –Body- Front /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/ 802.11a Antenna 2 -CH120-High –Body- Front /Zoom Scan: Measurement grid: dx=4mm,dy=4mm, dz=2mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	7x7x12 dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Body Front
Band	5600MHz
Channels	High
Signal	Crest factor: 1.0

SURFACE SAR	VOLUME SAR
	

Maximum location: X=23.00, Y=57.00
SAR Peak: 2.23 W/kg

SAR 10g (W/Kg)	0.201370
SAR 1g (W/Kg)	0.791694

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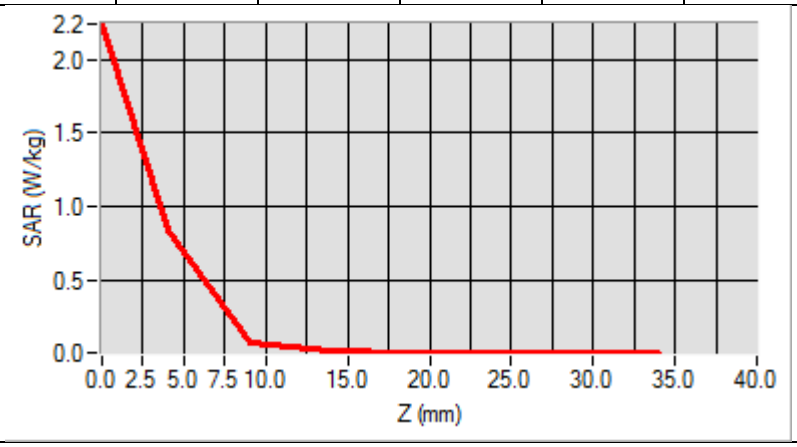
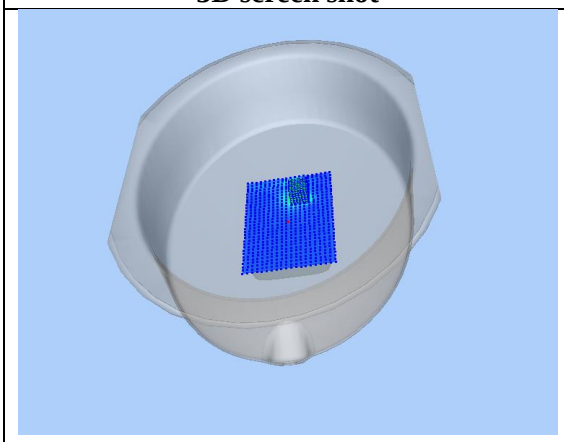
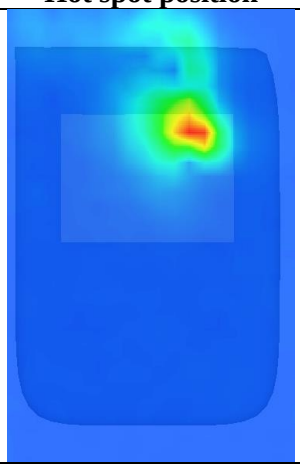
Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	2.2403	0.8412	0.0685	0.0139	0.0032	0.0028	0.0028



3D screen shot	Hot spot position
	

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WIFI 5.8GHz MODE

Test Laboratory: AGC Lab **Date: Dec. 06, 2022**
802.11a Antenna 1-CH157- Mid –Edge4
DUT: 15.6inch Notebook; Type: WWN15V2I38BK256

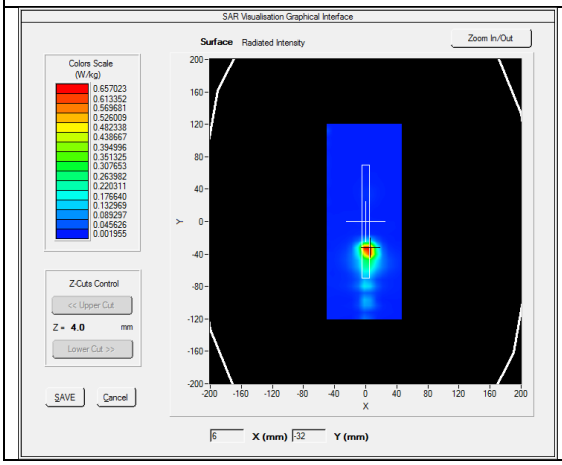
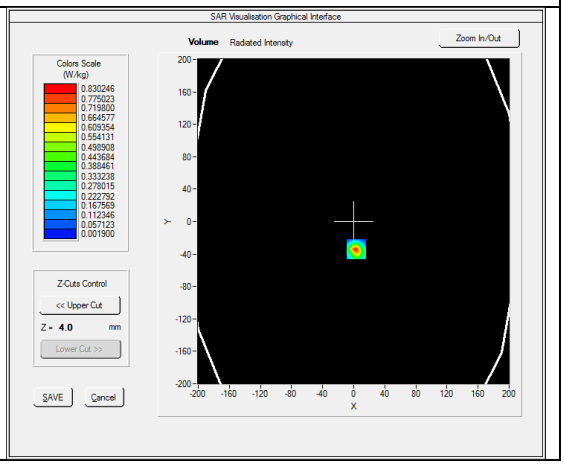
Communication System: Wi-Fi; Communication System Band: 802.11a; Duty Cycle: 1:1; Conv.F=1.42;
Frequency: 5785MHz; Medium parameters used: f = 5800 MHz; σ= 5.32mho/m; εr =36.10; ρ= 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃): 21.7, Liquid temperature (℃): 21.3

SATIMO Configuration:

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/ 802.11a Antenna 1-CH157- Mid – Edge4 /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/ 802.11a Antenna 1-CH157- Mid – Edge4 /Zoom Scan: Measurement grid: dx=4mm,dy=4mm, dz=2mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	7x7x12 dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Edge4
Band	5800MHz
Channels	Middle
Signal	Crest factor: 1.0

SURFACE SAR	VOLUME SAR
	

Maximum location: X=3.00, Y=-34.00
SAR Peak: 2.36 W/kg

SAR 10g (W/Kg)	0.214135
SAR 1g (W/Kg)	0.751041

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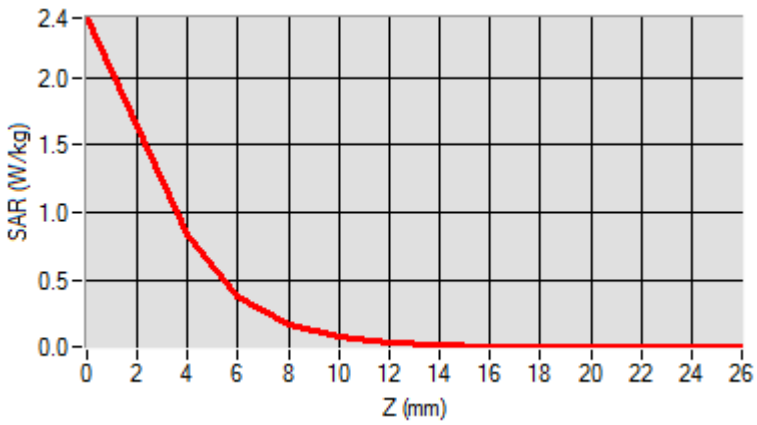
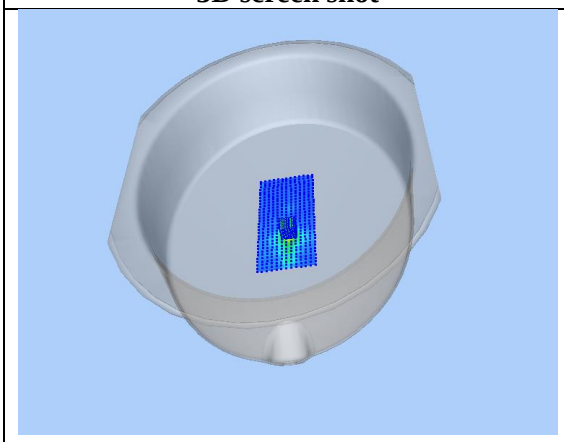
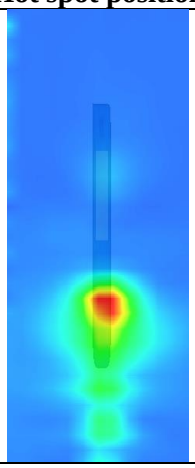
Z (mm)	0.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00
SAR (W/Kg)	2.4401	0.8302	0.3757	0.1684	0.0757	0.0344	0.0158	0.0088	0.0054	0.0039	0.0033	0.0031



3D screen shot	Hot spot position
	

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Test Laboratory: AGC Lab **Date: Dec. 06, 2022**
802.11a Antenna 2-CH165- High –Body-Worn- Front
DUT: 15.6inch Notebook; Type: WWN15V2I38BK256

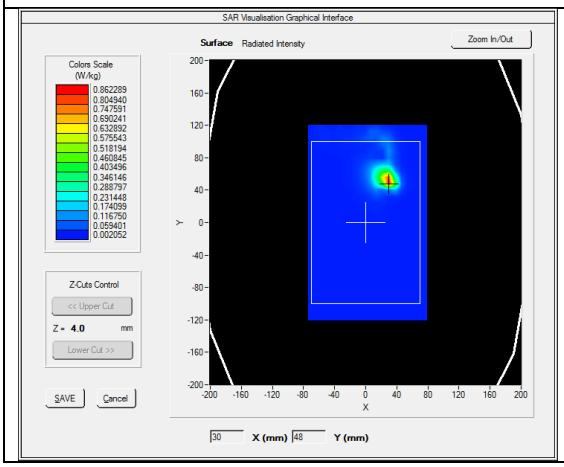
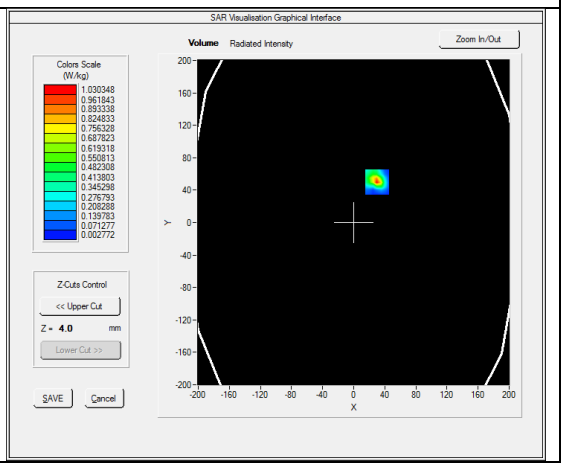
Communication System: Wi-Fi; Communication System Band: 802.11a; Duty Cycle: 1:1; Conv.F=1.42;
Frequency: 5825MHz; Medium parameters used: f = 5800 MHz; σ= 5.34mho/m; εr =35.64; ρ= 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃): 21.7, Liquid temperature (℃): 21.3

SATIMO Configuration:

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/ 802.11a Antenna 2-CH157- High –Body- Front /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/ 802.11a Antenna 2-CH157- High –Body- Front /Zoom Scan: Measurement grid: dx=4mm,dy=4mm, dz=2mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	7x7x12 dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Body Front
Band	5800MHz
Channels	High
Signal	Crest factor: 1.0

SURFACE SAR	VOLUME SAR
	

Maximum location: X=30.00, Y=50.00
SAR Peak: 2.60 W/kg

SAR 10g (W/Kg)	0.238978
SAR 1g (W/Kg)	0.900781

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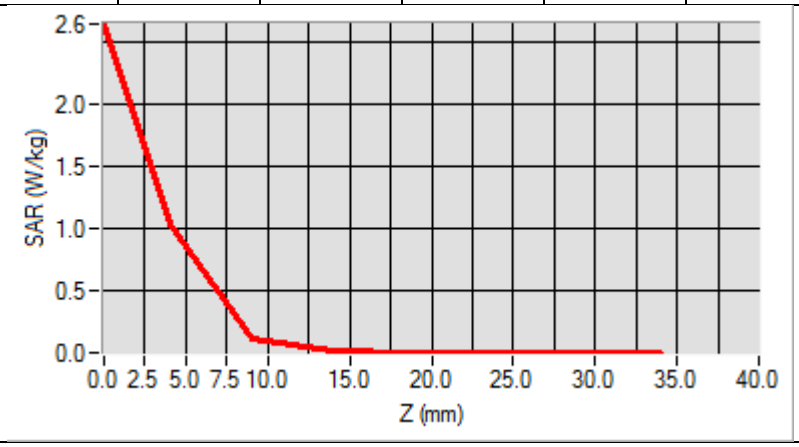
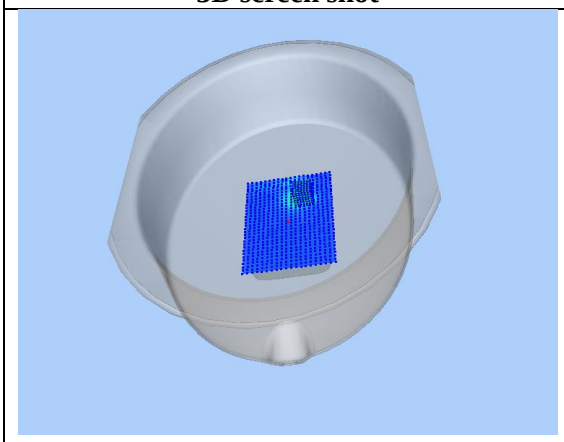
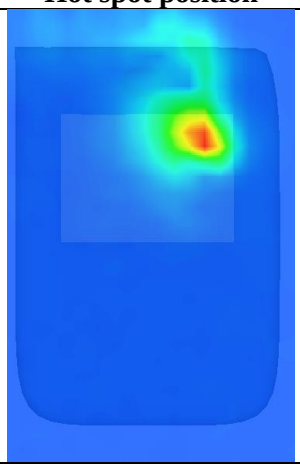
Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	2.6478	1.0303	0.1233	0.0160	0.0048	0.0035	0.0031



3D screen shot	Hot spot position
	

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Bluetooth MODE (BR/EDR)

Test Laboratory: AGC Lab **Date: Dec. 03, 2022**
BT Mid-Body-Worn- Front
DUT: 15.6inch Notebook; Type: WWN15V2I38BK256

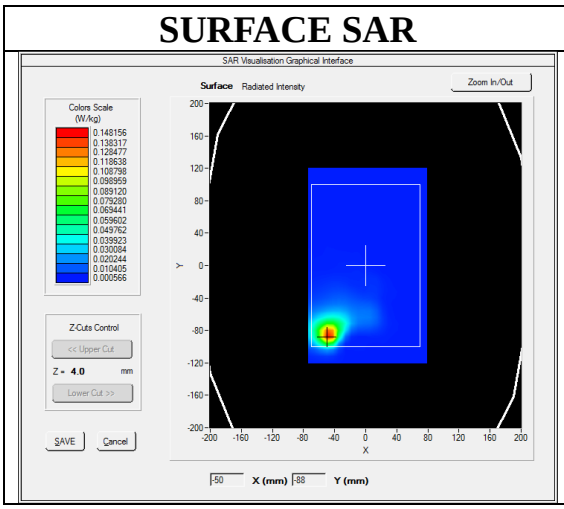
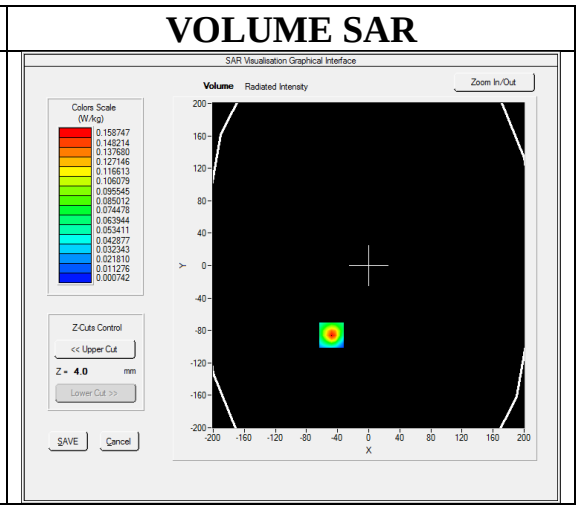
Communication System: Bluetooth; Communication System Band: BT; Duty Cycle: 0.77; Conv.F=1.99;
Frequency: 2441 MHz; Medium parameters used: f = 2450 MHz; σ =1.76mho/m; εr =39.78; ρ= 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃):21.7, Liquid temperature (℃): 21.2

SATIMO Configuration:

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/BT Mid- Body- Front /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/BT Mid- Body- Front /Zoom Scan: Measurement grid: dx=5mm,dy=5mm, dz=5mm;

Area Scan	surf_sam_plan.txt, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body Front
Band	Bluetooth
Channels	Middle
Signal	Crest factor: 1.3

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-48.00, Y=-86.00
SAR Peak: 0.30 W/kg

SAR 10g (W/Kg)	0.059955
SAR 1g (W/Kg)	0.145713

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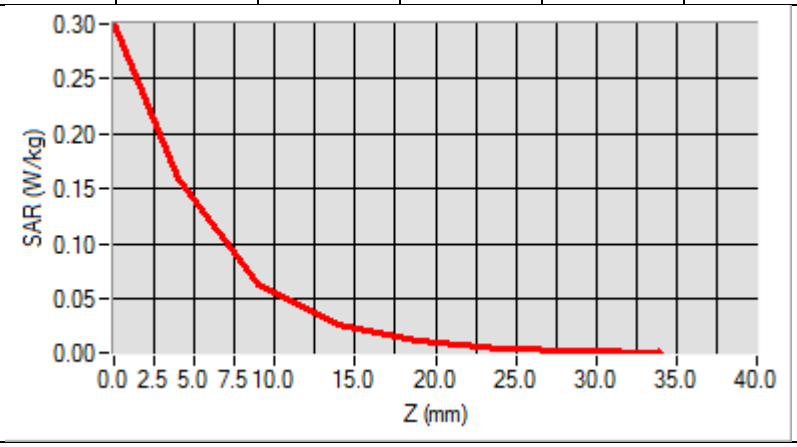
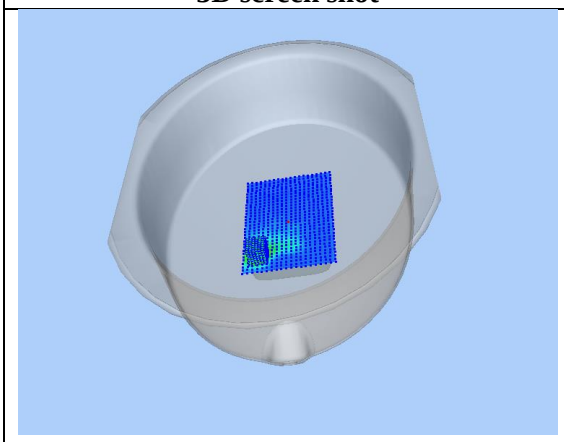
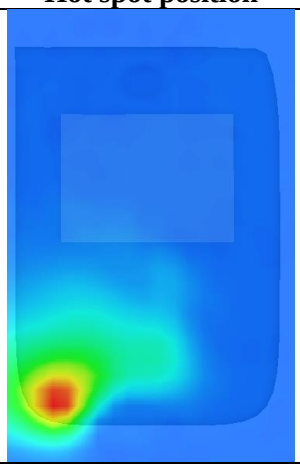
Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.2991	0.1587	0.0633	0.0264	0.0111	0.0050	0.0024



3D screen shot	Hot spot position
	

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Bluetooth MODE (BLE)

Test Laboratory: AGC Lab **Date: Dec. 03, 2022**
BT Mid-Body-Worn- Front
DUT: 15.6inch Notebook; Type: WWN15V2I38BK256

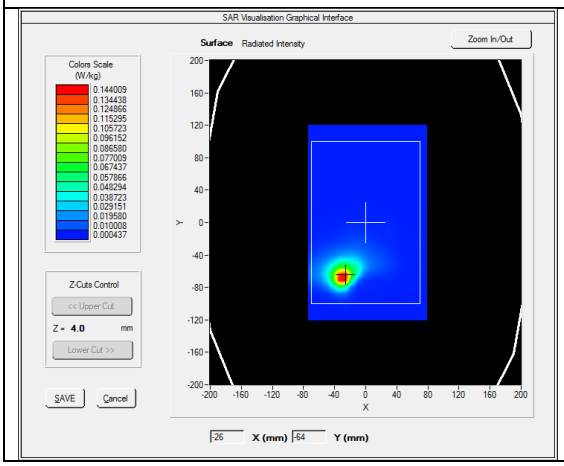
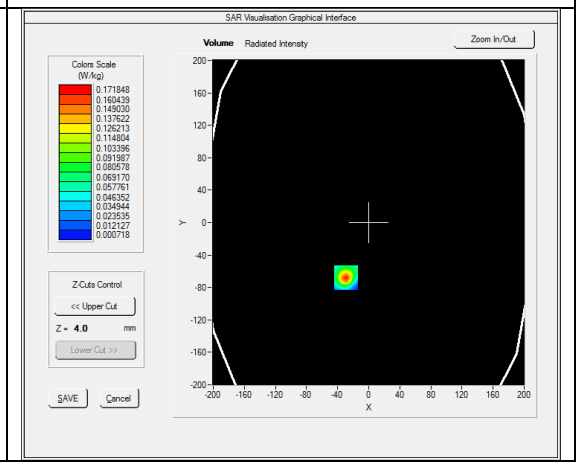
Communication System: Bluetooth; Communication System Band: BT; Duty Cycle: 1:1; Conv.F=1.99;
Frequency: 2440 MHz; Medium parameters used: f = 2450 MHz; σ =1.76mho/m; εr =39.78; ρ= 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃):21.7, Liquid temperature (℃): 21.2

SATIMO Configuration:

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/BT Mid- Body- Front /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/BT Mid- Body- Front /Zoom Scan: Measurement grid: dx=5mm,dy=5mm, dz=5mm;

Area Scan	surf_sam_plan.txt, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body Front
Band	Bluetooth
Channels	Middle
Signal	Crest factor: 1.0

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-29.00, Y=-68.00
SAR Peak: 0.33 W/kg

SAR 10g (W/Kg)	0.060097
SAR 1g (W/Kg)	0.153915

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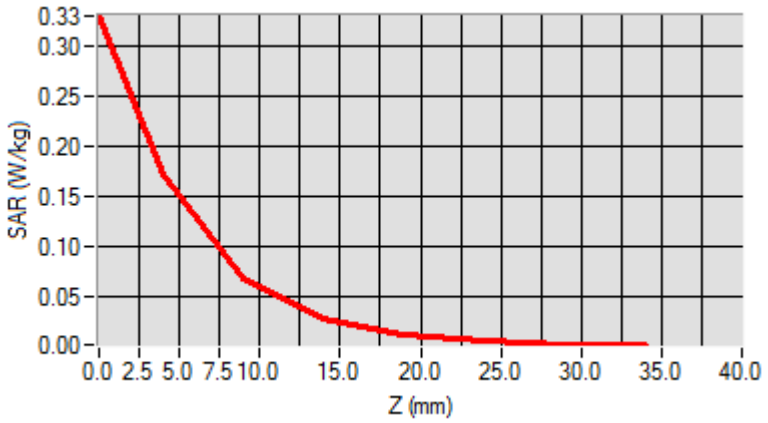
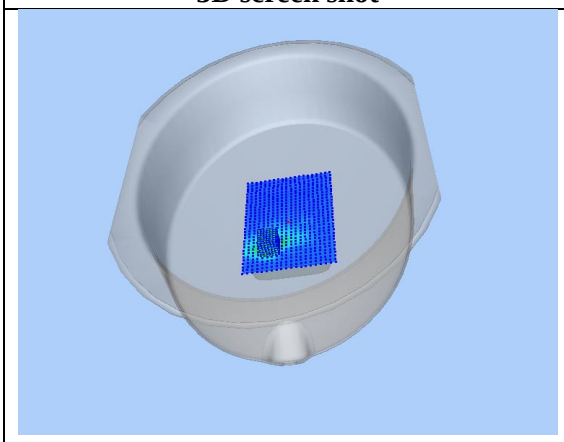
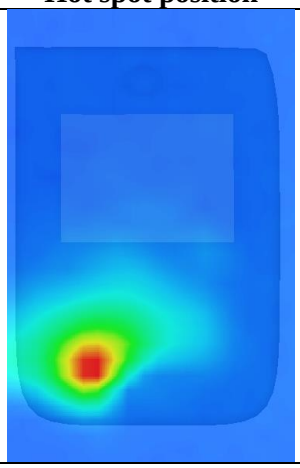
Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.3292	0.1718	0.0662	0.0264	0.0108	0.0045	0.0020



3D screen shot	Hot spot position
	

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Repeated SAR
2.4GHz WIFI MODE
Test Laboratory: AGC Lab **Date: Dec. 03, 2022**
802.11b Antenna 1 High-Body-Worn- Front
DUT: 15.6inch Notebook; Type: WWN15V2I38BK256

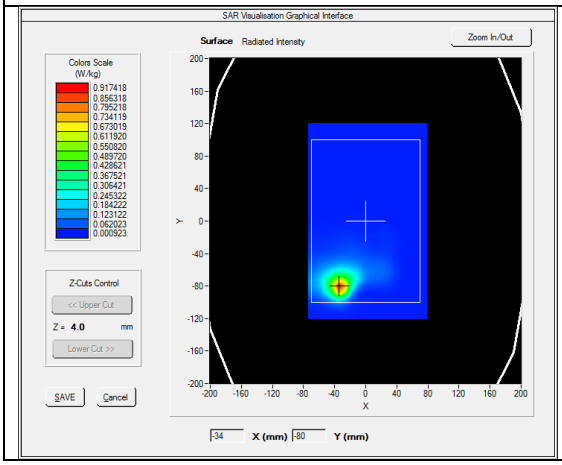
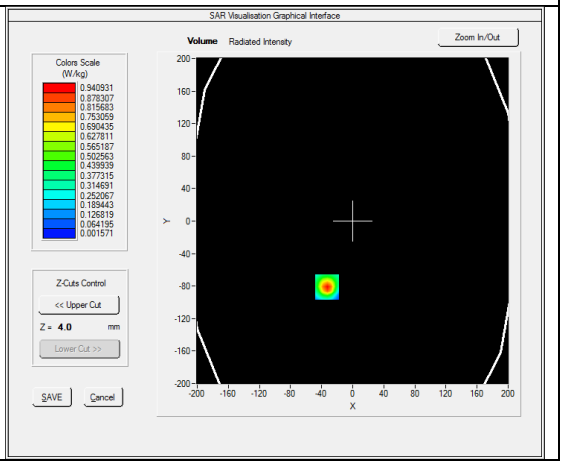
Communication System: Wi-Fi; Communication System Band: 802.11b; Duty Cycle: 1:1; Conv.F=1.99;
Frequency: 2462 MHz; Medium parameters used: f = 2450 MHz; σ =1.78mho/m; εr =39.52; ρ= 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃):21.7, Liquid temperature (℃): 21.2

SATIMO Configuration:

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/802.11b Antenna 1 High- Body- Front /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/802.11b Antenna 1 High- Body- Front /Zoom Scan: Measurement grid: dx=5mm,dy=5mm, dz=5mm;

Area Scan	surf_sam_plan.txt, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body Front
Band	2450MHz
Channels	High
Signal	Crest factor: 1.0

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-33.00, Y=-81.00
SAR Peak: 1.73 W/kg

SAR 10g (W/Kg)	0.355039
SAR 1g (W/Kg)	0.859556

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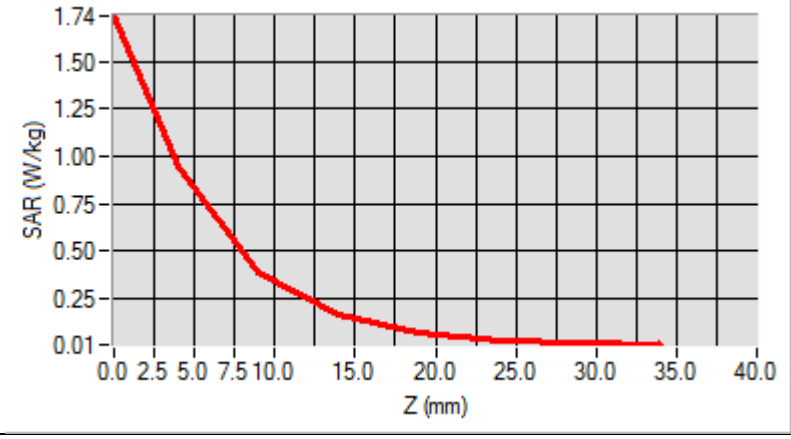
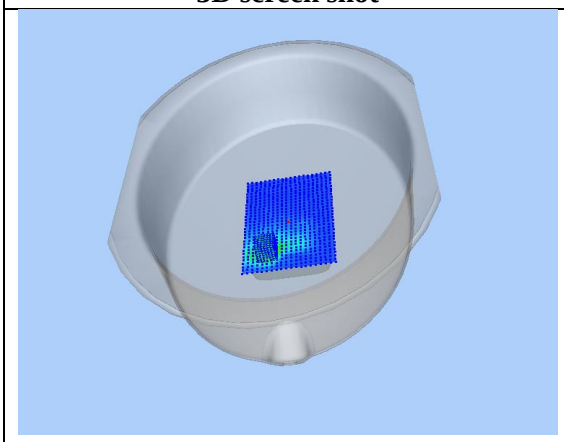
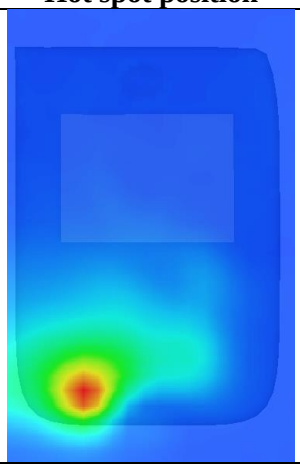
Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.7379	0.9409	0.3896	0.1635	0.0685	0.0294	0.0131



3D screen shot	Hot spot position
	

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Test Laboratory: AGC Lab **Date: Dec. 03, 2022**
802.11b Antenna 2 High-Body-Worn- Front
DUT: 15.6inch Notebook; Type: WWN15V2I38BK256

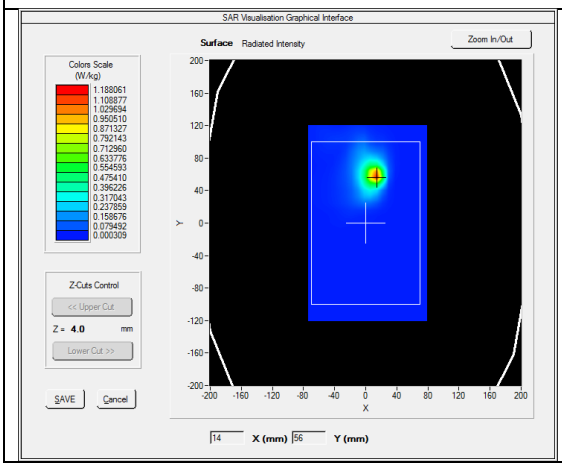
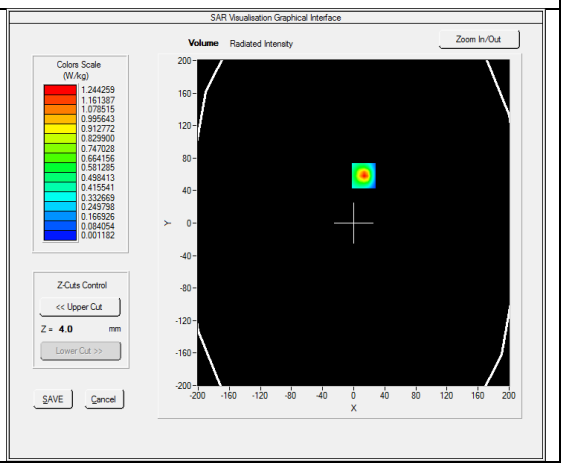
Communication System: Wi-Fi; Communication System Band: 802.11b; Duty Cycle: 1:1; Conv.F=1.99;
Frequency: 2462 MHz; Medium parameters used: f = 2450 MHz; σ =1.78mho/m; εr =39.52; ρ= 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃):21.7, Liquid temperature (℃): 21.2

SATIMO Configuration:

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/802.11b Antenna 2 High- Body- Front /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/802.11b Antenna 2 High- Body- Front /Zoom Scan: Measurement grid: dx=5mm,dy=5mm, dz=5mm;

Area Scan	surf_sam_plan.txt, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body Front
Band	2450MHz
Channels	High
Signal	Crest factor: 1.0

SURFACE SAR	VOLUME SAR
	

Maximum location: X=13.00, Y=58.00
SAR Peak: 2.37 W/kg

SAR 10g (W/Kg)	0.419986
SAR 1g (W/Kg)	1.102991

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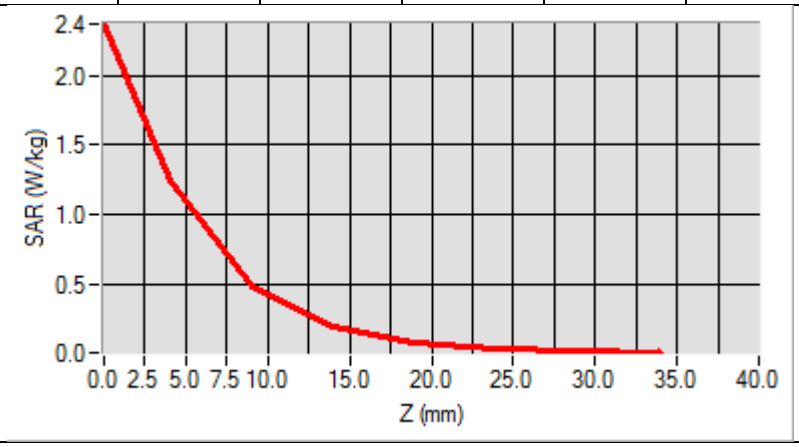
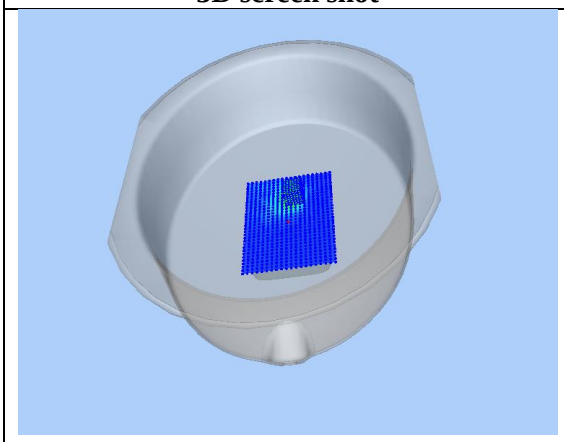
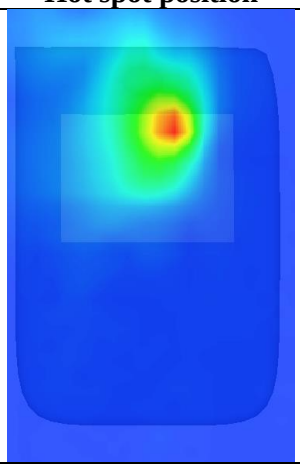
Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	2.3677	1.2443	0.4852	0.1903	0.0770	0.0315	0.0134



3D screen shot	Hot spot position
	

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WIFI 5.3GHz MODE

Test Laboratory: AGC Lab **Date: Dec. 01, 2022**
802.11a Antenna 1-CH56-Mid - Body-Worn- Front
DUT: 15.6inch Notebook; Type: WWN15V2I38BK256

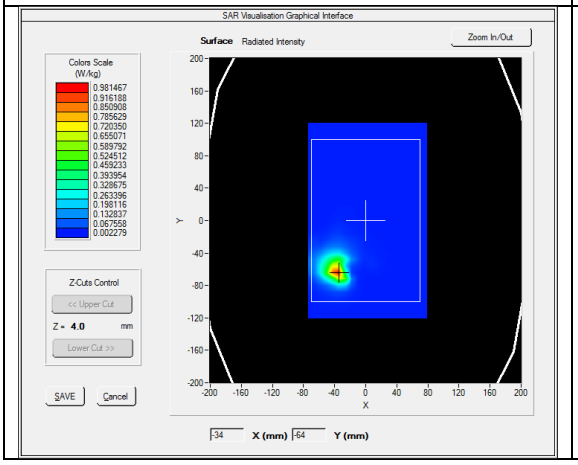
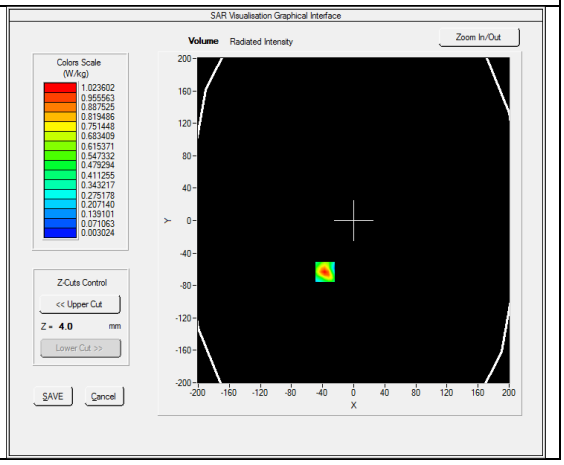
Communication System: Wi-Fi; Communication System Band: 802.11a; Duty Cycle: 1:1; Conv.F=2.35;
Frequency: 5280MHz; Medium parameters used: f = 5200 MHz; σ=4.80 mho/m; εr =36.56; ρ= 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃): 20.9, Liquid temperature (℃): 20.1

SATIMO Configuration:

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/802.11a Antenna 1-CH56-Mid - Body- Front /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/802.11a Antenna 1-CH56-Mid - Body- Front /Zoom Scan: Measurement grid: dx=4mm,dy=4mm, dz=2mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	7x7x12 dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Body Front
Band	5200MHz
Channels	Middle
Signal	Crest factor: 1.0

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-37.00, Y=-63.00
SAR Peak: 2.86 W/kg

SAR 10g (W/Kg)	0.340840
SAR 1g (W/Kg)	0.980569

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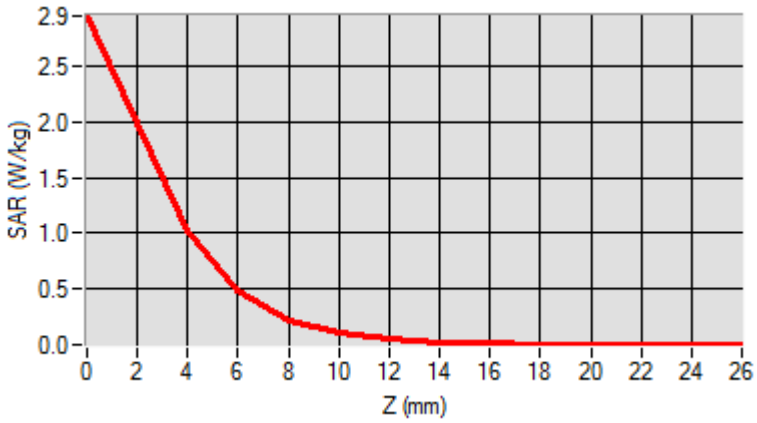
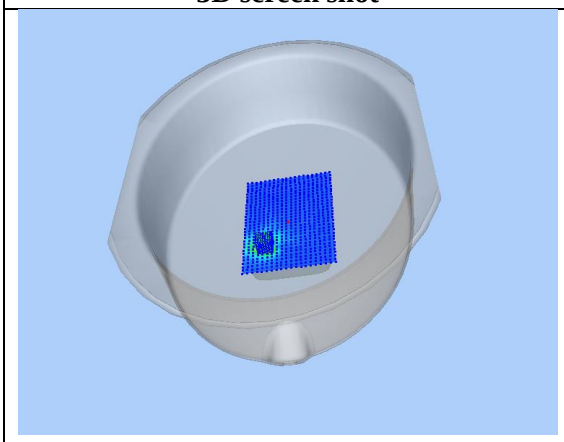
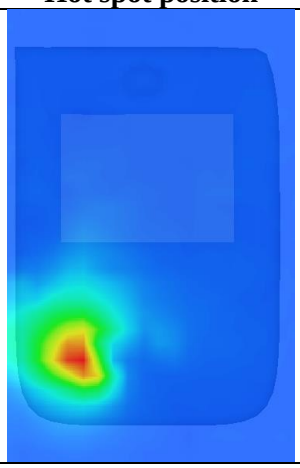
Z (mm)	0.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00
SAR (W/Kg)	2.9439	1.0236	0.4834	0.2225	0.1034	0.0501	0.0246	0.0123	0.0062	0.0042	0.0039	0.0033



3D screen shot	Hot spot position
	

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WIFI 5.6GHz MODE

Test Laboratory: AGC Lab **Date: Dec. 02, 2022**
802.11a Antenna 1 -CH120-Mid –Edge4
DUT: 15.6inch Notebook; Type: WWN15V2I38BK256

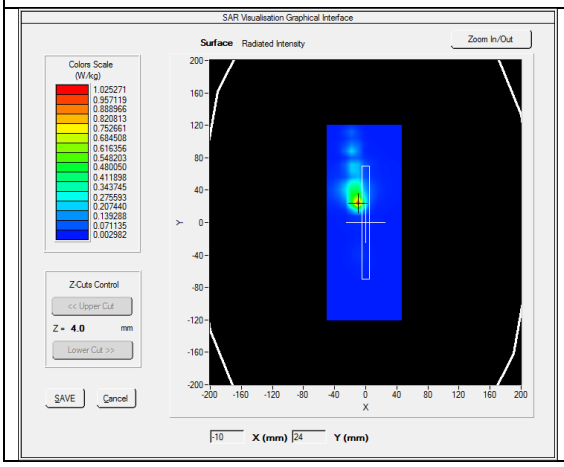
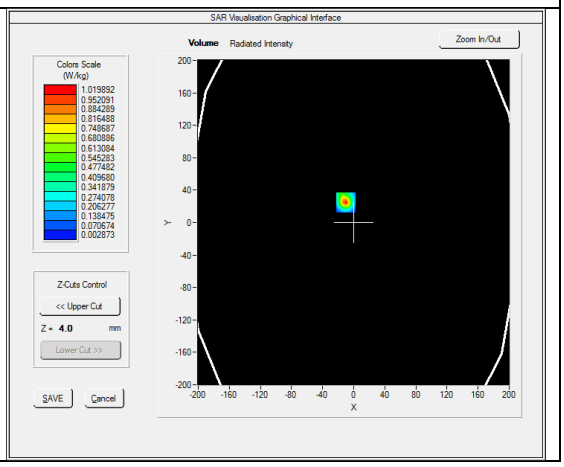
Communication System: Wi-Fi; Communication System Band: 802.11a; Duty Cycle: 1:1; Conv.F=1.52;
Frequency: 5600MHz; Medium parameters used: f = 5600 MHz; σ =5.15 mho/m; εr =34.58; ρ= 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃): 21.2, Liquid temperature (℃): 20.9

SATIMO Configuration:

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/ 802.11a Antenna 1 -CH120-Mid – Edge4 /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/ 802.11a Antenna 1 -CH120-Mid – Edge4 /Zoom Scan: Measurement grid: dx=4mm,dy=4mm, dz=2mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	7x7x12 dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Edge4
Band	5600MHz
Channels	Middle
Signal	Crest factor: 1.0

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-10.00, Y=25.00
SAR Peak: 2.86 W/kg

SAR 10g (W/Kg)	0.252842
SAR 1g (W/Kg)	0.908479

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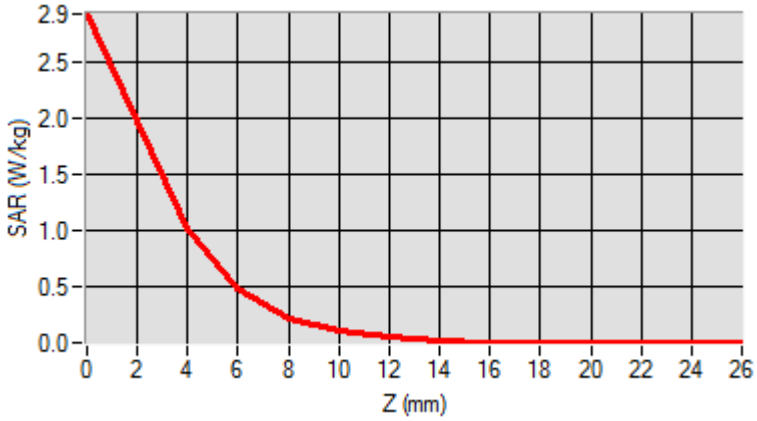
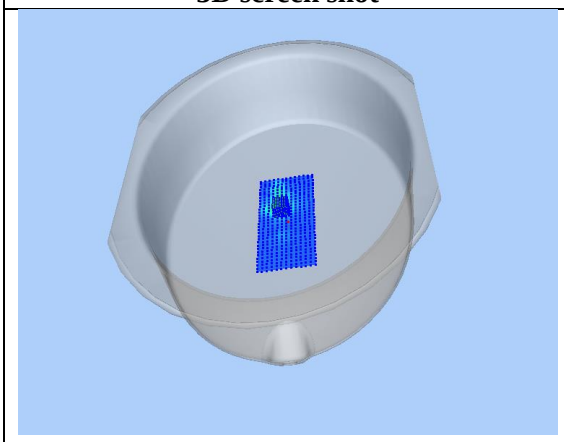
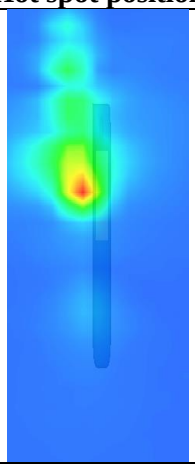
Z (mm)	0.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00
SAR (W/Kg)	2.9351	1.0199	0.4772	0.2220	0.1043	0.0495	0.0241	0.0122	0.0072	0.0051	0.0042	0.0037



3D screen shot	Hot spot position
	

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Test Laboratory: AGC Lab **Date: Dec. 02, 2022**
802.11a Antenna 2 -CH120-Mid –Body-Worn- Front
DUT: 15.6inch Notebook; Type: WWN15V2I38BK256

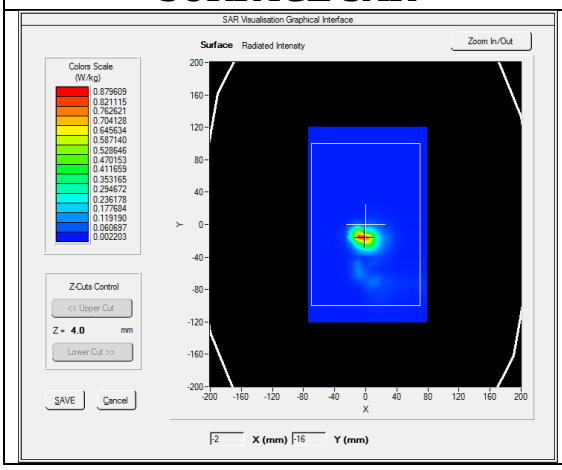
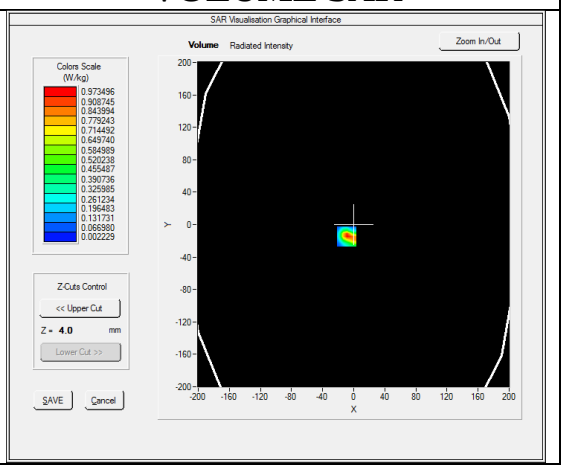
Communication System: Wi-Fi; Communication System Band: 802.11a; Duty Cycle: 1:1; Conv.F=1.52;
Frequency: 5600MHz; Medium parameters used: f = 5600 MHz; σ =5.15 mho/m; εr =34.58; ρ= 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃): 21.2, Liquid temperature (℃): 20.9

SATIMO Configuration:

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/ 802.11a Antenna 2 -CH120-Mid –Body- Front /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/ 802.11a Antenna 2 -CH120-Mid –Body- Front /Zoom Scan: Measurement grid: dx=4mm,dy=4mm, dz=2mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	7x7x12 dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Body Front
Band	5600MHz
Channels	Middle
Signal	Crest factor: 1.0

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-9.00, Y=-15.00
SAR Peak: 2.89 W/kg

SAR 10g (W/Kg)	0.256180
SAR 1g (W/Kg)	0.893947

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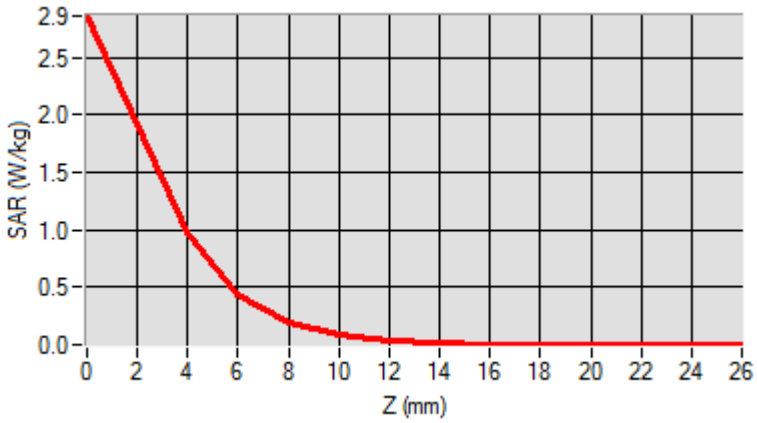
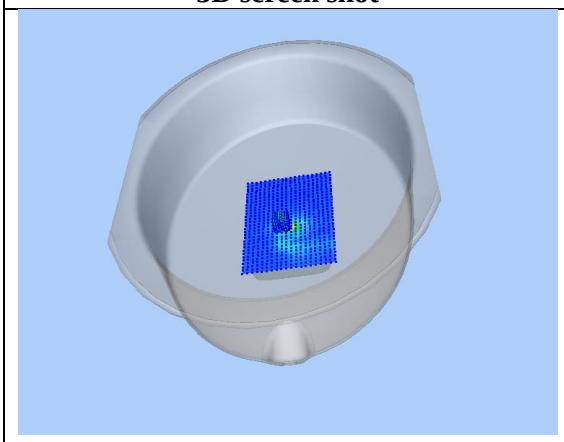
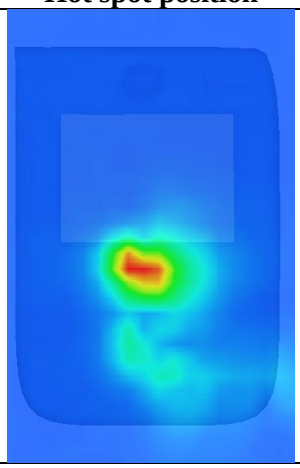
Z (mm)	0.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00
SAR (W/Kg)	2.8633	0.9735	0.4411	0.1965	0.0879	0.0400	0.0185	0.0093	0.0051	0.0039	0.0032	0.0026



3D screen shot	Hot spot position
	

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WIFI 5.8GHz MODE

Test Laboratory: AGC Lab **Date: Dec. 06, 2022**
802.11a Antenna 2-CH165- High –Body-Worn- Front
DUT: 15.6inch Notebook; Type: WWN15V2I38BK256

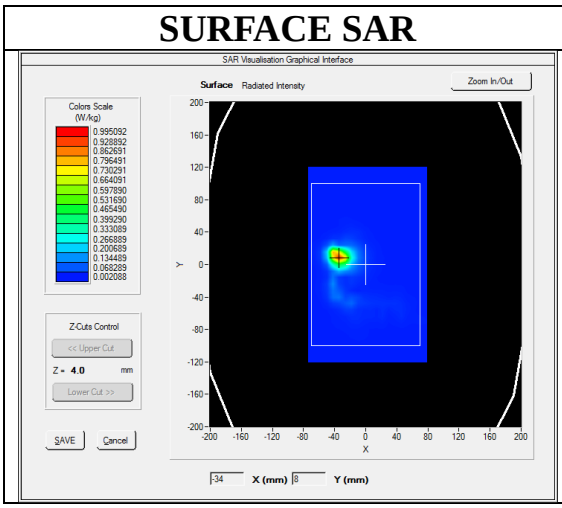
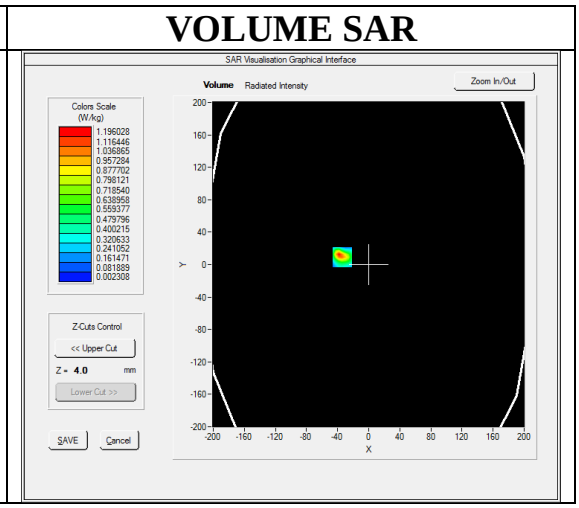
Communication System: Wi-Fi; Communication System Band: 802.11a; Duty Cycle: 1:1; Conv.F=1.42;
Frequency: 5825MHz; Medium parameters used: f = 5800 MHz; σ= 5.34mho/m; εr =35.64; ρ= 1000 kg/m³ ;
Phantom section: Flat Section
Ambient temperature (℃): 21.7, Liquid temperature (℃): 21.3

SATIMO Configuration:

- Probe: SSE2; Calibrated: Apr. 13, 2022; Serial No.: SN 13/22 EPGO368
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Phantom: ELLI39 Phantom
- Measurement SW: OpenSAR V4_02_35

Configuration/ 802.11a Antenna 2-CH157- High –Body- Front /Area Scan: Measurement grid: dx=8mm, dy=8mm
Configuration/ 802.11a Antenna 2-CH157- High –Body- Front /Zoom Scan: Measurement grid: dx=4mm,dy=4mm, dz=2mm

Area Scan	sam_direct_droit2_surf8mm.txt
ZoomScan	7x7x12 dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Body Front
Band	5800MHz
Channels	High
Signal	Crest factor: 1.0

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-34.00, Y=9.00
SAR Peak: 3.49 W/kg

SAR 10g (W/Kg)	0.321015
SAR 1g (W/Kg)	1.090241

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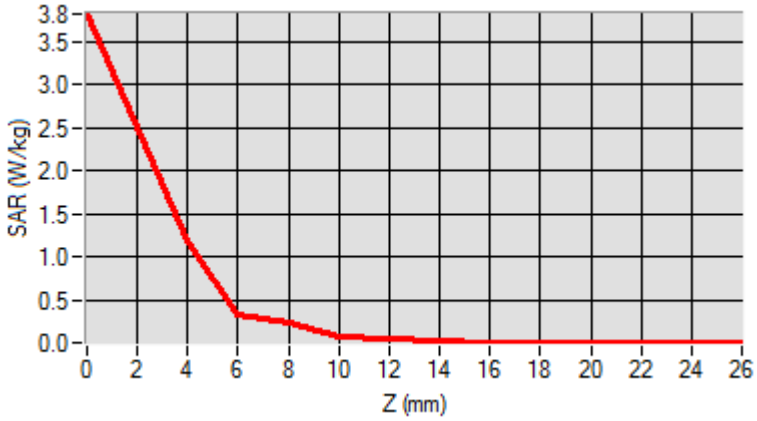
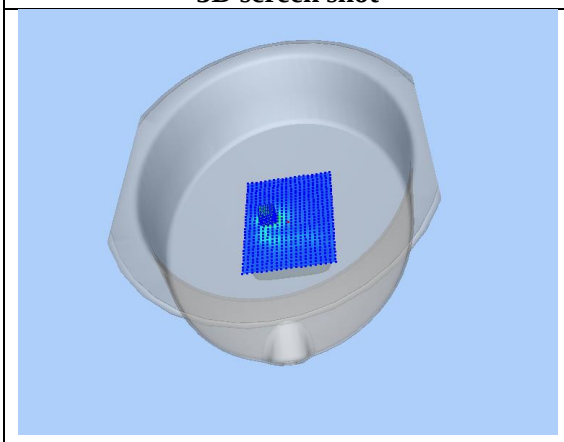
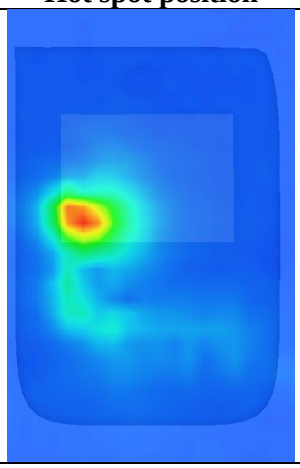
Z (mm)	0.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00
SAR (W/Kg)	3.8149	1.1960	0.3312	0.2299	0.0722	0.0448	0.0164	0.0093	0.0050	0.0037	0.0034	0.0028



3D screen shot	Hot spot position
	

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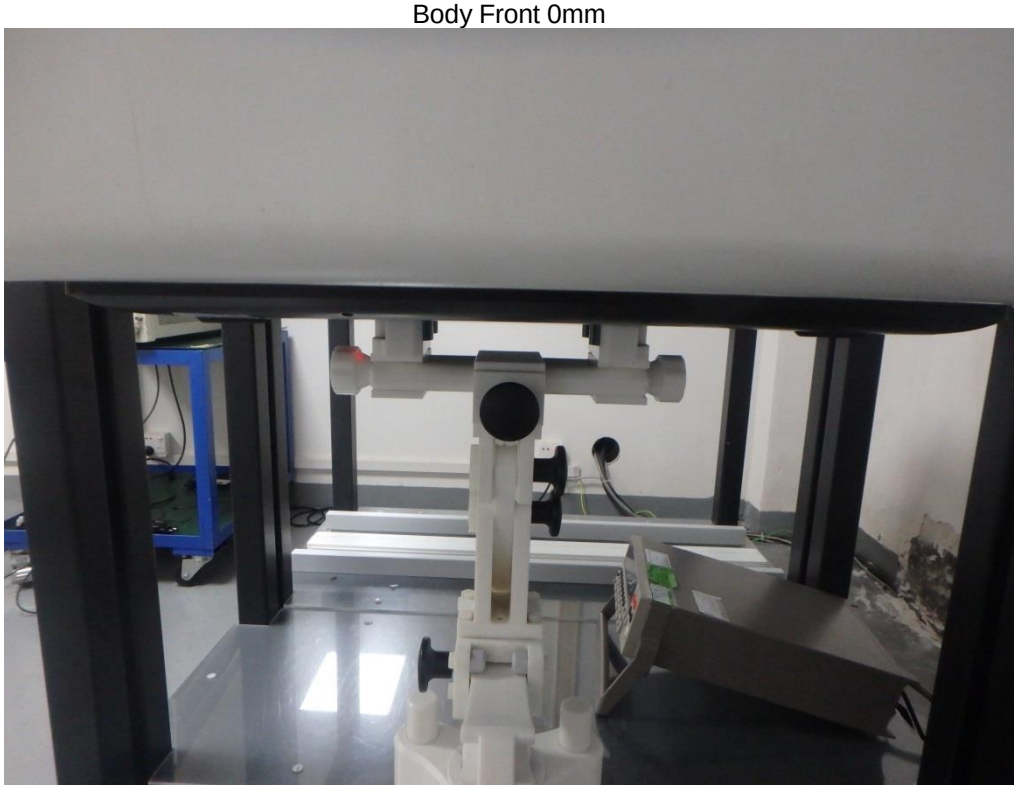
APPENDIX C. TEST SETUP PHOTOGRAPHS

Body Back 0mm

Body Front 0mm



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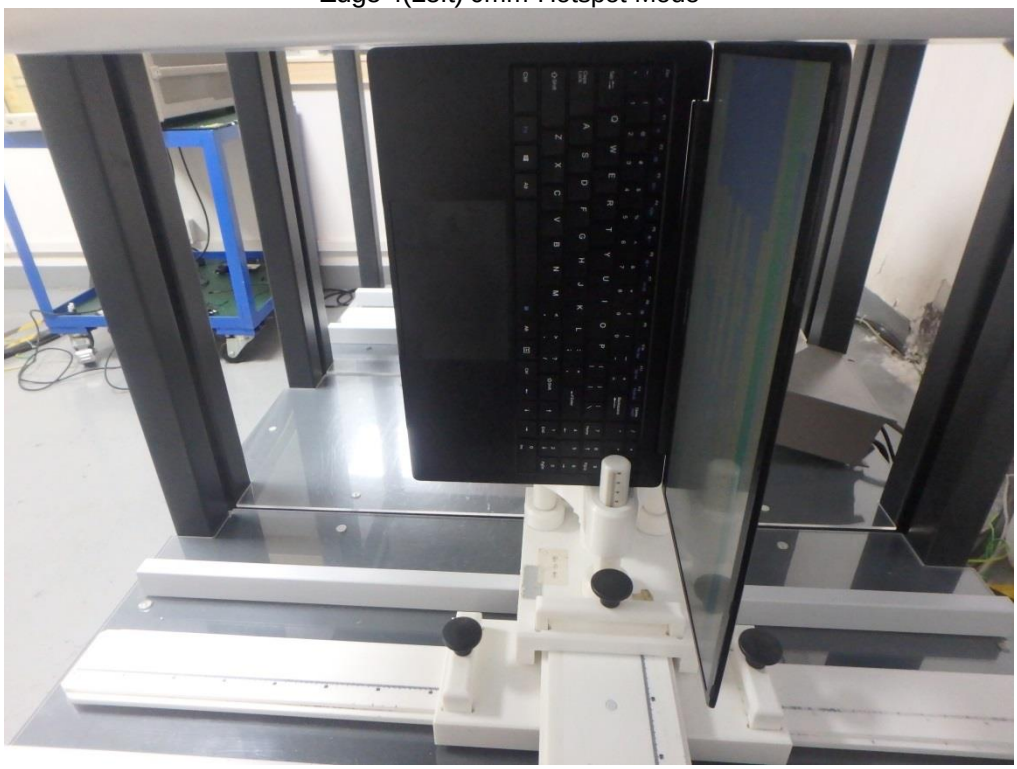
Edge 3(Bottom) 0mm-Hotspot Mode

Edge 4(Left) 0mm-Hotspot Mode



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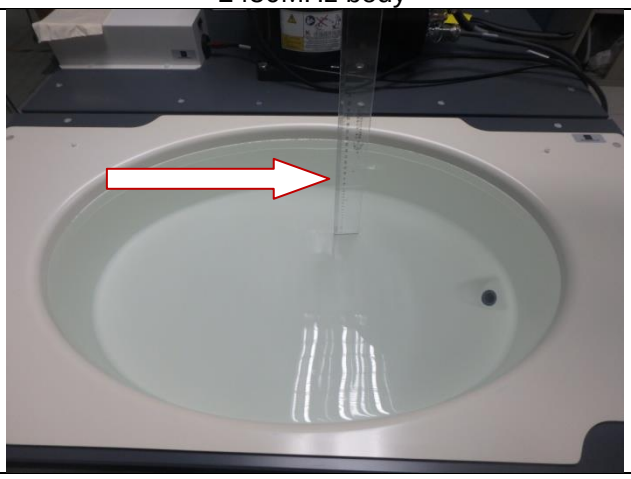
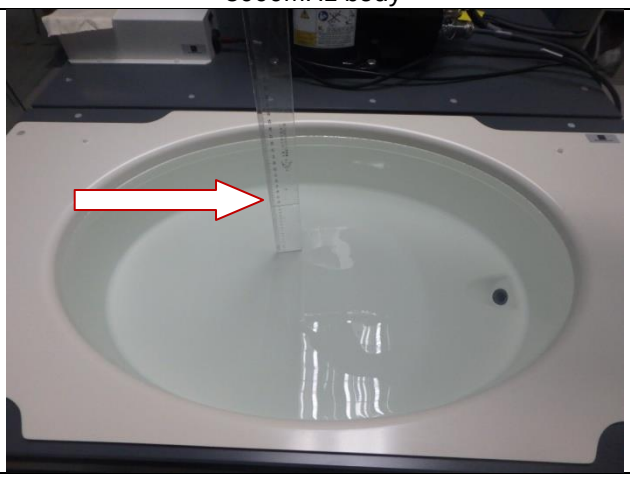
DEPTH OF THE LIQUID IN THE PHANTOM—ZOOM IN

Note：The position used in the measurement were according to IEEE 1528-2013

2450MHz body	5000MHz body
	

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

APPENDIX D. CALIBRATION DATA

Refer to Attached files.

----END OF REPORT----

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

Conditions of Issuance of Test Reports

1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").

2. Any report issued by Company as a result of this application for testing services (the "Report") shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.

3.The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.

4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.

5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.

6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.

7.Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.

8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.

9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.