

FCC SAR EVALUATION REPORT

**In accordance with the requirements of
FCC 47 CFR Part 2(2.1093), ANSI/IEEE C95.1-1992 and
IEEE Std 1528-2013**

Product Name : Tablet PC

Trademark : Blackview

Model Name : Tab 60 Pro

Family Model : N/A

FCC ID : 2A7DX-TAB60PRO

Report No. : S24090504303001

Prepared for

DOKE COMMUNICATION (HK) LIMITED

19H MAXGRAND PLAZA NO 3 TAI YAU STREET SAN PO KONG KL

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TEST RESULT CERTIFICATION**Applicant's name**: DOKE COMMUNICATION (HK) LIMITED

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Manufacturer's Name.....: Shenzhen DOKE Electronic Co., LtdAddress.....: 801, Building3, 7th Industrial Zone, Yulv Community, Yutang Road,
Guangming District, Shenzhen, China.**Product description**

Product name.....: Tablet PC

Trademark: Blackview

Model Name: Tab 60 Pro

Family Model.....: N/A

Standards: FCC 47 CFR Part 2(2.1093);
ANSI/IEEE C95.1-1992
IEEE Std 1528-2013;
Published RF exposure KDB procedures

This device described above has been tested by Shenzhen NTEK. In accordance with the measurement methods and procedures specified in IEEE Std 1528-2013 and KDB 865664 D01. Testing has shown that this device is capable of compliance with localized specific absorption rate (SAR) specified in FCC 47 CFR Part 2(2.1093) and ANSI/IEEE C95.1-1992. The test results in this report apply only to the tested sample of the stated device/equipment. Other similar device/equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

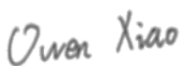
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Test Sample Number S240905043004

Date of Test

Date (s) of performance of tests: Sep. 13, 2024 ~ Oct. 16, 2024

Date of Issue: Nov. 19, 2024

Test Result.....: **Pass**Prepared
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※ ※ Revision History ※ ※

REV.	DESCRIPTION	ISSUED DATE	REMARK
Rev.1.0	Initial Test Report Release	Nov. 19, 2024	Owen Xiao

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1. General Information

1.1. RF exposure limits

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

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

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

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

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

Occupational/Controlled Environments:

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

General Population/Uncontrolled Environments:

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

NOTE
TRUNK LIMIT
1.6 W/kg
APPLIED TO THIS EUT

1.2. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for Tab 60 Pro are as follows.

RF Exposure Conditions		Equipment Class -Highest Reported SAR (W/kg)			
		PCE	DTS	NII	DSS
1-g Body-Worn (Separation distance of 0mm)		1.078	0.202	0.344	0.084
1-g Hotspot (Separation distance of 0mm)		1.078	0.202	0.344	0.084
Max Simultaneous Tx	Body-Worn	1.422	1.280	1.422	1.162
	Hotspot	1.422	1.280	1.422	1.162

Note: The Max Simultaneous Tx is calculated based on the same configuration and test position. This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR Part 2(2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE Std 1528-2013 & KDB 865664 D01.

1.3. EUT Description

Device Information			
Product Name	Tablet PC		
Trade Name	Blackview		
Model Name	Tab 60 Pro		
Family Model	N/A		
Model Difference	N/A		
FCC ID	2A7DX-TAB60PRO		
Device Phase	Identical Prototype		
Exposure Category	General population / Uncontrolled environment		
Antenna	PIFA Antenna		
Battery	DC 3.85V, 7700mAh, 29.645Wh		
Hardware version	S866_9230SMB_D4UF_V1.0		
Software version	Tab60Pro_NEU_DK086_V1.0		
Device Operating Configurations			
Supporting Mode(s)	GSM 850/1900, WCDMA Band 2/4/5, LTE Band 2/4/5/7/12/17/41, WLAN 2.4G/5G, Bluetooth		
Test Modulation	GSM(GMSK/8PSK), WCDMA(QPSK), LTE(QPSK/16QAM), WLAN(DSSS/OFDM), Bluetooth(GFSK, $\pi/4$ -DQPSK, 8DPSK), GPS(BPSK), FM(FM)		
Device Class	B		
Operating Frequency	Band	Tx (MHz)	Rx (MHz)

Range(s)	GSM 850	824-849	869-894
	GSM 1900	1850-1910	1930-1990
	WCDMA Band 2	1850-1910	1930-1990
	WCDMA Band 4	1710-1755	2110-2155
	WCDMA Band 5	824-849	869-894
	LTE Band 2	1850-1910	1930-1990
	LTE Band 4	1710-1755	2110-2155
	LTE Band 5	824-849	869-894
	LTE Band 7	2500-2570	2620-2690
	LTE Band 12	699-716	729-746
	LTE Band 17	704-716	734-746
	LTE Band 41	2545-2655	
	WLAN 2.4G	2412-2462	
	WLAN 5.2G	5180-5240	
	WLAN 5.8G	5745-5825	
	Bluetooth	2402-2480	
GPRS Multislot Class(12)	Max Number of Timeslots in Uplink		4
	Max Number of Timeslots in Downlink		4
	Max Total Timeslot		5
EGPRS Multislot Class(12)	Max Number of Timeslots in Uplink		4
	Max Number of Timeslots in Downlink		4
	Max Total Timeslot		5
Power Class	4, tested with power level 5(GSM 850)		
	1, tested with power level 0(GSM 1900)		
	3, tested with power control "all 1"(WCDMA Band 2)		
	3, tested with power control "all 1"(WCDMA Band 4)		
	3, tested with power control "all 1"(WCDMA Band 5)		
	3, tested with power control all Max.(LTE Band 2)		
	3, tested with power control all Max.(LTE Band 4)		
	3, tested with power control all Max.(LTE Band 5)		
	3, tested with power control all Max.(LTE Band 7)		
	3, tested with power control all Max.(LTE Band 12)		
	3, tested with power control all Max.(LTE Band 17)		
	3, tested with power control all Max.(LTE Band 41)		

1.4. Test specification(s)

FCC 47 CFR Part 2(2.1093)
ANSI/IEEE C95.1-1992
IEEE Std 1528-2013

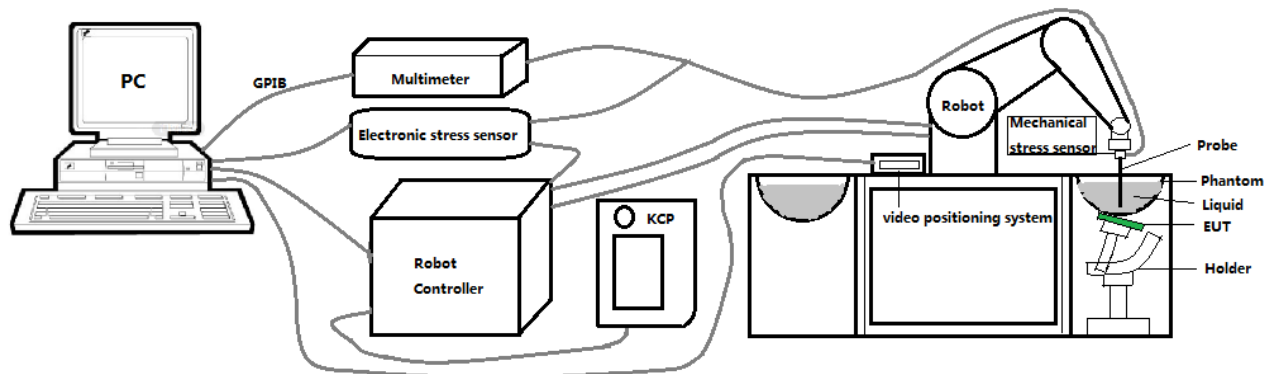
KDB 865664 D01 SAR measurement 100 MHz to 6 GHz
KDB 865664 D02 RF Exposure Reporting
KDB 447498 D01 General RF Exposure Guidance
KDB 248227 D01 802.11 Wi-Fi SAR
KDB 941225 D01 3G SAR Procedures
KDB 941225 D05 SAR for LTE Devices
KDB 616217 D04 SAR for laptop and tablets

1.5. Ambient Condition

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

2. SAR Measurement System

2.1. SATIMO SAR Measurement Set-up Diagram



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

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

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

2.2. Robot

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



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

2.3. E-Field Probe

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

For the measurements the Specific Dosimetric E-Field Probe SN 08/16 EPGO287 with following specifications is used



- Dynamic range: 0.01-100 W/kg
 - Tip Diameter : 2.5 mm
 - Distance between probe tip and sensor center: 1 mm
 - Distance between sensor center and the inner phantom surface: 2 mm (repeatability better than ± 1 mm).
 - Probe linearity: ± 0.08 dB
 - Axial isotropy: ± 0.01 dB
 - Hemispherical Isotropy: ± 0.01 dB
 - Calibration range: 650MHz to 5900MHz for head & body simulating liquid.
 - Lower detection limit: 8mW/kg
- Angle between probe axis (evaluation axis) and surface normal line: less than 30° .

2.3.1. E-Field Probe Calibration

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

2.4. SAM phantoms

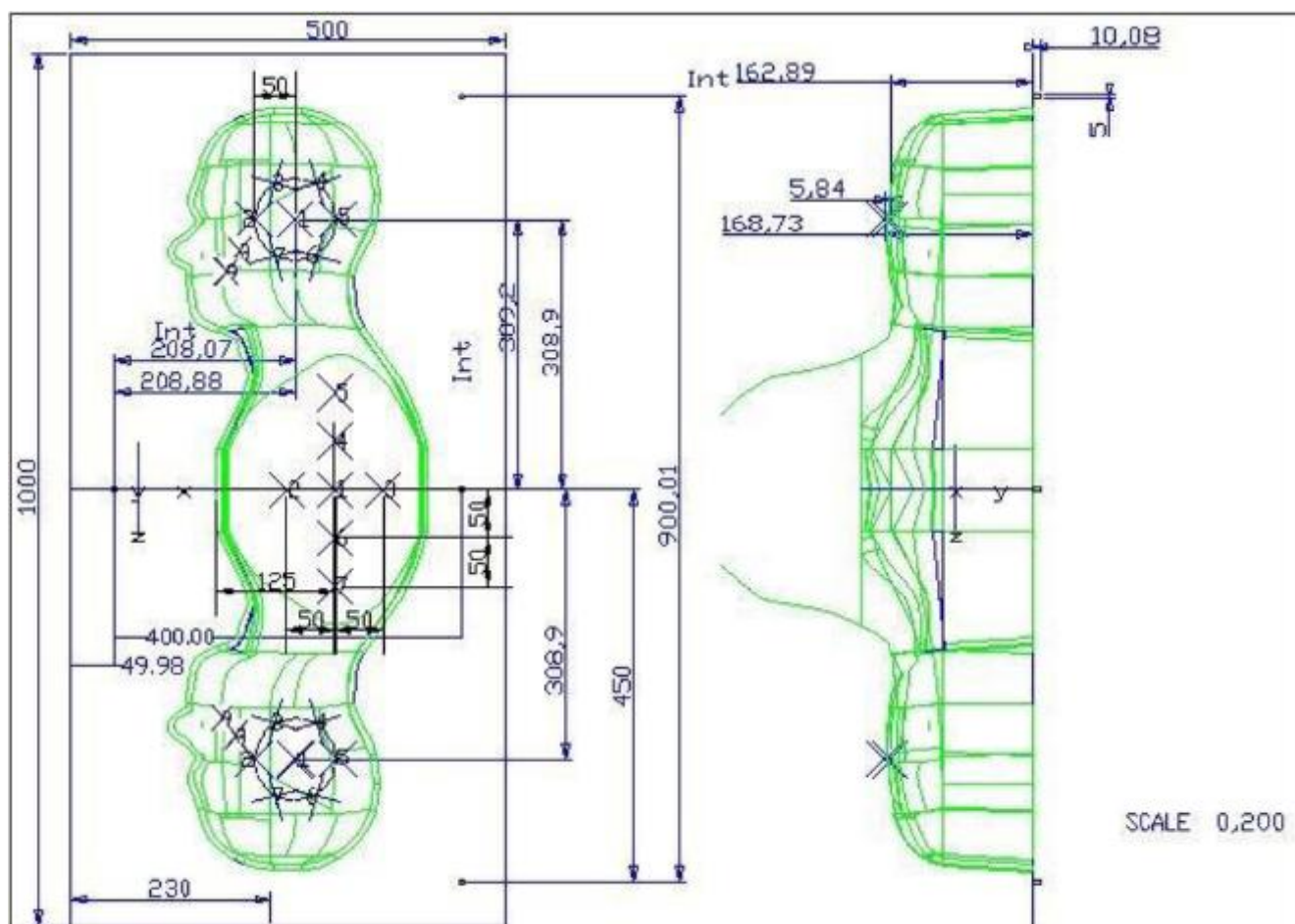
Photo of SAM phantom SN 16/15 SAM119



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

2.4.1. Technical Data

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

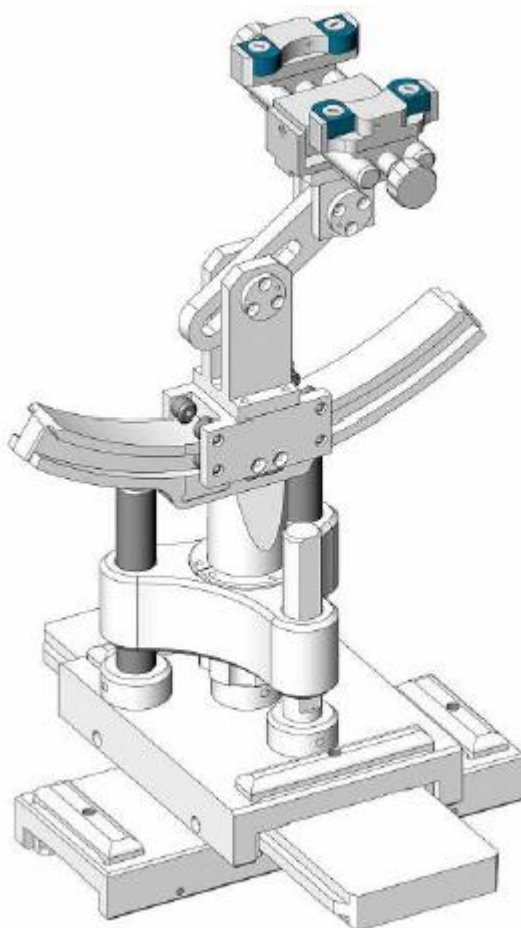


Serial Number	Left Head(mm)		Right Head(mm)		Flat Part(mm)	
SN 16/15 SAM119	2	2.02	2	2.08	1	2.09
	3	2.05	3	2.06	2	2.06
	4	2.07	4	2.07	3	2.08
	5	2.08	5	2.08	4	2.10
	6	2.05	6	2.07	5	2.10
	7	2.05	7	2.05	6	2.07
	8	2.07	8	2.06	7	2.07
	9	2.08	9	2.06	-	-

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

2.5. Device Holder

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



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

2.6. Test Equipment List

This table gives a complete overview of the SAR measurement equipment.

Devices used during the test described are marked ☒

	Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
					Last Cal.	Due Date
☒	MVG	E FIELD PROBE	SSE2	4024-EPGO-442	Oct.4.2024	Oct.3.2025
☒	MVG	E FIELD PROBE	SSE2	3423-EPGO-426	Sep. 18, 2023	Sep. 17, 2024
☒	MVG	750 MHz Dipole	SID750	SN 03/15 DIP 0G750-355	Feb. 21, 2024	Feb. 20, 2027
☒	MVG	835 MHz Dipole	SID835	SN 03/15 DIP 0G835-347	Feb. 21, 2024	Feb. 20, 2027
☐	MVG	900 MHz Dipole	SID900	SN 03/15 DIP 0G900-348	Feb. 21, 2024	Feb. 20, 2027
☒	MVG	1800 MHz Dipole	SID1800	SN 03/15 DIP 1G800-349	Feb. 21, 2024	Feb. 20, 2027
☒	MVG	1900 MHz Dipole	SID1900	SN 03/15 DIP 1G900-350	Feb. 21, 2024	Feb. 20, 2027
☐	MVG	2000 MHz Dipole	SID2000	SN 03/15 DIP 2G000-351	Feb. 21, 2024	Feb. 20, 2027
☒	MVG	2450 MHz Dipole	SID2450	SN 03/15 DIP 2G450-352	Feb. 21, 2024	Feb. 20, 2027
☒	MVG	2600 MHz Dipole	SID2600	SN 03/15 DIP 2G600-356	Feb. 21, 2024	Feb. 20, 2027
☐	MVG	5000 MHz Dipole	SWG5500	SN 13/14 WGA 33	Feb. 21, 2024	Feb. 20, 2027
☒	MVG	Liquid measurement Kit	SCLMP	SN 21/15 OCPG 72	NCR	NCR
☒	MVG	Power Amplifier	N.A	AMPLISAR_28/14_003	NCR	NCR
☒	KEITHLEY	Millivoltmeter	2000	4072790	NCR	NCR
☒	R&S	Universal radio communication tester	CMU200	105747	Apr. 26, 2024	Apr. 25, 2025
☒	R&S	Wideband radio communication tester	CMW500	103917	Apr. 26, 2024	Apr. 25, 2025

☒	HP	Network Analyzer	E5071C	LPS-461	Oct. 15, 2024	Oct. 14, 2025
☒	Agilent	MXG Vector Signal Generator	N5182A	MY47070317	Apr. 25, 2024	Apr. 24, 2025
☒	Agilent	Power meter	E4419B	MY45102538	Apr. 25, 2024	Apr. 24, 2025
☒	Agilent	Power sensor	E9301A	MY41495644	May. 30, 2024	May. 29, 2025
☒	Agilent	Power sensor	E9301A	US39212148	Apr. 25, 2024	Apr. 24, 2025
☒	MCLI/USA	Directional Coupler	CB11-20	0D2L51502	Apr. 26, 2024	Apr. 25, 2027
☒	N/A	Thermometer	N/A	LES-085	Mar. 27, 2023	Mar. 26, 2026
☒	MVG	SAM Phantom	SSM2	SN 16/15 SAM119	NCR	NCR
☒	MVG	Device Holder	SMPPD	SN 16/15 MSH100	NCR	NCR

Measurement Software

Manufacturer	Software Name	Software Version
SATIMO	OpenSAR	V4_02_31

3. SAR Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

- (a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
- (b) Read the WWAN RF power level from the base station simulator.
- (c) For WLAN/Bluetooth power measurement, use engineering software to configure EUT WLAN/Bluetooth continuously transmission, at maximum RF power in each supported wireless interface and frequency band.
- (d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/Bluetooth output power.

<SAR measurement>

- (a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/Bluetooth continuously transmission, at maximum RF power, in the highest power channel.
- (b) Place the EUT in the positions as Appendix A demonstrates.
- (c) Set scan area, grid size and other setting on the OPENSAR software.
- (d) Measure SAR results for the highest power channel on each testing position.
- (e) Find out the largest SAR result on these testing positions of each band.
- (f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg.

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

- (a) Power reference measurement
- (b) Area scan
- (c) Zoom scan
- (d) Power drift measurement

3.1. Power Reference

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

3.2. Area scan & Zoom scan

The area scan is a 2D scan to find the hot spot location on the DUT. The zoom scan is a 3D scan above the hot spot to calculate the 1g and 10g SAR value.

Measurement of the SAR distribution with a grid of 8 to 16 mm * 8 to 16 mm and a constant distance to the inner surface of the phantom. Since the sensors cannot directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With these values the area of the maximum SAR is calculated by an interpolation scheme. Around this point, a cube of 30 * 30 * 30 mm or 32 * 32 * 32 mm is assessed by measuring 5 or 8 * 5 or 8 * 4 or 5 mm. With these data, the peak spatial-average SAR value can be calculated.

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

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

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

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

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

3.3. Description of interpolation/extrapolation scheme

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

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

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

3.4. Volumetric Scan

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

3.5. Power Drift

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

4. System Verification Procedure

4.1. Tissue Verification

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

Ingredients (% of weight)	Head Tissue								
Frequency Band (MHz)	750	835	900	1800	1900	2000	2450	2600	5000
Water	34.40	34.40	34.40	55.36	55.36	71.88	71.88	71.88	65.53
NaCl	0.79	0.79	0.79	0.35	0.35	0.16	0.16	0.16	0.00
1,2-Propanediol	64.81	64.81	64.81	0.00	0.00	0.00	0.00	0.00	0.00
Triton X-100	0.00	0.00	0.00	30.45	30.45	19.97	19.97	19.97	17.24
DGBE	0.00	0.00	0.00	13.84	13.84	7.99	7.99	7.99	0.00

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

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

4.1.1. Tissue Dielectric Parameter Check Results

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

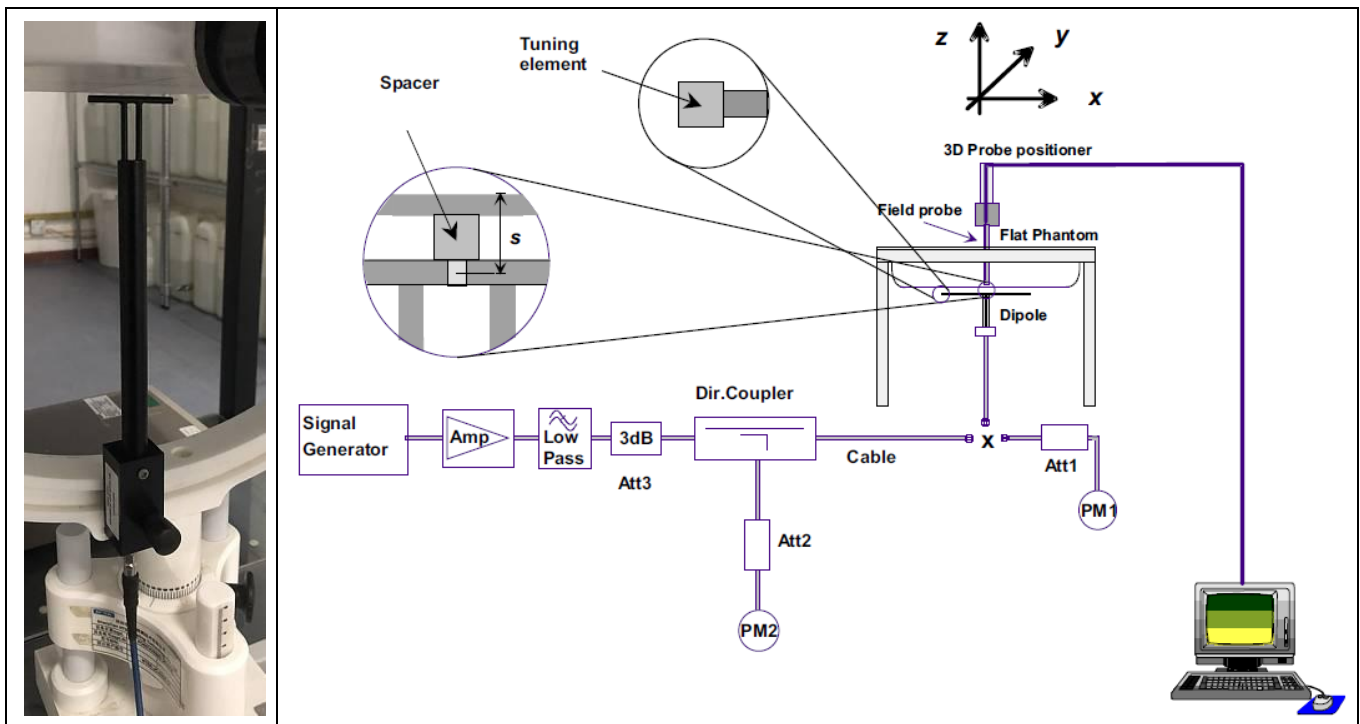
Tissue Type	Measured Frequency (MHz)	Target Tissue		Measured Tissue		Liquid Temp.	Test Date
		$\epsilon_r (\pm 5\%)$	$\sigma \text{ (S/m)} (\pm 5\%)$	ϵ_r	$\sigma \text{ (S/m)}$		
Head 750	750	41.96 (39.86~44.06)	0.89 (0.85~0.93)	40.42	0.89	21.7 °C	Oct. 08, 2024
Head 850	835	41.50 (39.43~43.58)	0.90 (0.86~0.95)	42.09	0.92	21.9 °C	Oct. 10, 2024
Head 850	835	41.50 (39.43~43.58)	0.90 (0.86~0.95)	41.96	0.91	21.2 °C	Oct. 15, 2024
Head 1800	1800	40.00 (38.00~42.00)	1.40 (1.33~1.47)	39.32	1.37	21.7 °C	Sep. 13, 2024
Head 1900	1900	40.00 (38.00~42.00)	1.40 (1.33~1.47)	38.44	1.45	21.8 °C	Oct. 12, 2024
Head 1900	1900	40.00 (38.00~42.00)	1.40 (1.33~1.47)	38.57	1.46	21.7 °C	Oct. 16, 2024
Head 2450	2450	39.20 (37.24~41.16)	1.80 (1.71~1.89)	40.11	1.83	21.8 °C	Sep. 16, 2024
Head 2600	2600	39.01 (37.06~40.96)	1.96 (1.86~2.06)	38.95	2.03	21.2 °C	Oct. 13, 2024
Head 5200	5200	36.00 (34.20~37.80)	4.66 (4.43~4.89)	36.75	4.55	21.5 °C	Oct. 05, 2024
Head 5800	5800	35.30 (33.54~37.07)	5.27 (5.01~5.53)	35.28	5.08	21.6 °C	Oct. 07, 2024

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

4.2. System Verification Procedure

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

The system verification is shown as below picture:



4.2.1. System Verification Results

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

System Verification	Target SAR (1W) ($\pm 10\%$)		Measured SAR			Measured SAR (Normalized to 1W)		Liquid Temp.	Test Date
	1-g (W/Kg)	10-g (W/Kg)	Input Power	1-g (W/Kg)	10-g (W/Kg)	1-g (W/Kg)	10-g (W/Kg)		
750MHz	8.60 (7.74~9.46)	5.78 (5.20~6.36)	18dBm	0.540	0.364	8.56	5.77	21.7 °C	Oct. 08, 2024
835MHz	9.40 (8.46~10.34)	6.28 (5.65~6.91)	18dBm	0.638	0.408	10.11	6.47	21.9 °C	Oct. 10, 2024
1800MHz	37.06 (33.35~40.77)	20.01 (18.01~22.01)	18dBm	2.408	1.247	38.16	19.76	21.7 °C	Sep. 13, 2024
1900MHz	39.69 (35.72~43.66)	20.92 (18.83~23.01)	18dBm	2.631	1.288	41.70	20.41	21.8 °C	Oct. 12, 2024
2450MHz	50.05 (45.05~55.06)	23.80 (21.42~26.18)	18dBm	2.975	1.424	47.15	22.57	21.8 °C	Sep. 16, 2024
2600MHz	54.16 (48.74~59.58)	24.85 (22.37~27.34)	18dBm	3.385	1.538	53.65	24.37	21.2 °C	Oct. 13, 2024
5200MHz	162.59 (146.33~178.85)	56.21 (50.59~61.83)	20dBm	15.360	5.563	153.60	55.63	21.5 °C	Oct. 05, 2024
5800MHz	182.20 (163.98~200.42)	61.32 (55.19~67.45)	20dBm	18.660	5.754	186.60	57.54	21.6 °C	Oct. 07, 2024

5. SAR Measurement variability and uncertainty

5.1. SAR measurement variability

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

- 1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg;

steps 2) through 4) do not apply.

- 2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
- 3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).
- 4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .

5.2. SAR measurement uncertainty

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

6. RF Exposure Positions

6.1. Tablet host platform exposure conditions

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

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

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

7. RF Output Power

7.1. GSM Conducted Power

Band GSM850	Burst-Averaged output Power (dBm)				Frame-Averaged output Power (dBm)			
Tx Channel	Tune -	128	189	251	Tune -	128	189	251
Frequency (MHz)	up (dBm)	824.2	836.4	848.8	up (dBm)	824.2	836.4	848.8
GSM (GMSK)	23.50	23.18	23.09	23.25	14.47	14.15	14.06	14.22
GPRS(GMSK, 1 TS)	30.00	29.85	29.76	29.89	20.97	20.82	20.73	20.86
GPRS(GMSK, 2 TS)	28.00	27.66	27.65	27.88	21.98	21.64	21.63	21.86
GPRS(GMSK, 3 TS)	26.50	25.95	25.97	26.17	22.24	21.69	21.71	21.91
GPRS(GMSK, 4 TS)	24.00	23.83	23.77	23.94	20.99	20.82	20.76	20.93
EGPRS(8PSK, 1 TS)	23.00	22.61	22.48	22.92	13.97	13.58	13.45	13.89
EGPRS(8PSK, 2 TS)	22.50	22.17	22.02	21.43	16.48	16.15	16.00	15.41
EGPRS(8PSK, 3 TS)	20.00	19.71	19.81	19.86	15.74	15.45	15.55	15.60
EGPRS(8PSK, 4 TS)	18.50	18.05	17.18	17.35	15.49	15.04	14.17	14.34
Band GSM1900	Burst-Averaged output Power (dBm)				Frame-Averaged output Power (dBm)			
Tx Channel	Tune -	512	661	810	Tune -	512	661	810
Frequency (MHz)	up (dBm)	1850.2	1880	1909.8	up (dBm)	1850.2	1880	1909.8
GSM (GMSK)	23.50	23.03	22.91	22.55	14.47	14.00	13.88	13.52
GPRS(GMSK, 1 TS)	29.50	29.30	29.37	29.08	20.47	20.27	20.34	20.05
GPRS(GMSK, 2 TS)	27.50	27.41	27.23	26.87	21.48	21.39	21.21	20.85
GPRS(GMSK, 3 TS)	26.00	25.87	25.67	25.29	21.74	21.61	21.41	21.03
GPRS(GMSK, 4 TS)	24.00	23.75	23.57	23.26	20.99	20.74	20.56	20.25
EGPRS(8PSK, 1 TS)	26.00	25.05	25.57	24.76	16.97	16.02	16.54	15.73
EGPRS(8PSK, 2 TS)	24.50	24.18	24.08	23.54	18.48	18.16	18.06	17.52
EGPRS(8PSK, 3 TS)	21.50	21.14	21.28	21.25	17.24	16.88	17.02	16.99
EGPRS(8PSK, 4 TS)	20.00	19.63	19.66	19.12	16.99	16.62	16.65	16.11

Note: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots. The calculated method are shown as below:

Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9.03 dB

Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6.02 dB

Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB

Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3.01 dB

7.2. WCDMA Conducted Power

WCDMA Band 2		Burst-Averaged output Power (dBm)			
Tx Channel	Tune-up (dBm)	9262	9400	9538	
Frequency (MHz)		1852.4	1880	1907.6	
RMC12.2K	22.50	22.16	22.10	21.94	
HSDPA Sub 1	22.00	21.90	21.65	21.40	
HSDPA Sub 2	22.00	21.52	21.30	21.17	
HSDPA Sub 3	21.50	21.22	21.22	20.64	
HSDPA Sub 4	21.50	21.09	20.75	20.65	
HSUPA Sub 1	22.00	21.63	21.42	21.26	
HSUPA Sub 2	22.00	21.70	21.53	21.29	
HSUPA Sub 3	21.50	21.36	21.20	20.84	
HSUPA Sub 4	22.00	21.57	21.52	21.27	
HSUPA Sub 5	21.50	21.48	21.25	20.92	
WCDMA Band 4		Burst-Averaged output Power (dBm)			
Tx Channel	Tune-up (dBm)	1312	1413	1513	
Frequency (MHz)		1712.4	1732.6	1752.6	
RMC12.2K	22.50	22.17	21.84	22.39	
HSDPA Sub 1	22.00	21.60	21.42	21.72	
HSDPA Sub 2	21.50	20.98	20.98	21.42	
HSDPA Sub 3	21.50	20.69	20.56	21.21	
HSDPA Sub 4	21.50	20.83	20.57	21.15	
HSUPA Sub 1	22.00	21.67	21.23	21.53	
HSUPA Sub 2	22.00	21.46	21.52	21.82	
HSUPA Sub 3	21.50	21.48	20.85	21.31	
HSUPA Sub 4	22.00	21.45	21.53	21.73	
HSUPA Sub 5	22.00	21.06	21.46	21.64	
WCDMA Band 5		Burst-Averaged output Power (dBm)			
Tx Channel	Tune-up (dBm)	4132	4182	4233	
Frequency (MHz)		826.4	836.4	846.6	
RMC12.2K	22.50	22.21	22.35	22.27	
HSDPA Sub 1	22.50	22.09	21.86	21.94	
HSDPA Sub 2	22.00	21.77	21.60	21.91	
HSDPA Sub 3	22.00	21.39	21.43	21.52	
HSDPA Sub 4	22.00	21.16	20.74	21.53	
HSUPA Sub 1	22.50	22.06	21.67	21.60	

HSUPA Sub 2	22.00	22.00	21.91	21.95
HSUPA Sub 3	22.00	21.70	21.57	21.32
HSUPA Sub 4	22.50	21.95	21.86	22.13
HSUPA Sub 5	22.00	21.75	21.39	21.84

7.3. LTE Conducted Power

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18607/1850.7	18900/1880	19193/1909.3
LTE Band 2	1.4MHz	QPSK	1	0	15.50	14.58	15.28	14.69
			1	2	15.50	14.87	15.49	14.80
			1	5	15.50	14.79	15.28	14.58
			3	0	15.50	14.84	15.40	14.76
			3	1	15.50	14.98	15.45	14.79
			3	2	15.50	14.95	15.39	14.71
			6	0	14.00	13.35	13.90	13.14
		16QAM	1	0	15.00	13.98	14.55	13.84
			1	2	15.00	14.33	14.66	13.93
			1	5	15.00	14.13	14.52	13.69
			3	0	15.00	13.84	14.39	13.62
			3	1	15.00	13.99	14.50	13.68
			3	2	15.00	13.89	14.40	13.62
			6	0	13.50	12.97	13.33	12.71
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18615/1851.5	18900/1880	19185/1908.5
LTE Band 2	3MHz	QPSK	1	0	15.50	14.69	15.36	15.01
			1	7	15.50	15.11	15.46	14.86
			1	14	15.50	15.15	15.30	14.62
			8	0	14.50	13.39	13.98	13.38
			8	4	14.50	13.94	14.02	13.31
			8	7	14.50	13.44	13.98	13.21
			15	0	14.00	13.47	13.99	13.30
		16QAM	1	0	15.00	14.03	14.70	14.15
			1	7	15.00	14.40	14.80	14.02
			1	14	15.00	14.44	14.67	13.91
			8	0	13.50	13.00	13.35	12.95
			8	4	13.50	13.22	13.40	12.89
			8	7	13.50	13.27	13.36	12.79
			15	0	13.50	13.12	13.33	12.84

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18625/1852.5	18900/1880	19175/1907.5
LTE Band 2	5MHz	QPSK	1	0	15.50	14.36	14.94	15.14
			1	12	15.50	15.33	15.46	15.08
			1	24	15.50	15.03	14.90	14.29
			12	0	14.50	13.39	13.86	13.62
			12	6	14.50	13.77	14.01	13.50
			12	11	14.50	13.77	13.86	13.18
			25	0	14.00	13.59	13.88	13.41
		16QAM	1	0	15.00	13.63	14.19	14.35
			1	12	15.00	14.57	14.86	14.28
			1	24	15.00	14.29	14.23	13.52
			12	0	13.50	12.95	13.23	13.13
			12	6	13.50	13.32	13.36	13.02
			12	11	13.50	13.32	13.18	12.69
			25	0	13.50	13.14	13.21	12.93
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18650/1855	18900/1880	19150/1905
LTE Band 2	10MHz	QPSK	1	0	17.00	15.05	15.88	16.52
			1	24	17.00	15.05	15.43	15.71
			1	49	17.00	15.39	15.49	15.03
			25	0	15.00	13.20	13.91	14.68
			25	12	15.00	13.61	14.05	14.19
			25	24	15.00	13.86	14.18	13.78
			50	0	14.50	13.55	14.06	14.25
		16QAM	1	0	16.00	14.26	14.37	15.69
			1	24	16.00	14.27	14.81	14.92
			1	49	16.00	14.56	14.91	14.16
			25	0	14.50	12.75	13.23	14.19
			25	12	14.50	13.13	13.38	13.72
			25	24	14.50	13.42	13.50	13.29
			50	0	14.00	13.10	13.36	13.77
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18675/1857.5	18900/1880	19125/1902.5
LTE Band 2	15MHz	QPSK	1	0	16.50	15.41	15.24	16.38
			1	37	16.50	15.16	15.42	15.61
			1	74	16.50	15.27	15.33	15.07

			36	0	15.00	13.47	13.94	14.77
			36	18	15.00	13.68	13.98	14.13
			36	37	15.00	13.81	14.01	13.35
			75	0	14.50	13.65	13.98	14.13
		16QAM	1	0	16.00	14.56	14.54	15.53
			1	37	16.00	14.40	14.81	14.82
			1	74	16.00	14.58	14.61	14.35
			36	0	14.50	12.94	13.26	14.29
			36	18	14.50	13.17	13.29	13.68
			36	37	14.50	13.28	13.31	12.89
75	0	14.00	13.12	13.28	13.66			
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18700/1860	18900/1880	19100/1900
LTE Band 2	20MHz	QPSK	1	0	17.00	15.72	15.80	16.70
			1	49	17.00	15.07	15.44	16.10
			1	99	17.00	15.80	15.75	15.40
			50	0	15.50	13.65	14.22	15.02
			50	24	15.50	13.72	14.09	14.67
			50	49	15.50	13.99	14.28	13.92
			100	0	15.00	13.82	14.24	14.50
		16QAM	1	0	16.00	14.98	15.10	15.88
			1	49	16.00	14.27	14.67	15.44
			1	99	16.00	14.99	15.01	14.60
			50	0	15.00	13.12	13.51	14.57
			50	24	15.00	13.21	13.42	14.21
			50	49	15.00	13.45	13.56	13.46
			100	0	14.50	13.27	13.51	14.03

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		19957/1710.7	20175/1732.5	20393/1754.3
LTE Band 4	1.4MHz	QPSK	1	0	15.50	14.56	14.65	15.07
			1	2	15.50	14.74	14.86	15.27
			1	5	15.50	14.52	14.68	15.02
			3	0	15.50	14.67	14.78	15.16
			3	1	15.50	14.73	14.86	15.23
			3	2	15.50	14.66	14.81	15.15
			6	0	14.50	13.67	13.79	14.11

			16QAM	1	0	15.00	13.79	13.84	14.31
				1	2	15.00	14.08	14.08	14.54
				1	5	15.00	13.76	13.91	14.19
				3	0	14.50	13.72	13.77	14.17
				3	1	14.50	13.80	13.85	14.24
				3	2	14.50	13.71	13.87	14.17
				6	0	13.50	12.62	12.84	13.22
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)			
			RB Size	RB Offset		19965/1711.5	20175/1732.5	20385/1753.5	
LTE Band 4	3MHz	QPSK	1	0	15.50	14.61	14.65	15.10	
			1	7	15.50	14.70	14.84	15.21	
			1	14	15.50	14.57	14.76	15.08	
			8	0	14.50	13.70	13.79	14.15	
			8	4	14.50	13.74	13.88	14.19	
			8	7	14.50	13.70	13.86	14.16	
			15	0	14.50	13.70	13.83	14.16	
		16QAM	1	0	14.50	13.97	13.97	14.30	
			1	7	14.50	13.94	14.20	14.45	
			1	14	14.50	13.96	14.11	14.32	
			8	0	13.50	12.63	12.84	13.24	
			8	4	13.50	12.65	12.90	13.30	
			8	7	13.50	12.64	12.89	13.23	
			15	0	13.50	12.60	12.82	13.21	
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)			
			RB Size	RB Offset		19975/1712.5	20175/1732.5	20375/1752.5	
LTE Band 4	5MHz	QPSK	1	0	15.50	14.22	14.26	14.77	
			1	12	15.50	14.76	14.90	15.27	
			1	24	15.50	14.40	14.49	14.73	
			12	0	14.50	13.60	13.67	14.06	
			12	6	14.50	13.78	13.88	14.21	
			12	11	14.50	13.70	13.78	14.07	
			25	0	14.50	13.66	13.74	14.07	
		16QAM	1	0	15.00	13.54	13.44	13.99	
			1	12	15.00	13.97	14.21	14.53	
			1	24	15.00	13.73	13.73	13.97	
			12	0	13.50	12.49	12.65	13.10	

			12	6	13.50	12.65	12.87	13.25
			12	11	13.50	12.59	12.77	13.11
			25	0	13.50	12.53	12.72	13.10
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20000/1715	20175/1732.5	20350/1750
LTE Band 4	10MHz	QPSK	1	0	15.50	14.13	14.28	15.00
			1	24	15.50	14.75	14.84	15.22
			1	49	15.50	15.43	15.23	15.45
			25	0	14.50	13.47	13.64	14.20
			25	12	14.50	13.78	13.91	14.27
			25	24	14.50	14.22	14.13	14.42
			50	0	14.50	13.86	13.90	14.31
		16QAM	1	0	15.00	13.57	13.53	14.23
			1	24	15.00	14.02	14.06	14.49
			1	49	15.00	14.84	14.35	14.77
			25	0	13.50	12.42	12.63	13.22
			25	12	13.50	12.74	12.90	13.30
			25	24	13.50	13.15	13.12	13.44
			50	0	13.50	12.80	12.89	13.34
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20025/1717.5	20175/1732.5	20325/1747.5
LTE Band 4	15MHz	QPSK	1	0	16.00	14.43	14.17	15.06
			1	37	16.00	15.05	14.83	15.00
			1	74	16.00	15.93	14.87	14.92
			36	0	15.00	13.68	13.61	14.09
			36	18	15.00	14.03	13.84	14.02
			36	37	15.00	14.56	13.97	14.02
			75	0	14.50	14.14	13.80	14.06
		16QAM	1	0	15.50	13.69	14.47	14.21
			1	37	15.50	14.29	14.14	14.29
			1	74	15.50	15.18	14.11	14.06
			36	0	13.50	12.60	12.63	13.14
			36	18	13.50	12.99	12.82	13.04
			36	37	13.50	13.49	12.99	13.05
			75	0	13.50	13.07	12.81	13.10
Band	Band	Modulation	RB		Tune-up	Channel/Frequency(MHz)		

	Width		Configuration		(dBm)			
			RB Size	RB Offset		20050/1720	20175/1732.5	20300/1745
LTE Band 4	20MHz	QPSK	1	0	16.50	15.28	15.27	15.60
			1	49	16.50	14.83	14.82	15.02
			1	99	16.50	16.18	15.05	15.37
			50	0	15.00	13.38	13.67	14.39
			50	24	15.00	13.84	13.90	14.16
			50	49	15.00	14.52	14.10	14.24
			100	0	14.50	13.97	13.88	14.31
		16QAM	1	0	15.50	14.26	14.48	14.76
			1	49	15.50	14.04	14.10	14.35
			1	99	15.50	15.25	14.27	14.60
			50	0	13.50	12.33	12.71	13.47
			50	24	13.50	12.83	12.90	13.19
			50	49	13.50	13.47	13.14	13.32
			100	0	13.50	12.93	12.91	13.36

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20407/824.7	20525/836.5	20643/848.3
LTE Band 5	1.4MHz	QPSK	1	0	14.00	13.56	13.62	13.69
			1	2	14.00	13.85	13.86	13.91
			1	5	14.00	13.69	13.67	13.66
			3	0	14.00	13.68	13.77	13.82
			3	1	14.00	13.83	13.85	13.90
			3	2	14.00	13.79	13.80	13.81
			6	0	13.00	12.73	12.72	12.91
		16QAM	1	0	13.50	12.74	12.88	12.98
			1	2	13.50	13.14	13.04	13.31
			1	5	13.50	12.85	12.85	13.09
			3	0	13.50	12.68	12.69	12.94
			3	1	13.50	12.84	12.82	13.04
			3	2	13.50	12.79	12.78	12.93
			6	0	12.00	11.81	11.81	11.98
LTE Band 5	3MHz	QPSK	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20415/825.5	20525/836.5	20635/847.5
LTE Band 5	3MHz	QPSK	1	0	14.00	13.57	13.58	13.64
			1	7	14.00	13.88	13.82	13.86

				1	14	14.00	13.64	13.70	13.71	
				8	0	13.00	12.77	12.70	12.88	
				8	4	13.00	12.88	12.79	12.97	
				8	7	13.00	12.84	12.78	12.95	
				15	0	13.00	12.80	12.75	12.92	
			16QAM	1	0	13.50	12.75	12.70	12.91	
				1	7	13.50	13.08	12.99	13.21	
				1	14	13.50	12.96	12.97	13.01	
				8	0	12.00	11.80	11.77	11.90	
				8	4	12.00	11.94	11.85	11.99	
				8	7	12.00	11.87	11.84	11.94	
				15	0	12.00	11.80	11.75	11.89	
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)				
			RB Size	RB Offset		20425/826.5	20525/836.5	20625/846.5		
LTE Band 5	5MHz	QPSK	1	0	14.00	13.16	13.11	13.38		
			1	12	14.00	13.85	13.87	13.84		
			1	24	14.00	13.07	13.33	13.36		
			12	0	13.00	12.70	12.56	12.74		
			12	6	13.00	12.85	12.81	12.91		
			12	11	13.00	12.58	12.69	12.82		
			25	0	13.00	12.66	12.63	12.78		
		16QAM	1	0	13.50	12.48	12.38	12.76		
			1	12	13.50	13.19	13.06	13.13		
			1	24	13.50	12.42	12.55	12.70		
			12	0	12.00	11.67	11.54	11.71		
			12	6	12.00	11.85	11.81	11.87		
			12	11	12.00	11.55	11.69	11.79		
			25	0	12.00	11.64	11.62	11.75		
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)				
			RB Size	RB Offset		20450/829	20525/836.5	20600/844		
LTE Band 5	10MHz	QPSK	1	0	14.50	13.63	13.26	14.45		
			1	24	14.50	13.85	13.84	13.93		
			1	49	14.50	13.77	13.60	14.01		
			25	0	13.50	12.93	12.56	13.43		
			25	12	13.50	12.92	12.82	13.13		
			25	24	13.50	12.91	12.91	13.10		
			50	0	13.50	12.92	12.74	13.27		
		16QAM	1	0	14.00	12.92	12.53	13.72		

			1	24	14.00	13.13	13.07	13.22
			1	49	14.00	13.01	12.78	13.37
			25	0	12.50	11.91	11.54	12.37
			25	12	12.50	11.90	11.80	12.08
			25	24	12.50	11.88	11.89	12.05
			50	0	12.50	11.90	11.71	12.21

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20775/2502.5	21100/2535	21425/2567.5
LTE Band 7	5MHz	QPSK	1	0	14.50	13.56	13.86	13.54
			1	12	14.50	14.27	14.34	14.07
			1	24	14.50	13.84	13.82	13.64
			12	0	13.50	12.92	13.06	12.82
			12	6	13.50	13.18	13.22	13.00
			12	11	13.50	13.09	13.08	12.90
			25	0	13.50	13.02	13.08	12.88
		16QAM	1	0	14.00	12.65	12.92	12.77
			1	12	14.00	13.51	13.49	13.27
			1	24	14.00	13.12	12.93	12.91
			12	0	12.50	12.06	12.22	11.82
			12	6	12.50	12.30	12.40	12.00
			12	11	12.50	12.24	12.26	11.92
			25	0	12.50	12.16	12.25	11.88
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20800/2505	21100/2535	21400/2565
LTE Band 7	10MHz	QPSK	1	0	15.00	13.71	14.13	14.05
			1	24	15.00	14.37	14.31	14.00
			1	49	15.00	14.51	14.52	14.27
			25	0	13.50	13.07	13.13	13.04
			25	12	13.50	13.34	13.25	13.03
			25	24	13.50	13.49	13.39	13.19
			50	0	13.50	13.29	13.26	13.12
		16QAM	1	0	14.00	12.86	13.21	13.30
			1	24	14.00	13.56	13.45	13.23
			1	49	14.00	13.60	13.56	13.53
			25	0	13.00	12.22	12.31	12.02
			25	12	13.00	12.47	12.43	12.03
			25	24	13.00	12.65	12.56	12.17

			50	0	12.50	12.44	12.44	12.09
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20825/2507.5	21100/2535	21375/2562.5
LTE Band 7	15MHz	QPSK	1	0	15.00	13.89	14.38	14.62
			1	37	15.00	14.42	14.32	13.96
			1	74	15.00	14.08	14.32	13.83
			36	0	13.50	13.22	13.30	13.33
			36	18	13.50	13.33	13.23	12.98
			36	37	13.50	13.30	13.29	12.84
			75	0	13.50	13.26	13.30	13.09
		16QAM	1	0	14.00	12.98	13.53	13.71
			1	37	14.00	13.55	13.53	13.11
			1	74	14.00	13.30	13.37	12.84
			36	0	12.50	12.37	12.46	12.38
			36	18	12.50	12.46	12.41	12.01
			36	37	12.50	12.43	12.43	11.90
			75	0	12.50	12.41	12.45	12.15
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20850/2510	21100/2535	21350/2560
LTE Band 7	20MHz	QPSK	1	0	15.50	14.32	14.90	15.16
			1	49	15.50	14.47	14.31	14.22
			1	99	15.50	14.34	14.64	14.09
			50	0	14.00	13.56	13.54	13.85
			50	24	14.00	13.49	13.33	13.32
			50	49	14.00	13.49	13.48	13.04
			100	0	14.00	13.52	13.50	13.46
		16QAM	1	0	14.50	13.46	14.01	14.22
			1	49	14.50	13.72	13.39	13.41
			1	99	14.50	13.52	13.75	13.07
			50	0	13.00	12.68	12.67	12.94
			50	24	13.00	12.63	12.49	12.39
			50	49	13.00	12.61	12.62	12.12
			100	0	13.00	12.63	12.63	12.53

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		23017/699.7	23095/707.5	23173/715.3
LTE	1.4MHz	QPSK	1	0	15.00	14.44	14.43	14.27

Band 12			1	2	15.00	14.73	14.56	14.43
			1	5	15.00	14.51	14.32	14.28
			3	0	15.00	14.67	14.52	14.37
			3	1	15.00	14.72	14.55	14.43
			3	2	15.00	14.65	14.47	14.38
			6	0	13.50	13.01	12.90	12.75
		16QAM	1	0	14.00	13.57	13.50	13.38
			1	2	14.00	13.78	13.75	13.51
			1	5	14.00	13.66	13.47	13.43
			3	0	14.00	13.45	13.41	13.26
			3	1	14.00	13.51	13.48	13.32
			3	2	14.00	13.53	13.39	13.27
		6	0	13.00	12.56	12.48	12.31	
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		23025/700.5	23095/707.5	23165/714.5
LTE Band 12	3MHz	QPSK	1	0	15.00	14.55	14.44	14.36
			1	7	15.00	14.55	14.51	14.40
			1	14	15.00	14.32	14.45	14.28
			8	0	13.00	13.00	12.95	12.76
			8	4	13.00	12.98	12.95	12.80
			8	7	13.00	12.88	12.90	12.77
			15	0	13.00	12.95	12.93	12.77
		16QAM	1	0	14.00	13.66	13.57	13.44
			1	7	14.00	13.60	13.59	13.52
			1	14	14.00	13.50	13.49	13.38
			8	0	13.00	12.59	12.49	12.31
			8	4	13.00	12.53	12.47	12.37
			8	7	13.00	12.45	12.45	12.34
15	0	12.50	12.48	12.44	12.30			
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		23035/701.5	23095/707.5	23155/713.5
LTE Band 12	5MHz	QPSK	1	0	15.00	14.20	13.97	14.25
			1	12	15.00	14.51	14.55	14.42
			1	24	15.00	13.88	14.14	13.94
			12	0	13.00	12.85	12.83	12.85
			12	6	13.00	12.89	12.97	12.88
			12	11	13.00	12.67	12.84	12.66
			25	0	13.00	12.76	12.84	12.77

			16QAM	1	0	14.00	13.30	13.07	13.37
			16QAM	1	12	14.00	13.63	13.67	13.61
			16QAM	1	24	14.00	13.06	13.35	13.09
			16QAM	12	0	12.50	12.36	12.34	12.38
			16QAM	12	6	12.50	12.39	12.49	12.39
			16QAM	12	11	12.50	12.18	12.34	12.15
			16QAM	25	0	12.50	12.26	12.36	12.26
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)			
			RB Size	RB Offset		23060/704	23095/707.5	23130/711	
LTE Band 12	10MHz	QPSK	1	0	15.00	14.09	13.78	14.52	
			1	24	15.00	14.20	14.50	14.77	
			1	49	15.00	14.64	14.49	14.57	
			25	0	13.50	12.58	12.74	13.16	
			25	12	13.50	12.76	13.01	13.21	
			25	24	13.50	13.04	13.12	13.12	
			50	0	13.50	12.82	12.94	13.14	
		16QAM	1	0	14.00	13.25	12.89	13.64	
			1	24	14.00	13.40	13.61	13.88	
			1	49	14.00	13.77	13.68	13.62	
			25	0	13.00	12.06	12.22	12.66	
			25	12	13.00	12.24	12.51	12.70	
			25	24	13.00	12.51	12.61	12.59	
			50	0	13.00	12.29	12.41	12.62	

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		23755/706.5	23790/710	23825/713.5
LTE Band 17	5MHz	QPSK	1	0	15.00	13.90	14.34	14.27
			1	12	15.00	14.65	14.99	14.45
			1	24	15.00	14.11	14.19	13.96
			12	0	13.50	12.77	13.13	12.88
			12	6	13.50	13.02	13.32	12.90
			12	11	13.50	12.84	13.07	12.68
			25	0	13.50	12.82	13.12	12.78
		16QAM	1	0	14.50	12.92	13.39	13.33
			1	12	14.50	13.83	14.13	13.59
			1	24	14.50	13.24	13.37	13.12
			12	0	13.00	12.27	12.66	12.37
			12	6	13.00	12.53	12.85	12.39

			12	11	13.00	12.35	12.58	12.17
			25	0	13.00	12.30	12.62	12.29
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		23780/709	23790/710	23800/711
LTE Band 17	10MHz	QPSK	1	0	15.00	14.29	14.47	14.55
			1	24	15.00	14.90	14.96	14.81
			1	49	15.00	14.64	14.60	14.59
			25	0	13.50	13.11	13.18	13.19
			25	12	13.50	13.30	13.28	13.24
			25	24	13.50	13.33	13.24	13.15
			50	0	13.50	13.23	13.22	13.17
		16QAM	1	0	14.50	13.38	13.51	13.55
			1	24	14.50	13.95	14.11	13.86
			1	49	14.50	13.79	13.59	13.70
			25	0	13.00	12.59	12.68	12.68
			25	12	13.00	12.80	12.79	12.73
			25	24	13.00	12.82	12.72	12.64
			50	0	13.00	12.71	12.69	12.65

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)			
			RB Size	RB Offset		40115/2542.5	40465/2577.5	40815/2612.5	41165/2647.5
LTE Band 41	5MHz	QPSK	1	0	14	13.59	13.61	13.54	13.22
			1	12	14	13.26	13.34	13.41	13.62
			1	24	14	13.73	13.09	13.51	13.01
			12	0	14	13.37	13.23	13.39	13.06
			12	6	14	13.57	13.16	13.28	13.13
			12	11	14	13.42	13.42	13.27	12.93
			25	0	13.5	13.37	13.05	13.12	13.01
		16QAM	1	0	13.5	12.60	12.47	12.61	12.49
			1	12	13.5	13.28	13.11	13.08	12.90
			1	24	13.5	12.85	13.51	13.15	12.27
			12	0	12	11.69	13.64	13.41	11.55
			12	6	12	11.90	11.63	11.51	11.64
			12	11	12	11.78	11.45	11.62	11.44

			25	0	12	11.74	11.62	11.18	11.51
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)			
			RB Size	RB Offset		40140/2545	40465/2577.5	40815/2612.5	41140/2645
LTE Band 41	10MHz	QPSK	1	0	14.5	13.42	13.31	13.61	13.83
			1	24	14.5	13.97	13.54	13.72	13.80
			1	49	14.5	14.14	13.38	13.41	13.83
			25	0	14	13.23	13.15	13.51	13.43
			25	12	14	13.44	13.05	13.24	13.40
			25	24	14	13.58	13.31	13.35	13.40
			50	0	13.5	13.41	13.27	13.52	13.42
		16QAM	1	0	13.5	12.54	13.18	13.28	13.03
			1	24	13.5	13.17	13.15	13.36	13.05
			1	49	13.5	13.28	13.51	12.87	13.13
			25	0	13	11.65	12.54	12.68	11.92
			25	12	13	11.85	12.63	12.74	11.89
			25	24	13	12.65	12.42	12.63	11.89
			50	0	12	11.84	11.32	11.58	11.90
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)			
			RB Size	RB Offset		40165/2547.5	40465/2577.5	40815/2612.5	41115/2642.5
LTE Band 41	15MHz	QPSK	1	0	14.5	13.70	13.36	13.56	13.83
			1	37	14.5	14.06	14.06	13.81	13.62
			1	74	14.5	13.78	13.69	14.1	13.16
			36	0	13.5	13.42	13.05	13.12	13.42
			36	18	13.5	12.65	12.98	13.02	13.19
			36	37	13.5	13.25	12.74	13.11	13.03
			75	0	13.5	13.48	12.36	12.87	13.23
		16QAM	1	0	13.5	12.82	13.21	13.32	13.14
			1	37	13.5	13.26	12.23	12.21	12.91
			1	74	13.5	12.90	12.21	12.26	12.46
			36	0	12	11.83	11.52	11.63	11.84
			36	18	12	11.88	11.41	11.35	11.64

			36	37	12	11.89	11.62	11.41	11.47
			75	0	12	11.90	11.46	11.62	11.69
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)			
			RB Size	RB Offset		40190/2550	40465/2577.5	40815/2612.5	41090/2640
LTE Band 41	20MHz	QPSK	1	0	14.5	13.99	14.05	14.21	14.44
			1	49	14.5	14.00	14.13	14.18	13.97
			1	99	14.5	13.71	13.67	13.58	13.45
			50	0	14	13.55	13.36	13.24	13.76
			50	24	14	13.50	13.28	13.63	13.38
			50	49	14	13.41	13.64	13.51	13.26
			100	0	14	13.47	13.65	13.37	13.50
		16QAM	1	0	14	13.04	13.41	13.63	13.77
			1	49	14	13.17	13.21	13.25	12.98
			1	99	14	12.77	13.63	13.51	12.77
			50	0	12.5	12.03	12.02	12.13	12.23
			50	24	12.5	11.95	11.68	12.02	11.88
			50	49	12.5	11.89	11.74	11.62	11.74
			100	0	12	11.94	11.57	11.36	11.96

7.4. WLAN & Bluetooth Output Power

7.4.1. Output Power Results Of WLAN

Mode	Channel	Frequency (MHz)	Tune-up (dBm)	Output Power (dBm)
802.11b	1	2412	14.00	13.67
	6	2437	14.00	13.19
	11	2462	14.00	12.29
802.11g	1	2412	14.00	13.95
	6	2437	14.00	12.99
	11	2462	14.00	12.99
802.11n HT20	1	2412	13.50	13.10
	6	2437	13.50	12.03
	11	2462	13.50	12.03
802.11n HT40	3	2422	12.00	12.00

	6	2437	12.00	11.77
	9	2452	12.00	11.80

NOTE: Power measurement results of WLAN 2.4G.

Mode	Channel	Frequency (MHz)	Tune-up (dBm)	Output Power (dBm)
802.11a	36	5180	7.50	6.89
	40	5200	7.50	6.92
	48	5240	7.50	7.07
802.11n HT20	36	5180	6.50	6.21
	40	5200	6.50	6.22
	48	5240	6.50	6.21
802.11n HT40	38	5190	7.00	6.67
	46	5230	7.00	6.64
802.11ac VHT20	36	5180	7.00	6.65
	40	5200	7.00	6.23
	48	5240	7.00	6.13
802.11ac VHT40	38	5190	7.00	6.28
	46	5230	7.00	6.62
802.11ac VHT80	42	5210	7.00	6.66

NOTE: Power measurement results of WLAN 5.2G.

Mode	Channel	Frequency (MHz)	Tune-up (dBm)	Output Power (dBm)
802.11a	149	5745	8.50	8.08
	157	5785	8.50	7.85
	165	5825	8.50	7.07
802.11n HT20	149	5745	7.50	7.21
	157	5785	7.50	6.96
	165	5825	7.50	6.51
802.11n HT40	151	5755	8.00	7.54
	159	5795	8.00	7.20
802.11ac VHT20	149	5745	8.00	7.77
	157	5785	8.00	7.15
	165	5825	8.00	6.90
802.11ac VHT40	151	5755	8.00	6.41
	159	5795	8.00	7.51
802.11ac VHT80	155	5775	7.50	7.12

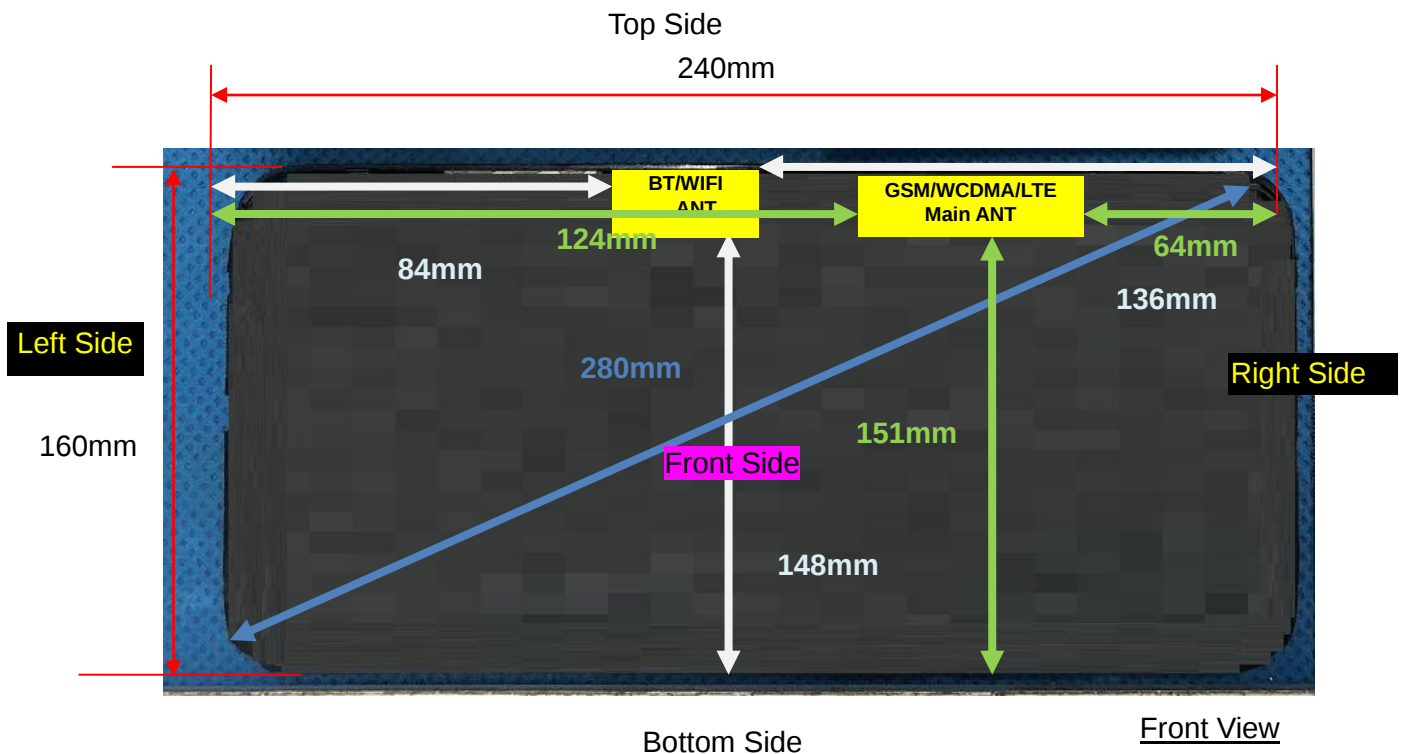
NOTE: Power measurement results of WLAN 5.8G.

7.4.2. Output Power Results Of Bluetooth

BR+EDR	Output Power (dBm)				
	Data Rates	Tune-up (dBm)	Channel		
			0CH	39CH	78CH
	1M	3	1.62	2.49	1.52
	2M	1.5	1.06	1.35	0.42
	3M	2	1.38	1.60	0.67

BLE	Output Power (dBm)				
	Data Rates	Tune-up (dBm)	Channe		
			0CH	19CH	39CH
	1M	0.5	0.02	0.25	-1.59
	2M	0.5	-0.12	0.11	-1.76

8. Antenna Location



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

Distance of the Antenna to the EUT surface/edge						
Antennas	Front Side	Back Side	Left Side	Right Side	Top Side	Bottom Side
WLAN & Bluetooth	5	5	124	64	5	151
WWAN	5	5	84	136	5	148

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

Positions for SAR tests		
Test separation distances $\leq$ 50 mm		
Exposure Positions	Tune-up Maximum power of WLAN 2.4G	
	14.00dBm	
Front Side	Antenna to user(mm)	5
	SAR exclusion threshold	7.91
	SAR testing required?	YES
Back Side	Antenna to user(mm)	5
	SAR exclusion threshold	7.91
	SAR testing required?	YES
Top Side	Antenna to user(mm)	5
	SAR exclusion threshold	7.91
	SAR testing required?	YES
Exposure Positions	Tune-up Maximum power of WLAN 5.2G	

	7.00dBm	
Front Side	Antenna to user(mm)	5
	SAR exclusion threshold	2.29
	SAR testing required?	NO
Back Side	Antenna to user(mm)	5
	SAR exclusion threshold	2.29
	SAR testing required?	NO
Top Side	Antenna to user(mm)	5
	SAR exclusion threshold	2.29
	SAR testing required?	NO
Exposure Positions	Tune-up Maximum power of WLAN 5.8G	
	8.50dBm	
Front Side	Antenna to user(mm)	5
	SAR exclusion threshold	3.43
	SAR testing required?	YES
Back Side	Antenna to user(mm)	5
	SAR exclusion threshold	3.43
	SAR testing required?	YES
Top Side	Antenna to user(mm)	5
	SAR exclusion threshold	3.43
	SAR testing required?	YES
Exposure Positions	Tune-up Maximum power of GSM 850	
	26.50dBm	
Front Side	Antenna to user(mm)	5
	SAR exclusion threshold	82.36
	SAR testing required?	YES
Back Side	Antenna to user(mm)	5
	SAR exclusion threshold	82.36
	SAR testing required?	YES
Top Side	Antenna to user(mm)	5
	SAR exclusion threshold	82.36
	SAR testing required?	YES
Exposure Positions	Tune-up Maximum power of GSM 1900	
	26.00dBm	
Front Side	Antenna to user(mm)	5
	SAR exclusion threshold	109.75
	SAR testing required?	YES
Back Side	Antenna to user(mm)	5
	SAR exclusion threshold	109.75
	SAR testing required?	YES

Top Side	Antenna to user(mm)	5
	SAR exclusion threshold	109.75
	SAR testing required?	YES
Exposure Positions	Tune-up Maximum power of WCDMA Band 2	
	22.50dBm	
Front Side	Antenna to user(mm)	5
	SAR exclusion threshold	49.02
	SAR testing required?	YES
Back Side	Antenna to user(mm)	5
	SAR exclusion threshold	49.02
	SAR testing required?	YES
Top Side	Antenna to user(mm)	5
	SAR exclusion threshold	49.02
	SAR testing required?	YES
Exposure Positions	Tune-up Maximum power of WCDMA Band 4	
	22.50dBm	
Front Side	Antenna to user(mm)	5
	SAR exclusion threshold	46.78
	SAR testing required?	YES
Back Side	Antenna to user(mm)	5
	SAR exclusion threshold	46.78
	SAR testing required?	YES
Top Side	Antenna to user(mm)	5
	SAR exclusion threshold	46.78
	SAR testing required?	YES
Exposure Positions	Tune-up Maximum power of WCDMA Band 5	
	22.50dBm	
Front Side	Antenna to user(mm)	5
	SAR exclusion threshold	32.52
	SAR testing required?	YES
Back Side	Antenna to user(mm)	5
	SAR exclusion threshold	32.52
	SAR testing required?	YES
Top Side	Antenna to user(mm)	5
	SAR exclusion threshold	32.52
	SAR testing required?	YES
Exposure Positions	Tune-up Maximum power of LTE Band 2	
	17.00dBm	
Front Side	Antenna to user(mm)	5
	SAR exclusion threshold	13.74

	SAR testing required?	YES
Back Side	Antenna to user(mm)	5
	SAR exclusion threshold	13.74
	SAR testing required?	YES
Top Side	Antenna to user(mm)	5
	SAR exclusion threshold	13.74
	SAR testing required?	YES
Exposure Positions	Tune-up Maximum power of LTE Band 4	
	16.50dBm	
Front Side	Antenna to user(mm)	5
	SAR exclusion threshold	11.76
	SAR testing required?	YES
Back Side	Antenna to user(mm)	5
	SAR exclusion threshold	11.76
	SAR testing required?	YES
Top Side	Antenna to user(mm)	5
	SAR exclusion threshold	11.76
	SAR testing required?	YES
Exposure Positions	Tune-up Maximum power of LTE Band 5	
	14.50dBm	
Front Side	Antenna to user(mm)	5
	SAR exclusion threshold	5.16
	SAR testing required?	YES
Back Side	Antenna to user(mm)	5
	SAR exclusion threshold	5.16
	SAR testing required?	YES
Top Side	Antenna to user(mm)	5
	SAR exclusion threshold	5.16
	SAR testing required?	YES
Exposure Positions	Tune-up Maximum power of LTE Band 7	
	15.50dBm	
Front Side	Antenna to user(mm)	5
	SAR exclusion threshold	11.3
	SAR testing required?	YES
Back Side	Antenna to user(mm)	5
	SAR exclusion threshold	11.3
	SAR testing required?	YES
Top Side	Antenna to user(mm)	5
	SAR exclusion threshold	11.3
	SAR testing required?	YES

Exposure Positions	Tune-up Maximum power of LTE Band 12	
	15.00dBm	
Front Side	Antenna to user(mm)	5
	SAR exclusion threshold	5.32
	SAR testing required?	YES
Back Side	Antenna to user(mm)	5
	SAR exclusion threshold	5.32
	SAR testing required?	YES
Top Side	Antenna to user(mm)	5
	SAR exclusion threshold	5.32
	SAR testing required?	YES
Exposure Positions	Tune-up Maximum power of LTE Band 17	
	15.00dBm	
Front Side	Antenna to user(mm)	5
	SAR exclusion threshold	5.33
	SAR testing required?	YES
Back Side	Antenna to user(mm)	5
	SAR exclusion threshold	5.33
	SAR testing required?	YES
Top Side	Antenna to user(mm)	5
	SAR exclusion threshold	5.33
	SAR testing required?	YES
Exposure Positions	Tune-up Maximum power of LTE Band 41	
	14.50dBm	
Front Side	Antenna to user(mm)	5
	SAR exclusion threshold	9.08
	SAR testing required?	YES
Back Side	Antenna to user(mm)	5
	SAR exclusion threshold	9.08
	SAR testing required?	YES
Top Side	Antenna to user(mm)	5
	SAR exclusion threshold	9.08
	SAR testing required?	YES

NOTE: Refer to section 4.3.1 of KDB 447498 D01.

Positions for SAR tests		
Test separation distances > 50 mm		
Exposure Positions	Tune-up Maximum power of WLAN 2.4G	
	14.00 dBm	25.12 mV
Left Side	Antenna to user(mm)	124
	SAR exclusion threshold(mW)	836
	SAR testing required?	NO
Right Side	Antenna to user(mm)	64
	SAR exclusion threshold(mW)	236
	SAR testing required?	NO
Top Side	Antenna to user(mm)	151
	SAR exclusion threshold(mW)	1106
	SAR testing required?	NO
Exposure Positions	Tune-up Maximum power of WLAN 5.2G	
	7.00 dBm	5.01 mV
Left Side	Antenna to user(mm)	124
	SAR exclusion threshold(mW)	806
	SAR testing required?	NO
Right Side	Antenna to user(mm)	64
	SAR exclusion threshold(mW)	206
	SAR testing required?	NO
Top Side	Antenna to user(mm)	151
	SAR exclusion threshold(mW)	1076
	SAR testing required?	NO
Exposure Positions	Tune-up Maximum power of WLAN 5.8G	
	8.50 dBm	7.08 mV
Left Side	Antenna to user(mm)	124
	SAR exclusion threshold(mW)	802
	SAR testing required?	NO
Right Side	Antenna to user(mm)	64
	SAR exclusion threshold(mW)	202
	SAR testing required?	NO
Top Side	Antenna to user(mm)	151
	SAR exclusion threshold(mW)	1072
	SAR testing required?	NO
Exposure Positions	Tune-up Maximum power of GSM 850	
	26.50 dBm	446.68 mV
Left Side	Antenna to user(mm)	84
	SAR exclusion threshold(mW)	353

	SAR testing required?	NO
Right Side	Antenna to user(mm)	136
	SAR exclusion threshold(mW)	643
	SAR testing required?	NO
Bottom Side	Antenna to user(mm)	148
	SAR exclusion threshold(mW)	710
	SAR testing required?	NO
Exposure Positions	Tune-up Maximum power of GSM 1900	
	26.00 dBm	398.11 mV
Left Side	Antenna to user(mm)	84
	SAR exclusion threshold(mW)	449
	SAR testing required?	NO
Right Side	Antenna to user(mm)	136
	SAR exclusion threshold(mW)	969
	SAR testing required?	NO
Bottom Side	Antenna to user(mm)	148
	SAR exclusion threshold(mW)	1089
	SAR testing required?	NO
Exposure Positions	Tune-up Maximum power of WCDMA Band 2	
	22.50 dBm	177.83 mV
Left Side	Antenna to user(mm)	84
	SAR exclusion threshold(mW)	449
	SAR testing required?	NO
Right Side	Antenna to user(mm)	136
	SAR exclusion threshold(mW)	969
	SAR testing required?	NO
Bottom Side	Antenna to user(mm)	148
	SAR exclusion threshold(mW)	1089
	SAR testing required?	NO
Exposure Positions	Tune-up Maximum power of WCDMA Band 4	
	22.50 dBm	177.83 mV
Left Side	Antenna to user(mm)	84
	SAR exclusion threshold(mW)	462
	SAR testing required?	NO
Right Side	Antenna to user(mm)	136
	SAR exclusion threshold(mW)	982
	SAR testing required?	NO
Bottom Side	Antenna to user(mm)	148
	SAR exclusion threshold(mW)	1102
	SAR testing required?	NO

Exposure Positions	Tune-up Maximum power of WCDMA Band 5	
	22.50 dBm	177.83 mV
Left Side	Antenna to user(mm)	84
	SAR exclusion threshold(mW)	353
	SAR testing required?	NO
Right Side	Antenna to user(mm)	136
	SAR exclusion threshold(mW)	643
	SAR testing required?	NO
Bottom Side	Antenna to user(mm)	148
	SAR exclusion threshold(mW)	710
	SAR testing required?	NO
Exposure Positions	Tune-up Maximum power of LTE Band 2	
	17.00 dBm	50.12 mV
Left Side	Antenna to user(mm)	84
	SAR exclusion threshold(mW)	999
	SAR testing required?	NO
Right Side	Antenna to user(mm)	136
	SAR exclusion threshold(mW)	1446
	SAR testing required?	NO
Bottom Side	Antenna to user(mm)	148
	SAR exclusion threshold(mW)	732
	SAR testing required?	NO
Exposure Positions	Tune-up Maximum power of LTE Band 4	
	16.50 dBm	44.67 mV
Left Side	Antenna to user(mm)	84
	SAR exclusion threshold(mW)	999
	SAR testing required?	NO
Right Side	Antenna to user(mm)	136
	SAR exclusion threshold(mW)	1446
	SAR testing required?	NO
Bottom Side	Antenna to user(mm)	148
	SAR exclusion threshold(mW)	732
	SAR testing required?	NO
Exposure Positions	Tune-up Maximum power of LTE Band 5	
	14.50 dBm	28.18 mV
Left Side	Antenna to user(mm)	84
	SAR exclusion threshold(mW)	353
	SAR testing required?	NO
Right Side	Antenna to user(mm)	136
	SAR exclusion threshold(mW)	643

	SAR testing required?	NO
Bottom Side	Antenna to user(mm)	148
	SAR exclusion threshold(mW)	710
	SAR testing required?	NO
Exposure Positions	Tune-up Maximum power of LTE Band 7	
	15.50 dBm	35.48 mV
Left Side	Antenna to user(mm)	84
	SAR exclusion threshold(mW)	436
	SAR testing required?	NO
Right Side	Antenna to user(mm)	136
	SAR exclusion threshold(mW)	956
	SAR testing required?	NO
Bottom Side	Antenna to user(mm)	148
	SAR exclusion threshold(mW)	1076
	SAR testing required?	NO
Exposure Positions	Tune-up Maximum power of LTE Band 12	
	15.00 dBm	31.62 mV
Left Side	Antenna to user(mm)	84
	SAR exclusion threshold(mW)	564
	SAR testing required?	NO
Right Side	Antenna to user(mm)	136
	SAR exclusion threshold(mW)	1084
	SAR testing required?	NO
Bottom Side	Antenna to user(mm)	148
	SAR exclusion threshold(mW)	1204
	SAR testing required?	NO
Exposure Positions	Tune-up Maximum power of LTE Band 17	
	15.00 dBm	31.62 mV
Left Side	Antenna to user(mm)	84
	SAR exclusion threshold(mW)	564
	SAR testing required?	NO
Right Side	Antenna to user(mm)	136
	SAR exclusion threshold(mW)	1084
	SAR testing required?	NO
Bottom Side	Antenna to user(mm)	148
	SAR exclusion threshold(mW)	1204
	SAR testing required?	NO
Exposure Positions	Tune-up Maximum power of LTE Band 41	
	14.50 dBm	28.18 mV
Left Side	Antenna to user(mm)	84

	SAR exclusion threshold(mW)	436
	SAR testing required?	NO
Right Side	Antenna to user(mm)	136
	SAR exclusion threshold(mW)	956
	SAR testing required?	NO
Bottom Side	Antenna to user(mm)	148
	SAR exclusion threshold(mW)	1076
	SAR testing required?	NO

NOTE: Refer to section 4.3.1 of KDB 447498 D01.

9. Stand-alone SAR test exclusion

Refer to FCC KDB 447498D01, the 1-g SAR and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f_{(\text{GHz})}}]$
 ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where:

- $f_{(\text{GHz})}$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

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

Mode	P_{max} (dBm)	P_{max} (mW)	Distance (mm)	f (GHz)	Calculation Result	SAR Exclusion threshold	SAR test exclusion
Bluetooth	3.00	1.995	5	2.480	0.628	3	Yes

NOTE: Standalone SAR test exclusion for Bluetooth.

When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f_{(\text{GHz})}}/x]$ W/kg for test separation distances ≤ 50 mm, where $x = 7.5$ for 1-g SAR and $x = 18.75$ for 10-g SAR.

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

Mode	Position	P_{max} (dBm)	P_{max} (mW)	Distance (mm)	f (GHz)	x	Estimated SAR (W/Kg)
Bluetooth	Body	3	1.995	5	2.48	7.5	0.084
Bluetooth	Hotspot	3	1.995	5	2.48	7.5	0.084

NOTE: Estimated SAR calculation for Bluetooth

10. SAR Results

10.1. SAR measurement results

10.1.1. SAR measurement Result of GSM850

Test Position of Body-Worn with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Front Side	189/836.4	GPRS(GMSK 3TS)	0.220	0.110	3.61	25.97	26.50	0.249	2024/10/10	
Back Side	189/836.4	GPRS(GMSK 3TS)	0.185	0.096	-3.01	25.97	26.50	0.209	2024/10/10	

NOTE: Body-Worn SAR test results of GSM850

Test Position of Hotspot with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	189/836.4	GPRS(GMSK 3TS)	0.220	0.110	3.61	25.97	26.50	0.249	2024/10/10	
Back Side	189/836.4	GPRS(GMSK 3TS)	0.185	0.096	-3.01	25.97	26.50	0.209	2024/10/10	
Left Side	189/836.4	GPRS(GMSK 3TS)	0.044	0.023	-0.32	25.97	26.50	0.050	2024/10/10	
Right Side	189/836.4	GPRS(GMSK 3TS)	0.021	0.011	-3.00	25.97	26.50	0.024	2024/10/10	
Top Side	189/836.4	GPRS(GMSK 3TS)	0.345	0.163	-0.07	25.97	26.50	0.390	2024/10/10	1#

NOTE: Hotspot SAR test results of GSM850

10.1.2. SAR measurement Result of GSM1900

Test Position of Body-Worn with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Front Side	661/1880	GPRS(GMSK 3TS)	0.656	0.238	3.14	25.67	26.00	0.708	2024/10/12	
Back Side	661/1880	GPRS(GMSK 3TS)	0.999	0.512	4.35	25.67	26.00	1.078	2024/10/12	2#

[illegible]

Omm										
Front Side	9400/1880	RMC12.2K	0.135	0.047	-3.88	22.10	22.50	0.148	2024/10/12	
Back Side	9400/1880	RMC12.2K	0.170	0.060	-1.15	22.10	22.50	0.186	2024/10/12	
Left Side	9400/1880	RMC12.2K	0.017	0.015	0.98	22.10	22.50	0.019	2024/10/12	
Right Side	9400/1880	RMC12.2K	0.011	0.009	3.02	22.10	22.50	0.012	2024/10/12	
Top Side	9400/1880	RMC12.2K	0.239	0.097	3.11	22.10	22.50	0.262	2024/10/12	3#

NOTE: Hotspot SAR test results of WCDMA Band 2

10.1.4. SAR measurement Result of WCDMA Band 4

Test Position of Body-Worn with Omm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Front Side	1413/1732.6	RMC12.2K	0.149	0.065	-1.26	21.84	22.50	0.173	2024/9/13	
Back Side	1413/1732.6	RMC12.2K	0.188	0.086	0.56	21.84	22.50	0.219	2024/9/13	

NOTE: Body-Worn SAR test results of WCDMA Band 4

Test Position of Hotspot with Omm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	1413/1732.6	RMC12.2K	0.149	0.065	-1.26	21.84	22.50	0.173	2024/9/13	
Back Side	1413/1732.6	RMC12.2K	0.188	0.086	0.56	21.84	22.50	0.219	2024/9/13	
Left Side	1413/1732.6	RMC12.2K	0.023	0.010	1.60	21.84	22.50	0.027	2024/9/13	
Right Side	1413/1732.6	RMC12.2K	0.011	0.009	3.09	21.84	22.50	0.013	2024/9/13	
Top Side	1413/1732.6	RMC12.2K	0.291	0.125	-0.69	21.84	22.50	0.339	2024/9/13	4#

NOTE: Hotspot SAR test results of WCDMA Band 4

10.1.5. SAR measurement Result of WCDMA Band 5

Test Position of Body-Worn with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Front Side	4182/836.4	RMC12.2K	0.026	0.018	2.20	22.35	22.50	0.027	2024/10/10	
Back Side	4182/836.4	RMC12.2K	0.020	0.012	3.60	22.35	22.50	0.021	2024/10/10	

NOTE: Body-Worn SAR test results of WCDMA Band 5

Test Position of Hotspot with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	4182/836.4	RMC12.2K	0.026	0.018	2.20	22.35	22.50	0.027	2024/10/10	
Back Side	4182/836.4	RMC12.2K	0.020	0.012	3.60	22.35	22.50	0.021	2024/10/10	
Left Side	4182/836.4	RMC12.2K	0.008	0.006	0.97	22.35	22.50	0.008	2024/10/10	
Right Side	4182/836.4	RMC12.2K	0.004	0.002	0.53	22.35	22.50	0.004	2024/10/10	
Top Side	4182/836.4	RMC12.2K	0.050	0.027	4.39	22.35	22.50	0.052	2024/10/10	5#

NOTE: Hotspot SAR test results of WCDMA Band 5

10.1.6. SAR measurement Result of LTE Band 2

Test Position of Body-Worn with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	18900/1880	20M QPSK(1,0)	0.185	0.071	-0.03	15.80	17.00	0.196	2024/10/12	
Back Side	18900/1880	20M QPSK(1,0)	0.251	0.096	-0.65	15.80	17.00	0.331	2024/10/12	
50%RB										
Front Side	18900/1880	20M QPSK(50,49)	0.165	0.062	3.36	14.28	15.50	0.219	2024/10/12	
Back Side	18900/1880	20M QPSK(50,49)	0.231	0.085	0.13	14.28	15.50	0.306	2024/10/12	

NOTE: Body-Worn SAR test results of LTE Band 2

Test	Test channel	Mode	SAR Value	Power	Conducted	Tune-up	Scaled	Date	Plot
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Position of Hotspot with 0mm	/Freq.		(W/kg)		Drift(%)	Power (dBm)	Power (dBm)	SAR 1-g (W/Kg)		
			1-g	10-g						
1RB										
Front Side	18900/1880	20M QPSK(1,0)	0.185	0.071	-0.03	15.80	17.00	0.196	2024/10/12	
Back Side	18900/1880	20M QPSK(1,0)	0.251	0.096	-0.65	15.80	17.00	0.331	2024/10/12	
Left Side	18900/1880	20M QPSK(1,0)	0.027	0.010	-2.49	15.80	17.00	0.036	2024/10/12	
Right Side	18900/1880	20M QPSK(1,0)	0.013	0.011	0.09	15.80	17.00	0.017	2024/10/12	
Top Side	18900/1880	20M QPSK(1,0)	0.386	0.154	2.81	15.80	17.00	0.509	2024/10/12	9#
50%RB										
Front Side	18900/1880	20M QPSK(50,49)	0.165	0.062	3.36	14.28	15.50	0.219	2024/10/12	
Back Side	18900/1880	20M QPSK(50,49)	0.231	0.085	0.13	14.28	15.50	0.306	2024/10/12	
Left Side	18900/1880	20M QPSK(50,49)	0.024	0.009	3.33	14.28	15.50	0.032	2024/10/12	
Right Side	18900/1880	20M QPSK(50,49)	0.011	0.01	-4.63	14.28	15.50	0.015	2024/10/12	
Top Side	18900/1880	20M QPSK(50,49)	0.334	0.141	0.2	14.28	15.50	0.442	2024/10/12	

NOTE: Hotspot SAR test results of LTE Band 2

10.1.7. SAR measurement Result of LTE Band 4

Test Position of Body-Worn with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	20175/1732.5	20M QPSK(1,0)	0.185	0.085	0.24	15.27	16.50	0.246	2024/9/13	
Back Side	20175/1732.5	20M QPSK(1,0)	0.236	0.110	-2.51	15.27	16.50	0.313	2024/9/13	
50%RB										

Front Side	20175/1732.5	20M QPSK(50,49)	0.174	0.073	4.24	14.10	15.00	0.186	2024/9/13	
Back Side	20175/1732.5	20M QPSK(50,49)	0.219	0.097	-1.6	14.10	15.00	0.269	2024/9/13	

NOTE: Body-Worn SAR test results of LTE Band 4

Test Position of Hotspot with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	20175/1732.5	20M QPSK(1,0)	0.185	0.085	0.24	15.27	16.50	0.246	2024/9/13	
Back Side	20175/1732.5	20M QPSK(1,0)	0.236	0.110	-2.51	15.27	16.50	0.313	2024/9/13	
Left Side	20175/1732.5	20M QPSK(1,0)	0.025	0.012	2.81	15.27	16.50	0.033	2024/9/13	
Right Side	20175/1732.5	20M QPSK(1,0)	0.013	0.011	0.17	15.27	16.50	0.017	2024/9/13	
Top Side	20175/1732.5	20M QPSK(1,0)	0.355	0.152	0.46	15.27	16.50	0.471	2024/9/13	10#
50%RB										
Front Side	20175/1732.5	20M QPSK(50,49)	0.174	0.073	4.24	14.10	15.00	0.186	2024/9/13	
Back Side	20175/1732.5	20M QPSK(50,49)	0.219	0.097	-1.6	14.10	15.00	0.269	2024/9/13	
Left Side	20175/1732.5	20M QPSK(50,49)	0.023	0.01	0.55	14.10	15.00	0.028	2024/9/13	
Right Side	20175/1732.5	20M QPSK(50,49)	0.011	0.01	-2.2	14.10	15.00	0.014	2024/9/13	
Top Side	20175/1732.5	20M QPSK(50,49)	0.309	0.136	-3.52	14.10	15.00	0.380	2024/9/13	

NOTE: Hotspot SAR test results of LTE Band 4

10.1.8. SAR measurement Result of LTE Band 5

Test Position of Body-Worn with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	20525/836.5	10M	0.048	0.027	3.20	13.84	14.50	0.056	2024/10/10	

		QPSK(1,24)								
Back Side	20525/836.5	10M QPSK(1,24)	0.037	0.021	-2.48	13.84	14.50	0.043	2024/10/10	
50%RB										
Front Side	20525/836.5	10M QPSK(25,24)	0.044	0.023	1.02	12.91	13.50	0.050	2024/10/10	
Back Side	20525/836.5	10M QPSK(25,24)	0.032	0.019	-0.1	12.91	13.50	0.037	2024/10/10	

NOTE: Body-Worn SAR test results of LTE Band 5

Test Position of Hotspot with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	20525/836.5	10M QPSK(1,24)	0.048	0.027	3.20	13.84	14.50	0.056	2024/10/10	
Back Side	20525/836.5	10M QPSK(1,24)	0.037	0.021	-2.48	13.84	14.50	0.043	2024/10/10	
Left Side	20525/836.5	10M QPSK(1,24)	0.014	0.009	0.79	13.84	14.50	0.016	2024/10/10	
Right Side	20525/836.5	10M QPSK(1,24)	0.010	0.005	3.82	13.84	14.50	0.012	2024/10/10	
Top Side	20525/836.5	10M QPSK(1,24)	0.092	0.046	1.83	13.84	14.50	0.107	2024/10/10	11#
50%RB										
Front Side	20525/836.5	10M QPSK(25,24)	0.044	0.023	1.02	12.91	13.50	0.050	2024/10/10	
Back Side	20525/836.5	10M QPSK(25,24)	0.032	0.019	-0.1	12.91	13.50	0.037	2024/10/10	
Left Side	20525/836.5	10M QPSK(25,24)	0.012	0.008	-2.96	12.91	13.50	0.014	2024/10/10	
Right Side	20525/836.5	10M QPSK(25,24)	0.009	0.005	-4.28	12.91	13.50	0.010	2024/10/10	
Top Side	20525/836.5	10M QPSK(25,24)	0.079	0.04	4.78	12.91	13.50	0.090	2024/10/10	

NOTE: Hotspot SAR test results of LTE Band 5

10.1.9. SAR measurement Result of LTE Band 7

Test Position of Body-Worn with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	21100/2535	20M QPSK(1,0)	0.249	0.079	0.16	14.90	15.50	0.286	2024/10/13	
Back Side	21100/2535	20M QPSK(1,0)	0.560	0.179	-3.56	14.90	15.50	0.643	2024/10/13	
50%RB										
Front Side	21100/2535	20M QPSK(50,0)	0.234	0.071	-0.52	13.54	14.00	0.260	2024/10/13	
Back Side	21100/2535	20M QPSK(50,0)	0.527	0.16	0.64	13.54	14.00	0.586	2024/10/13	

NOTE: Body-Worn SAR test results of LTE Band 7

Test Position of Hotspot with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	21100/2535	20M QPSK(1,0)	0.249	0.079	0.16	14.90	15.50	0.286	2024/10/13	
Back Side	21100/2535	20M QPSK(1,0)	0.560	0.179	-3.56	14.90	15.50	0.643	2024/10/13	
Left Side	21100/2535	20M QPSK(1,0)	0.030	0.009	-3.76	14.90	15.50	0.034	2024/10/13	
Right Side	21100/2535	20M QPSK(1,0)	0.058	0.018	2.11	14.90	15.50	0.067	2024/10/13	
Top Side	21100/2535	20M QPSK(1,0)	0.624	0.201	1.09	14.90	15.50	0.716	2024/10/13	12#
50%RB										
Front Side	21100/2535	20M QPSK(50,0)	0.234	0.071	-0.52	13.54	14.00	0.260	2024/10/13	
Back Side	21100/2535	20M QPSK(50,0)	0.527	0.16	0.64	13.54	14.00	0.586	2024/10/13	
Left	21100/2535	20M	0.026	0.008	0.2	13.54	14.00	0.029	2024/10/13	

Side		QPSK(50,0)								
Right Side	21100/2535	20M QPSK(50,0)	0.049	0.017	-2.25	13.54	14.00	0.054	2024/10/13	
Top Side	21100/2535	20M QPSK(50,0)	0.546	0.19	-3.66	13.54	14.00	0.607	2024/10/13	

NOTE: Hotspot SAR test results of LTE Band 7

10.1.10. SAR measurement Result of LTE Band 12

Test Position of Body-Worn with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	23095/707.5	10M QPSK(1,24)	0.033	0.018	1.00	14.50	15.00	0.037	2024/10/08	
Back Side	23095/707.5	10M QPSK(1,24)	0.030	0.015	0.50	14.50	15.00	0.034	2024/10/08	
50%RB										
Back Side	23095/707.5	10M QPSK(25,24)	0.031	0.016	-4.7	13.12	13.50	0.034	2024/10/08	
Front Side	23095/707.5	10M QPSK(25,24)	0.026	0.014	1.22	13.12	13.50	0.028	2024/10/08	

NOTE: Body-Worn SAR test results of LTE Band 12

Test Position of Hotspot with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	23095/707.5	10M QPSK(1,24)	0.033	0.018	1.00	14.50	15.00	0.037	2024/10/08	
Back Side	23095/707.5	10M QPSK(1,24)	0.030	0.015	0.50	14.50	15.00	0.034	2024/10/08	
Left Side	23095/707.5	10M QPSK(1,24)	0.019	0.014	0.09	14.50	15.00	0.021	2024/10/08	
Right Side	23095/707.5	10M QPSK(1,24)	0.010	0.005	-3.53	14.50	15.00	0.011	2024/10/08	
Top	23095/707.5	10M	0.037	0.020	-3.77	14.50	15.00	0.042	2024/10/08	13#

Side		QPSK(1,24)								
50%RB										
Back Side	23095/707.5	10M QPSK(25,24)	0.031	0.016	-4.7	13.12	13.50	0.034	2024/10/08	
Front Side	23095/707.5	10M QPSK(25,24)	0.026	0.014	1.22	13.12	13.50	0.028	2024/10/08	
Left Side	23095/707.5	10M QPSK(25,24)	0.017	0.012	4	13.12	13.50	0.019	2024/10/08	
Right Side	23095/707.5	10M QPSK(25,24)	0.009	0.005	-4.53	13.12	13.50	0.010	2024/10/08	
Top Side	23095/707.5	10M QPSK(25,24)	0.033	0.017	-1.03	13.12	13.50	0.036	2024/10/08	

NOTE: Hotspot SAR test results of LTE Band 12

10.1.11. SAR measurement Result of LTE Band 17

Test Position of Body-Worn with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	23790/710	10M QPSK(1,24)	0.041	0.022	-0.01	14.96	15.00	0.041	2024/10/08	
Back Side	23790/710	10M QPSK(1,24)	0.033	0.016	1.20	14.96	15.00	0.033	2024/10/08	
50%RB										
Back Side	23790/710	10M QPSK(25,12)	0.037	0.019	-0.06	13.28	13.50	0.039	2024/10/08	
Front Side	23790/710	10M QPSK(25,12)	0.029	0.014	0.77	13.28	13.50	0.031	2024/10/08	

NOTE: Body-Worn SAR test results of LTE Band 17

Test Position of Hotspot with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	23790/710	10M QPSK(1,24)	0.041	0.022	-0.01	14.96	15.00	0.041	2024/10/08	

Back Side	23790/710	10M QPSK(1,24)	0.033	0.016	1.20	14.96	15.00	0.033	2024/10/08	
Left Side	23790/710	10M QPSK(1,24)	0.016	0.014	2.48	14.96	15.00	0.016	2024/10/08	
Right Side	23790/710	10M QPSK(1,24)	0.006	0.004	-3.19	14.96	15.00	0.006	2024/10/08	
Top Side	23790/710	10M QPSK(1,24)	0.049	0.026	3.20	14.96	15.00	0.049	2024/10/08	14#
50%RB										
Back Side	23790/710	10M QPSK(25,12)	0.037	0.019	-0.06	13.28	13.50	0.039	2024/10/08	
Front Side	23790/710	10M QPSK(25,12)	0.029	0.014	0.77	13.28	13.50	0.031	2024/10/08	
Left Side	23790/710	10M QPSK(25,12)	0.015	0.013	2.7	13.28	13.50	0.016	2024/10/08	
Right Side	23790/710	10M QPSK(25,12)	0.006	0.003	-4.37	13.28	13.50	0.006	2024/10/08	
Top Side	23790/710	10M QPSK(25,12)	0.046	0.025	-4.69	13.28	13.50	0.048	2024/10/08	

NOTE: Hotspot SAR test results of LTE Band 17

10.1.12. SAR measurement Result of LTE Band 41

Test Position of Body-Worn with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	40465/2577.5	20M QPSK(1,0)	0.091	0.036	-2.37	14.05	14.50	0.101	2024/10/13	
Front Side	40815/2612.5	20M QPSK(1,0)	0.081	0.029	0.72	14.21	14.50	0.087	2024/10/13	
Back Side	40465/2577.5	20M QPSK(1,0)	0.174	0.061	-1.43	14.05	14.50	0.193	2024/10/13	
Back Side	40815/2612.5	20M QPSK(1,0)	0.157	0.059	-2.74	14.21	14.50	0.168	2024/10/13	
50%RB										
Front Side	40465/2577.5	20M QPSK(50,24)	0.076	0.026	-0.27	13.36	14.00	0.088	2024/10/13	

Front Side	40815/2612.5	20M QPSK(50,49)	0.07	0.027	-3.65	13.63	14.00	0.076	2024/10/13	
Back Side	40465/2577.5	20M QPSK(50,24)	0.159	0.053	3.33	13.36	14.00	0.184	2024/10/13	
Back Side	40815/2612.5	20M QPSK(50,49)	0.144	0.055	3.67	13.63	14.00	0.157	2024/10/13	

NOTE: Body-Worn SAR test results of LTE Band 41

Test Position of Hotspot with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	40465/2577.5	20M QPSK(1,0)	0.091	0.036	-2.37	14.05	14.50	0.101	2024/10/13	
Front Side	40815/2612.5	20M QPSK(1,0)	0.081	0.029	0.72	14.21	14.50	0.087	2024/10/13	
Back Side	40465/2577.5	20M QPSK(1,0)	0.174	0.061	-1.43	14.05	14.50	0.193	2024/10/13	
Back Side	40815/2612.5	20M QPSK(1,0)	0.157	0.059	-2.74	14.21	14.50	0.168	2024/10/13	
Left Side	40465/2577.5	20M QPSK(1,0)	0.013	0.009	-3.82	14.05	14.50	0.014	2024/10/13	
Left Side	40815/2612.5	20M QPSK(1,0)	0.009	0.006	3.59	14.21	14.50	0.010	2024/10/13	
Right Side	40465/2577.5	20M QPSK(1,0)	0.015	0.007	0.76	14.05	14.50	0.017	2024/10/13	
Right Side	40815/2612.5	20M QPSK(1,0)	0.026	0.011	-3.76	14.21	14.50	0.028	2024/10/13	
Top Side	40465/2577.5	20M QPSK(1,0)	0.224	0.117	2.7	14.05	14.50	0.248	2024/10/13	15#
Top Side	40815/2612.5	20M QPSK(1,0)	0.201	0.094	-3.08	14.21	14.50	0.215	2024/10/13	
50%RB										
Front Side	40465/2577.5	20M QPSK(50,24)	0.076	0.026	-0.27	13.36	14.00	0.088	2024/10/13	

Front Side	40815/2612.5	20M QPSK(50,49)	0.07	0.027	-3.65	13.63	14.00	0.076	2024/10/13	
Back Side	40465/2577.5	20M QPSK(50,24)	0.159	0.053	3.33	13.36	14.00	0.184	2024/10/13	
Back Side	40815/2612.5	20M QPSK(50,49)	0.144	0.055	3.67	13.63	14.00	0.157	2024/10/13	
Left Side	40465/2577.5	20M QPSK(50,24)	0.008	0.006	4.19	13.36	14.00	0.009	2024/10/13	
Left Side	40815/2612.5	20M QPSK(50,49)	0.008	0.005	-3.47	13.63	14.00	0.009	2024/10/13	
Right Side	40465/2577.5	20M QPSK(50,24)	0.024	0.01	-4.61	13.36	14.00	0.028	2024/10/13	
Right Side	40815/2612.5	20M QPSK(50,49)	0.021	0.009	2.34	13.63	14.00	0.023	2024/10/13	
Top Side	40465/2577.5	20M QPSK(50,24)	0.189	0.089	-0.06	13.36	14.00	0.219	2024/10/13	
Top Side	40815/2612.5	20M QPSK(50,49)	0.172	0.08	0.27	13.63	14.00	0.187	2024/10/13	

NOTE: Hotspot SAR test results of LTE Band 41

10.1.13. SAR measurement Result of WLAN 2.4G

Test Position of Body-Worn with 0mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	6/2437	802.11b	0.204	0.133	0.59	13.67	14.00	0.220	2024/9/16	8#
Back Side	6/2437	802.11b	0.187	0.113	-2.05	13.67	14.00	0.202	2024/9/16	

NOTE: Body-Worn SAR test results of WLAN 2.4G

Test Position of Hotspot with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	6/2437	802.11b	0.204	0.133	0.59	13.67	14.00	0.220	2024/9/16	8#
Back Side	6/2437	802.11b	0.187	0.113	-2.05	13.67	14.00	0.202	2024/9/16	
Right Side	6/2437	802.11b	0.031	0.013	3.97	13.67	14.00	0.033	2024/9/16	
Top Side	6/2437	802.11b	0.198	0.125	2.74	13.67	14.00	0.214	2024/9/16	

NOTE: Hotspot SAR test results of WLAN 2.4G

10.1.14. SAR measurement Result of WLAN 5.2G

Test Position of Body-Worn with 0mm	Test channel /Freq	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	48/5240	802.11a	0.210	0.145	-1.25	7.07	7.50	0.232	2024/10/05	
Back Side	48/5240	802.11a	0.312	0.217	0.56	7.07	7.50	0.344	2024/10/05	6#

NOTE: Body-Worn SAR test results of WLAN 5.2G

Test Position of Hotspot with 0mm	Test channel /Freq	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	48/5240	802.11a	0.210	0.145	-1.25	7.07	7.50	0.232	2024/10/05	
Back Side	48/5240	802.11a	0.312	0.217	0.56	7.07	7.50	0.344	2024/10/05	6#
Right Side	48/5240	802.11a	0.032	0.022	0.53	7.07	7.50	0.035	2024/10/05	
Top Side	48/5240	802.11a	0.090	0.060	-0.42	7.07	7.50	0.099	2024/10/05	

NOTE: Hotspot SAR test results of WLAN 5.2G

10.1.15. SAR measurement Result of WLAN 5.8G

Test Position of Body-Worn with 0mm	Test channel /Freq	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	149/5745	802.11a	0.212	0.081	-0.33	8.08	8.50	0.234	2024/10/07	
Back Side	149/5745	802.11a	0.224	0.098	3.65	8.08	8.50	0.247	2024/10/07	7#

NOTE: Body-Worn SAR test results of WLAN 5.8G

Test Position of Hotspot with 0mm	Test channel /Freq	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	149/5745	802.11a	0.212	0.081	-0.33	8.08	8.50	0.234	2024/10/07	
Back Side	149/5745	802.11a	0.224	0.098	3.65	8.08	8.50	0.247	2024/10/07	7#

Right Side	149/5745	802.11a	0.024	0.011	-1.65	8.08	8.50	0.026	2024/10/07
Top Side	149/5745	802.11a	0.189	0.074	2.96	8.08	8.50	0.208	2024/10/07

NOTE: Hotspot SAR test results of WLAN 5.8G

10.2. SAR Summation Scenario

Per KDB 447498 D01, simultaneous transmission SAR is compliant if,

- 1) Scalar SAR summation $< 1.6\text{W/kg}$.
- 2) $\text{SPLSR} = (\text{SAR}_1 + \text{SAR}_2)^{1.5} / (\text{min. separation distance, mm})$, and the peak separation distance is determined from the square root of $[(x_1 - x_2)^2 + (y_1 - y_2)^2 + (z_1 - z_2)^2]$, where (x_1, y_1, z_1) and (x_2, y_2, z_2) are the coordinates of the extrapolated peak SAR locations in the zoom scan. If $\text{SPLSR} \leq 0.04$, simultaneously transmission SAR measurement is not necessary.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		WWAN	DTS			
Body	Front Side	0.708	0.220	0.928	N/A	N/A
	Back Side	1.078	0.202	1.28	N/A	N/A
	Left Side	0.050	N/A	0.050	N/A	N/A
	Right Side	0.139	0.033	0.172	N/A	N/A
	Top Side	0.716	0.214	0.93	N/A	N/A
	Bottom Side	N/A	N/A	N/A	N/A	N/A

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		WWAN	NII			
Body	Front Side	0.708	0.234	0.942	N/A	N/A
	Back Side	1.078	0.344	1.422	N/A	N/A
	Left Side	0.050	N/A	0.050	N/A	N/A
	Right Side	0.139	0.035	0.174	N/A	N/A
	Top Side	0.716	0.208	0.924	N/A	N/A
	Bottom Side	N/A	N/A	N/A	N/A	N/A

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		WWAN	DSS			
Body	Front Side	0.708	0.084	0.792	N/A	N/A
	Back Side	1.078	0.084	1.162	N/A	N/A
	Left Side	0.050	0.084	0.134	N/A	N/A
	Right Side	0.139	0.084	0.223	N/A	N/A
	Top Side	0.716	0.084	0.800	N/A	N/A
	Bottom Side	N/A	0.084	0.084	N/A	N/A

11. Appendix A. Photo documentation

Refer to appendix Test Setup photo---SAR

12. Appendix B. System Check Plots

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MEASUREMENT 9 System Performance Check - 5200MHz
MEASUREMENT 10 System Performance Check - 5800MHz

MEASUREMENT 1

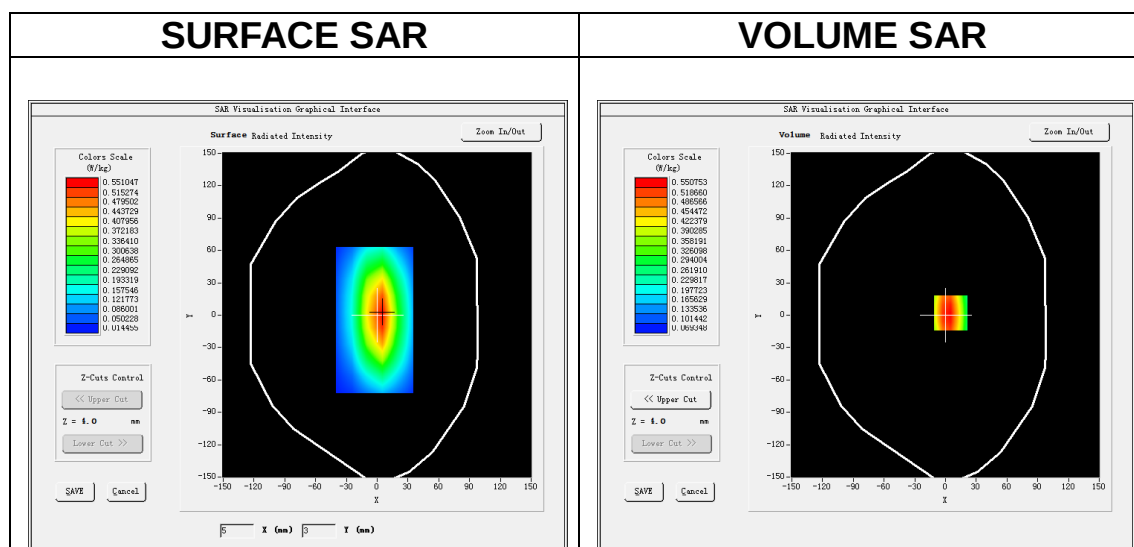
Date of measurement: 8/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Dipole</u>
<u>Band</u>	<u>CW750</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>CW (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.42</u>

B. SAR Measurement Results

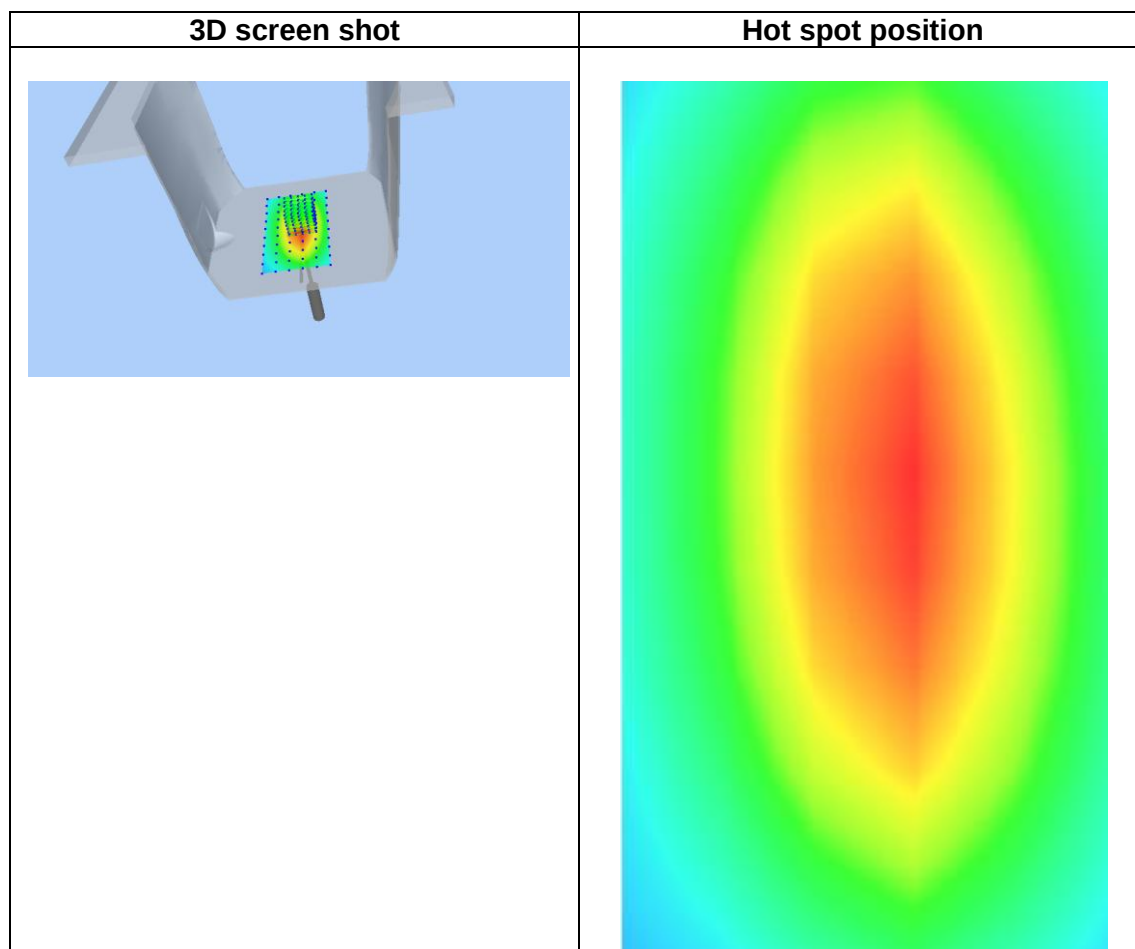
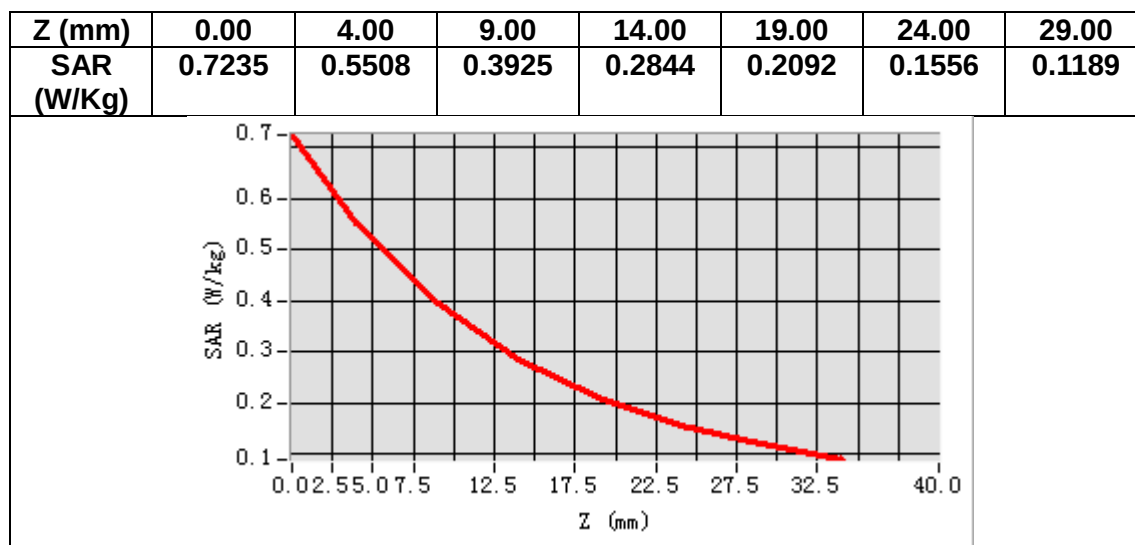
Frequency (MHz)	750.000000
Relative permittivity (real part)	40.424361
Relative permittivity (imaginary part)	21.432888
Conductivity (S/m)	0.893037
Variation (%)	-0.180000



Maximum location: X=5.00, Y=2.00

SAR Peak: 0.74 W/kg

SAR 10g (W/Kg)	0.363533
SAR 1g (W/Kg)	0.539981



MEASUREMENT 2

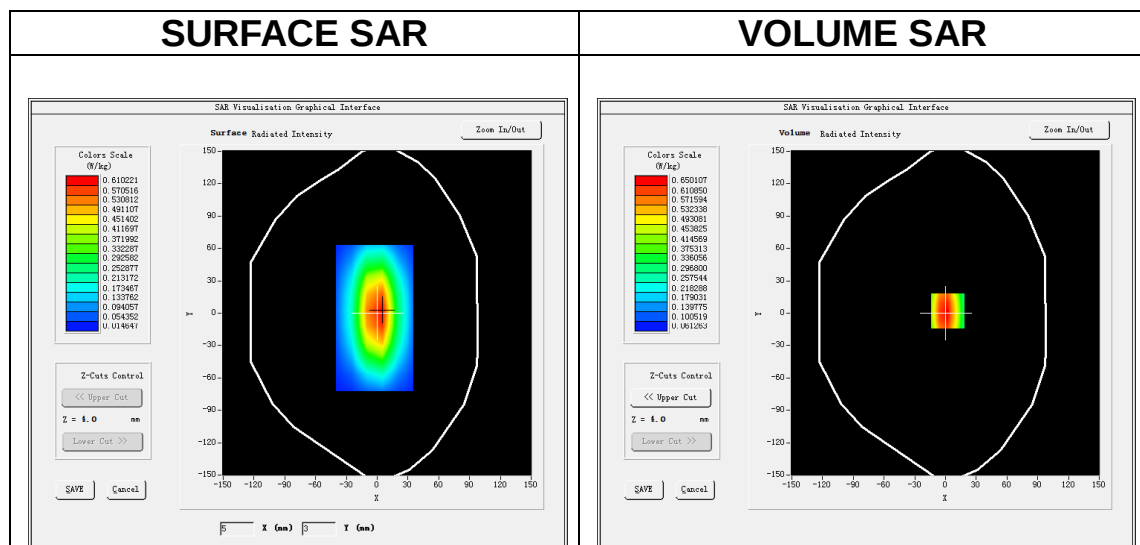
Date of measurement: 10/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Dipole</u>
<u>Band</u>	<u>CW835</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>CW (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.34</u>

B. SAR Measurement Results

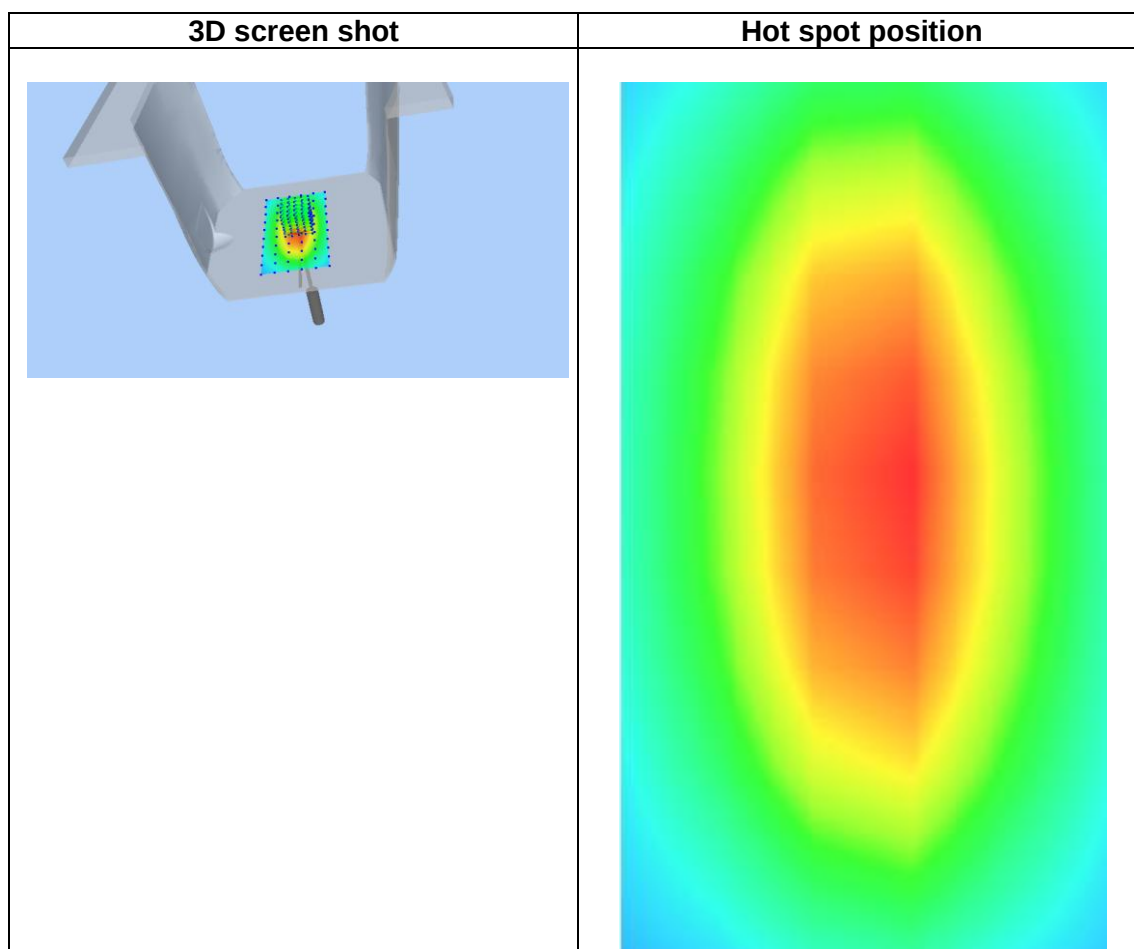
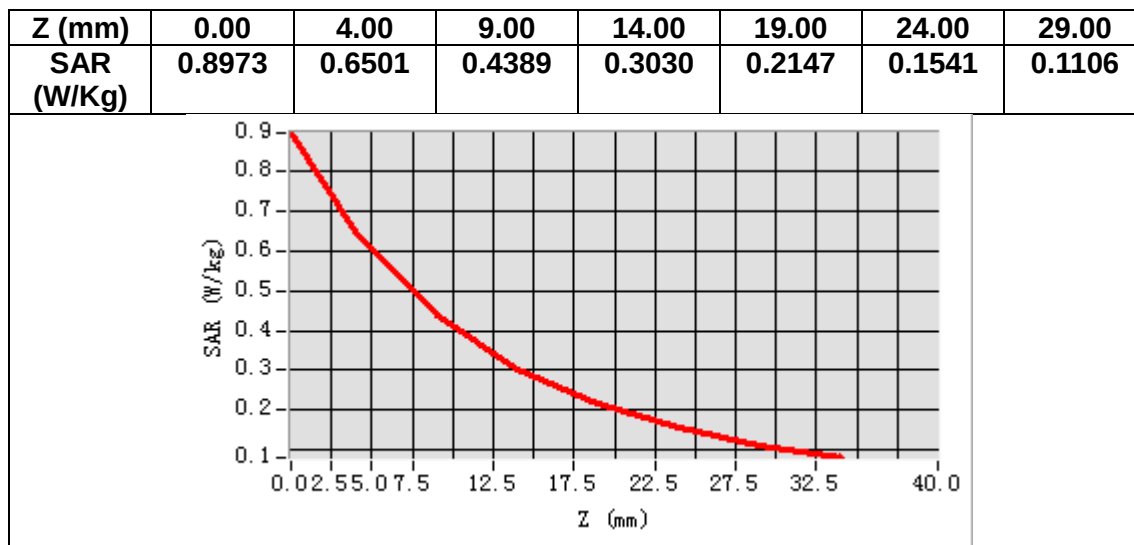
Frequency (MHz)	835.000000
Relative permittivity (real part)	42.090089
Relative permittivity (imaginary part)	19.822689
Conductivity (S/m)	0.919553
Variation (%)	-0.290000



Maximum location: X=2.00, Y=2.00

SAR Peak: 0.92 W/kg

SAR 10g (W/Kg)	0.407878
SAR 1g (W/Kg)	0.638460



MEASUREMENT 3

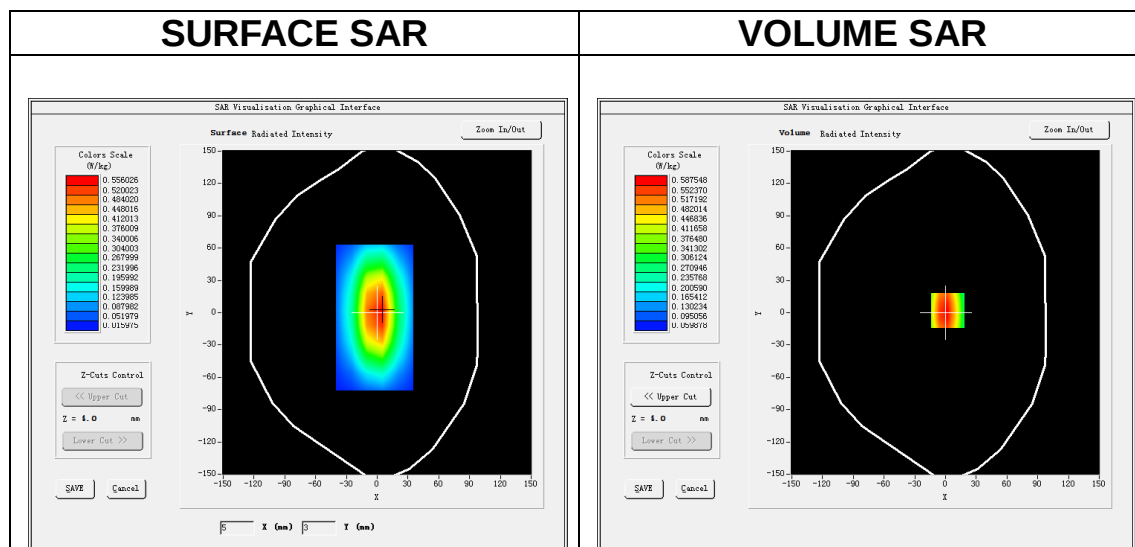
Date of measurement: 15/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Dipole</u>
<u>Band</u>	<u>CW835</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>CW (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.34</u>

B. SAR Measurement Results

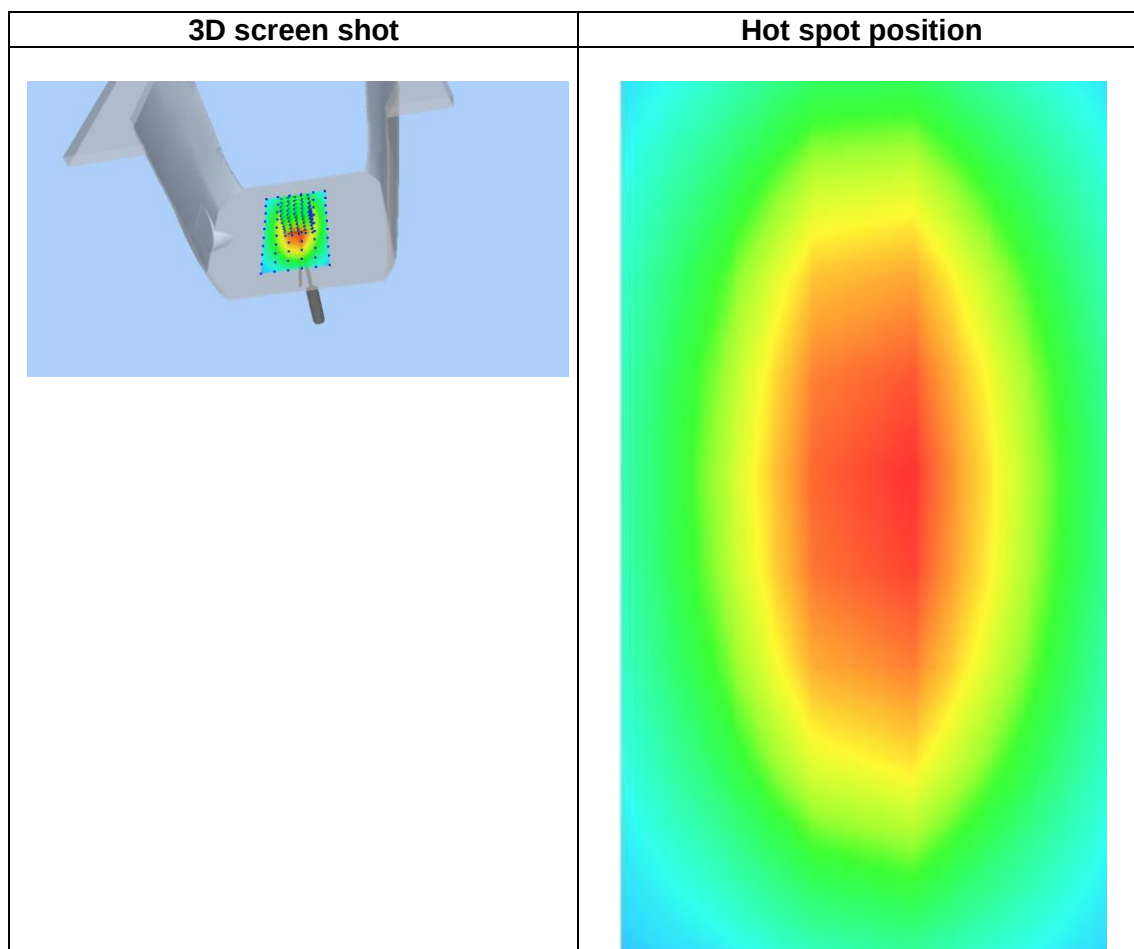
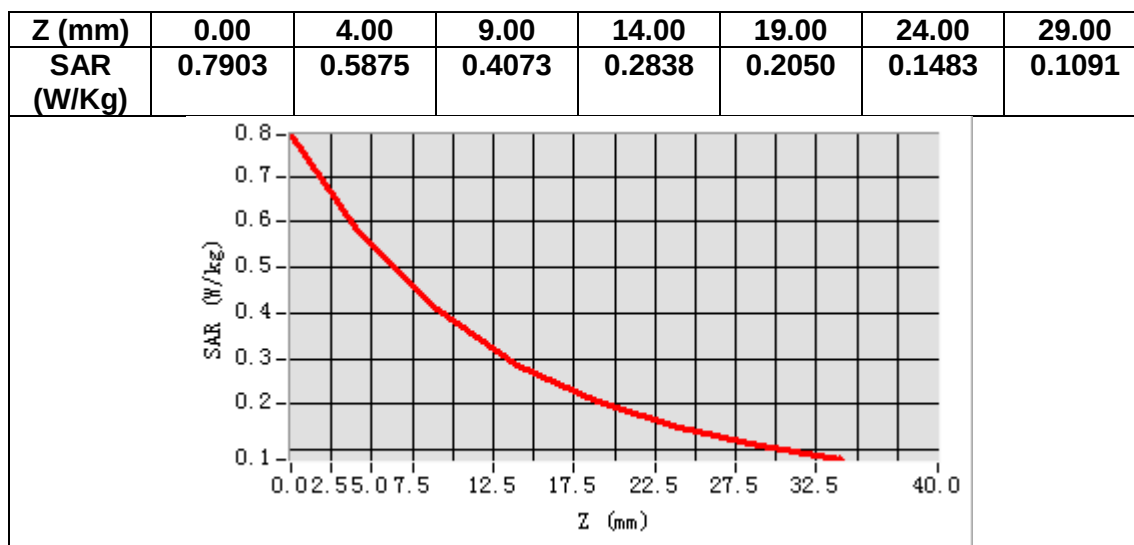
Frequency (MHz)	835.000000
Relative permittivity (real part)	41.962568
Relative permittivity (imaginary part)	19.705231
Conductivity (S/m)	0.914104
Variation (%)	-0.910000



Maximum location: X=2.00, Y=2.00

SAR Peak: 0.80 W/kg

SAR 10g (W/Kg)	0.376230
SAR 1g (W/Kg)	0.574431



MEASUREMENT 4

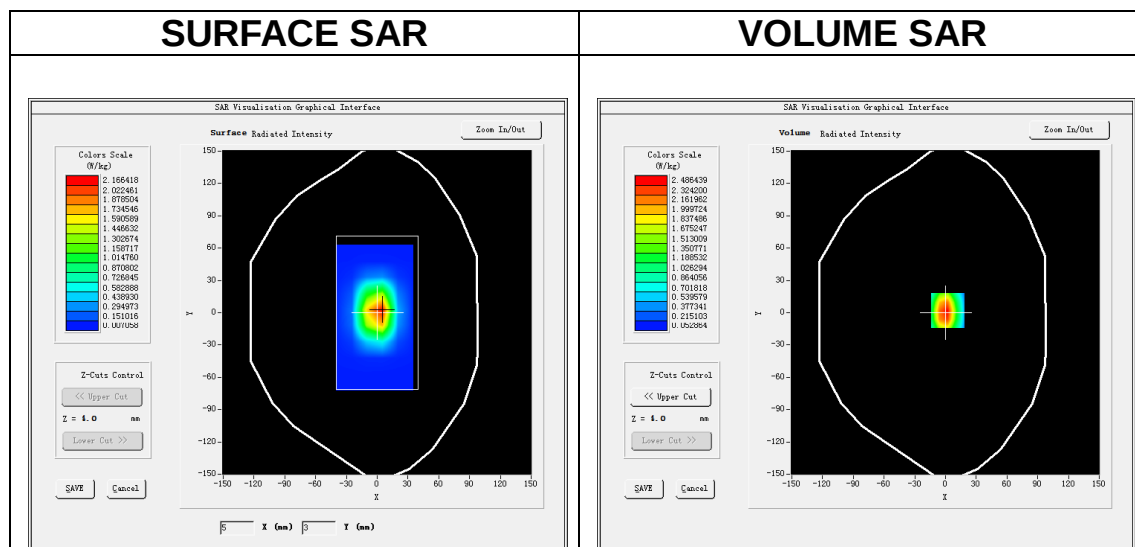
Date of measurement: 13/9/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Dipole</u>
<u>Band</u>	<u>CW1800</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>CW (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.45</u>

B. SAR Measurement Results

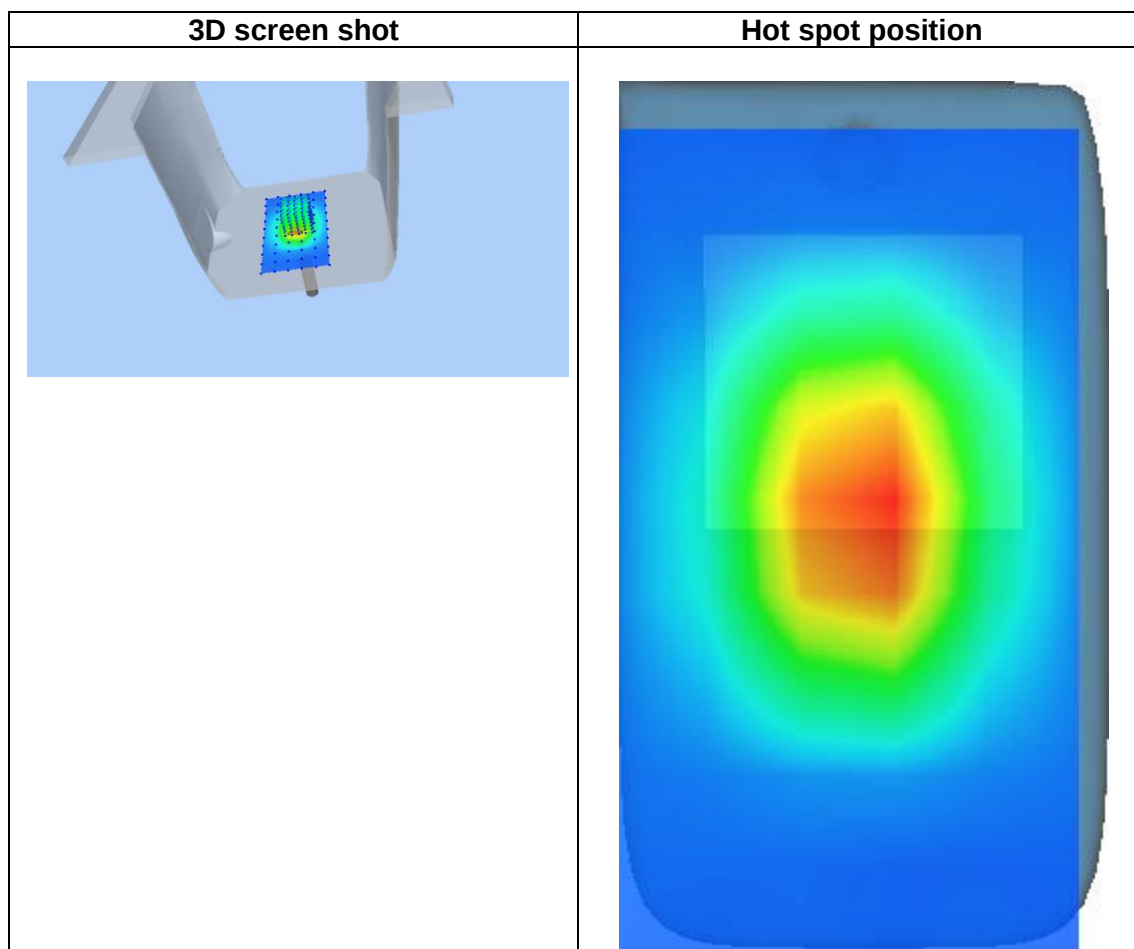
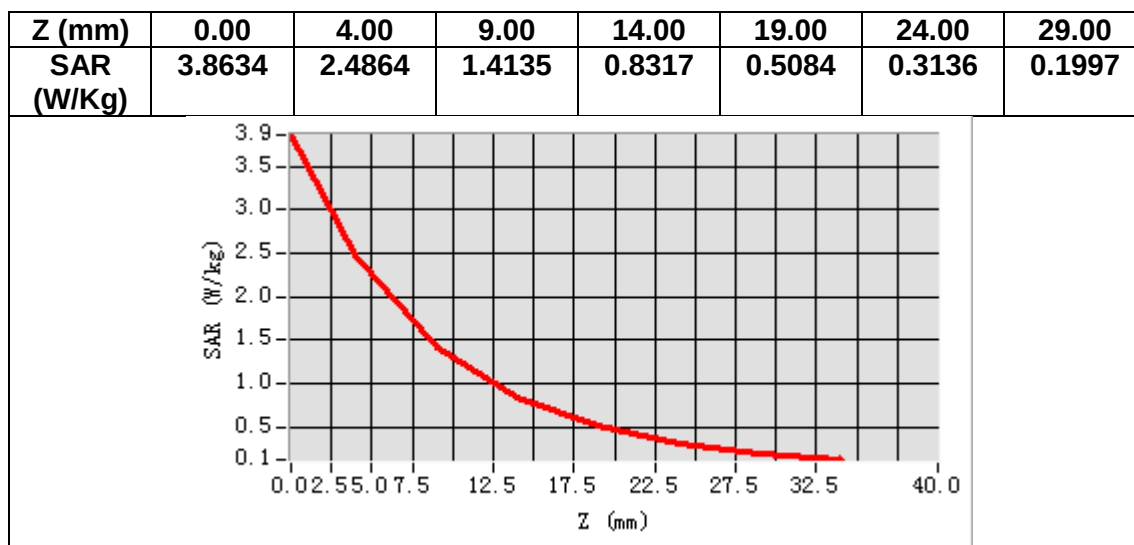
Frequency (MHz)	1800.000000
Relative permittivity (real part)	39.320408
Relative permittivity (imaginary part)	13.742189
Conductivity (S/m)	1.374219
Variation (%)	-0.430000



Maximum location: X=2.00, Y=2.00

SAR Peak: 4.00 W/kg

SAR 10g (W/Kg)	1.246602
SAR 1g (W/Kg)	2.407766



MEASUREMENT 5

Date of measurement: 12/10/2024

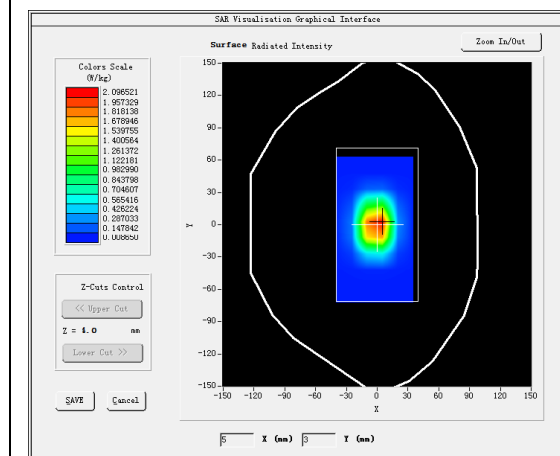
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Dipole</u>
<u>Band</u>	<u>CW1900</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>CW (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.57</u>

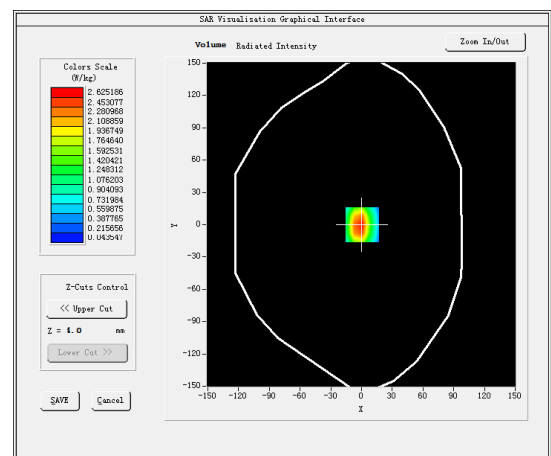
B. SAR Measurement Results

Frequency (MHz)	1900.000000
Relative permittivity (real part)	38.440114
Relative permittivity (imaginary part)	13.715587
Conductivity (S/m)	1.447756
Variation (%)	-0.070000

SURFACE SAR



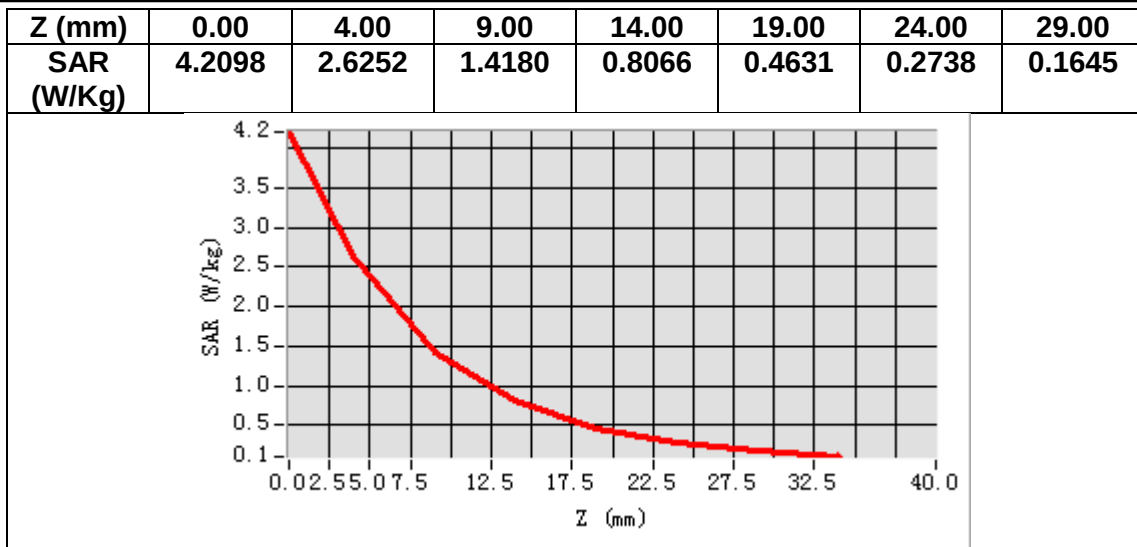
VOLUME SAR



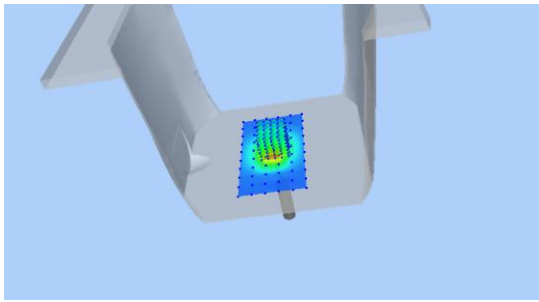
Maximum location: X=1.00, Y=0.00

SAR Peak: 4.36 W/kg

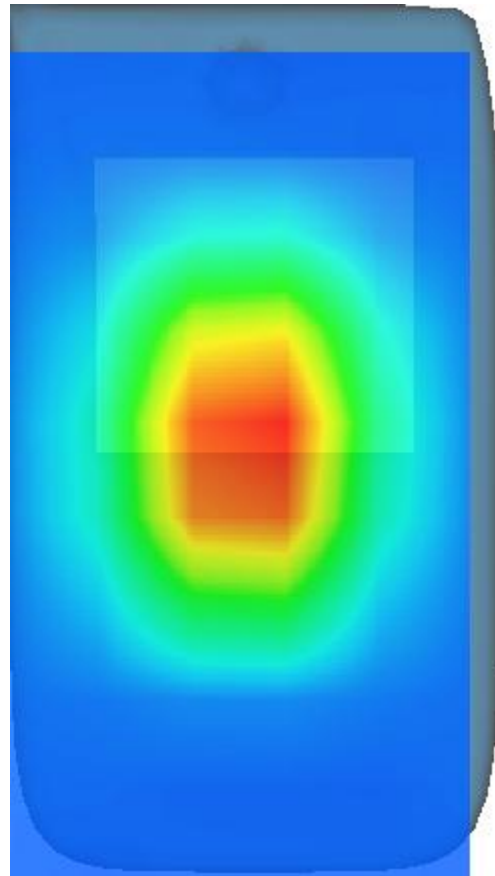
SAR 10g (W/Kg)	1.287791
SAR 1g (W/Kg)	2.631295



3D screen shot



Hot spot position



MEASUREMENT 6

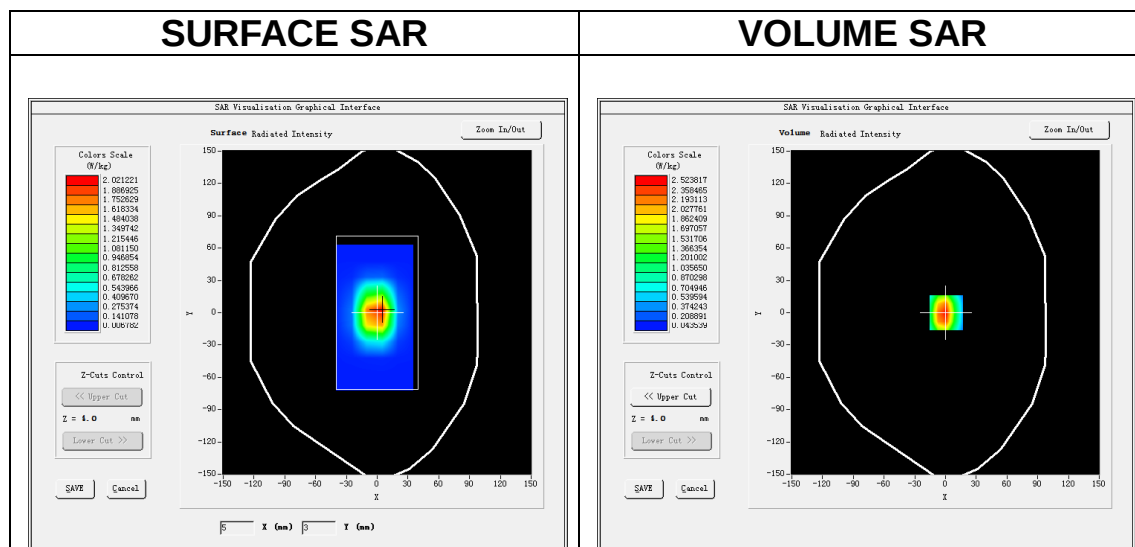
Date of measurement: 16/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Dipole</u>
<u>Band</u>	<u>CW1900</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>CW (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.57</u>

B. SAR Measurement Results

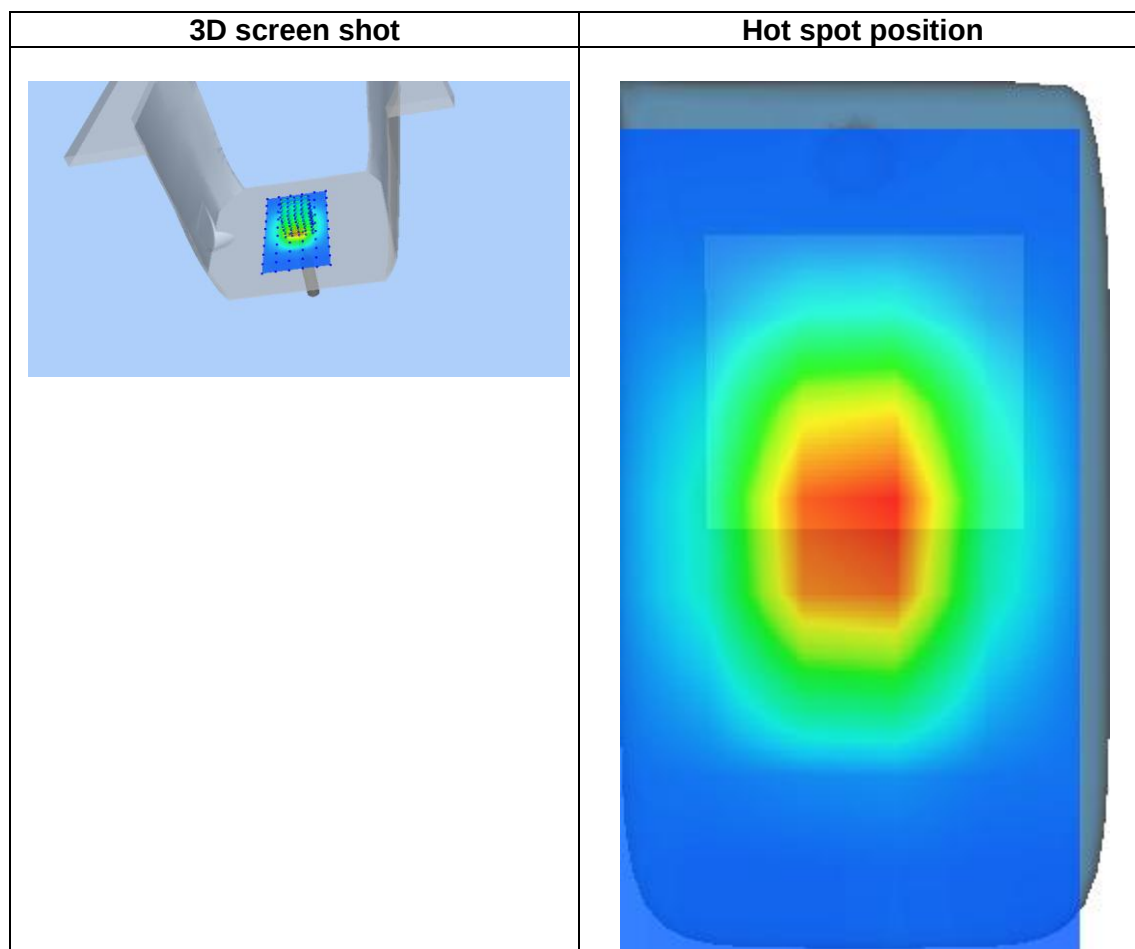
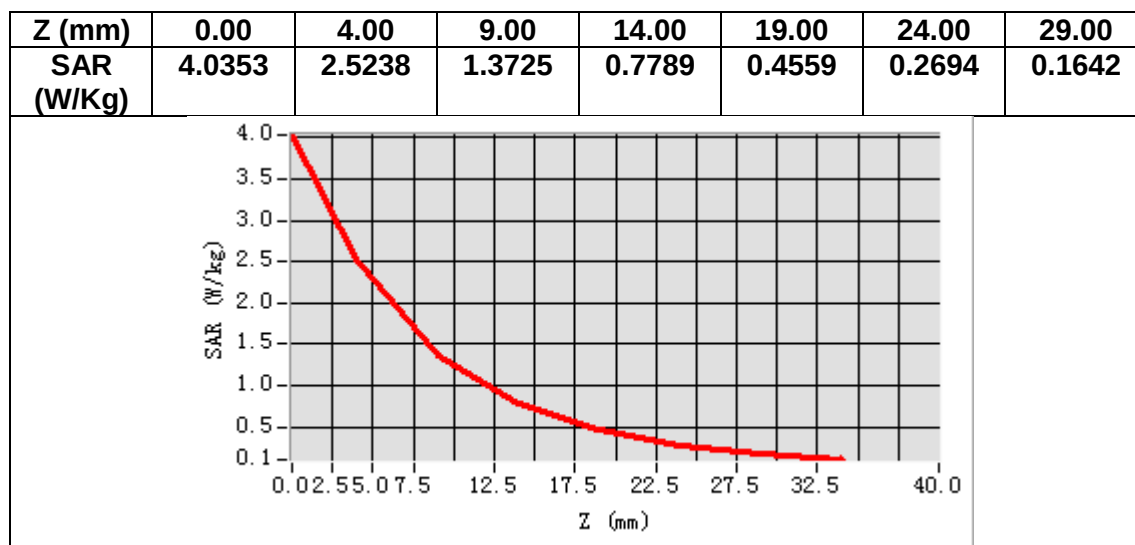
Frequency (MHz)	1900.000000
Relative permittivity (real part)	38.570754
Relative permittivity (imaginary part)	13.854547
Conductivity (S/m)	1.462424
Variation (%)	-0.230000



Maximum location: X=1.00, Y=0.00

SAR Peak: 4.17 W/kg

SAR 10g (W/Kg)	1.242750
SAR 1g (W/Kg)	2.526869



MEASUREMENT 7

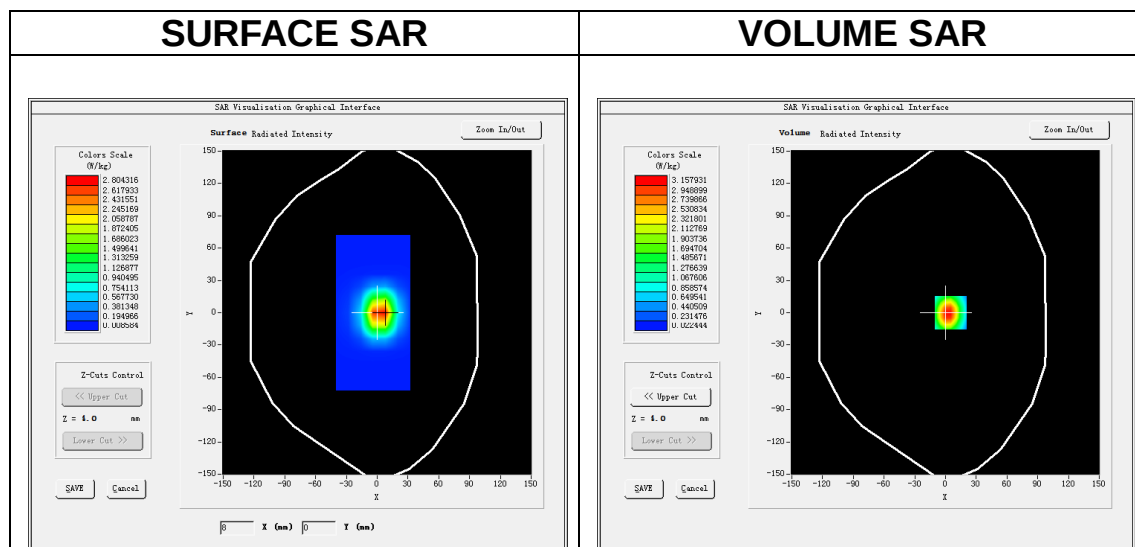
Date of measurement: 16/9/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Dipole</u>
<u>Band</u>	<u>CW2450</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>CW (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.85</u>

B. SAR Measurement Results

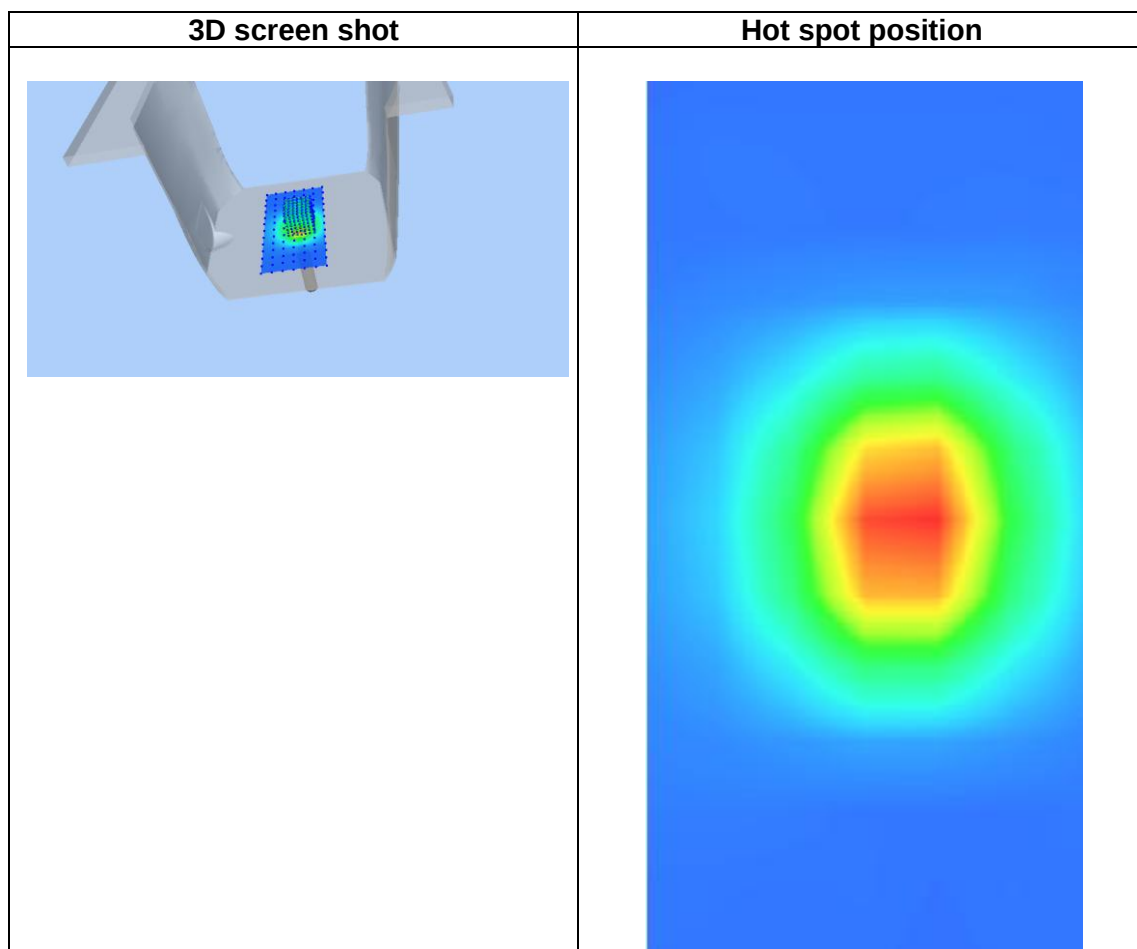
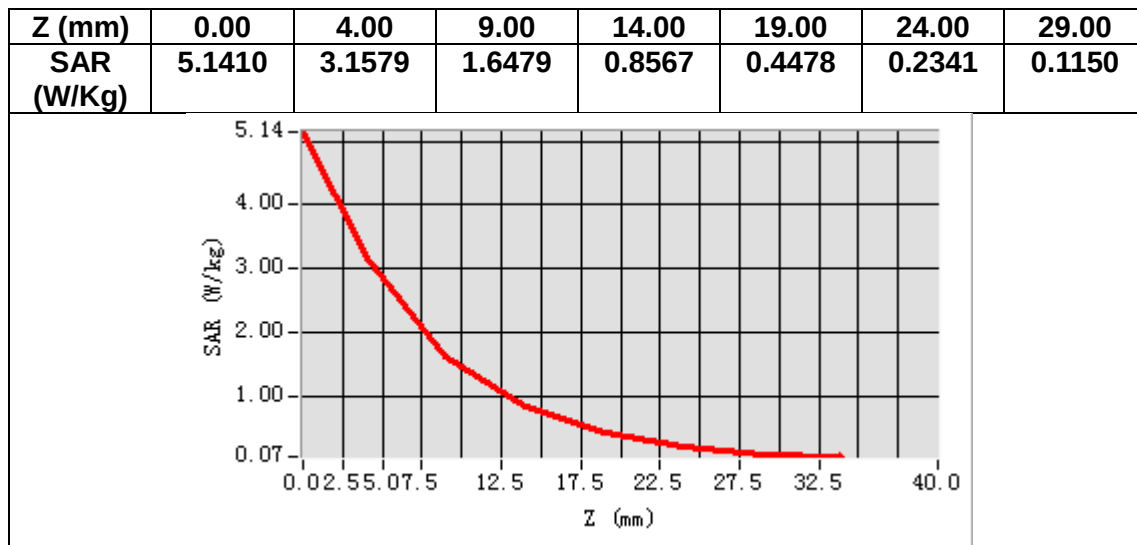
Frequency (MHz)	2450.000000
Relative permittivity (real part)	40.110912
Relative permittivity (imaginary part)	13.431449
Conductivity (S/m)	1.828169
Variation (%)	-3.670000



Maximum location: X=5.00, Y=0.00

SAR Peak: 5.23 W/kg

SAR 10g (W/Kg)	1.423636
SAR 1g (W/Kg)	2.975236



MEASUREMENT 8

Date of measurement: 13/10/2024

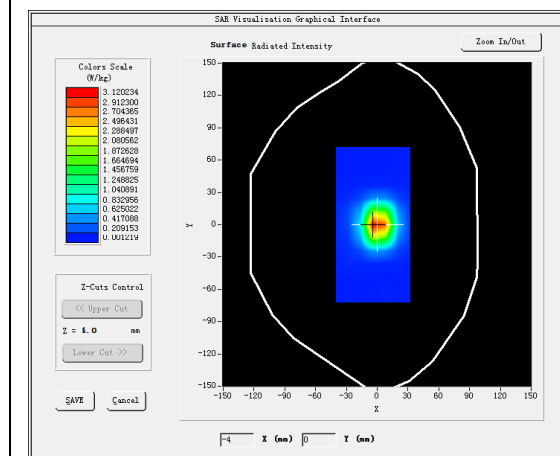
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Dipole</u>
<u>Band</u>	<u>CW2600</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>CW (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.51</u>

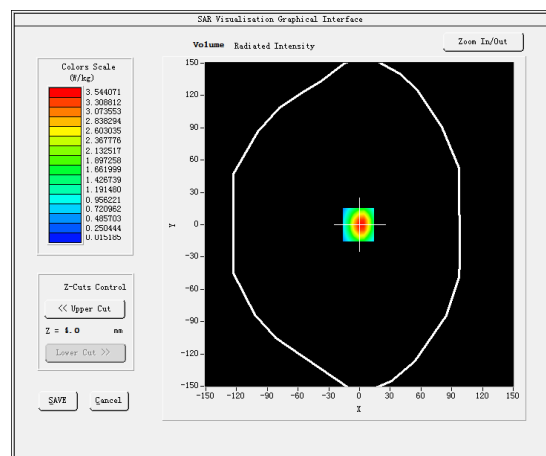
B. SAR Measurement Results

Frequency (MHz)	2600.000000
Relative permittivity (real part)	38.950442
Relative permittivity (imaginary part)	14.049088
Conductivity (S/m)	2.029313
Variation (%)	0.520000

SURFACE SAR



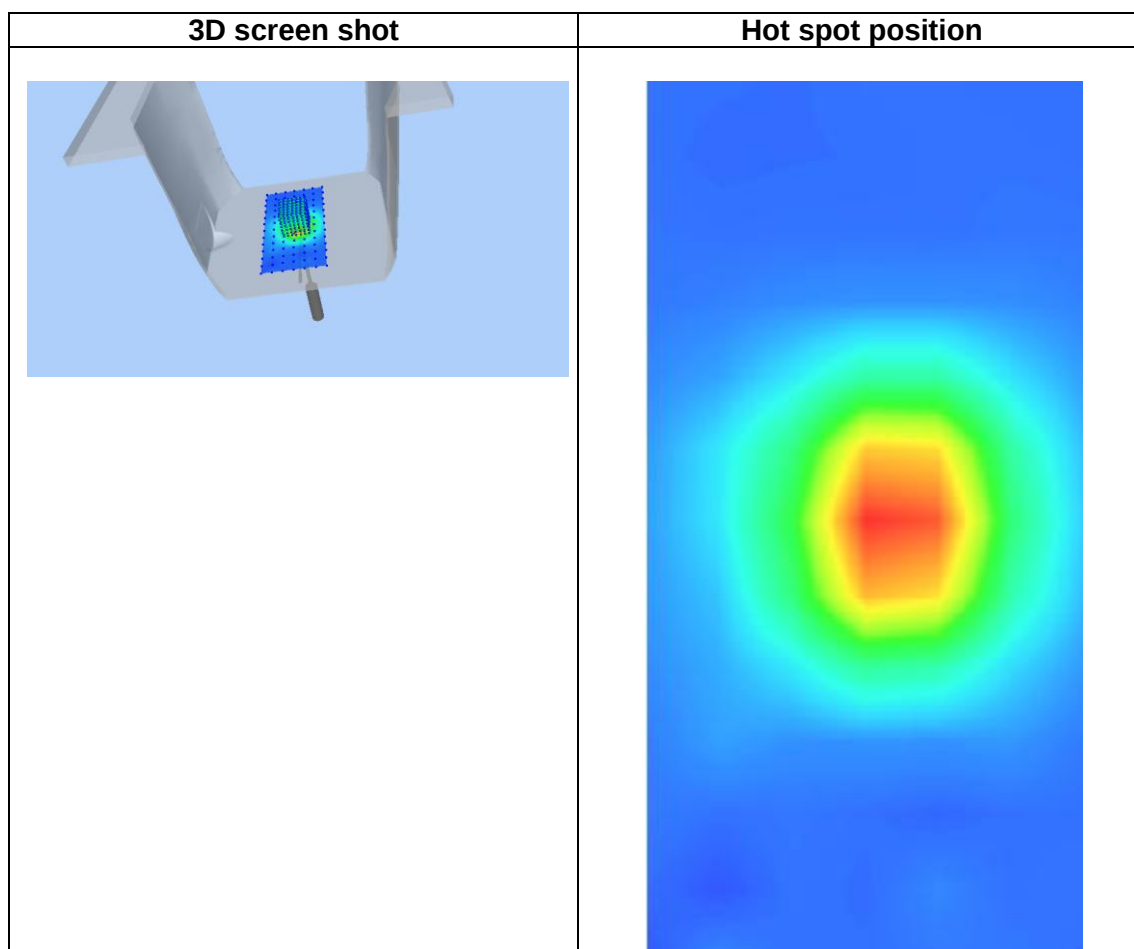
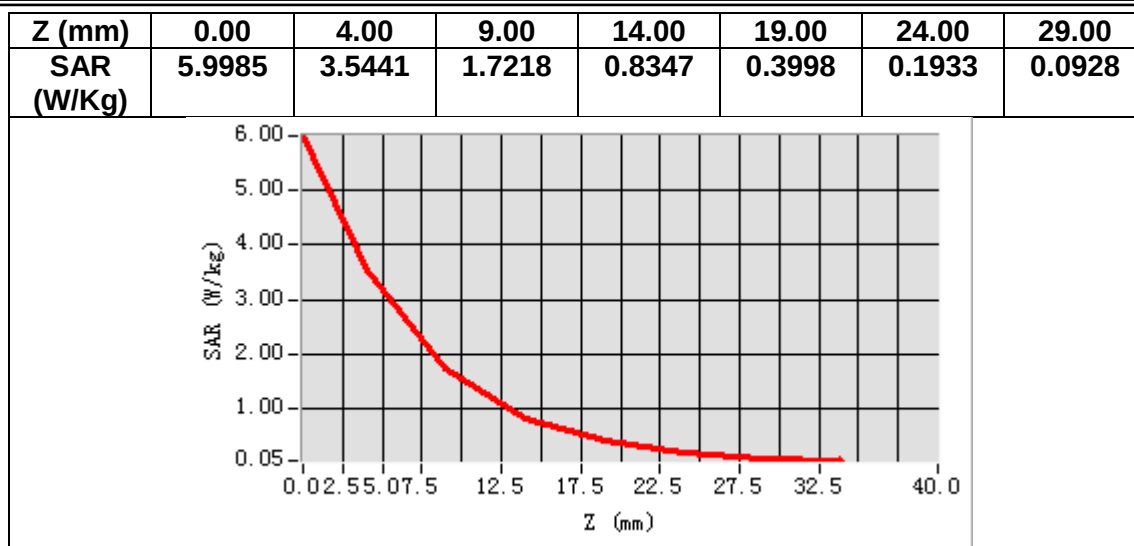
VOLUME SAR



Maximum location: X=-1.00, Y=0.00

SAR Peak: 6.08 W/kg

SAR 10g (W/Kg)	1.537704
SAR 1g (W/Kg)	3.384757



MEASUREMENT 9

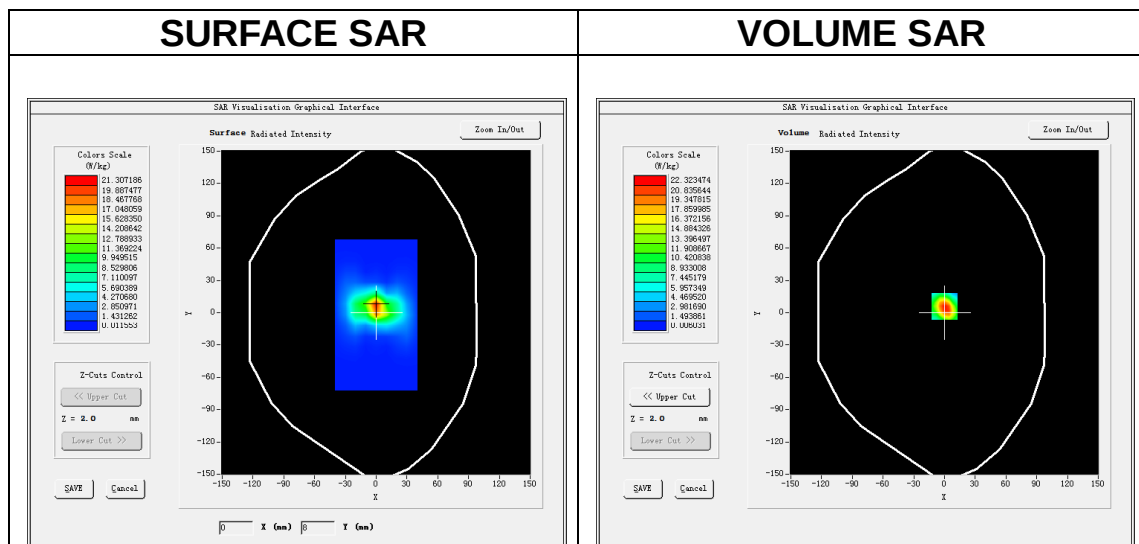
Date of measurement: 5/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=10mm dy=10mm, h= 2.00 mm</u>
<u>ZoomScan</u>	<u>7x7x12,dx=4mm dy=4mm dz=2mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Dipole</u>
<u>Band</u>	<u>CW5200</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>CW (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>1.89</u>

B. SAR Measurement Results

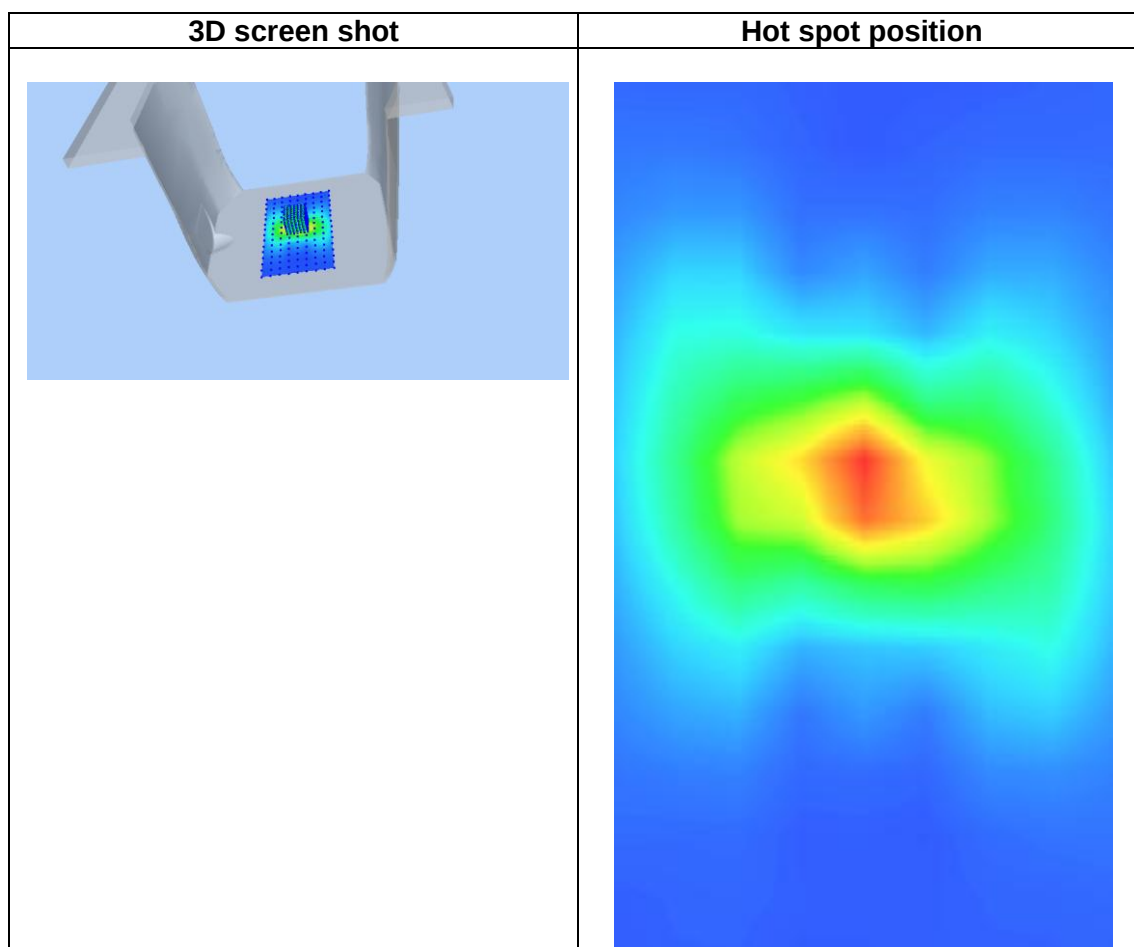
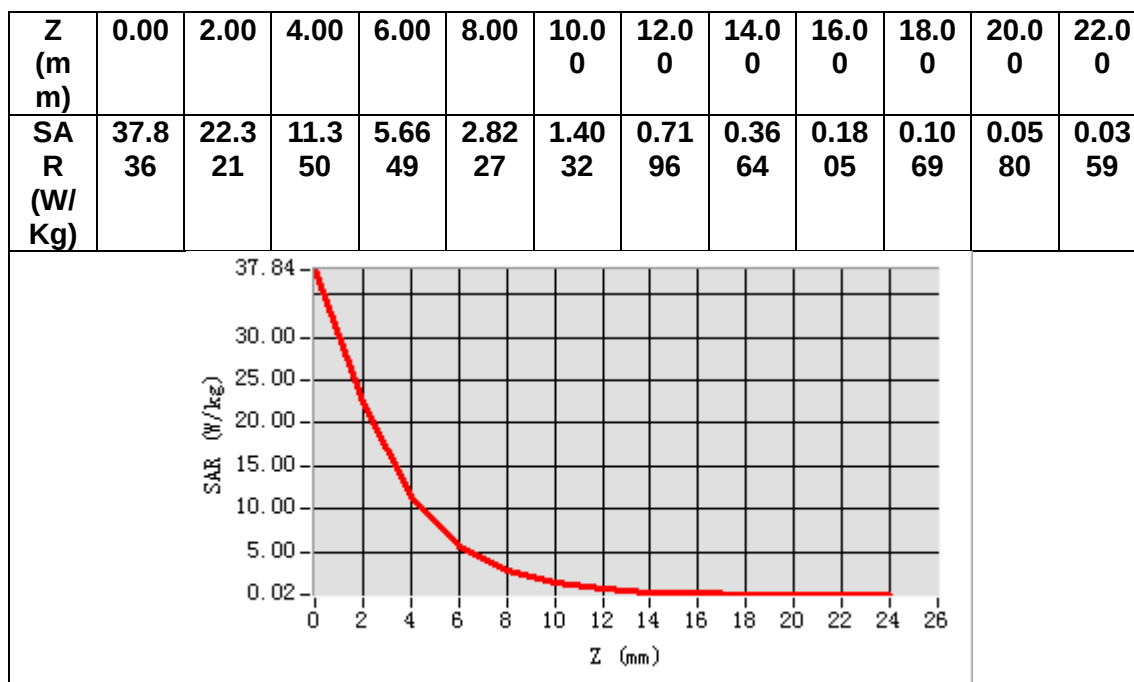
Frequency (MHz)	5200.000000
Relative permittivity (real part)	36.747216
Relative permittivity (imaginary part)	15.759931
Conductivity (S/m)	4.552869
Variation (%)	1.700000



Maximum location: X=0.00, Y=6.00

SAR Peak: 40.06 W/kg

SAR 10g (W/Kg)	5.563165
SAR 1g (W/Kg)	15.360243



MEASUREMENT 10

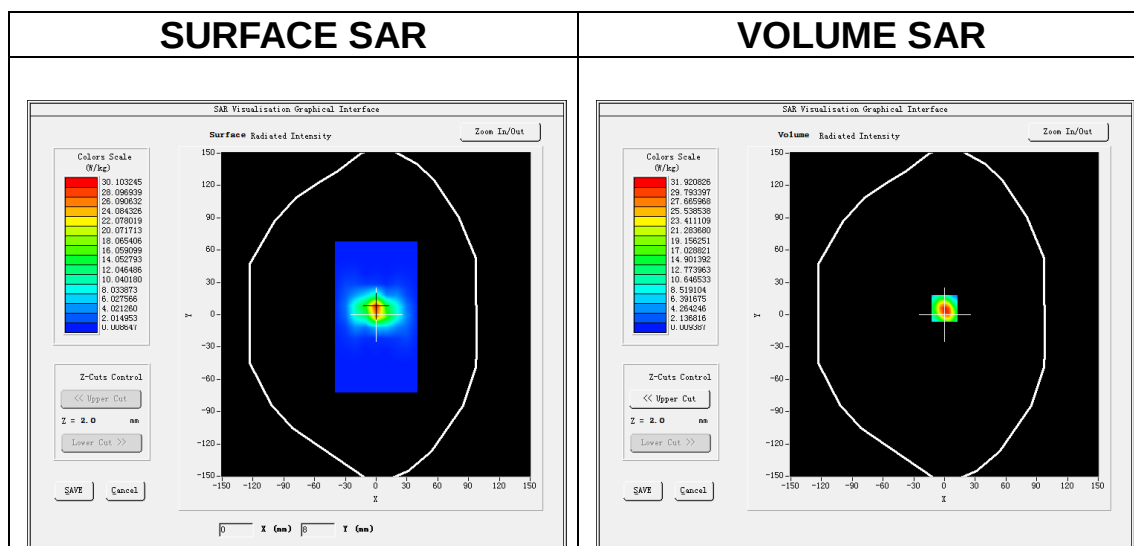
Date of measurement: 7/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=10mm dy=10mm, h= 2.00 mm</u>
<u>ZoomScan</u>	<u>7x7x12,dx=4mm dy=4mm dz=2mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Dipole</u>
<u>Band</u>	<u>CW5800</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>CW (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>1.90</u>

B. SAR Measurement Results

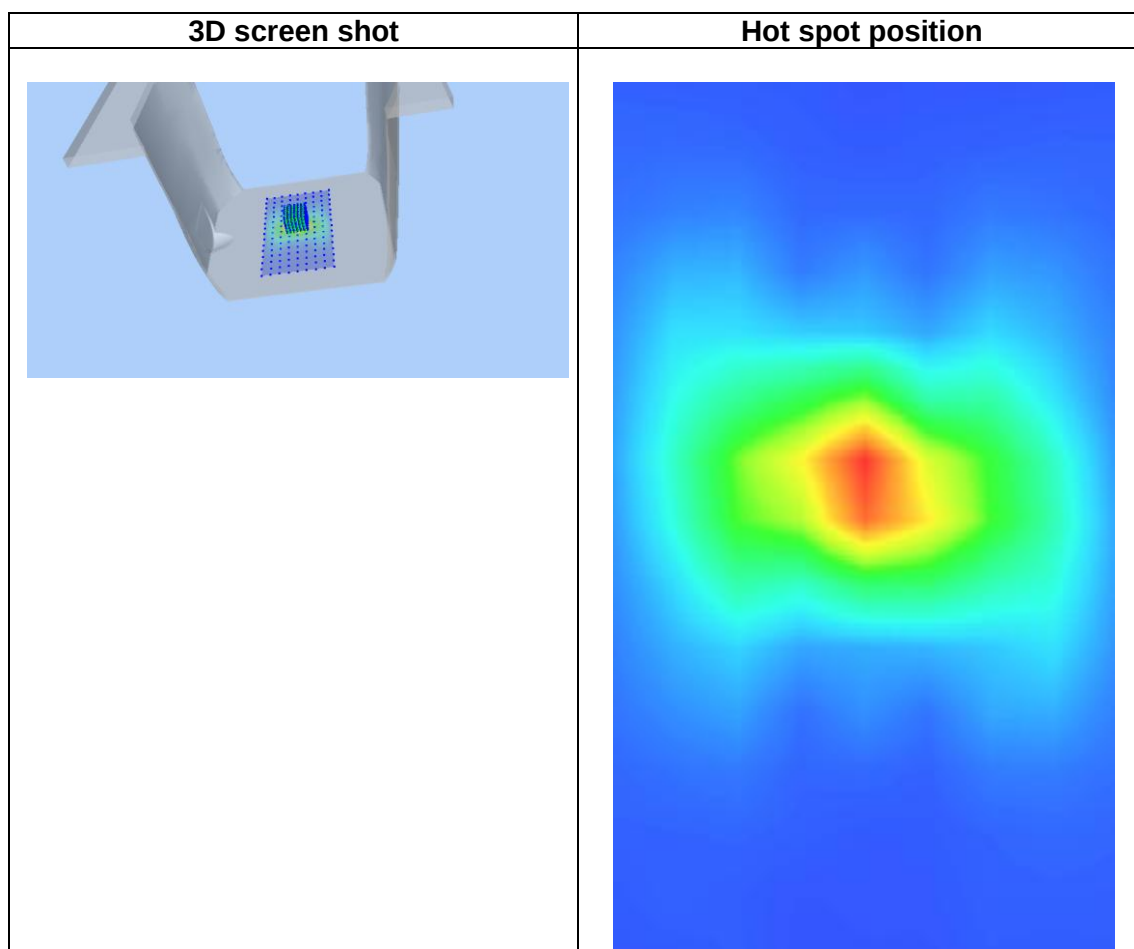
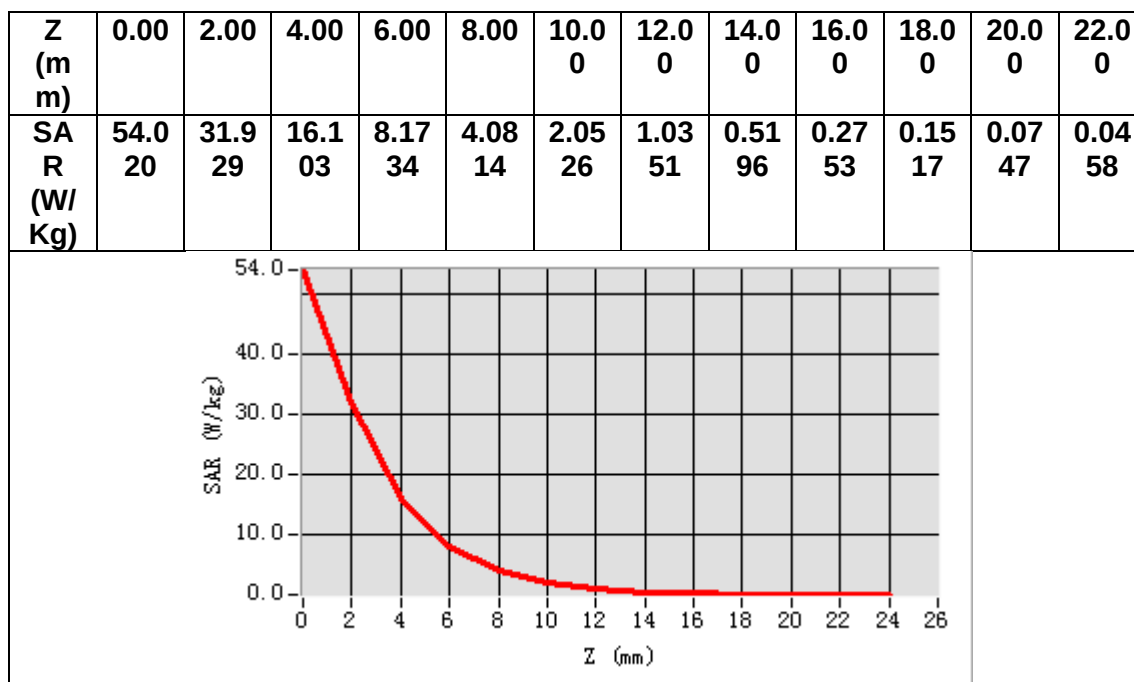
Frequency (MHz)	5800.000000
Relative permittivity (real part)	35.277500
Relative permittivity (imaginary part)	15.771107
Conductivity (S/m)	5.081801
Variation (%)	-0.760000



Maximum location: X=0.00, Y=6.00

SAR Peak: 57.37 W/kg

SAR 10g (W/Kg)	5.754020
SAR 1g (W/Kg)	18.660031



13. Appendix C. Plots of High SAR Measurement

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MEASUREMENT 1

Date of measurement: 10/10/2024

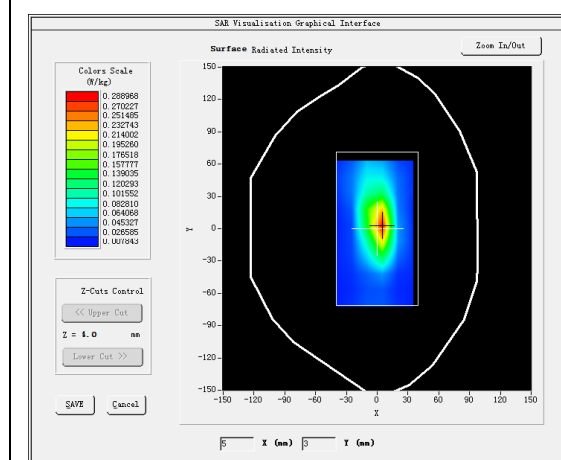
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>GSM850</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>TDMA (Crest factor: 8.0)</u>
<u>ConvF</u>	<u>2.34</u>

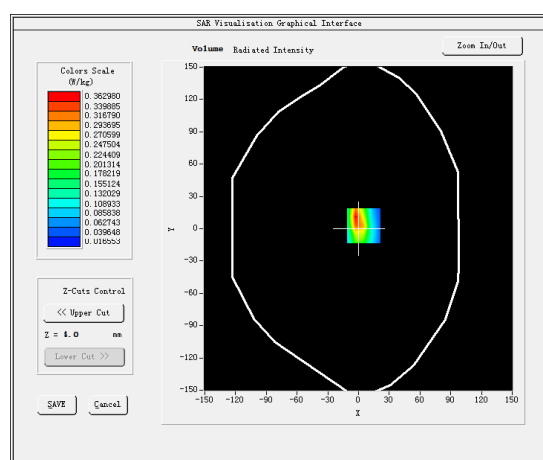
B. SAR Measurement Results

Frequency (MHz)	836.400000
Relative permittivity (real part)	42.005749
Relative permittivity (imaginary part)	19.848530
Conductivity (S/m)	0.922295
Variation (%)	-0.070000

SURFACE SAR



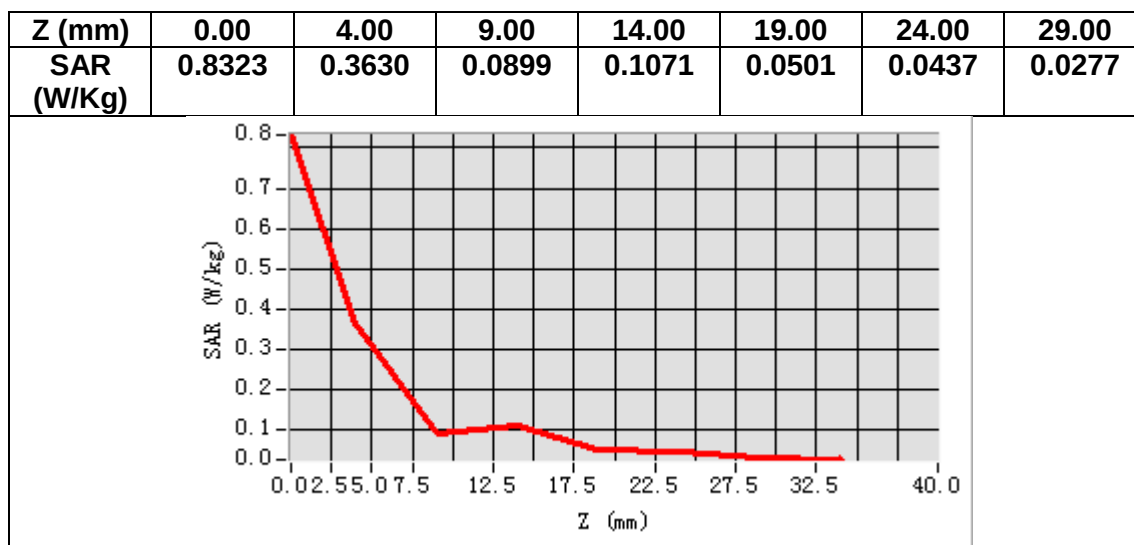
VOLUME SAR



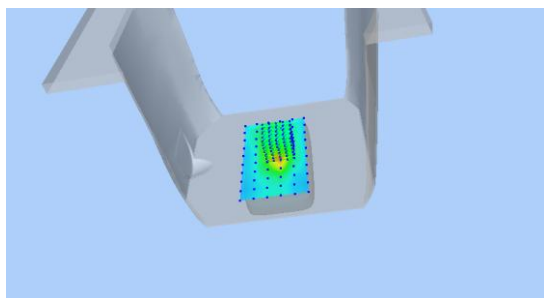
Maximum location: X=5.00, Y=3.00

SAR Peak: 0.65 W/kg

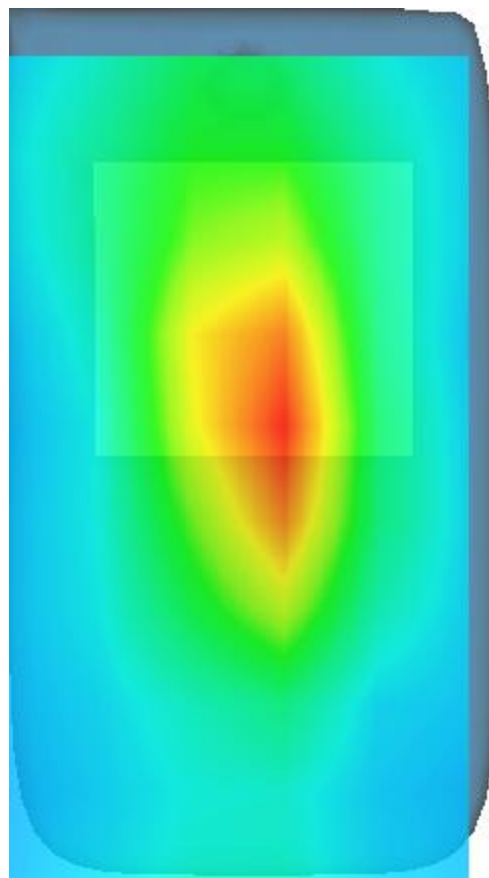
SAR 10g (W/Kg)	0.162996
SAR 1g (W/Kg)	0.345257



3D screen shot



Hot spot position



MEASUREMENT 2

Date of measurement: 12/10/2024

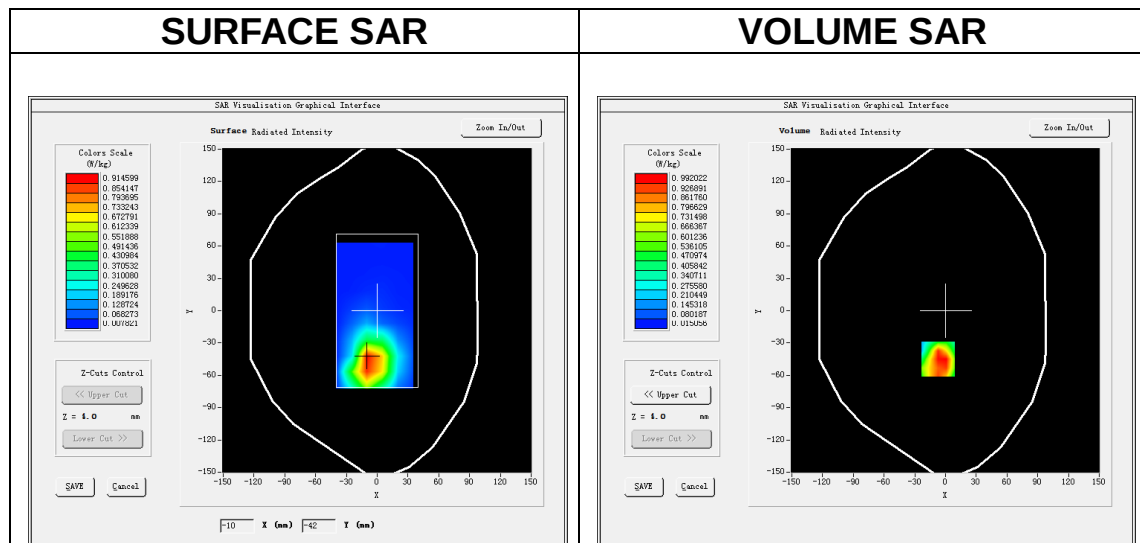
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>GSM1900</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>TDMA (Crest factor: 8.0)</u>
<u>ConvF</u>	<u>2.51</u>

B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.526512
Relative permittivity (imaginary part)	13.733387
Conductivity (S/m)	1.434376
Variation (%)	4.350000

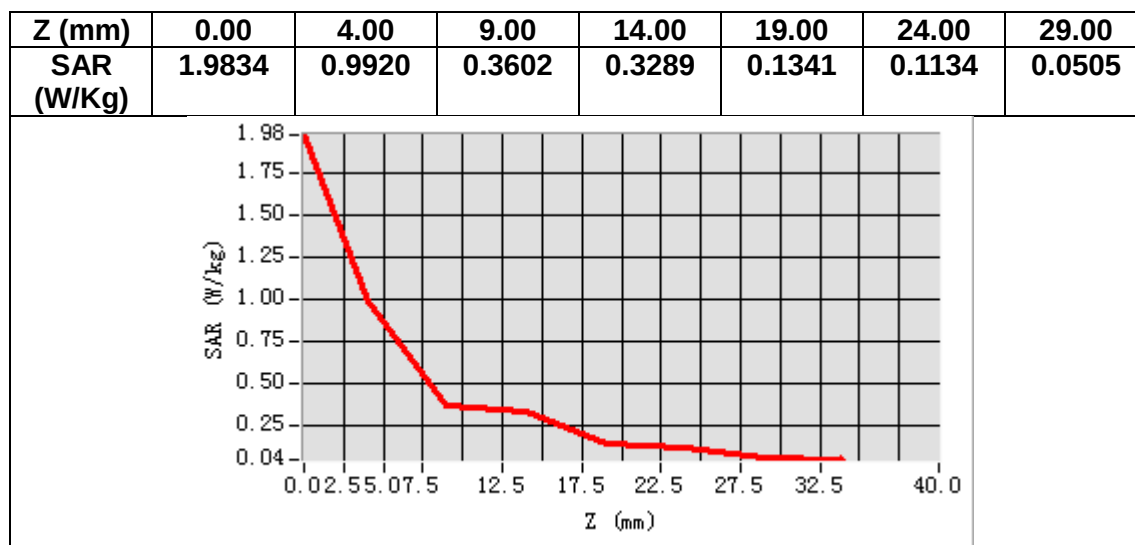
SURFACE SAR



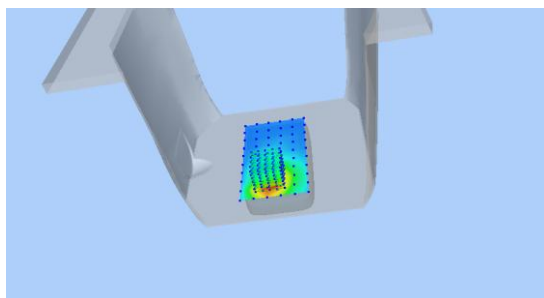
Maximum location: X=-7.00, Y=-45.00

SAR Peak: 1.69 W/kg

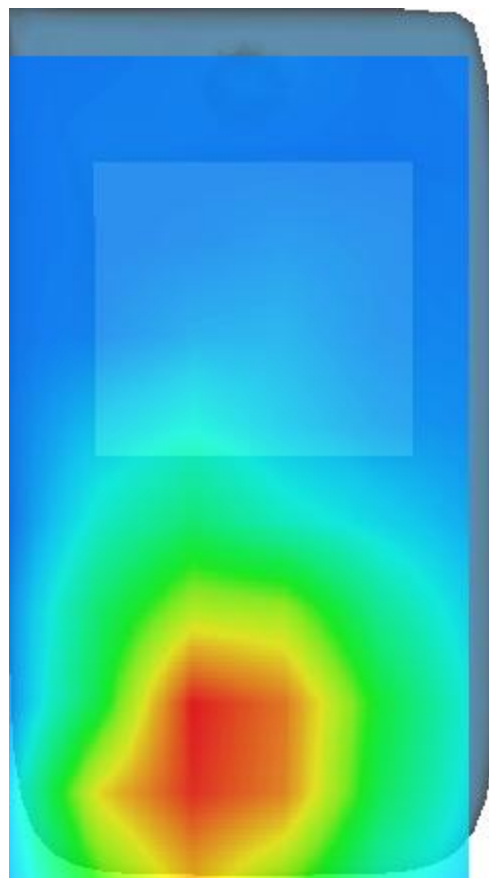
SAR 10g (W/Kg)	0.511954
SAR 1g (W/Kg)	0.999359



3D screen shot



Hot spot position



MEASUREMENT 3

Date of measurement: 12/10/2024

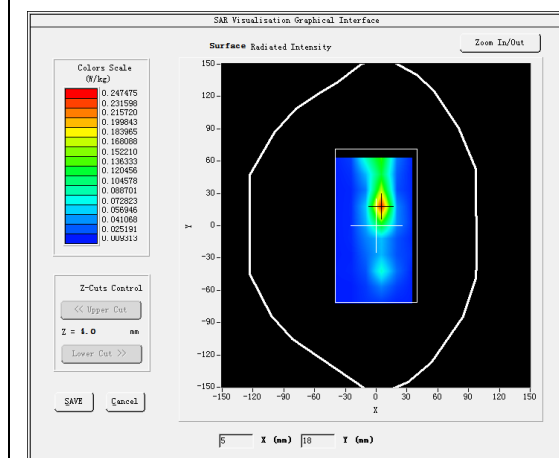
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>Band2 WCDMA1900</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>WCDMA (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.51</u>

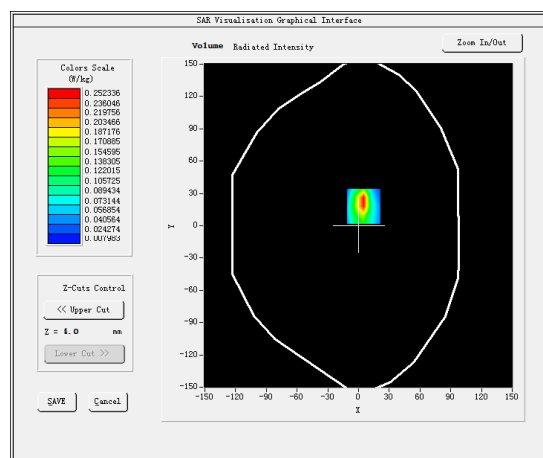
B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.526512
Relative permittivity (imaginary part)	13.733387
Conductivity (S/m)	1.434376
Variation (%)	3.110000

SURFACE SAR



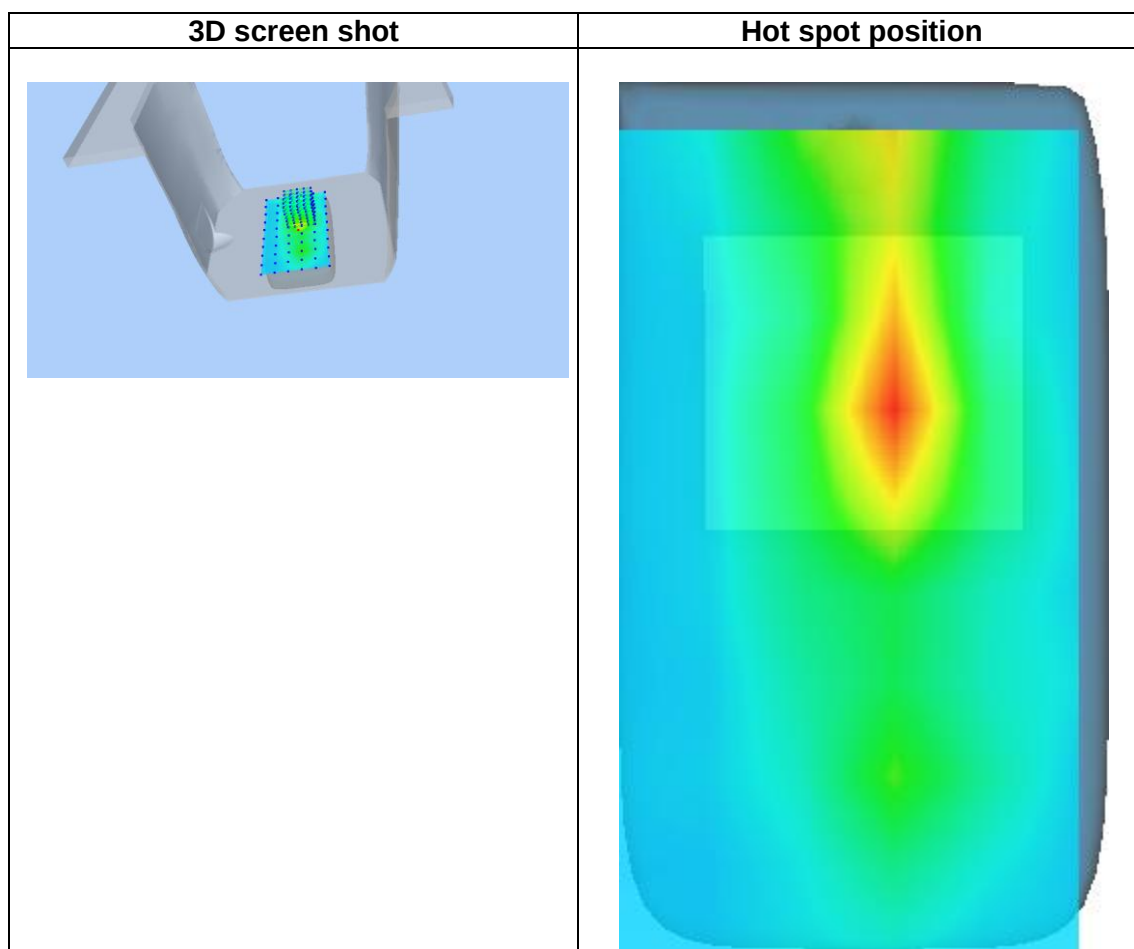
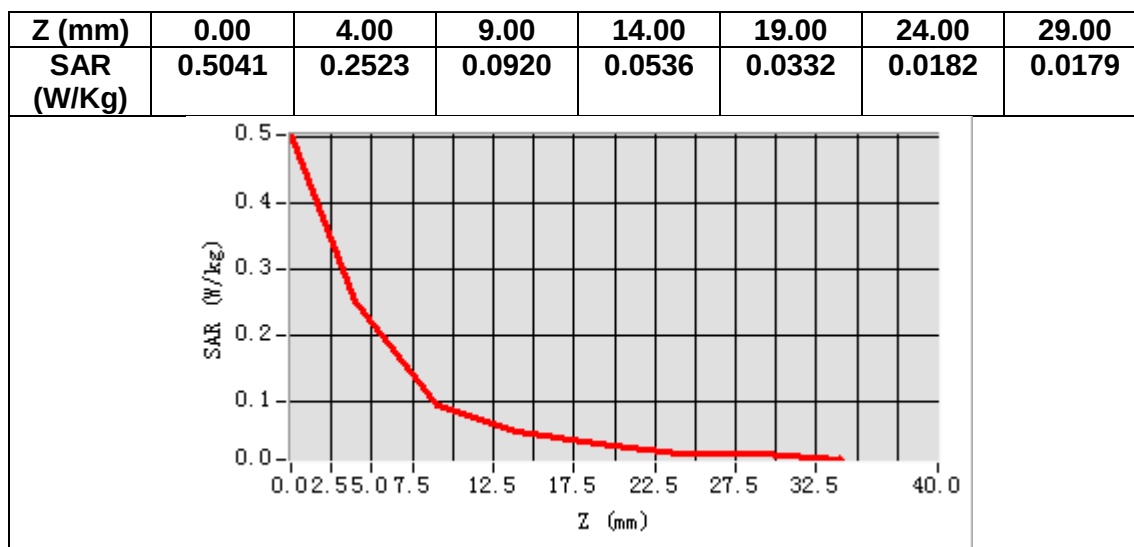
VOLUME SAR



Maximum location: X=5.00, Y=18.00

SAR Peak: 0.49 W/kg

SAR 10g (W/Kg)	0.096732
SAR 1g (W/Kg)	0.239370



MEASUREMENT 4

Date of measurement: 13/9/2024

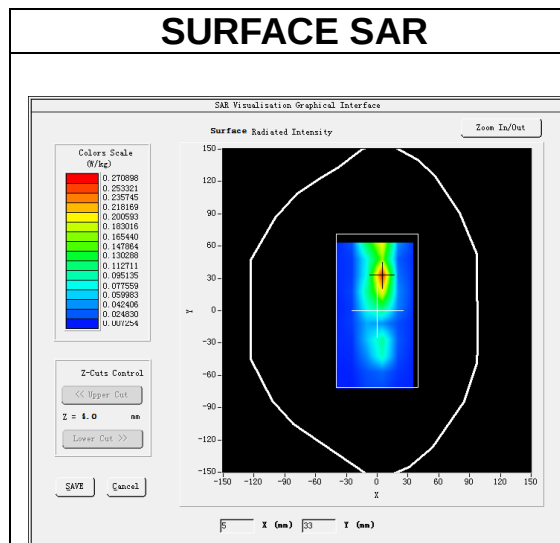
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>Band4 WCDMA1700</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>WCDMA (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.45</u>

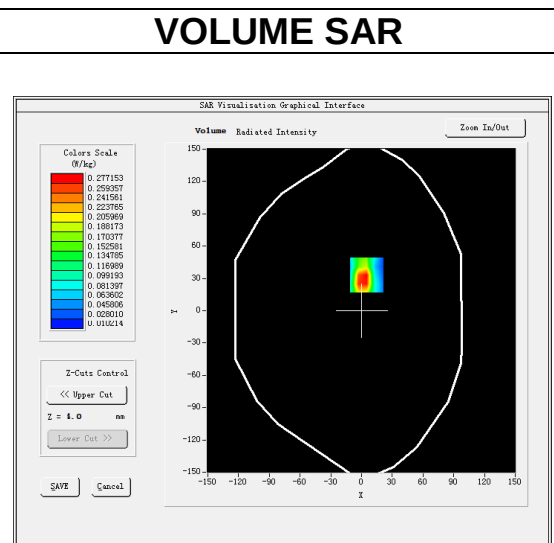
B. SAR Measurement Results

Frequency (MHz)	1732.600000
Relative permittivity (real part)	39.780106
Relative permittivity (imaginary part)	13.694489
Conductivity (S/m)	1.317714
Variation (%)	-0.690000

SURFACE SAR



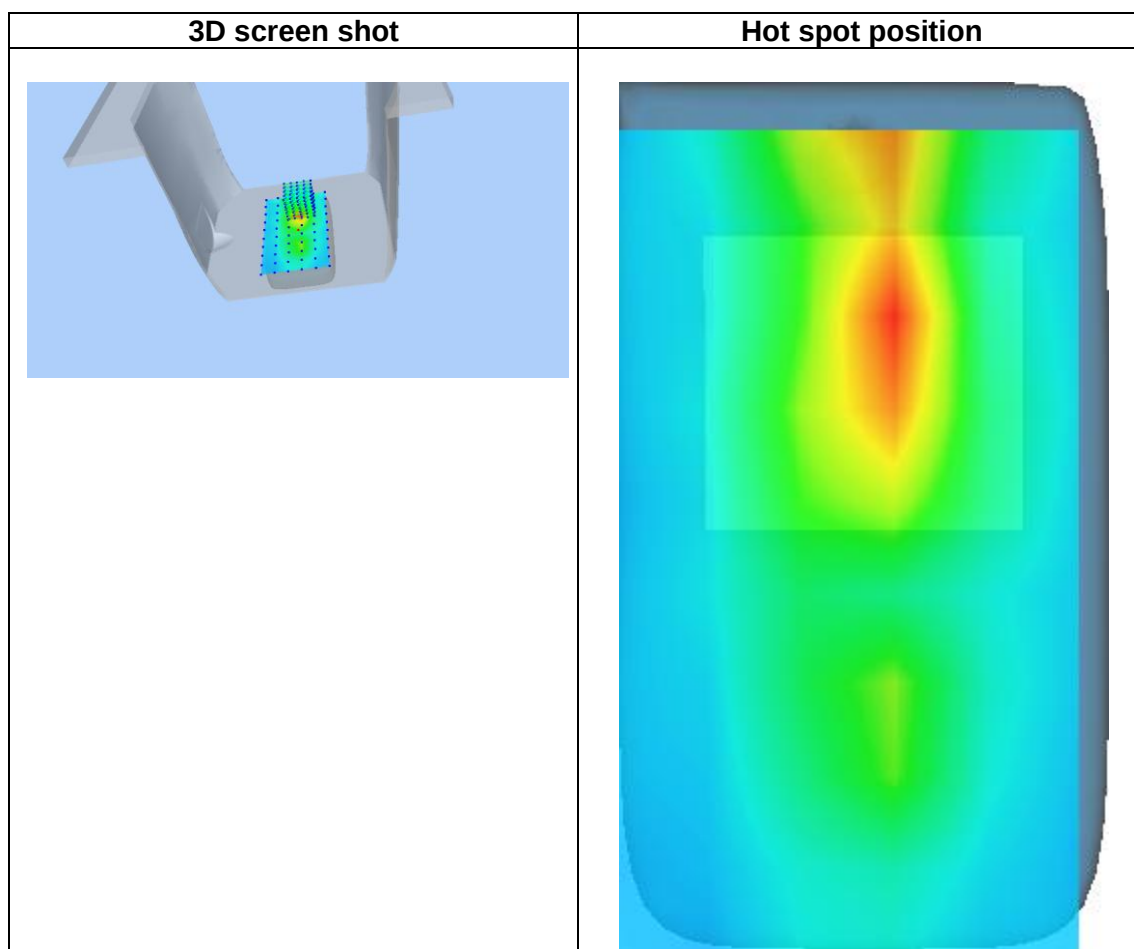
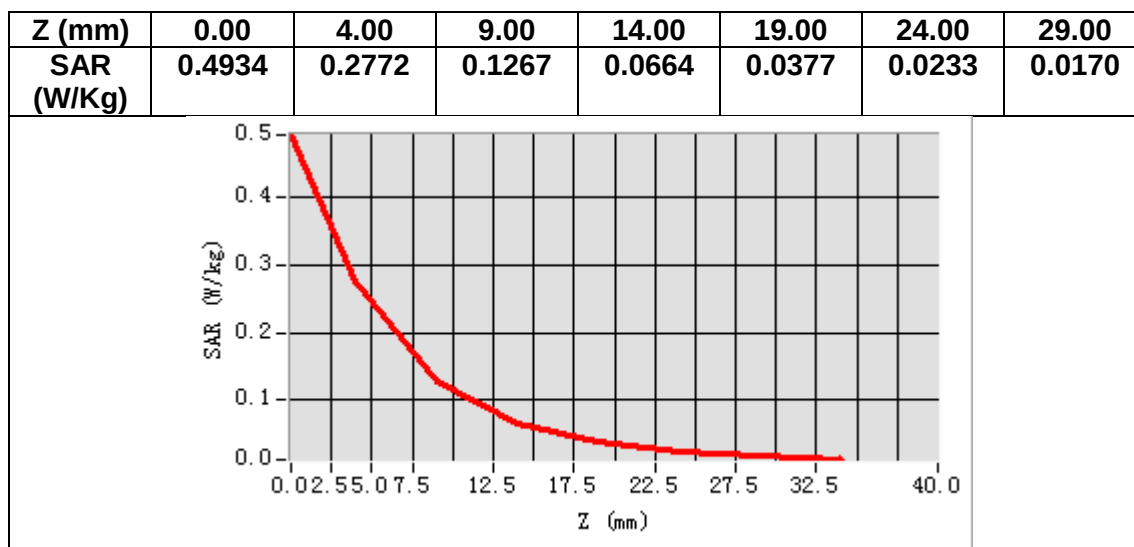
VOLUME SAR



Maximum location: X=5.00, Y=33.00

SAR Peak: 0.56 W/kg

SAR 10g (W/Kg)	0.124597
SAR 1g (W/Kg)	0.290506



MEASUREMENT 5

Date of measurement: 10/10/2024

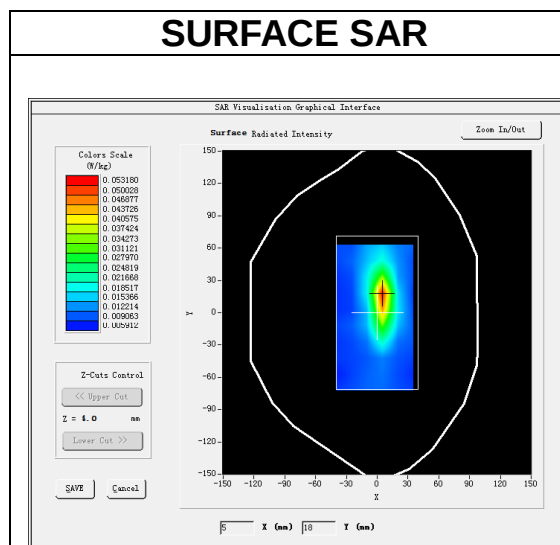
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>Band5 WCDMA850</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>WCDMA (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.34</u>

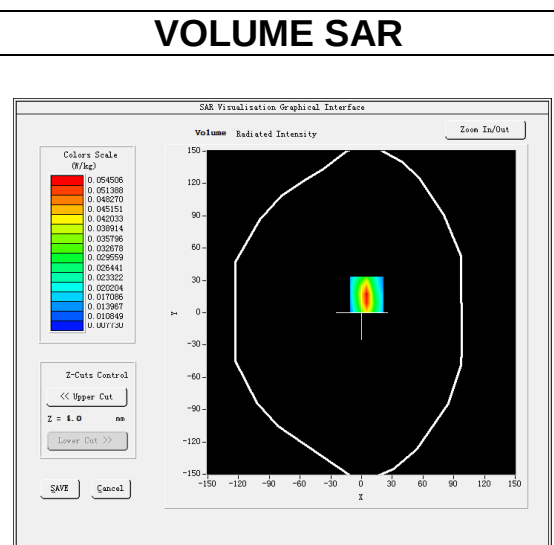
B. SAR Measurement Results

Frequency (MHz)	836.400000
Relative permittivity (real part)	42.005749
Relative permittivity (imaginary part)	19.848530
Conductivity (S/m)	0.922295
Variation (%)	4.390000

SURFACE SAR



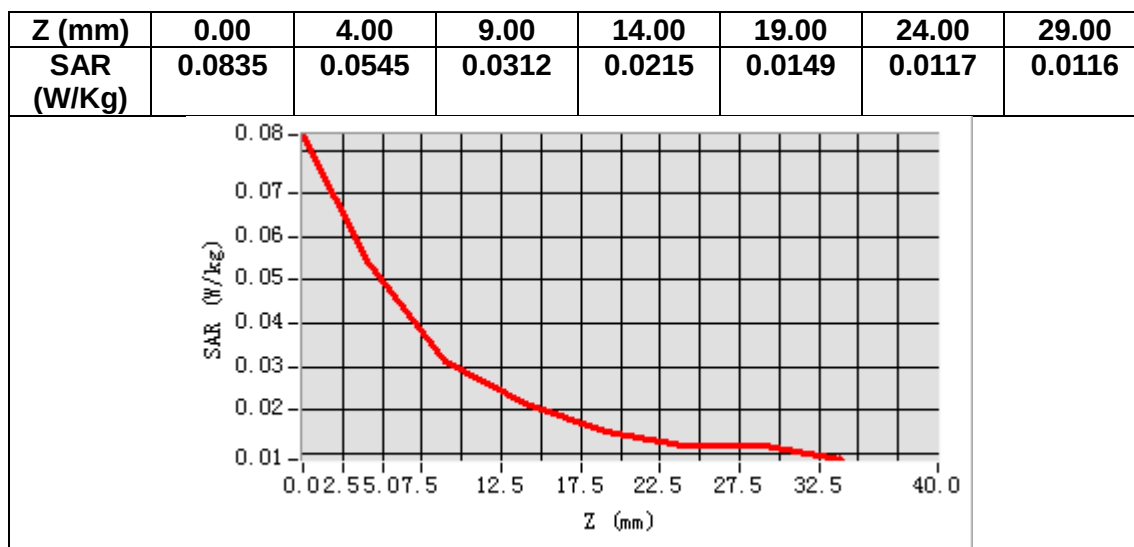
VOLUME SAR



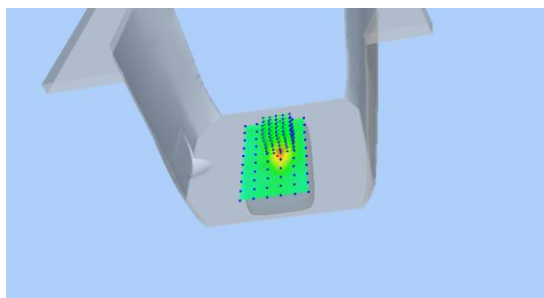
Maximum location: X=5.00, Y=17.00

SAR Peak: 0.09 W/kg

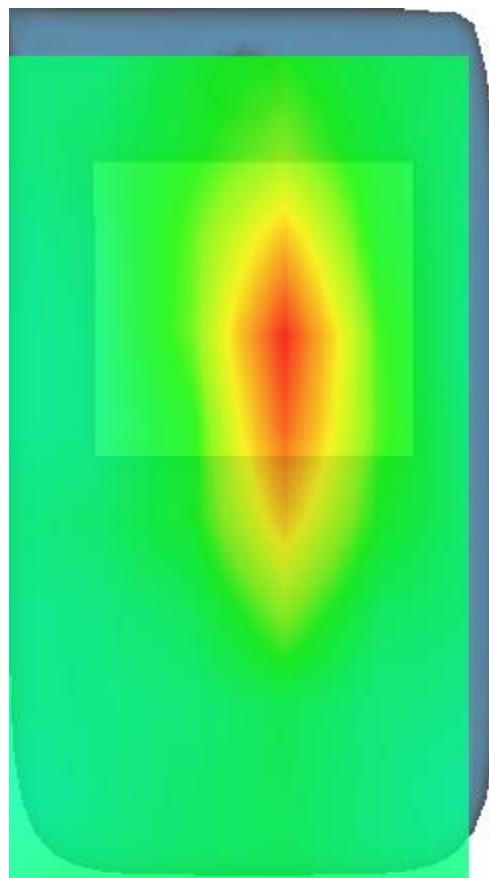
SAR 10g (W/Kg)	0.027328
SAR 1g (W/Kg)	0.050297



3D screen shot



Hot spot position



MEASUREMENT 6

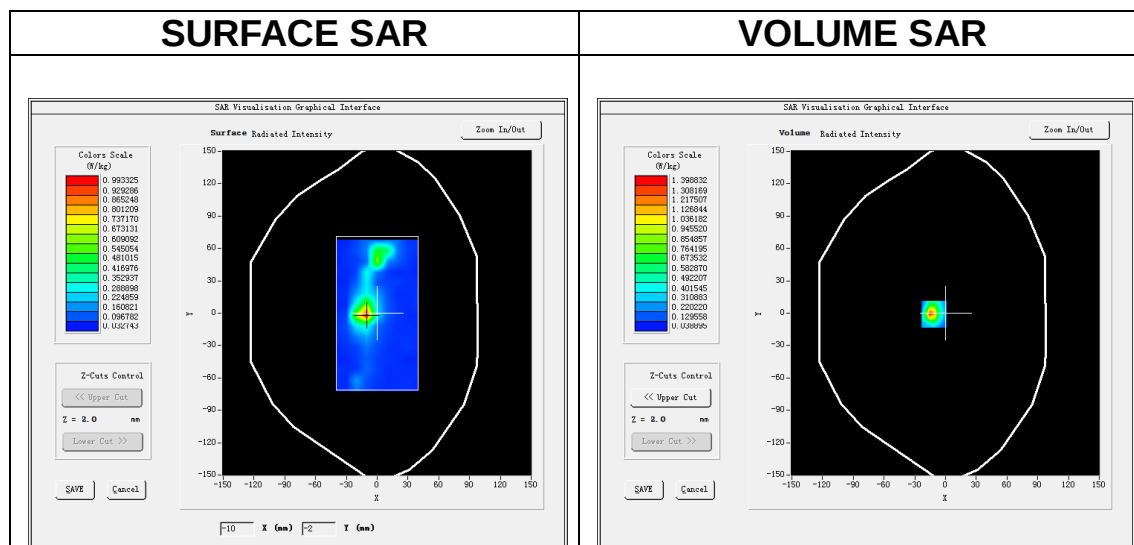
Date of measurement: 5/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=10mm dy=10mm, h= 2.00 mm</u>
<u>ZoomScan</u>	<u>7x7x12,dx=4mm dy=4mm dz=2mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>IEEE 802.11a U-NII</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>IEEE802.11a (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>1.89</u>

B. SAR Measurement Results

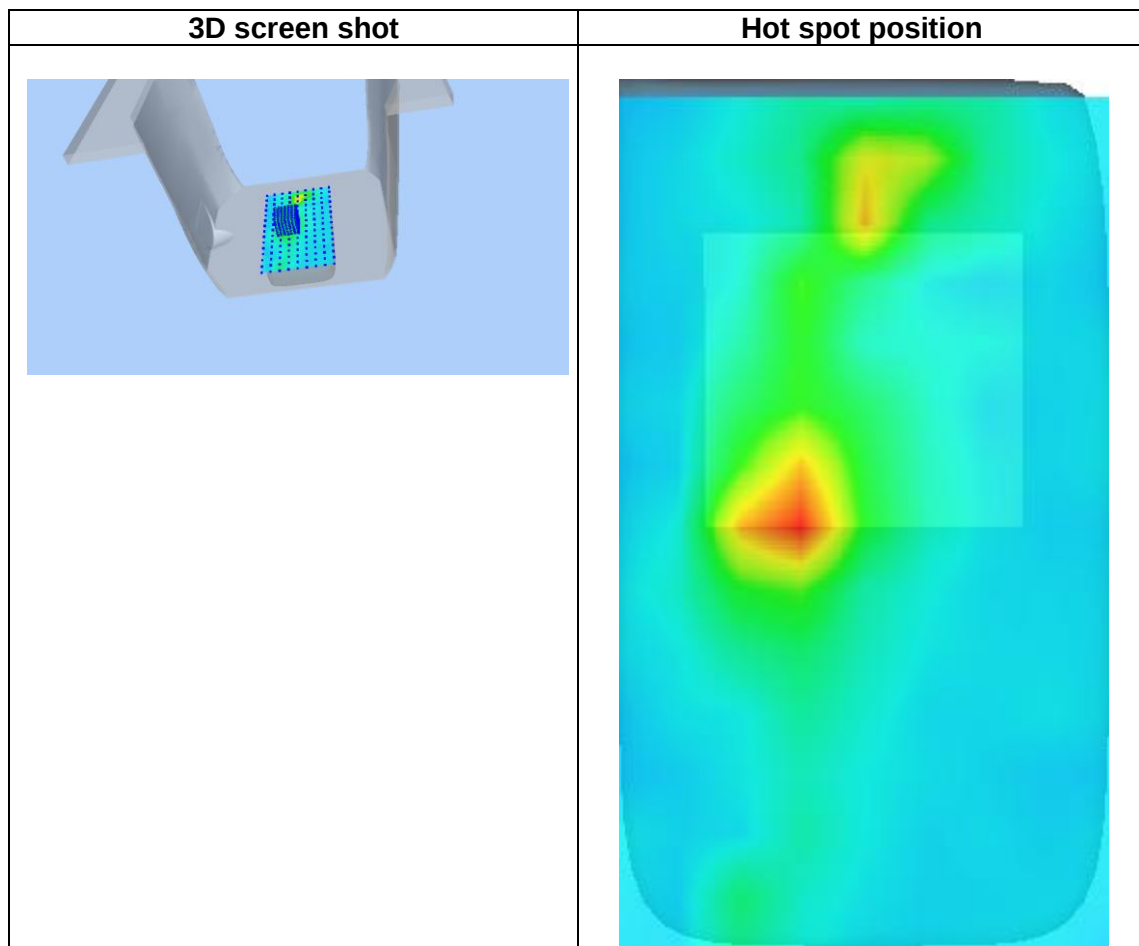
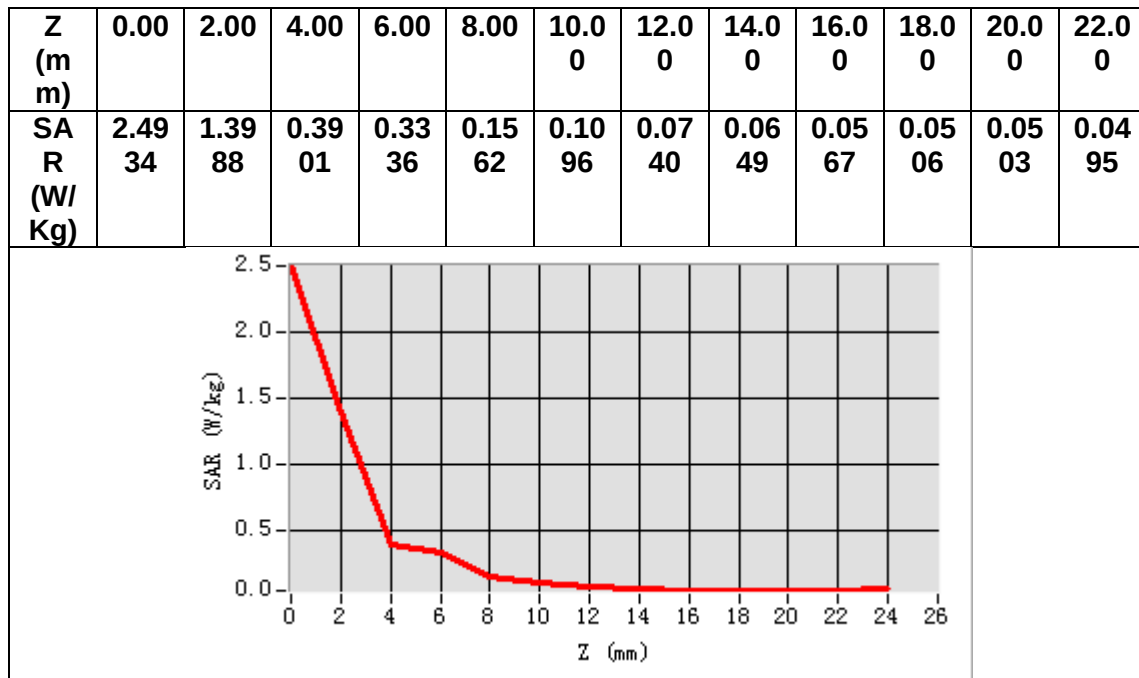
Frequency (MHz)	5240.000000
Relative permittivity (real part)	36.747215
Relative permittivity (imaginary part)	15.759931
Conductivity (S/m)	4.552869
Variation (%)	0.560000



Maximum location: X=-11.00, Y=-1.00

SAR Peak: 2.54 W/kg

SAR 10g (W/Kg)	0.216959
SAR 1g (W/Kg)	0.312273



MEASUREMENT 7

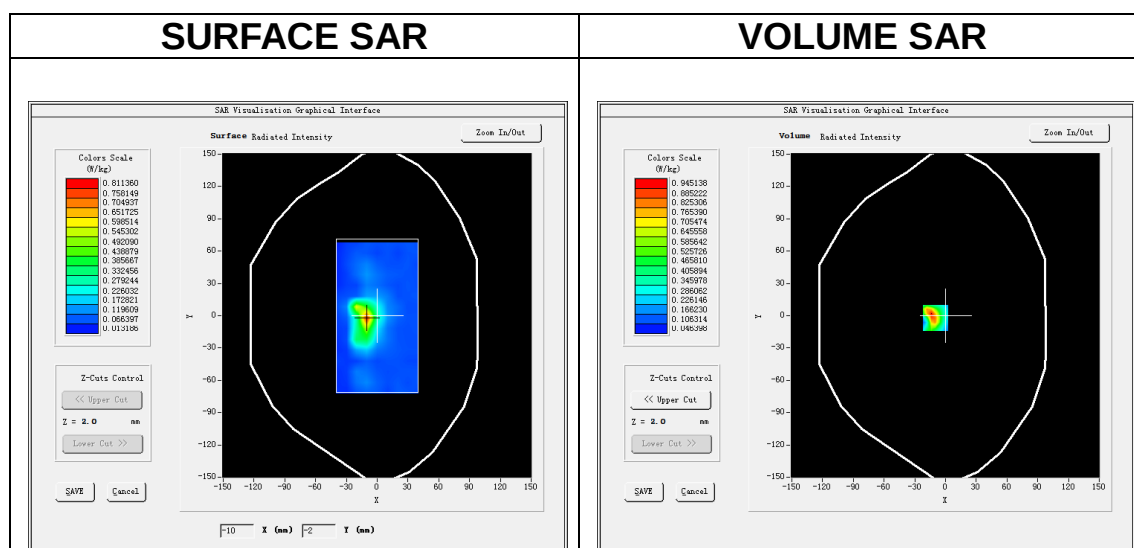
Date of measurement: 7/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=10mm dy=10mm, h= 2.00 mm</u>
<u>ZoomScan</u>	<u>7x7x12,dx=4mm dy=4mm dz=2mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>IEEE 802.11a U-NII</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>IEEE802.11a (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>1.90</u>

B. SAR Measurement Results

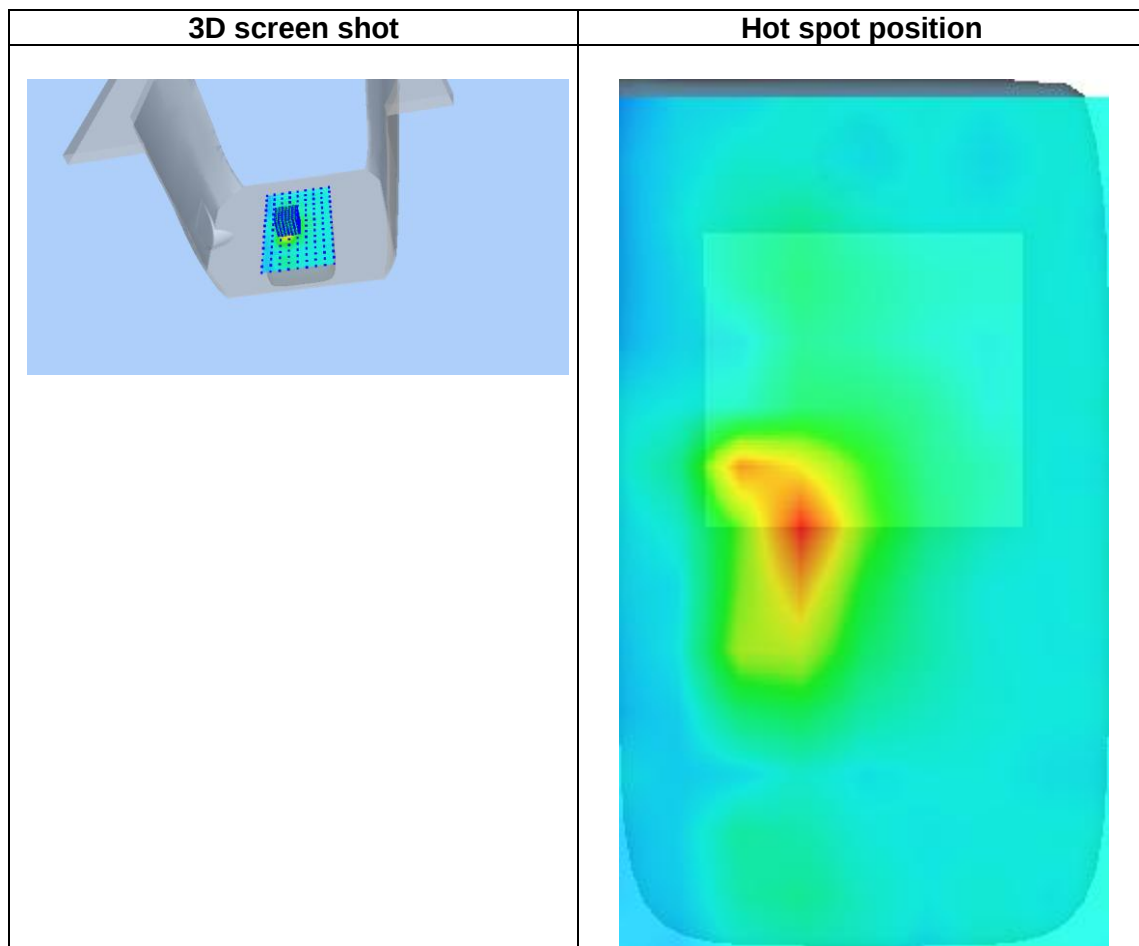
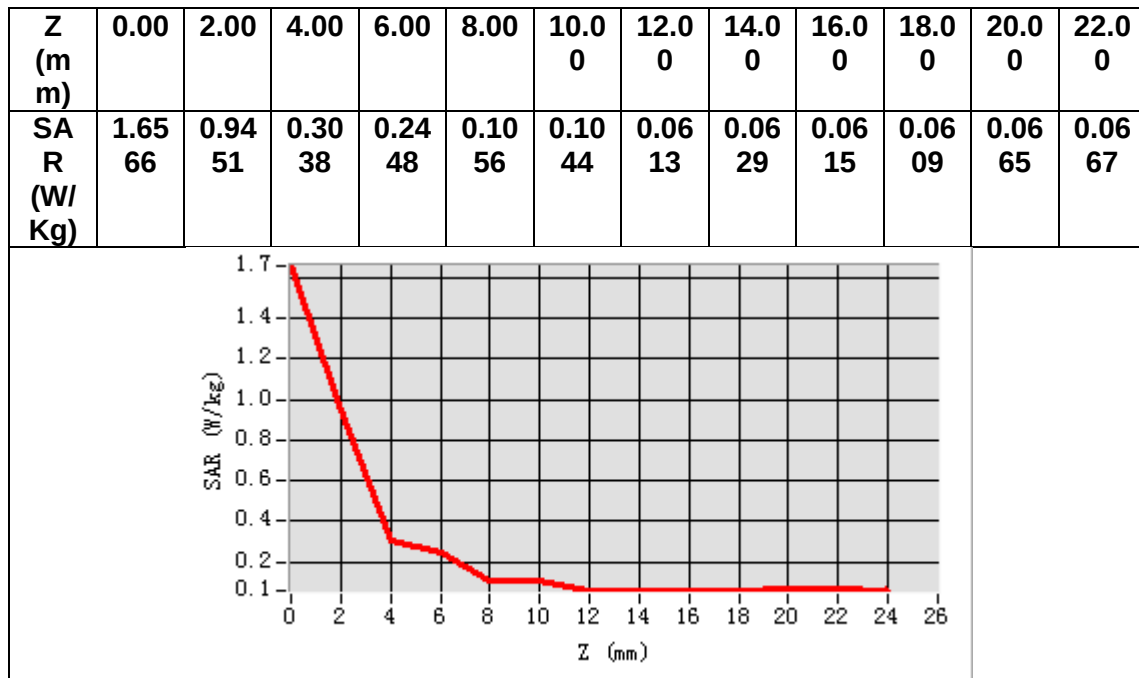
Frequency (MHz)	5785.000000
Relative permittivity (real part)	35.353451
Relative permittivity (imaginary part)	15.646664
Conductivity (S/m)	5.028664
Variation (%)	2.150000



Maximum location: X=-10.00, Y=-2.00

SAR Peak: 1.70 W/kg

SAR 10g (W/Kg)	0.098273
SAR 1g (W/Kg)	0.224092



MEASUREMENT 8

Date of measurement: 16/9/2024

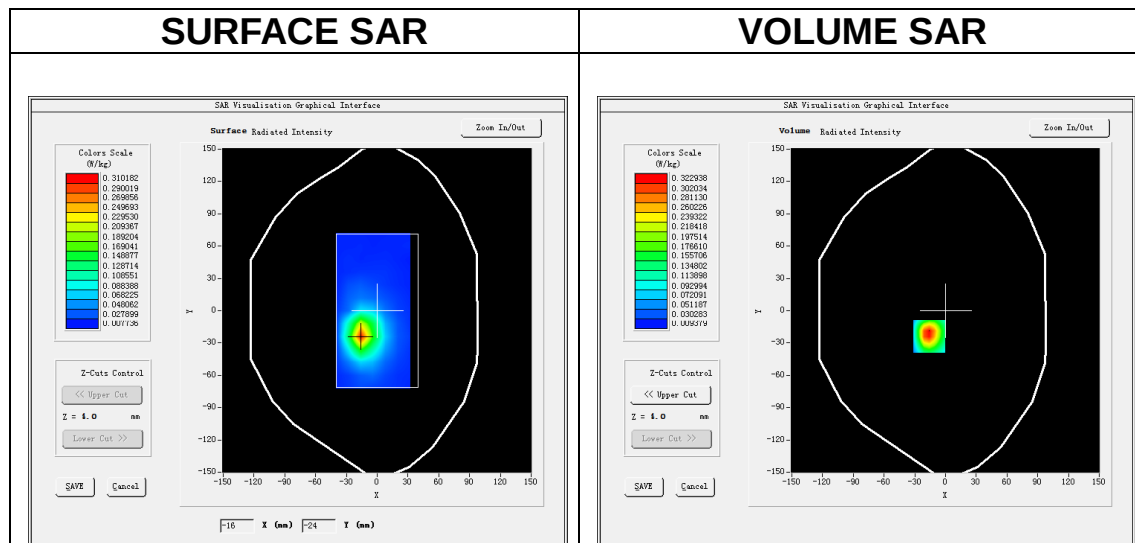
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>IEEE 802.11b ISM</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>IEEE802.11b (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.85</u>

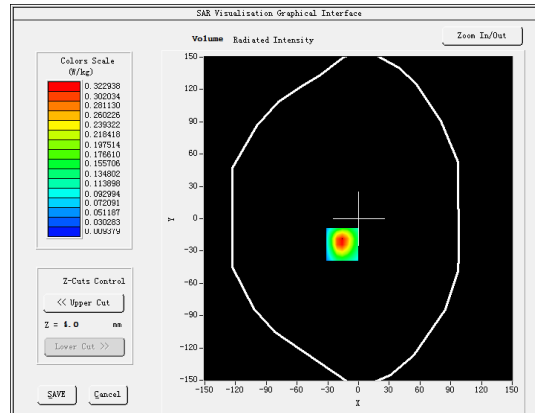
B. SAR Measurement Results

Frequency (MHz)	2437.000000
Relative permittivity (real part)	40.163013
Relative permittivity (imaginary part)	13.349949
Conductivity (S/m)	1.807435
Variation (%)	0.590000

SURFACE SAR



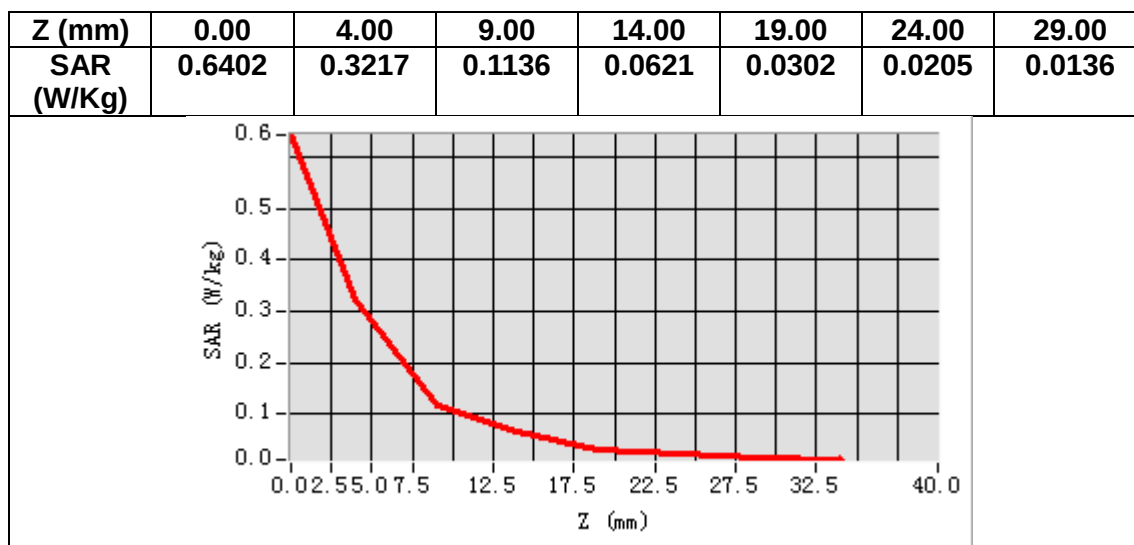
VOLUME SAR



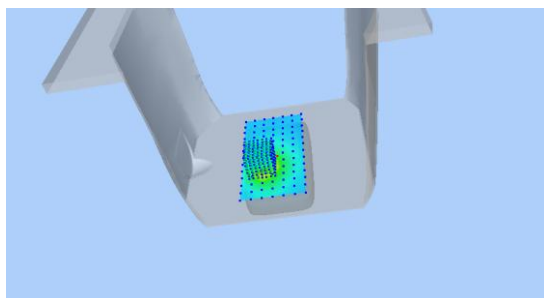
Maximum location: X=-16.00, Y=-24.00

SAR Peak: 0.60 W/kg

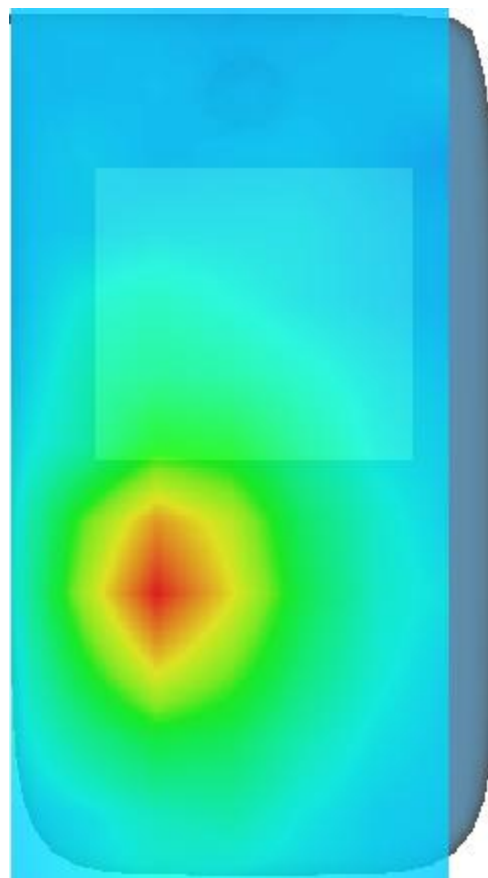
SAR 10g (W/Kg)	0.133421
SAR 1g (W/Kg)	0.203864



3D screen shot



Hot spot position



MEASUREMENT 9

Date of measurement: 16/10/2024

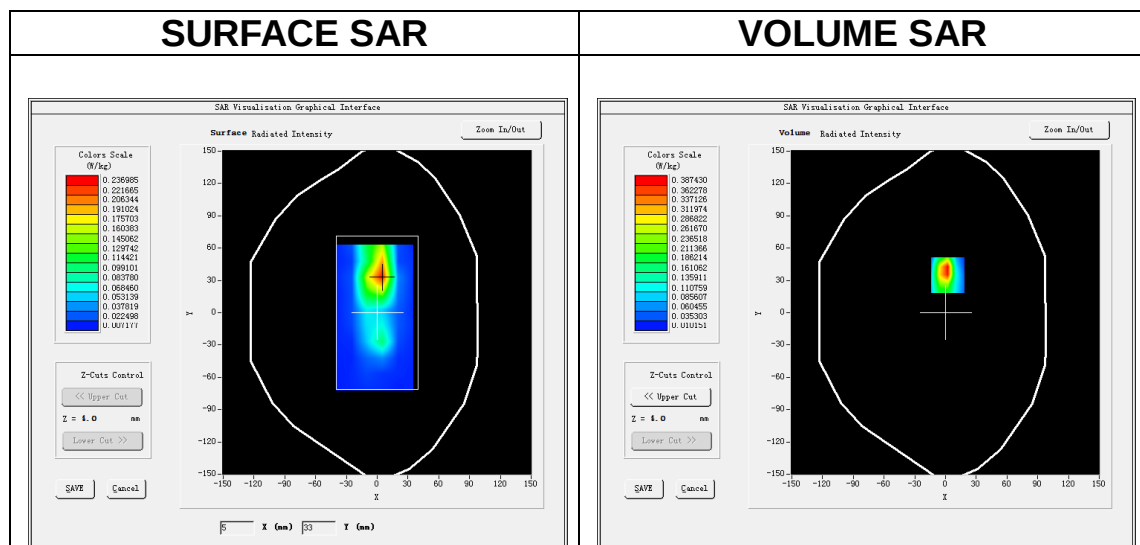
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 2</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.57</u>

B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.657154
Relative permittivity (imaginary part)	13.872347
Conductivity (S/m)	1.448890
Variation (%)	2.810000

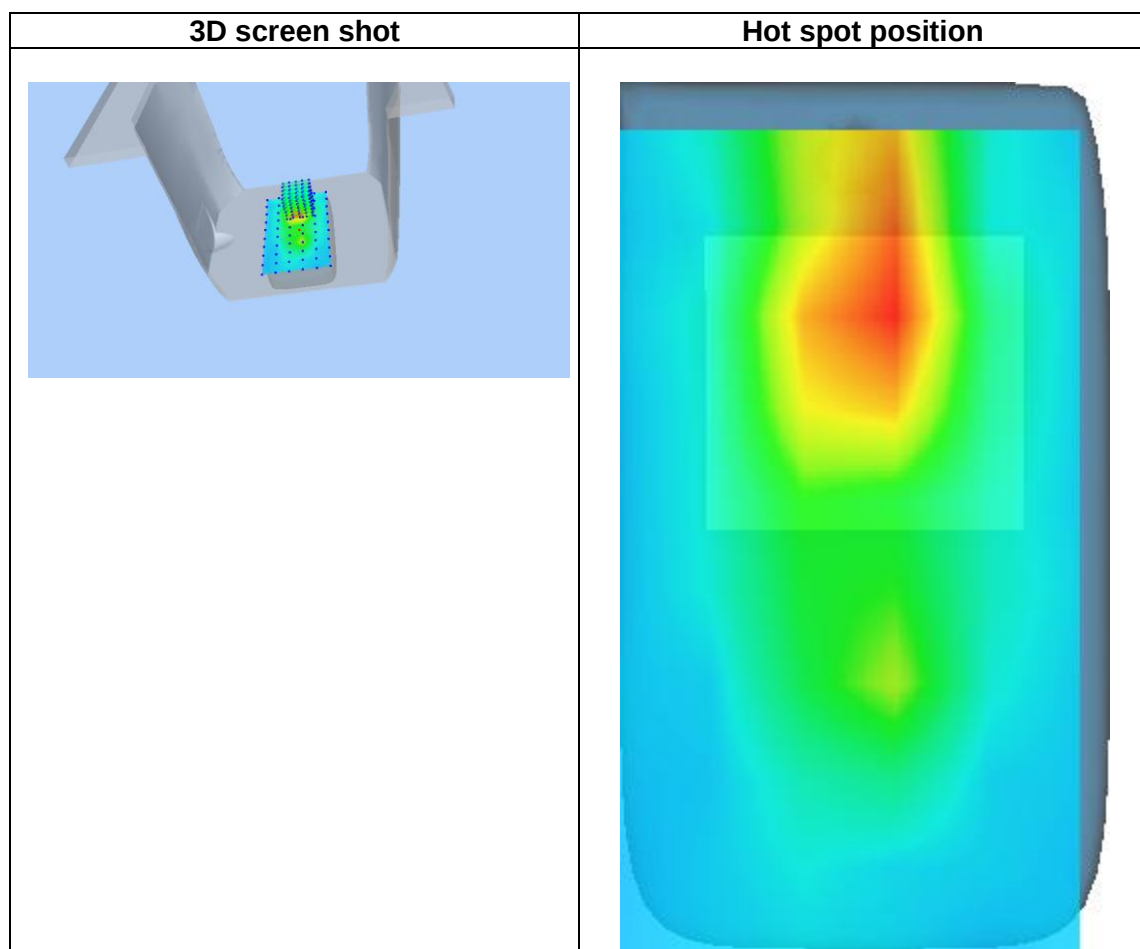
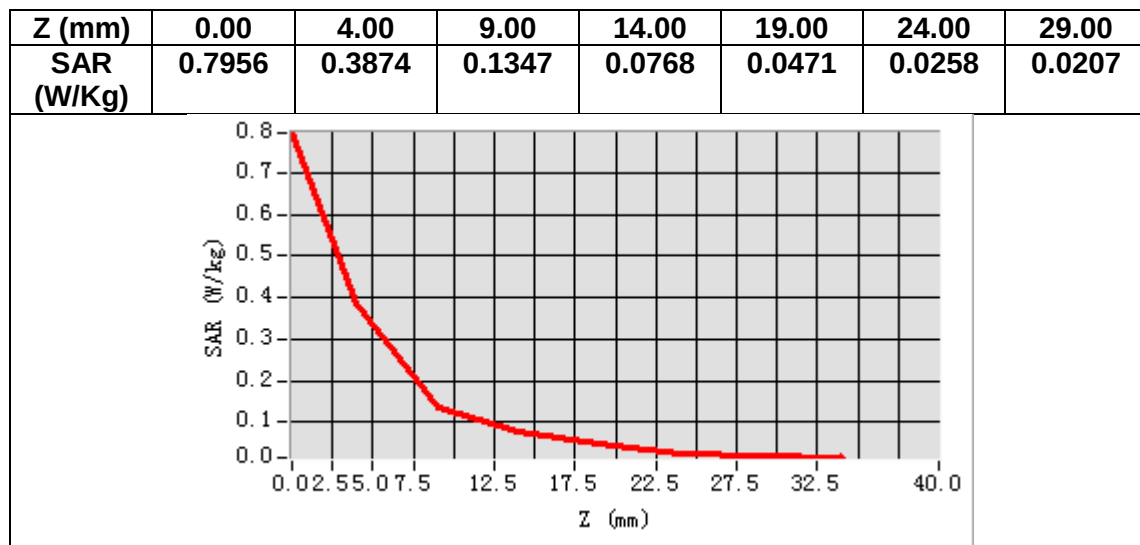
SURFACE SAR



Maximum location: X=2.00, Y=35.00

SAR Peak: 0.78 W/kg

SAR 10g (W/Kg)	0.153635
SAR 1g (W/Kg)	0.386415



MEASUREMENT 10

Date of measurement: 13/9/2024

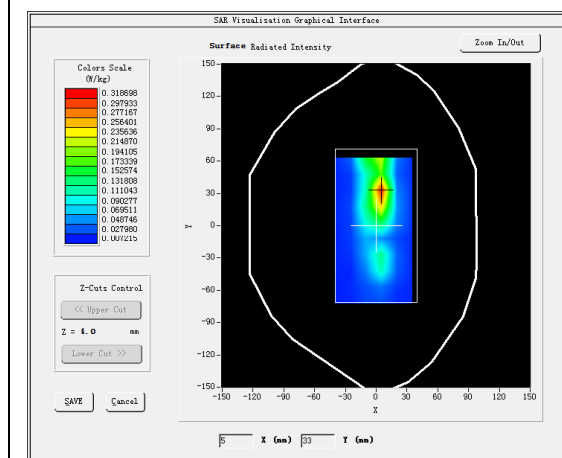
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 4</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.51</u>

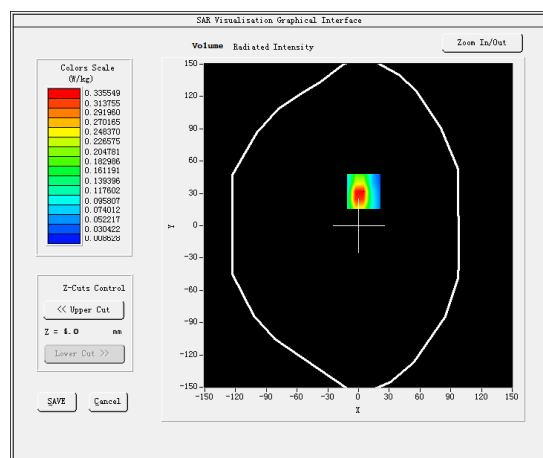
B. SAR Measurement Results

Frequency (MHz)	1732.500000
Relative permittivity (real part)	39.788006
Relative permittivity (imaginary part)	13.679339
Conductivity (S/m)	1.316636
Variation (%)	0.460000

SURFACE SAR



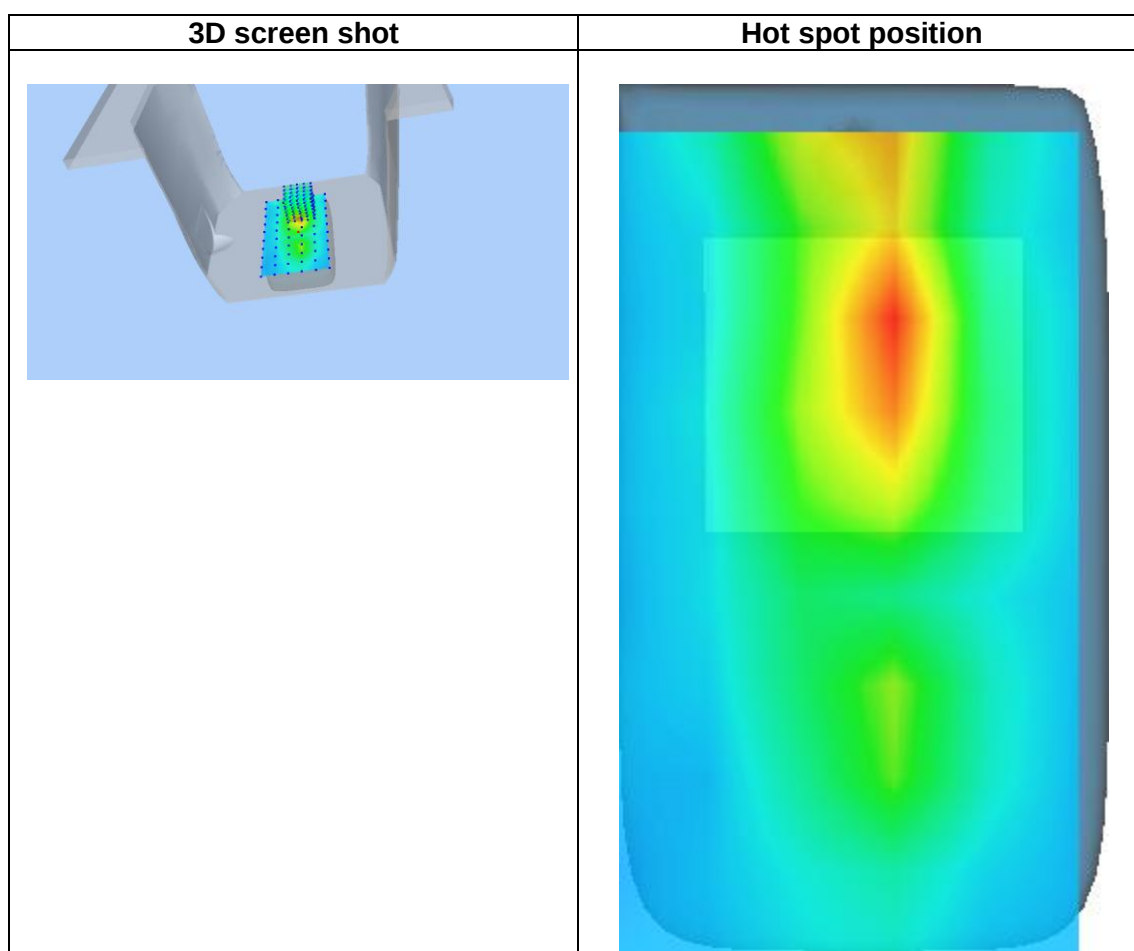
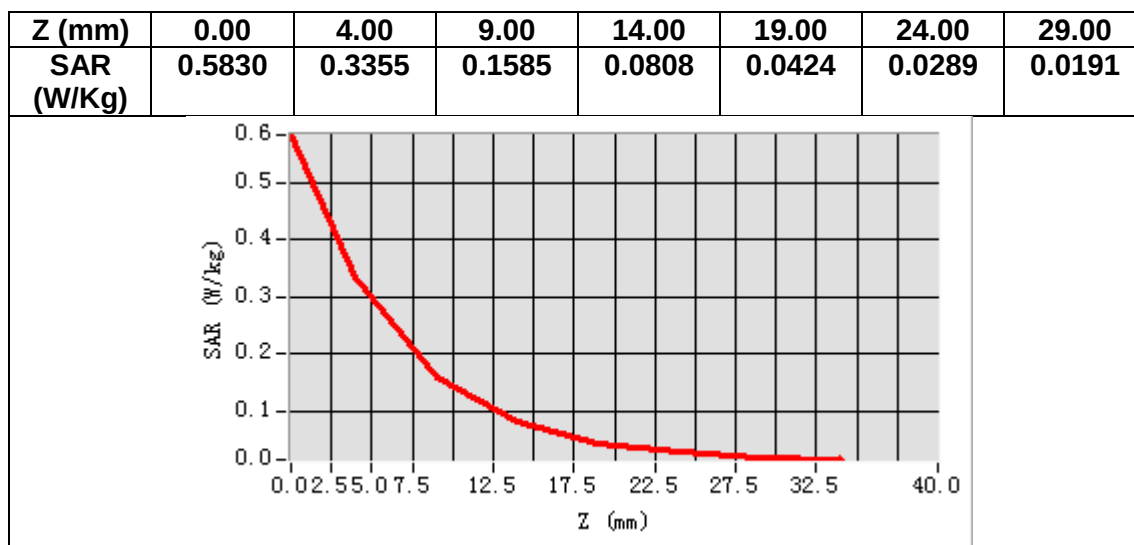
VOLUME SAR



Maximum location: X=5.00, Y=32.00

SAR Peak: 0.68 W/kg

SAR 10g (W/Kg)	0.152024
SAR 1g (W/Kg)	0.354543



MEASUREMENT 11

Date of measurement: 15/10/2024

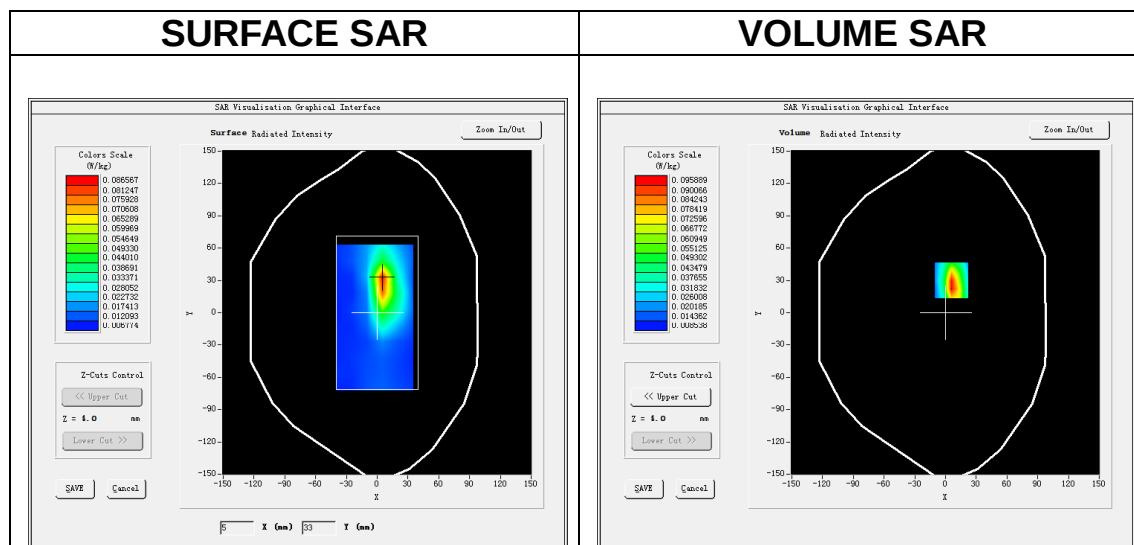
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 5</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.34</u>

B. SAR Measurement Results

Frequency (MHz)	836.500000
Relative permittivity (real part)	41.867868
Relative permittivity (imaginary part)	19.736431
Conductivity (S/m)	0.917196
Variation (%)	1.830000

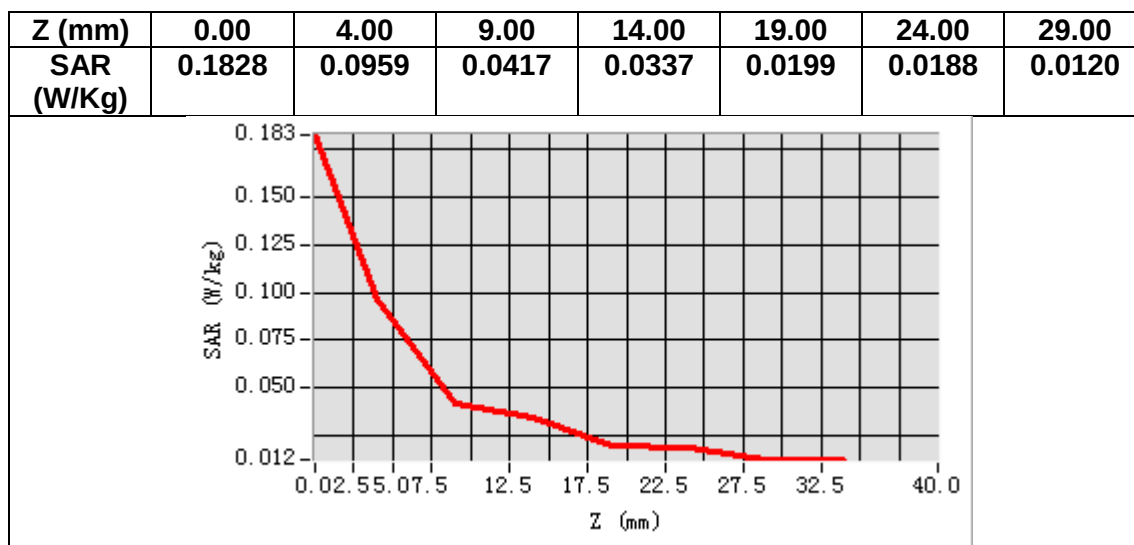
SURFACE SAR



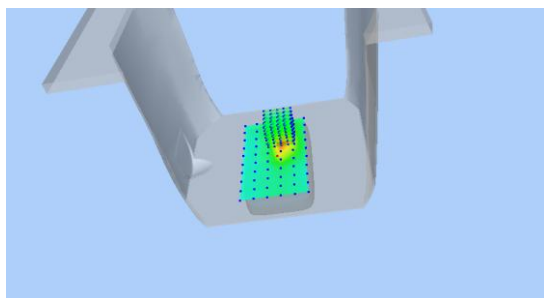
Maximum location: X=6.00, Y=30.00

SAR Peak: 0.17 W/kg

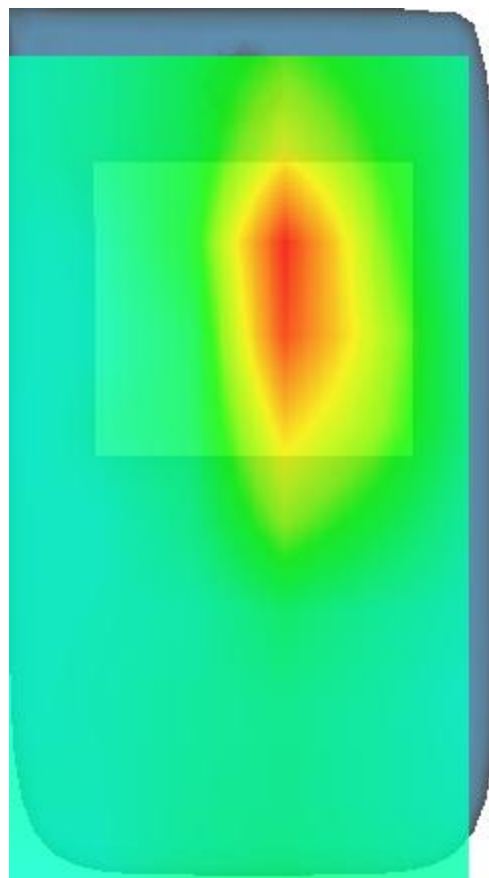
SAR 10g (W/Kg)	0.046437
SAR 1g (W/Kg)	0.092331



3D screen shot



Hot spot position



MEASUREMENT 12

Date of measurement: 13/10/2024

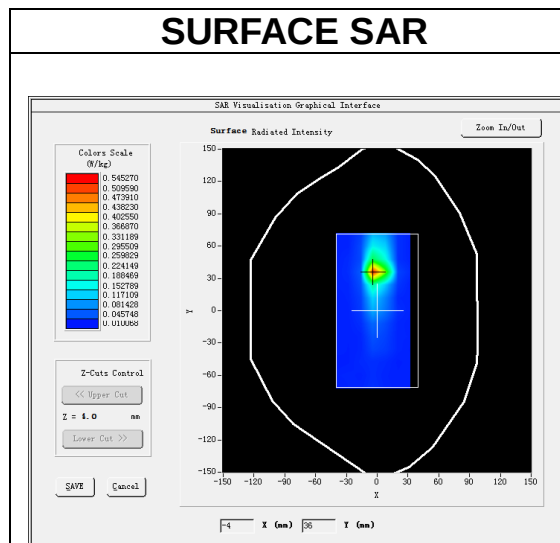
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7, dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 7</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.51</u>

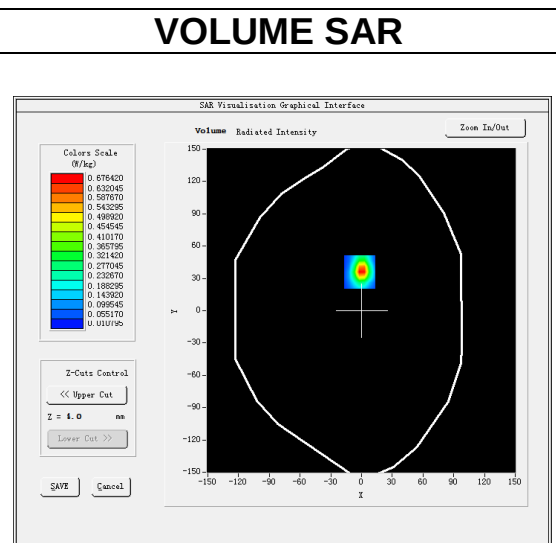
B. SAR Measurement Results

Frequency (MHz)	2535.000000
Relative permittivity (real part)	39.285744
Relative permittivity (imaginary part)	13.916988
Conductivity (S/m)	1.959976
Variation (%)	1.090000

SURFACE SAR



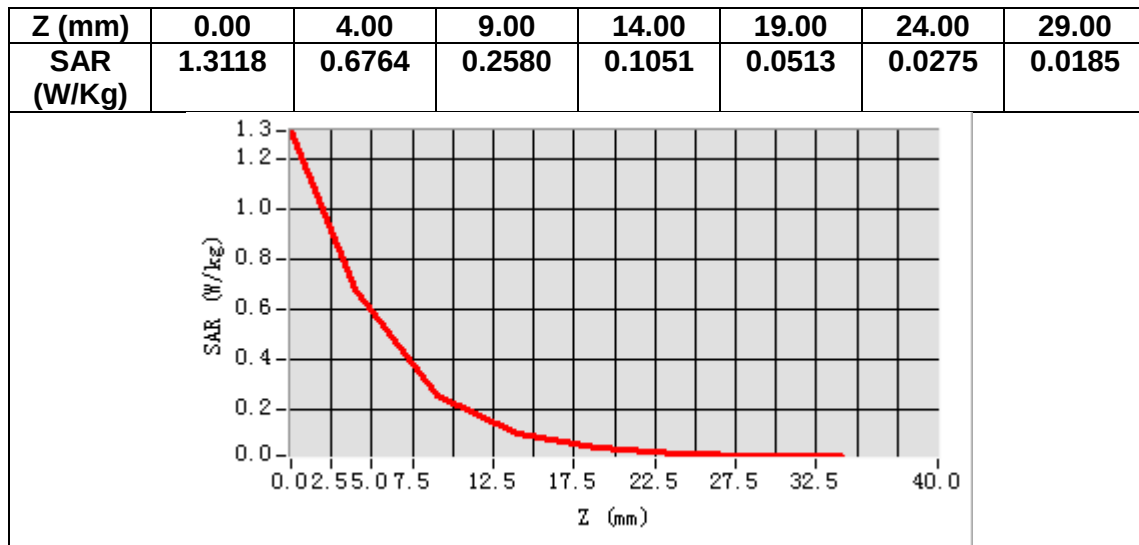
VOLUME SAR



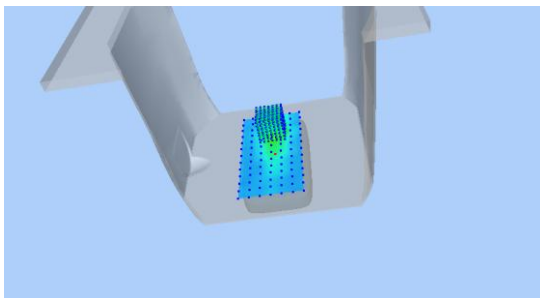
Maximum location: X=-2.00, Y=36.00

SAR Peak: 1.43 W/kg

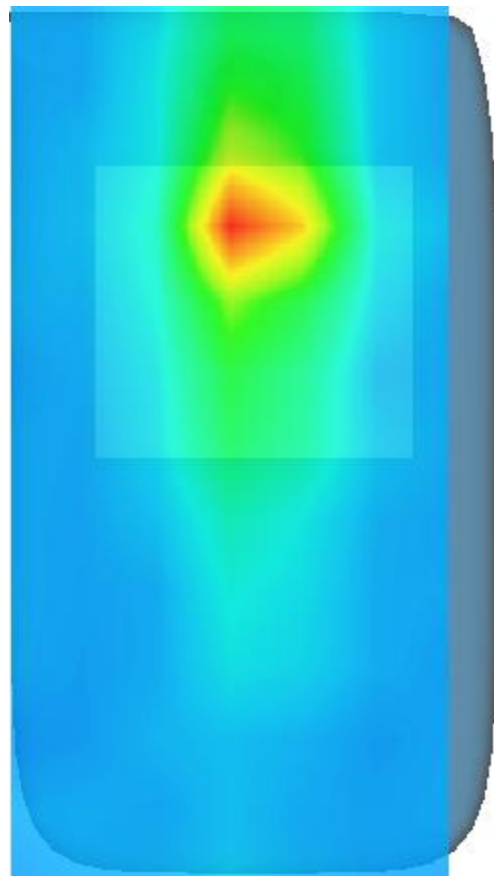
SAR 10g (W/Kg)	0.200669
SAR 1g (W/Kg)	0.624032



3D screen shot



Hot spot position



MEASUREMENT 13

Date of measurement: 8/10/2024

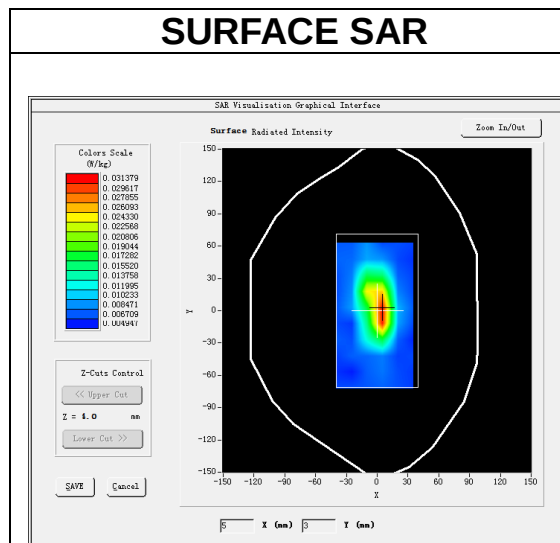
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 12</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.42</u>

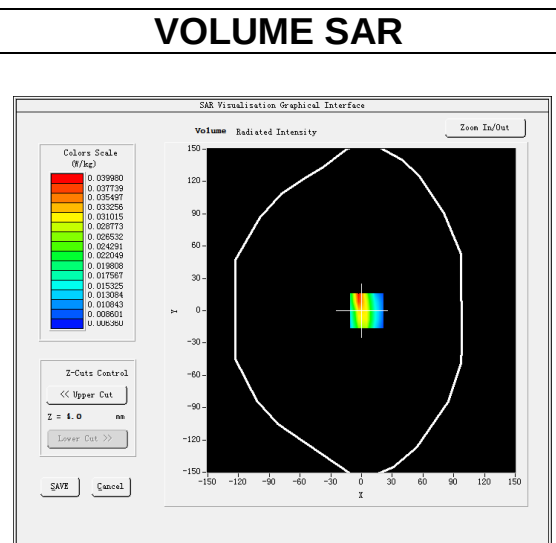
B. SAR Measurement Results

Frequency (MHz)	707.500000
Relative permittivity (real part)	40.967010
Relative permittivity (imaginary part)	21.744638
Conductivity (S/m)	0.854685
Variation (%)	-3.770000

SURFACE SAR



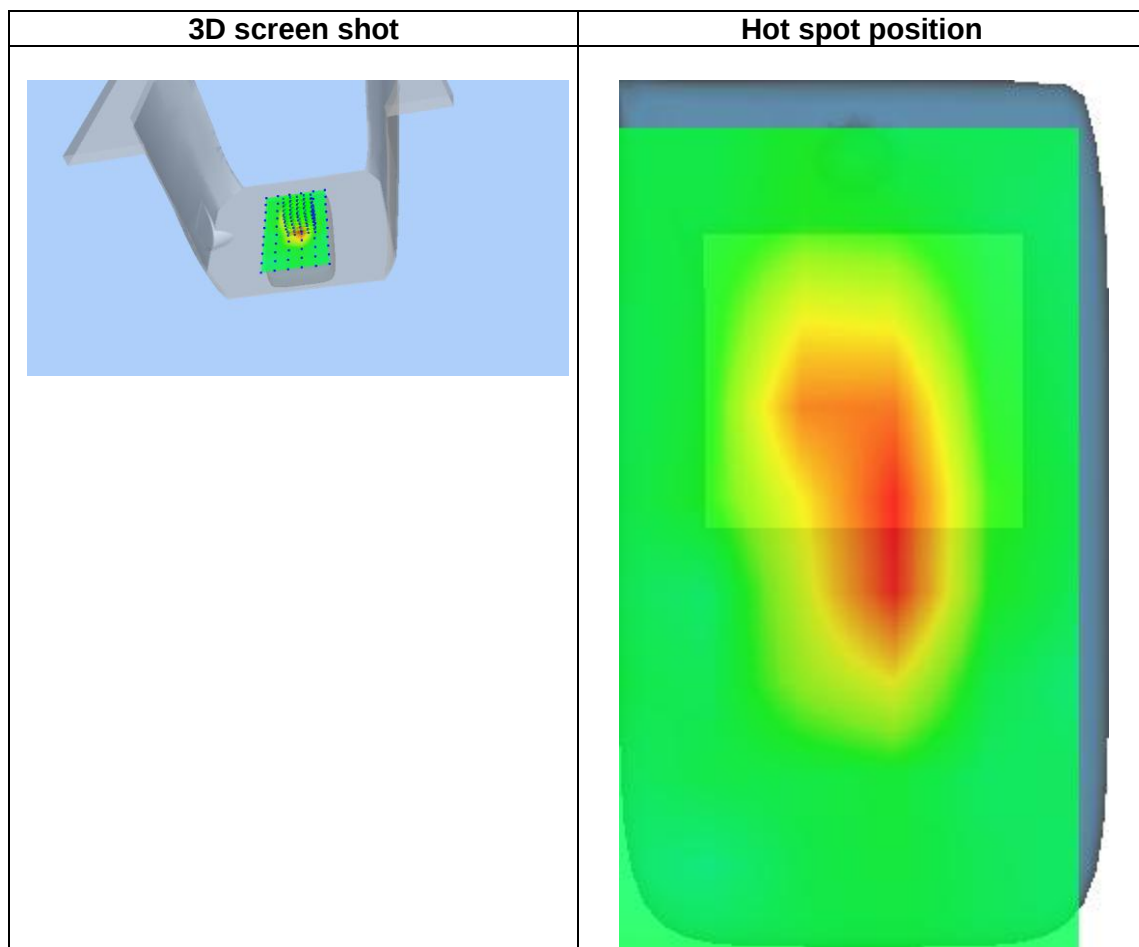
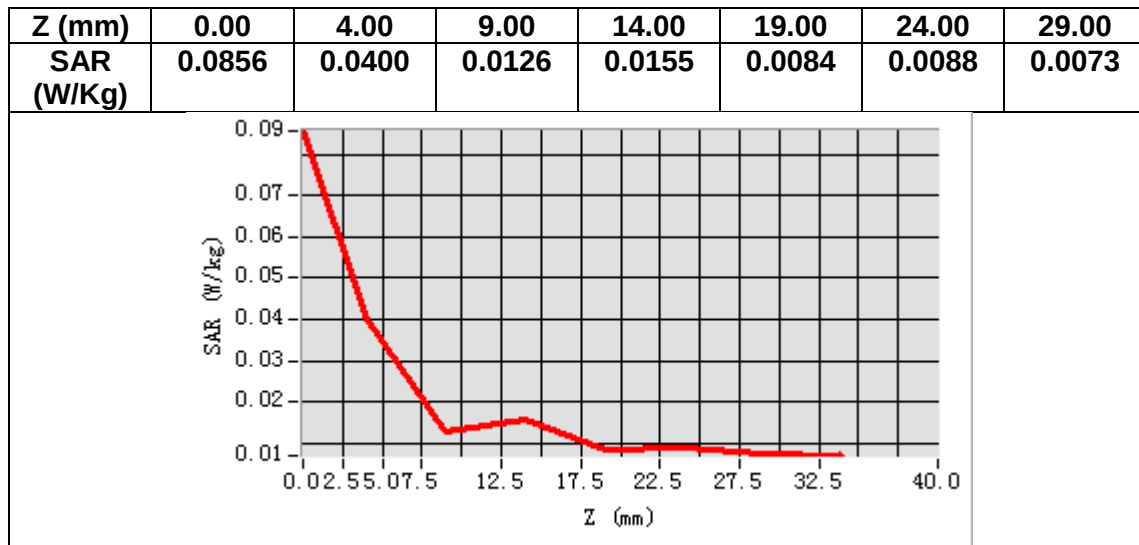
VOLUME SAR



Maximum location: X=5.00, Y=0.00

SAR Peak: 0.07 W/kg

SAR 10g (W/Kg)	0.020280
SAR 1g (W/Kg)	0.036895



MEASUREMENT 14

Date of measurement: 8/10/2024

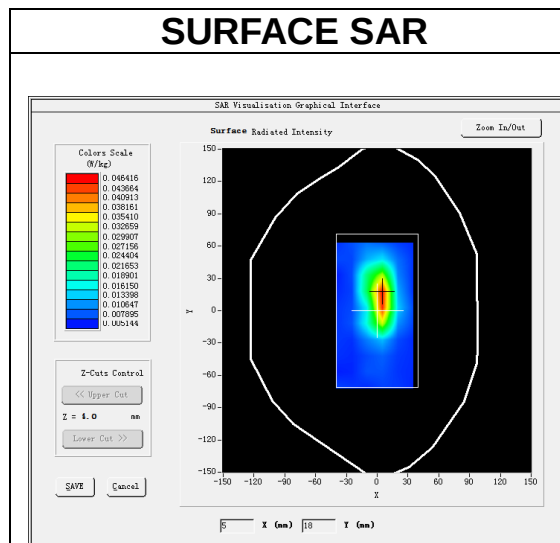
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 17</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.42</u>

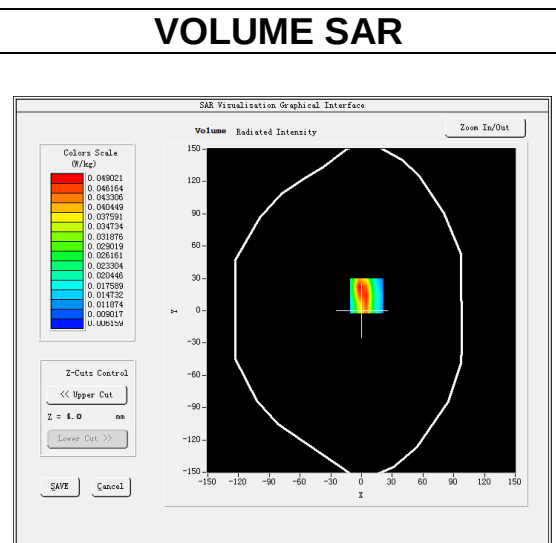
B. SAR Measurement Results

Frequency (MHz)	710.000000
Relative permittivity (real part)	40.951660
Relative permittivity (imaginary part)	21.685087
Conductivity (S/m)	0.855356
Variation (%)	3.200000

SURFACE SAR



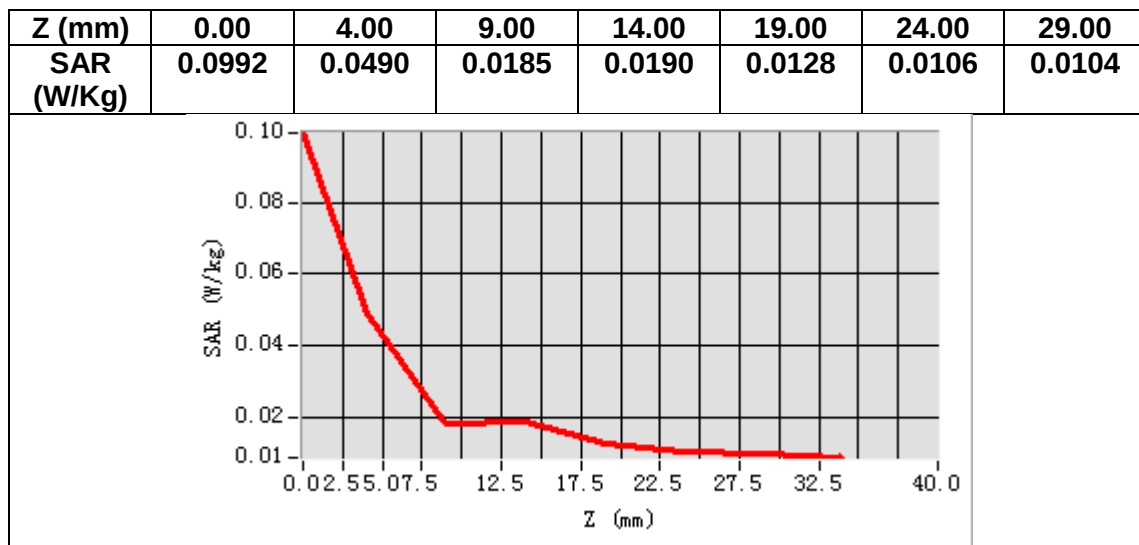
VOLUME SAR



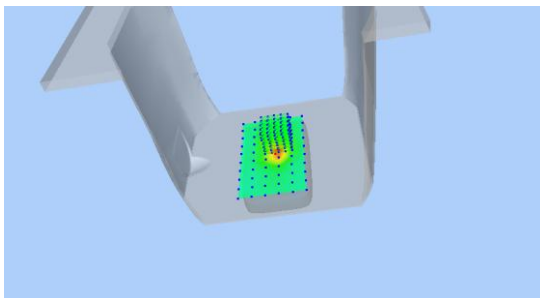
Maximum location: X=5.00, Y=14.00

SAR Peak: 0.08 W/kg

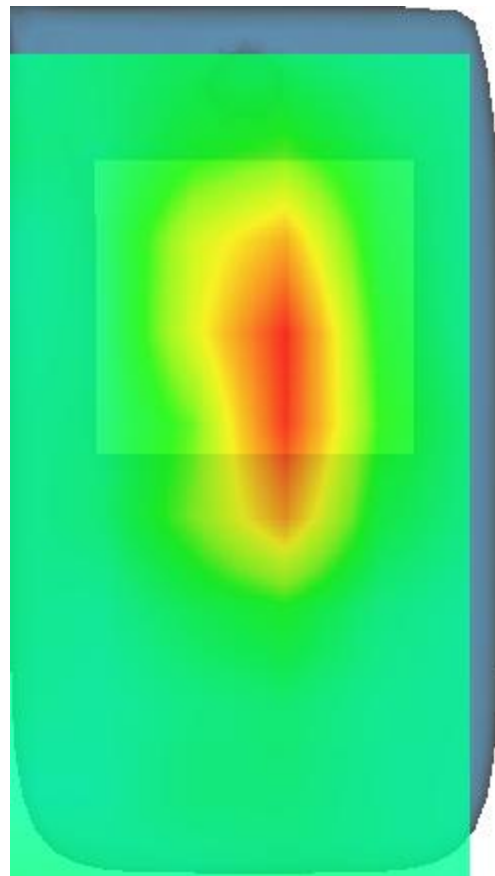
SAR 10g (W/Kg)	0.025960
SAR 1g (W/Kg)	0.048897



3D screen shot



Hot spot position



MEASUREMENT 15

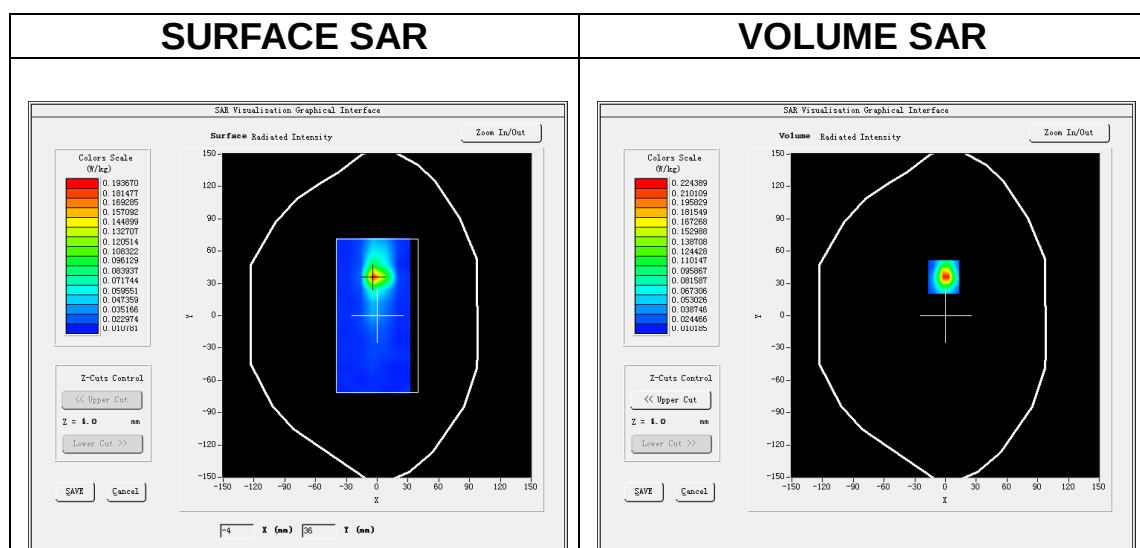
Date of measurement: 13/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 41</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.6)</u>
<u>ConvF</u>	<u>2.51</u>

B. SAR Measurement Results

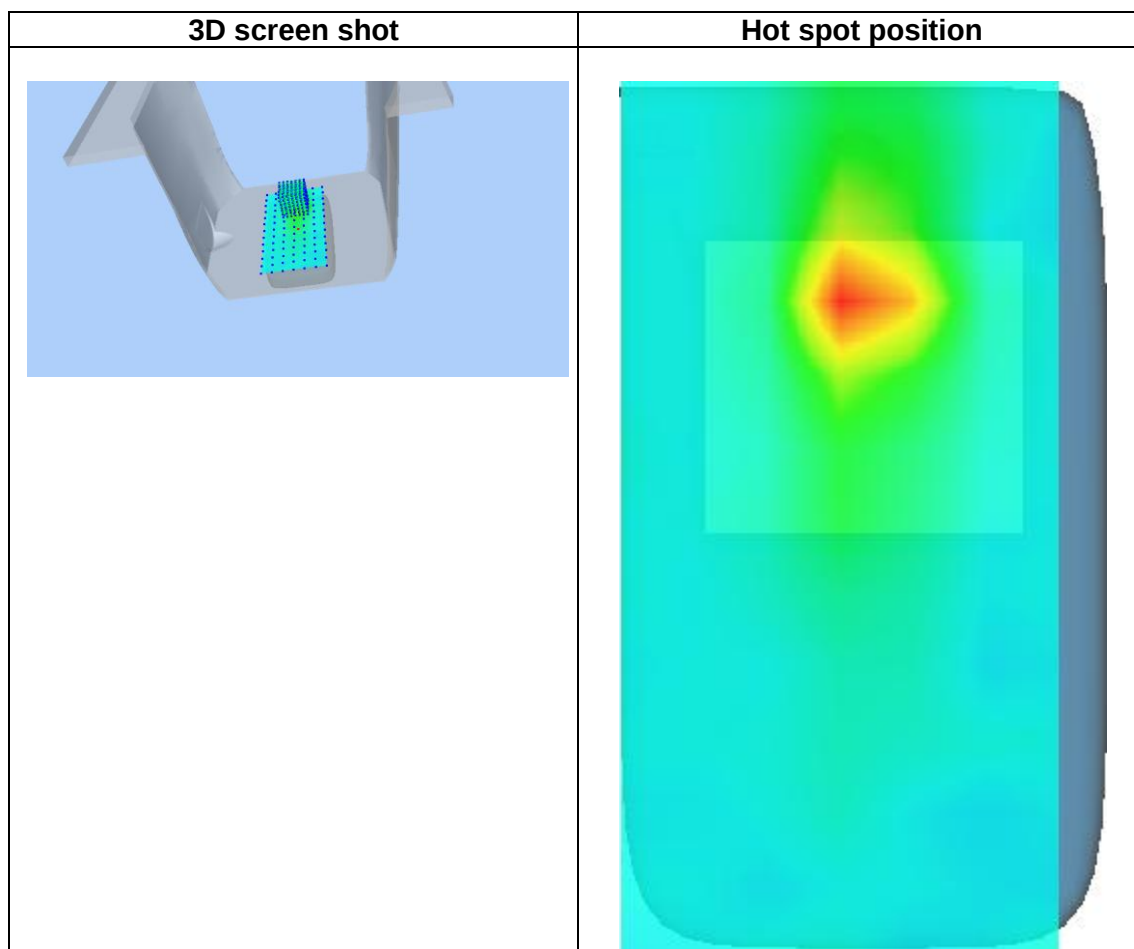
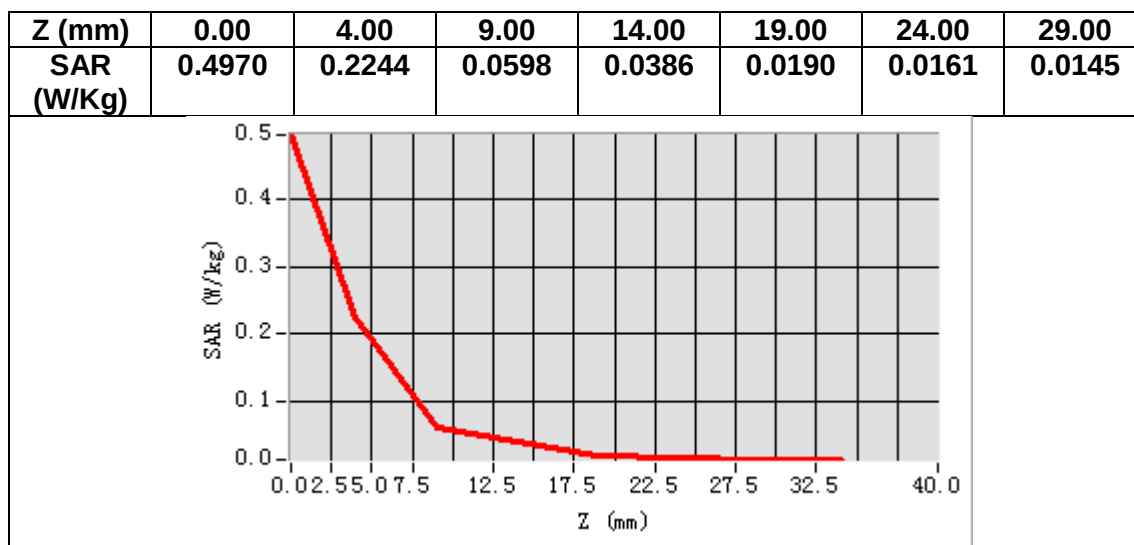
Frequency (MHz)	2593.000000
Relative permittivity (real part)	39.004242
Relative permittivity (imaginary part)	14.080588
Conductivity (S/m)	2.028387
Variation (%)	2.120000



Maximum location: X=-2.00, Y=36.00

SAR Peak: 0.47 W/kg

SAR 10g (W/Kg)	0.070342
SAR 1g (W/Kg)	0.202559



14. Appendix D. Calibration Certificate

Table of contents
E Field Probe - 3423-EPGO-426
E Field Probe - 4024-EPGO-442
750 MHz Dipole - SN 03/15 DIP 0G750-355
835 MHz Dipole - SN 03/15 DIP 0G835-347
1800 MHz Dipole - SN 03/15 DIP 1G800-349
1900 MHz Dipole - SN 03/15 DIP 1G900-350
2450 MHz Dipole - SN 03/15 DIP 2G450-352
2600 MHz Dipole - SN 03/15 DIP 2G600-356
5000-6000 MHz Dipole - SN 13/14 WGA 33



COMOSAR E-Field Probe Calibration Report

Ref : ACR.261.11.23.BES.A

SHENZHEN NTEK TESTING TECHNOLOGY CO., LTD.

BUILDING E, FENDA SCIENCE PARK, SANWEI
COMMUNITY, XIXIANG STREET,
BAO'AN DISTRICT, SHENZHEN GUANGDONG, CHINA
MVG COMOSAR DOSIMETRIC E-FIELD PROBE
SERIAL NO.: 3423-EPGO-426

Calibrated at MVG

Z.I. de la pointe du diable

Technopôle Brest Iroise – 295 avenue Alexis de Rochon
29280 PLOUZANE - FRANCE

Calibration date: 09/18/2023



Accreditations #2-6789
Scope available on www.cofrac.fr

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Summary:

This document presents the method and results from an accredited COMOSAR Dosimetric E-Field Probe calibration performed at MVG, using the CALIPROBE test bench, for use with a MVG COMOSAR system only. The test results covered by accreditation are traceable to the International System of Units (SI).



COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.261.11.23.BES.A

	Name	Function	Date	Signature
Prepared by :	Cyrille ONNEE	Measurement Responsible	9/18/2023	
Checked & approved by:	Jérôme Luc	Technical Manager	9/18/2023	
Authorized by:	Yann Toutain	Laboratory Director	9/19/2023	

Yann
Toutain ID

Signature
numérique de
Yann Toutain ID
Date : 2023.09.19
09:08:14 +02'00'

	Customer Name
Distribution :	SHENZHEN NTEK TESTING TECHNOLOGY CO., LTD.

Issue	Name	Date	Modifications
A	Cyrille ONNEE	9/18/2023	Initial release



COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.261.11.23.BES.A

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COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.261.11.23.BES.A

1 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR DOSIMETRIC E FIELD PROBE
Manufacturer	MVG
Model	SSE2
Serial Number	3423-EPGO-426
Product Condition (new / used)	New
Frequency Range of Probe	0.15 GHz-7.5GHz
Resistance of Three Dipoles at Connector	Dipole 1: R1=0.261 MΩ Dipole 2: R2=0.213 MΩ Dipole 3: R3=0.233 MΩ

2 PRODUCT DESCRIPTION

2.1 GENERAL INFORMATION

MVG's COMOSAR E field Probes are built in accordance to the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards.



Figure 1 – MVG COMOSAR Dosimetric E field Probe

Probe Length	330 mm
Length of Individual Dipoles	2 mm
Maximum external diameter	8 mm
Probe Tip External Diameter	2.5 mm
Distance between dipoles / probe extremity	1 mm

3 MEASUREMENT METHOD

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards provide recommended practices for the probe calibrations, including the performance characteristics of interest and methods by which to assess their effect. All calibrations / measurements performed meet the fore-mentioned standards.

3.1 SENSITIVITY

The sensitivity factors of the three dipoles were determined using a two step calibration method (air and tissue simulating liquid) using waveguides as outlined in the standards for frequency range 600-7500MHz and using the calorimeter cell method (transfer method) as outlined in the standards for frequency 150-450 MHz.



COMOSAR E-FIELD PROBE CALIBRATION REPORT

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3.2 LINEARITY

The evaluation of the linearity was done in free space using the waveguide, performing a power sweep to cover the SAR range 0.01 W/kg to 100 W/kg.

3.3 ISOTROPY

The axial isotropy was evaluated by exposing the probe to a reference wave from a standard dipole with the dipole mounted under the flat phantom in the test configuration suggested for system validations and checks. The probe was rotated along its main axis from 0 to 360 degrees in 15-degree steps. The hemispherical isotropy is determined by inserting the probe in a thin plastic box filled with tissue-equivalent liquid, with the plastic box illuminated with the fields from a half wave dipole. The dipole is rotated about its axis (0°–180°) in 15° increments. At each step the probe is rotated about its axis (0°–360°).

3.4 BOUNDARY EFFECT

The boundary effect is defined as the deviation between the SAR measured data and the expected exponential decay in the liquid when the probe is oriented normal to the interface. To evaluate this effect, the liquid filled flat phantom is exposed to fields from either a reference dipole or waveguide. With the probe normal to the phantom surface, the peak spatial average SAR is measured and compared to the analytical value at the surface.

The boundary effect uncertainty can be estimated according to the following uncertainty approximation formula based on linear and exponential extrapolations between the surface and $d_{be} + d_{step}$ along lines that are approximately normal to the surface:

$$SAR_{uncertainty} [\%] = \Delta SAR_{be} \frac{(d_{be} + d_{step})^2}{2d_{step}} \frac{(e^{-d_{be}/(\delta/2)})}{\delta/2} \quad \text{for } (d_{be} + d_{step}) < 10 \text{ mm}$$

where

$SAR_{uncertainty}$	is the uncertainty in percent of the probe boundary effect
d_{be}	is the distance between the surface and the closest <i>zoom-scan</i> measurement point, in millimetre
Δ_{step}	is the separation distance between the first and second measurement points that are closest to the phantom surface, in millimetre, assuming the boundary effect at the second location is negligible
δ	is the minimum penetration depth in millimetres of the head tissue-equivalent liquids defined in this standard, i.e., $\delta \approx 14$ mm at 3 GHz;
ΔSAR_{be}	in percent of SAR is the deviation between the measured SAR value, at the distance d_{be} from the boundary, and the analytical SAR value.

The measured worst case boundary effect SARuncertainty[%] for scanning distances larger than 4mm is 1.0% Limit ,2%).



COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.261.11.23.BES.A

4 MEASUREMENT UNCERTAINTY

The guidelines outlined in the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards were followed to generate the measurement uncertainty associated with a SAR probe calibration using the waveguide or calorimetric cell technique depending on the frequency.

The estimated expanded uncertainty (k=2) in calibration for SAR (W/kg) is +/-11% for the frequency range 150-450MHz.

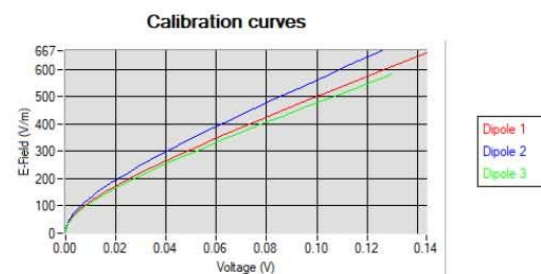
The estimated expanded uncertainty (k=2) in calibration for SAR (W/kg) is +/-14% for the frequency range 600-7500MHz.

5 CALIBRATION RESULTS

Ambient condition	
Liquid Temperature	20 +/- 1 °C
Lab Temperature	20 +/- 1 °C
Lab Humidity	30-70 %

5.1 CALIBRATION IN AIR

The following curve represents the measurement in waveguide of the voltage picked up by the probe toward the E-field generated inside the waveguide.



From this curve, the sensitivity in air is calculated using the below formula.

$$E^2 = \sum_{i=1}^3 \frac{V_i (1 + V_i / DCP_i)}{Norm_i}$$

where

Vi=voltage readings on the 3 channels of the probe

DCPi=diode compression point given below for the 3 channels of the probe

Normi=dipole sensitivity given below for the 3 channels of the probe



COMOSAR E-FIELD PROBE CALIBRATION REPORT

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Normx dipole 1 ($\mu\text{V}/(\text{V}/\text{m})^2$)	Normy dipole 2 ($\mu\text{V}/(\text{V}/\text{m})^2$)	Normz dipole 3 ($\mu\text{V}/(\text{V}/\text{m})^2$)
0.78	0.62	0.85

DCP dipole 1 (mV)	DCP dipole 2 (mV)	DCP dipole 3 (mV)
105	108	107

5.2 CALIBRATION IN LIQUID

The calorimeter cell or the waveguide is used to determine the calibration in liquid using the formula below.

$$\text{ConvF} = \frac{E_{\text{liquid}}^2}{E_{\text{air}}^2}$$

The E-field in the liquid is determined from the SAR measurement according to the below formula.

$$E_{\text{liquid}}^2 = \frac{\rho \text{ SAR}}{\sigma}$$

where

σ =the conductivity of the liquid

ρ =the volumetric density of the liquid

SAR=the SAR measured from the formula that depends on the setup used. The SAR formulas are given below

For the calorimeter cell (150-450 MHz), the formula is:

$$\text{SAR} = c \frac{dT}{dt}$$

where

c =the specific heat for the liquid

dT/dt =the temperature rises over the time

For the waveguide setup (600-75000 MHz), the formula is:

$$\text{SAR} = \frac{4P_W}{ab\delta} e^{-\frac{2z}{\delta}}$$

where

a =the larger cross-sectional of the waveguide

b =the smaller cross-sectional of the waveguide

δ =the skin depth for the liquid in the waveguide

P_W =the power delivered to the liquid



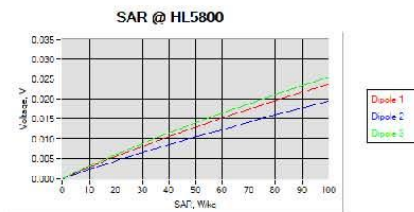
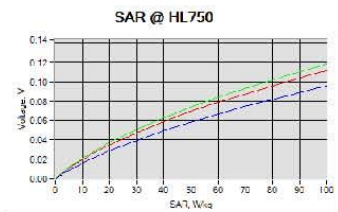
COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.261.11.23.BES.A

The below table summarize the ConvF for the calibrated liquid. The curves give examples for the measured SAR depending on the voltage in some liquid.

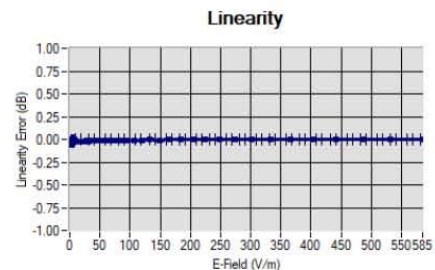
Liquid	Frequency (MHz*)	ConvF
HL750	750	2.37
HL850	835	2.32
HL900	900	2.23
HL1800	1800	2.45
HL1900	1900	2.63
HL2000	2000	2.83
HL2300	2300	2.81
HL2450	2450	2.85
HL2600	2600	2.65
HL3300	3300	2.21
HL3500	3500	2.20
HL3700	3700	2.11
HL3900	3900	2.40
HL4200	4200	2.40
HL4600	4600	2.33
HL4900	4900	2.37
HL5200	5200	2.07
HL5400	5400	2.11
HL5600	5600	2.20
HL5800	5800	2.04

(*) Frequency validity is ± 50 MHz below 600 MHz, ± 100 MHz from 600 MHz to 6 GHz and ± 700 MHz above 6 GHz

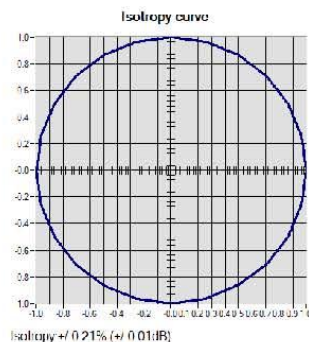


6 VERIFICATION RESULTS

The figures below represent the measured linearity and axial isotropy for this probe. The probe specification is ± 0.2 dB for linearity and ± 0.15 dB for axial isotropy.



Linearity: $\pm 1.42\%$ (± 0.06 dB)



Isotropy: $\pm 0.21\%$ (± 0.01 dB)