

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 : Body Camera

Brand Name : HALO

Model Name : S3

Family Model : Horizon Series

Report No. : S22110402102001

FCC ID : 2A9JS-S301

Prepared for

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TEST RESULT CERTIFICATION

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Manufacturer's Name : Halo Technologies Europe Ltd
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Product description

Product name : Body Camera
Brand Name : HALO
Model and/or type reference : S3
Family Model : Horizon Series

FCC 47 CFR Part 2(2.1093)

ANSI/IEEE C95.1-1992

Standards : 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..... : S221104021002

Date of Test

Date (s) of performance of tests..... : Nov. 11, 2022 ~ Nov. 21, 2022

Date of Issue : Dec. 14, 2022

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

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Approved By : Alex
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※ ※ Revision History ※ ※

REV.	DESCRIPTION	ISSUED DATE	REMARK
Rev.1.0	Initial Test Report Release	Dec. 14, 2022	Jacob Chen

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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 S3 are as follows.

RF Exposure Conditions		Equipment Class -Highest Reported SAR (W/kg)			
		PCT	DTS	NII	DSS
1-g Body (Separation distance of 0mm)		1.131	0.178	0.216	N/A
Max Simultaneous Tx	Body	1.298	1.166	1.183	1.298

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	Body Camera		
Brand Name	HALO		
Model Name	S3		
Family Model	Horizon Series		
Model Difference	All the model are the same circuit and RF module,except the model names.		
FCC ID	2A9JS-S301		
Device Phase	Identical Prototype		
Exposure Category	General population / Uncontrolled environment		
Antenna Type	FPCB Antenna		
Battery Information	DC 3.8V, 4200mAh, 15.96Wh		
HW Version	MB_V15		
SW Version	220920_V35BIN		
Device Operating Configurations			
Supporting Mode(s)	WCDMA Band 2/4/5, LTE Band 2/4/5/12/13/14/66/71, WLAN 2.4G/5G, Bluetooth, NFC		
Test Modulation	WCDMA(QPSK), LTE(QPSK/16QAM), WLAN(DSSS/OFDM) , Bluetooth(GFSK, $\pi/4$ -DQPSK, 8DPSK), NFC(ASK)		
Device Class	B		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	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 12	699-716	729-746
	LTE Band 13	777-787	746-756
	LTE Band 14	788-798	758-768
	LTE Band 66	1710-1780	2110-2200
	LTE Band 71	663-698	617-652
	WLAN 2.4G	2412-2462	
	WLAN 5.2G	5180-5240	
	NFC	13.56	
	Bluetooth	2402-2480	
Power Class	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 12)		
	3, tested with power control all Max.(LTE Band 13)		
	3, tested with power control all Max.(LTE Band 14)		
	3, tested with power control all Max.(LTE Band 66)		
	3, tested with power control all Max.(LTE Band 71)		

1.4. Test specification(s)

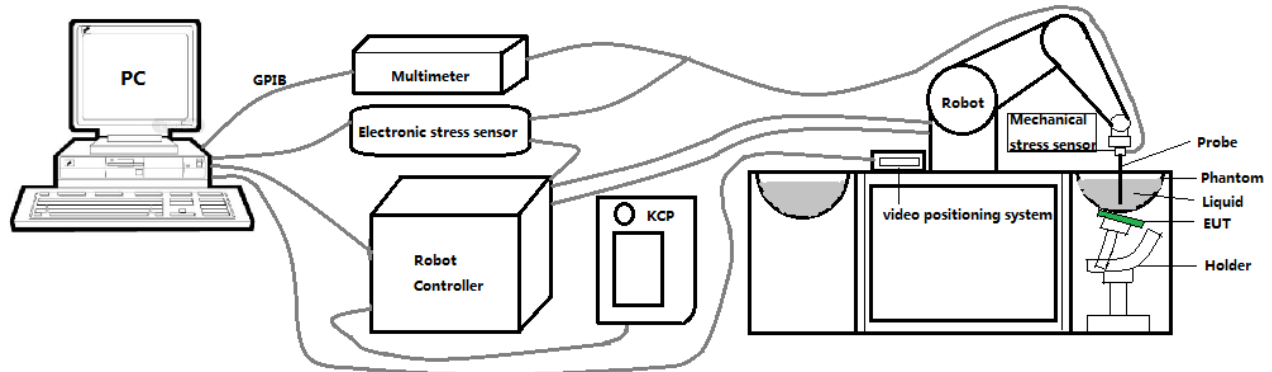
FCC 47 CFR Part 2(2.1093)
ANSI/IEEE C95.1-1992
IEEE Std 1528-2013
KDB 865664 D01 SAR measurement 100 MHz to 6 GHz
KDB 865664 D02 RF Exposure Reporting
KDB 447498 D01 General RF Exposure Guidance
KDB 248227 D01 802.11 Wi-Fi SAR
KDB 941225 D01 3G SAR Procedures
KDB 941225 D05 SAR for LTE Devices

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

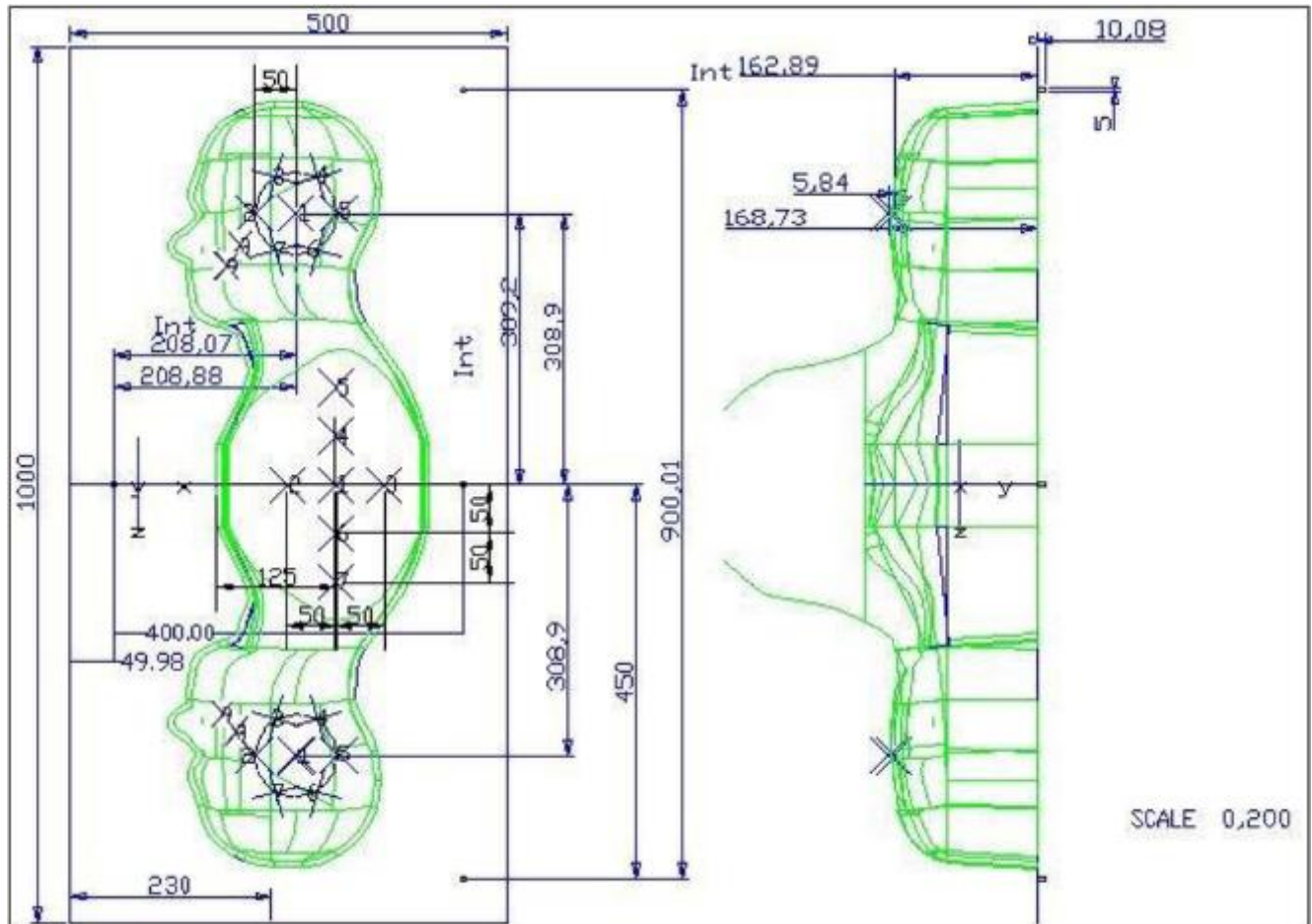
Photo of SAM phantom SN 16/15 SAM119



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

2.4.1. Technical Data

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

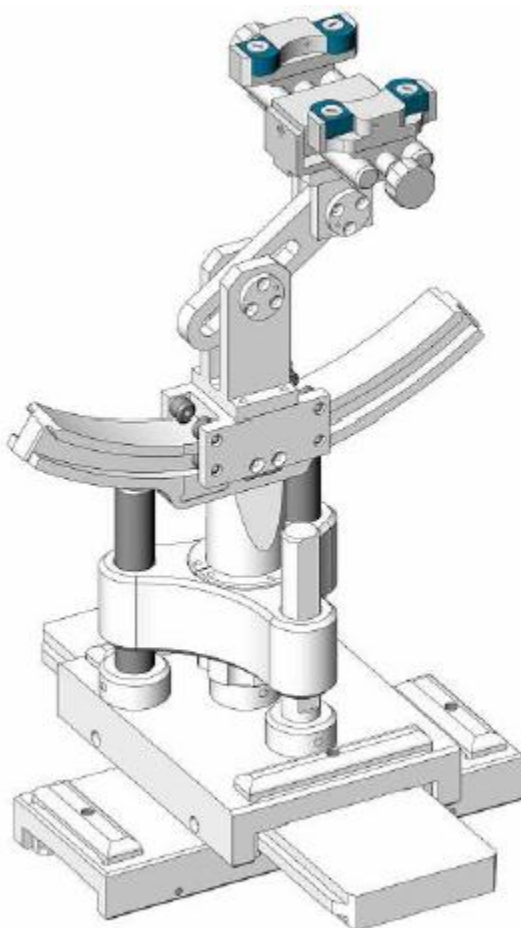


Serial Number	Left Head(mm)		Right Head(mm)		Flat Part(mm)	
SN 16/15 SAM119	2	2.02	2	2.08	1	2.09
	3	2.05	3	2.06	2	2.06
	4	2.07	4	2.07	3	2.08
	5	2.08	5	2.08	4	2.10
	6	2.05	6	2.07	5	2.10
	7	2.05	7	2.05	6	2.07
	8	2.07	8	2.06	7	2.07
	9	2.08	9	2.06	-	-

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

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	SN 08/16 EPGO287	Feb. 01, 2022	Jan. 31, 2023
☒	MVG	750 MHz Dipole	SID750	SN 03/15 DIP 0G750-355	Mar. 01, 2021	Feb. 28, 2024
☒	MVG	835 MHz Dipole	SID835	SN 03/15 DIP 0G835-347	Mar. 01, 2021	Feb. 28, 2024
☐	MVG	900 MHz Dipole	SID900	SN 03/15 DIP 0G900-348	Mar. 01, 2021	Feb. 28, 2024
☒	MVG	1800 MHz Dipole	SID1800	SN 03/15 DIP 1G800-349	Mar. 01, 2021	Feb. 28, 2024
☒	MVG	1900 MHz Dipole	SID1900	SN 03/15 DIP 1G900-350	Mar. 01, 2021	Feb. 28, 2024
☐	MVG	2000 MHz Dipole	SID2000	SN 03/15 DIP 2G000-351	Mar. 01, 2021	Feb. 28, 2024
☐	MVG	2300 MHz Dipole	SID2300	SN 03/16 DIP 2G300-358	Mar. 01, 2021	Feb. 28, 2024
☒	MVG	2450 MHz Dipole	SID2450	SN 03/15 DIP 2G450-352	Mar. 01, 2021	Feb. 28, 2024
☐	MVG	2600 MHz Dipole	SID2600	SN 03/15 DIP 2G600-356	Mar. 01, 2021	Feb. 28, 2024
☒	MVG	5000 MHz Dipole	SWG5500	SN 13/14 WGA 33	Mar. 01, 2021	Feb. 28, 2024
☒	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	117858	Jun. 17, 2022	Jun. 16, 2023
☒	R&S	Wideband radio communication tester	CMW500	103917	Jun. 17, 2022	Jun. 16, 2023
☒	HP	Network Analyzer	8753D	3410J01136	Jun. 17, 2022	Jun. 16, 2023

☒	Agilent	MXG Vector Signal Generator	N5182A	MY47070317	Jun. 16, 2022	Jun. 15, 2023
☒	Agilent	Power meter	E4419B	MY45102538	Jun. 17, 2022	Jun. 16, 2023
☒	Agilent	Power sensor	E9301A	MY41495644	Jun. 17, 2022	Jun. 16, 2023
☒	Agilent	Power sensor	E9301A	US39212148	Jun. 17, 2022	Jun. 16, 2023
☒	MCLI/USA	Directional Coupler	CB11-20	0D2L51502	Jul. 17, 2020	Jul. 16, 2023

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 Wi-Fi/BT power measurement, use engineering software to configure EUT Wi-Fi/BT 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 Wi-Fi/BT output power.

<SAR measurement>

- (a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT Wi-Fi/BT 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 used to determine these 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 of a full 3D scan over a specific area. This 3D scan is useful for multi Tx SAR measurement. Indeed, it is possible with OpenSAR to add, point by point, several volumetric scans to calculate the SAR value of the combined measurement as it is defined in the standard IEEE1528 and IEC62209.

3.5. Power Drift

All SAR testing is under the EUT installed 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	5200	5800
Water	34.40	34.40	34.40	55.36	55.36	57.87	57.87	57.87	65.53	65.53
NaCl	0.79	0.79	0.79	0.35	0.35	0.16	0.16	0.16	0.00	0.00
1,2-Propanediol	64.81	64.81	64.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triton X-100	0.00	0.00	0.00	30.45	30.45	19.97	19.97	19.97	24.24	24.24
DGBE	0.00	0.00	0.00	13.84	13.84	22.00	22.00	22.00	10.23	10.23

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.

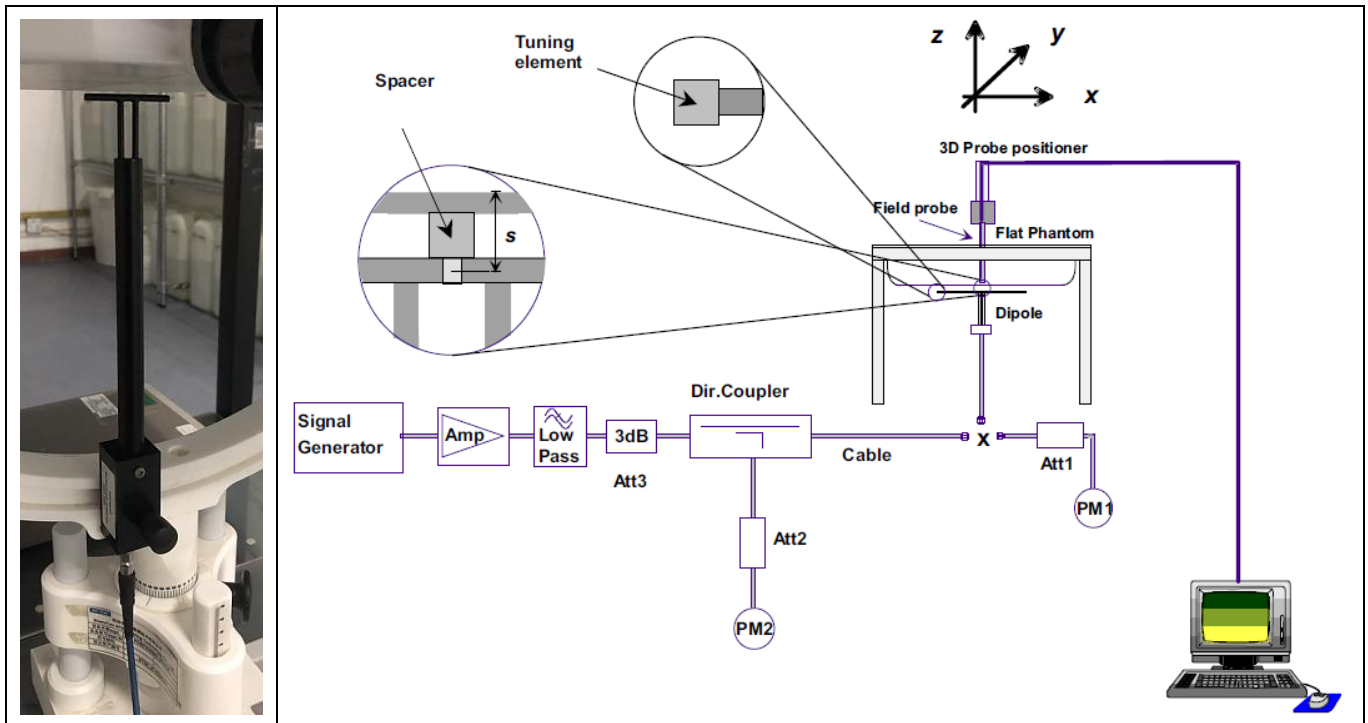
Tissue Type	Measured Frequency (MHz)	Target Tissue		Measured Tissue		Liquid Temp.	Test Date
		$\epsilon_r (\pm 5\%)$	σ (S/m) ($\pm 5\%$)	ϵ_r	σ (S/m)		
Head 750	750	41.96 (39.86~44.06)	0.89 (0.85~0.93)	40.41	0.90	21.7 °C	Nov. 11, 2022
Head 850	835	41.50 (39.43~43.58)	0.90 (0.86~0.95)	41.25	0.93	21.8 °C	Nov. 15, 2022
Head 1800	1800	40.00 (38.00~42.00)	1.40 (1.33~1.47)	38.92	1.39	21.5 °C	Nov. 21, 2022
Head 1900	1900	40.00 (38.00~42.00)	1.40 (1.33~1.47)	38.55	1.45	21.6 °C	Nov. 14, 2022
Head 2450	2450	39.20 (37.24~41.16)	1.80 (1.71~1.89)	37.87	1.81	21.3 °C	Nov. 18, 2022
Head 5200	5200	36.00 (34.20~37.80)	4.66 (4.43~4.89)	35.81	4.75	21.5 °C	Nov. 17, 2022

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. It is fed with a power of 100mW (below 5GHz) or 100mW (above 5GHz). 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 (Normalized to 1W)		Liquid Temp.	Test Date
	1-g (W/Kg)	10-g (W/Kg)	1-g (W/Kg)	10-g (W/Kg)		
750MHz	8.53 (7.68~9.38)	5.56 (5.01~6.11)	9.02	5.43	21.7 °C	Nov. 11, 2022
835MHz	9.84 (8.86~10.82)	6.22 (5.60~6.84)	9.03	6.08	21.8 °C	Nov. 15, 2022
1800MHz	37.96 (34.17~41.75)	19.81 (17.83~21.79)	36.62	19.73	21.5 °C	Nov. 21, 2022
1900MHz	40.37 (36.34~44.40)	20.48 (18.44~22.52)	43.72	20.93	21.6 °C	Nov. 14, 2022
2450MHz	53.69 (48.33~59.05)	23.94 (21.55~26.33)	49.56	22.58	21.3 °C	Nov. 18, 2022
5200MHz	162.34 (146.11~178.57)	55.42 (49.88~60.96)	172.19	54.49	21.5 °C	Nov. 17, 2022

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. Wireless Router Device

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WLAN simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 where SAR test considerations for handsets ($L \times W \geq 9 \text{ cm} \times 5 \text{ cm}$) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WLAN transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WLAN transmitter according to FCC KDB Publication 447498 D01 publication procedures. The "Portable Hotspot" feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

7. RF Output Power

7.1. 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	23.00	22.40	22.66	22.46	
HSDPA Sub 1	22.00	21.44	21.67	21.41	
HSDPA Sub 2	22.00	21.53	21.44	21.17	
HSDPA Sub 3	21.00	20.62	20.59	20.03	
HSDPA Sub 4	20.50	20.46	20.36	19.82	
HSUPA Sub 1	21.50	20.73	21.05	20.65	
HSUPA Sub 2	22.00	21.66	21.57	21.30	
HSUPA Sub 3	21.50	21.13	21.10	20.67	
HSUPA Sub 4	22.00	21.74	21.64	21.15	
HSUPA Sub 5	21.50	21.08	20.93	20.70	
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	23.50	23.29	23.36	23.39	
HSDPA Sub 1	22.50	22.31	22.26	22.32	
HSDPA Sub 2	22.50	22.28	22.12	22.24	
HSDPA Sub 3	21.50	21.44	21.11	21.21	
HSDPA Sub 4	21.50	21.11	21.18	20.87	
HSUPA Sub 1	22.00	21.55	21.63	21.56	
HSUPA Sub 2	22.50	22.49	22.30	22.36	
HSUPA Sub 3	22.50	22.03	21.83	21.67	
HSUPA Sub 4	22.50	22.37	22.20	22.39	
HSUPA Sub 5	22.00	21.70	21.65	21.68	
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	23.00	22.89	22.94	22.92	
HSDPA Sub 1	22.00	21.74	21.80	21.81	
HSDPA Sub 2	22.00	21.73	21.60	21.68	
HSDPA Sub 3	21.00	20.68	20.56	20.74	

HSDPA Sub 4	21.00	20.31	20.30	20.66
HSUPA Sub 1	21.50	21.08	21.19	21.16
HSUPA Sub 2	22.00	21.81	21.81	21.75
HSUPA Sub 3	21.50	21.34	21.29	21.23
HSUPA Sub 4	22.00	21.92	21.93	21.67
HSUPA Sub 5	21.50	21.20	21.12	21.11

7.2. 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	23.00	22.73	22.53	22.27
			1	2	23.00	22.91	22.57	22.41
			1	5	23.00	22.75	22.51	22.27
			3	0	23.00	22.64	22.53	22.37
			3	1	23.00	22.65	22.56	22.43
			3	2	23.00	22.57	22.53	22.26
			6	0	22.00	21.64	21.55	21.36
		16QAM	1	0	22.00	21.70	21.18	21.25
			1	2	22.00	21.81	21.22	21.38
			1	5	22.00	21.45	21.10	21.17
			3	0	22.00	21.59	21.33	21.47
			3	1	22.00	21.60	21.37	21.55
			3	2	22.00	21.53	21.34	21.58
			6	0	21.00	20.50	20.42	20.80
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	23.00	22.68	22.41	22.20
			1	7	23.00	22.53	22.38	22.31
			1	14	23.00	22.61	22.40	22.28
			8	0	22.00	21.57	21.38	21.44
			8	4	22.00	21.57	21.43	21.35
			8	7	22.00	21.49	21.39	21.28
			15	0	22.00	21.53	21.39	21.27
		16QAM	1	0	22.50	22.03	21.02	21.21
			1	7	22.50	21.80	21.24	21.19

			1	14	22.50	21.90	21.03	21.10
			8	0	20.50	20.48	20.20	20.22
			8	4	20.50	20.39	20.24	20.04
			8	7	20.50	20.40	20.20	19.92
			15	0	20.50	20.44	20.25	20.13
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	23.00	22.28	21.75	21.96
			1	12	23.00	22.48	22.36	22.17
			1	24	23.00	22.20	22.16	22.15
			12	0	21.50	21.39	21.25	21.09
			12	6	21.50	21.33	21.35	21.18
			12	11	21.50	21.44	21.31	21.10
			25	0	21.50	21.45	21.33	21.11
		16QAM	1	0	21.50	21.42	21.00	21.14
			1	12	21.50	21.31	20.99	21.27
			1	24	21.50	21.30	20.98	21.27
			12	0	20.50	20.26	19.97	19.91
			12	6	20.50	20.13	20.02	20.03
			12	11	20.50	20.22	20.17	19.90
			25	0	20.50	20.29	20.24	20.09
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	23.00	22.31	22.09	21.91
			1	24	23.00	22.37	22.47	22.04
			1	49	23.00	22.14	22.06	21.99
			25	0	21.50	21.29	21.27	20.82
			25	12	21.50	21.32	21.36	20.99
			25	24	21.50	21.29	21.21	21.08
			50	0	21.50	21.32	21.25	20.81
		16QAM	1	0	22.00	21.85	20.90	20.88
			1	24	22.00	21.96	20.81	20.79
			1	49	22.00	21.45	20.66	20.85
			25	0	20.50	20.41	20.25	19.84
			25	12	20.50	20.33	20.44	20.02
			25	24	20.50	20.29	20.38	20.06

			50	0	20.50	20.32	20.23	19.85
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	23.00	22.20	22.01	21.88
			1	37	23.00	22.27	22.63	22.06
			1	74	23.00	22.39	21.84	21.74
			36	0	21.50	21.20	21.09	20.84
			36	18	21.50	21.24	21.24	20.99
			36	37	21.50	21.21	21.11	20.97
			75	0	21.50	21.15	21.07	20.87
		16QAM	1	0	22.50	21.81	20.82	21.29
			1	37	22.50	21.98	21.43	21.43
			1	74	22.50	22.11	20.75	21.47
			36	0	20.50	20.31	20.24	19.73
			36	18	20.50	20.26	20.29	20.08
			36	37	20.50	20.33	20.25	20.00
			75	0	20.50	20.24	20.24	20.02
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	23.00	21.90	22.18	21.80
			1	49	23.00	22.25	22.37	21.58
			1	99	23.00	22.14	22.10	21.99
			50	0	21.50	21.19	21.10	20.93
			50	24	21.50	21.25	21.29	21.01
			50	49	21.50	21.19	21.08	21.03
			100	0	21.50	21.10	21.04	20.91
		16QAM	1	0	21.50	21.38	20.83	20.52
			1	49	21.50	21.18	21.24	20.51
			1	99	21.50	21.08	20.40	20.54
			50	0	20.50	20.35	19.90	20.05
			50	24	20.50	20.40	20.37	19.99
			50	49	20.50	20.42	20.26	20.07
			100	0	20.50	20.21	20.12	20.02

Band	Band Width	Modulation	RB Configuration	Tune-up (dBm)	Channel/Frequency(MHz)
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			RB Size	RB Offset		19957/1710.7	20175/1732.5	20393/1754.3
LTE Band 4	1.4MHz	QPSK	1	0	24.00	22.72	23.48	23.60
			1	2	24.00	23.87	23.58	23.61
			1	5	24.00	23.75	23.49	23.46
			3	0	24.00	23.71	23.56	23.61
			3	1	24.00	23.84	23.69	23.72
			3	2	24.00	23.84	23.62	23.63
			6	0	23.00	22.95	22.64	22.61
		16QAM	1	0	23.00	22.41	22.40	22.86
			1	2	23.00	22.03	22.50	22.97
			1	5	23.00	22.09	22.34	22.86
			3	0	23.50	22.55	22.76	23.02
			3	1	23.50	22.62	22.79	23.02
			3	2	23.50	22.64	22.74	22.94
			6	0	22.00	21.60	21.55	21.86
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	24.00	23.84	23.54	23.52
			1	7	24.00	23.80	23.41	23.59
			1	14	24.00	22.83	23.63	23.54
			8	0	23.00	22.85	22.48	22.55
			8	4	23.00	22.88	22.49	22.54
			8	7	23.00	22.94	22.43	22.45
			15	0	23.00	22.86	22.44	22.49
		16QAM	1	0	23.50	23.18	22.00	22.12
			1	7	23.50	23.12	22.29	22.36
			1	14	23.50	23.47	21.91	22.21
			8	0	22.50	22.02	21.28	21.27
			8	4	22.50	22.05	21.29	21.39
			8	7	22.50	22.10	21.23	21.18
			15	0	22.00	21.83	21.30	21.44
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	5MHz	QPSK	1	0	24.00	23.62	23.04	23.26
			1	12	24.00	23.83	23.25	23.14

4			1	24	24.00	23.64	23.03	23.18
			12	0	23.00	22.66	22.14	22.39
			12	6	23.00	22.71	22.19	22.39
			12	11	23.00	22.59	22.25	22.31
			25	0	23.00	22.57	22.18	22.36
		16QAM	1	0	23.00	22.55	22.09	22.65
			1	12	23.00	22.54	22.15	22.44
			1	24	23.00	22.56	21.98	22.21
			12	0	21.50	21.23	20.85	21.42
			12	6	21.50	21.27	20.82	21.42
			12	11	21.50	21.29	20.87	21.44
			25	0	22.00	21.50	21.17	21.22
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	24.00	23.50	22.92	23.05
			1	24	24.00	23.76	23.04	23.15
			1	49	24.00	23.37	23.13	23.26
			25	0	23.00	22.53	22.09	22.05
			25	12	23.00	22.41	21.99	22.02
			25	24	23.00	22.32	21.98	22.03
			50	0	22.50	22.35	21.87	22.04
		16QAM	1	0	23.50	22.86	21.48	21.85
			1	24	23.50	23.28	21.75	21.86
			1	49	23.50	22.77	21.50	21.56
			25	0	21.50	21.42	20.99	21.01
			25	12	21.50	21.41	20.97	21.01
			25	24	21.50	21.29	21.17	21.03
			50	0	21.50	21.23	21.04	21.04
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	24.00	23.34	23.07	22.76
			1	37	24.00	23.65	22.77	22.74
			1	74	24.00	23.35	22.96	22.81
			36	0	22.50	22.32	21.81	21.60
			36	18	22.50	22.23	21.92	21.84
			36	37	22.50	22.09	21.87	21.84

		16QAM	75	0	22.50	22.25	21.82	21.80
			1	0	23.50	22.93	22.39	22.12
			1	37	23.50	23.23	22.21	22.14
			1	74	23.50	22.52	21.43	21.60
			36	0	21.50	21.22	20.94	20.63
			36	18	21.50	21.25	20.87	20.75
			36	37	21.50	21.19	20.92	20.89
			75	0	21.50	21.14	20.70	20.91
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20050/1720	20175/1732.5	20300/1745
LTE Band 4	20MHz	QPSK	1	0	24.00	22.51	23.54	23.78
			1	49	24.00	23.85	23.29	23.49
			1	99	24.00	23.22	23.01	23.54
			50	0	23.00	22.71	22.41	22.40
			50	24	23.00	22.64	22.46	22.34
			50	49	23.00	22.51	22.48	22.34
			100	0	23.00	22.67	22.42	22.43
		16QAM	1	0	23.00	22.33	22.67	22.15
			1	49	23.00	22.47	22.24	22.02
			1	99	23.00	21.95	22.27	21.88
			50	0	22.00	21.62	21.38	21.14
			50	24	22.00	21.62	21.47	21.30
			50	49	22.00	21.41	21.48	21.30
			100	0	22.00	21.53	21.30	21.31

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	23.50	21.91	22.63	22.66
			1	2	23.50	22.89	23.03	22.87
			1	5	23.50	22.65	22.72	22.75
			3	0	23.50	22.94	22.92	22.89
			3	1	23.50	22.95	23.18	22.94
			3	2	23.50	22.88	23.06	22.94
			6	0	22.50	22.06	21.95	21.85
		16QAM	1	0	22.50	21.86	21.73	21.58
			1	2	22.50	22.04	21.95	21.51

			1	5	22.50	21.87	21.77	21.44
			3	0	22.50	22.12	21.85	21.42
			3	1	22.50	22.15	21.90	21.36
			3	2	22.50	22.03	21.81	21.36
			6	0	21.00	20.88	20.81	20.90
Band	Band Width	Modulation	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	23.50	23.12	22.72	22.76
			1	7	23.50	23.09	22.96	23.07
			1	14	23.50	23.14	22.96	23.09
			8	0	22.50	22.09	21.97	21.79
			8	4	22.50	22.04	21.99	21.91
			8	7	22.50	21.96	22.02	21.96
			15	0	22.00	21.99	21.96	21.88
		16QAM	1	0	23.00	22.54	21.49	21.76
			1	7	23.00	22.37	21.94	21.83
			1	14	23.00	22.51	21.74	21.83
			8	0	21.00	20.99	20.65	20.67
			8	4	21.00	20.96	20.85	20.76
			8	7	21.00	21.00	20.89	20.82
			15	0	21.00	20.88	20.87	20.73
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	23.50	23.44	22.27	22.62
			1	12	23.50	23.14	23.11	22.75
			1	24	23.50	23.26	22.95	22.91
			12	0	22.50	22.05	21.96	21.93
			12	6	22.50	22.03	22.07	21.95
			12	11	22.50	22.03	22.00	22.00
			25	0	22.50	22.07	22.08	21.83
		16QAM	1	0	22.50	22.12	21.71	21.97
			1	12	22.50	21.89	21.46	21.89
			1	24	22.50	21.92	21.37	21.66
			12	0	21.00	20.71	20.70	20.65
			12	6	21.00	20.81	20.91	20.79
			12	11	21.00	20.73	20.78	20.90

			25	0	21.50	21.01	21.15	20.76
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	23.50	22.94	22.84	23.14
			1	24	23.50	23.35	23.16	23.07
			1	49	23.50	23.11	23.04	23.32
			25	0	22.50	22.04	22.03	22.03
			25	12	22.50	22.21	22.01	21.98
			25	24	22.50	22.13	22.04	21.97
			50	0	22.50	22.03	22.05	21.95
		16QAM	1	0	23.00	22.47	21.52	21.91
			1	24	23.00	22.63	21.72	21.82
			1	49	23.00	22.37	21.18	21.88
			25	0	21.50	21.01	21.10	20.91
			25	12	21.50	21.18	21.18	20.88
			25	24	21.50	21.10	21.11	20.83
			50	0	21.50	21.03	21.14	20.82

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 Band 12	1.4MHz	QPSK	1	0	24.00	22.20	23.09	23.26
			1	2	24.00	23.19	23.32	23.46
			1	5	24.00	23.27	23.37	23.37
			3	0	24.00	23.27	23.38	23.30
			3	1	24.00	23.47	23.45	23.36
			3	2	24.00	23.15	23.38	23.48
			6	0	23.00	22.25	22.50	22.42
		16QAM	1	0	23.00	22.23	22.38	22.23
			1	2	23.00	22.36	22.44	22.12
			1	5	23.00	22.05	22.61	22.17
			3	0	22.50	22.18	22.23	22.04
			3	1	22.50	22.39	22.41	22.10
			3	2	22.50	22.41	22.35	22.01
			6	0	22.00	21.38	21.58	21.34
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	24.00	23.15	23.07	23.35
			1	7	24.00	23.44	23.67	23.43
			1	14	24.00	23.12	23.41	23.36
			8	0	23.00	22.27	22.32	22.40
			8	4	23.00	22.36	22.41	22.46
			8	7	23.00	22.18	22.51	22.49
			15	0	22.50	22.28	22.38	22.39
		16QAM	1	0	23.50	22.68	22.38	22.12
			1	7	23.50	23.21	22.68	22.30
			1	14	23.50	22.59	22.69	22.11
			8	0	22.00	21.50	21.30	21.07
			8	4	22.00	21.48	21.28	21.11
			8	7	22.00	21.05	21.28	21.12
			15	0	21.50	21.22	21.39	21.29
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	24.00	23.06	22.74	23.12
			1	12	24.00	23.50	23.42	23.16
			1	24	24.00	23.13	23.21	23.33
			12	0	22.50	22.30	22.27	22.39
			12	6	22.50	22.19	22.36	22.29
			12	11	22.50	22.09	22.36	22.38
			25	0	22.50	22.28	22.32	22.34
		16QAM	1	0	23.00	22.34	21.72	22.28
			1	12	23.00	22.43	22.53	21.97
			1	24	23.00	21.79	22.31	22.34
			12	0	21.50	21.21	20.99	21.17
			12	6	21.50	21.12	21.16	21.19
			12	11	21.50	20.94	21.19	21.16
			25	0	21.50	21.26	21.34	21.16
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	10MHz	QPSK	1	0	24.00	23.06	23.12	23.13
			1	24	24.00	23.19	23.13	23.43

12			1	49	24.00	23.40	23.17	23.29
			25	0	22.50	22.23	22.28	22.42
			25	12	22.50	22.25	22.39	22.45
			25	24	22.50	22.32	22.32	22.29
			50	0	22.50	22.27	22.27	22.36
		16QAM	1	0	23.00	22.57	21.85	22.10
			1	24	23.00	22.68	22.08	22.36
			1	49	23.00	22.68	21.50	21.76
			25	0	21.50	20.99	21.21	21.24
			25	12	21.50	21.01	21.32	21.29
			25	24	21.50	21.17	21.36	21.13
			50	0	21.50	21.10	21.12	21.27

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		23205/779.5	23230/782	23255/784.5
LTE Band 13	5MHz	QPSK	1	0	24.00	23.28	22.71	22.96
			1	12	24.00	23.37	23.35	23.27
			1	24	24.00	23.20	23.10	23.24
			12	0	22.50	22.36	22.21	22.29
			12	6	22.50	22.30	22.30	22.38
			12	11	22.50	22.25	22.24	22.36
			25	0	22.50	22.29	22.32	22.39
		16QAM	1	0	22.50	22.40	22.07	22.17
			1	12	22.50	22.35	22.31	22.28
			1	24	22.50	22.09	22.29	22.27
			12	0	21.50	21.21	20.94	21.11
			12	6	21.50	21.18	20.94	21.22
			12	11	21.50	21.03	20.98	21.09
			25	0	21.50	21.24	21.22	21.24
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		/	23230/782	/
LTE Band 13	10MHz	QPSK	1	0	24.00	/	23.26	/
			1	24	24.00	/	23.59	/
			1	49	24.00	/	23.39	/
			25	0	22.50	/	22.31	/
			25	12	22.50	/	22.31	/

			25	24	22.50	/	22.39	/
			50	0	22.50	/	22.33	/
		16QAM	1	0	23.50	/	22.57	/
			1	24	23.50	/	23.02	/
			1	49	23.50	/	22.83	/
			25	0	21.50	/	21.32	/
			25	12	21.50	/	21.31	/
			25	24	21.50	/	21.29	/
			50	0	21.50	/	21.25	/

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		23305/790.5	23330/793	23355/795.5
LTE Band 14	5MHz	QPSK	1	0	23.50	23.00	22.60	22.98
			1	12	23.50	23.48	23.25	23.10
			1	24	23.50	23.02	23.06	23.23
			12	0	22.50	22.16	22.23	22.26
			12	6	22.50	22.17	22.20	22.26
			12	11	22.50	22.25	22.12	22.17
			25	0	22.50	22.19	22.22	22.26
		16QAM	1	0	22.50	22.25	21.97	22.15
			1	12	22.50	22.28	21.73	21.78
			1	24	22.50	22.23	21.64	22.09
			12	0	21.50	20.90	20.78	20.95
			12	6	21.50	21.13	20.96	20.99
			12	11	21.50	21.12	20.90	21.06
			25	0	21.50	21.23	21.06	21.17
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		/	23330/793	/
LTE Band 14	10MHz	QPSK	1	0	23.50	/	23.11	/
			1	24	23.50	/	23.29	/
			1	49	23.50	/	23.12	/
			25	0	22.50	/	22.16	/
			25	12	22.50	/	22.27	/
			25	24	22.50	/	22.28	/
			50	0	22.50	/	22.27	/
		16QAM	1	0	23.00	/	22.46	/

			1	24	23.00	/	22.89	/
			1	49	23.00	/	22.62	/
			25	0	21.50	/	21.19	/
			25	12	21.50	/	21.17	/
			25	24	21.50	/	21.17	/
			50	0	21.50	/	21.15	/

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		131979/1710.7	132322/1745	132665/1779.3
LTE Band 66	1.4MHz	QPSK	1	0	23.50	22.10	22.67	22.71
			1	2	23.50	23.18	22.82	22.69
			1	5	23.50	23.15	22.71	22.67
			3	0	23.50	22.92	22.80	22.74
			3	1	23.50	23.08	22.95	22.84
			3	2	23.50	23.09	22.77	22.69
			6	0	22.50	22.19	21.80	21.87
		16QAM	1	0	22.50	21.77	21.92	21.57
			1	2	22.50	22.06	22.04	21.50
			1	5	22.50	21.93	21.78	21.49
			3	0	22.50	21.93	21.64	21.86
			3	1	22.50	21.81	21.71	22.04
			3	2	22.50	21.92	21.53	21.95
			6	0	21.50	21.23	20.78	20.98
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		131987/1711.5	132322/1745	132657/1778.5
LTE Band 66	3MHz	QPSK	1	0	23.50	22.98	22.84	22.79
			1	7	23.50	23.10	22.72	22.95
			1	14	23.50	23.17	22.79	22.86
			8	0	22.50	22.17	21.84	21.91
			8	4	22.50	22.17	21.98	21.88
			8	7	22.50	22.24	21.88	21.84
			15	0	22.50	22.15	21.86	21.91
		16QAM	1	0	23.00	22.77	21.60	21.65
			1	7	23.00	22.69	21.62	21.64
			1	14	23.00	22.85	21.43	21.43
			8	0	22.00	21.47	20.85	20.92

			8	4	22.00	21.59	20.89	20.91
			8	7	22.00	21.48	20.87	20.89
			15	0	21.50	21.23	20.90	21.09
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		131997/1712.5	132322/1745	132647/1777.5
LTE Band 66	5MHz	QPSK	1	0	23.50	22.93	22.48	22.42
			1	12	23.50	23.40	22.75	22.60
			1	24	23.50	23.00	22.64	22.68
			12	0	22.50	22.22	21.95	21.86
			12	6	22.50	22.26	21.93	21.93
			12	11	22.50	22.19	21.85	21.86
			25	0	22.50	22.15	21.83	21.85
		16QAM	1	0	22.50	22.15	21.85	21.78
			1	12	22.50	22.18	22.14	21.99
			1	24	22.50	22.09	21.67	21.77
			12	0	21.50	21.15	20.73	20.79
			12	6	21.50	21.25	20.78	20.90
			12	11	21.50	20.97	20.69	20.80
			25	0	21.50	21.37	20.81	20.76
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		132022/1715	132322/1745	132622/1775
LTE Band 66	10MHz	QPSK	1	0	23.50	23.08	22.93	22.89
			1	24	23.50	23.25	23.00	22.85
			1	49	23.50	23.06	22.77	22.71
			25	0	22.50	22.26	21.99	21.79
			25	12	22.50	22.30	21.80	21.85
			25	24	22.50	22.09	21.82	21.81
			50	0	22.00	22.00	21.84	21.81
		16QAM	1	0	23.50	22.53	21.79	21.83
			1	24	23.50	23.13	21.66	21.81
			1	49	23.50	22.35	21.25	21.32
			25	0	21.50	21.18	21.08	20.73
			25	12	21.50	21.30	21.13	20.90
			25	24	21.50	21.17	21.07	20.91
			50	0	21.50	21.06	20.85	20.79
Band	Band	Modulation	RB		Tune-up	Channel/Frequency(MHz)		

	Width		Configuration		(dBm)			
			RB Size	RB Offset		132047/1717.5	132322/1745	132597/1772.5
LTE Band 66	15MHz	QPSK	1	0	23.50	23.14	22.83	22.66
			1	37	23.50	23.37	22.89	22.76
			1	74	23.50	23.02	22.78	22.47
			36	0	22.50	22.23	22.00	21.76
			36	18	22.50	22.19	21.92	21.81
			36	37	22.50	21.98	21.77	21.79
			75	0	22.50	22.09	21.74	21.75
		16QAM	1	0	23.50	22.55	21.71	22.14
			1	37	23.50	23.38	21.66	22.36
			1	74	23.50	22.44	21.29	22.06
			36	0	21.50	21.23	21.03	20.80
			36	18	21.50	21.29	20.92	20.93
			36	37	21.50	21.14	20.91	20.81
			75	0	21.50	21.17	20.69	20.87
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		132072/1720	132322/1745	132572/1770
LTE Band 66	20MHz	QPSK	1	0	23.50	22.11	22.61	22.86
			1	49	23.50	23.29	22.64	22.98
			1	99	23.50	22.90	22.68	22.78
			50	0	22.50	22.18	22.17	21.86
			50	24	22.50	22.10	21.99	21.92
			50	49	22.50	22.26	22.07	21.91
			100	0	22.50	22.33	22.12	21.79
		16QAM	1	0	22.50	21.88	21.48	22.35
			1	49	22.50	21.72	21.79	21.79
			1	99	22.50	21.50	21.47	21.45
			50	0	21.50	21.32	21.05	20.85
			50	24	21.50	21.31	21.11	20.97
			50	49	21.50	21.15	21.08	21.05
			100	0	21.50	21.29	20.91	20.88

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		133147/665.5	133297/680.5	133447/695.5

LTE Band 71	5MHz	QPSK	1	0	23.50	22.98	22.95	23.02
			1	12	23.50	23.44	23.28	23.46
			1	24	23.50	23.40	23.02	23.37
			12	0	22.50	22.12	22.19	22.25
			12	6	22.50	22.25	22.35	22.39
			12	11	22.50	22.36	22.19	22.27
			25	0	22.50	22.22	22.24	22.34
		16QAM	1	0	23.00	21.95	22.23	22.31
			1	12	23.00	22.47	22.66	22.51
			1	24	23.00	22.12	22.34	22.20
			12	0	21.50	20.76	21.09	21.05
			12	6	21.50	21.11	21.15	21.30
			12	11	21.50	21.03	21.11	21.37
			25	0	21.50	21.15	21.08	21.39
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		133172/668	133297/680.5	133422/693
LTE Band 71	10MHz	QPSK	1	0	23.50	23.16	23.08	23.25
			1	24	23.50	23.43	23.33	23.33
			1	49	23.50	23.26	23.34	23.38
			25	0	23.00	22.32	22.23	22.25
			25	12	23.00	22.36	22.34	22.51
			25	24	23.00	22.19	22.26	22.41
			50	0	22.50	22.26	22.23	22.35
		16QAM	1	0	23.50	22.61	21.84	22.06
			1	24	23.50	23.38	21.96	22.57
			1	49	23.50	22.54	21.59	22.04
			25	0	21.50	21.44	21.05	21.31
			25	12	21.50	21.18	21.14	21.40
			25	24	21.50	21.13	21.16	21.40
			50	0	21.50	21.19	21.15	21.25
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		133197/670.5	133297/680.5	133397/690.5
LTE Band 71	15MHz	QPSK	1	0	23.50	23.11	23.18	23.18
			1	37	23.50	23.28	23.18	23.40
			1	74	23.50	23.17	23.31	23.26
			36	0	22.50	22.27	22.25	22.31

			36	18	22.50	22.29	22.27	22.32
			36	37	22.50	22.25	22.35	22.41
			75	0	22.50	22.28	22.27	22.23
		16QAM	1	0	23.00	22.77	22.01	22.65
			1	37	23.00	22.88	22.68	22.91
			1	74	23.00	22.51	21.66	22.61
			36	0	21.50	21.27	21.20	21.23
			36	18	21.50	21.33	21.34	21.27
			36	37	21.50	21.11	21.34	21.37
			75	0	21.50	21.21	21.25	21.34
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		133222/673	133322/683	133372/688
LTE Band 71	20MHz	QPSK	1	0	23.50	22.73	23.09	22.94
			1	49	23.50	23.46	23.35	23.27
			1	99	23.50	23.05	23.22	23.06
			50	0	22.50	22.22	22.21	22.24
			50	24	22.50	22.30	22.37	22.32
			50	49	22.50	22.20	22.35	22.29
			100	0	22.50	22.25	22.34	22.31
		16QAM	1	0	22.50	22.18	22.23	21.41
			1	49	22.50	22.04	22.36	21.83
			1	99	22.50	21.74	21.69	21.66
			50	0	21.50	21.09	21.27	21.17
			50	24	21.50	21.18	21.38	21.26
			50	49	21.50	21.15	21.13	21.15
			100	0	21.50	21.22	21.32	21.32

7.3. WLAN Output Power

Mode	Channel	Frequency (MHz)	Tune-up (dBm)	Output Power (dBm)
802.11b	1	2412	15.50	15.46
	6	2437	15.50	14.78
	11	2462	15.50	14.67
802.11g	1	2412	11.50	11.28
	6	2437	11.50	11.27
	11	2462	11.50	11.05

802.11n HT20	1	2412	10.00	9.72
	6	2437	10.00	9.12
	11	2462	10.00	9.59

NOTE: Power measurement results of WLAN 2.4G.

Mode	Channel	Frequency (MHz)	Tune-up (dBm)	Output Power (dBm)
802.11a	36	5180	11.00	10.41
	40	5200	11.00	10.35
	48	5240	11.00	10.67
802.11n HT20	36	5180	10.50	10.49
	40	5200	10.50	10.05
	48	5240	10.50	10.41
802.11ac VHT20	36	5180	10.50	10.46
	40	5200	10.50	9.98
	48	5240	10.50	10.33

NOTE: Power measurement results of WLAN 5.2G.

7.3.1. Output Power Results Of Bluetooth

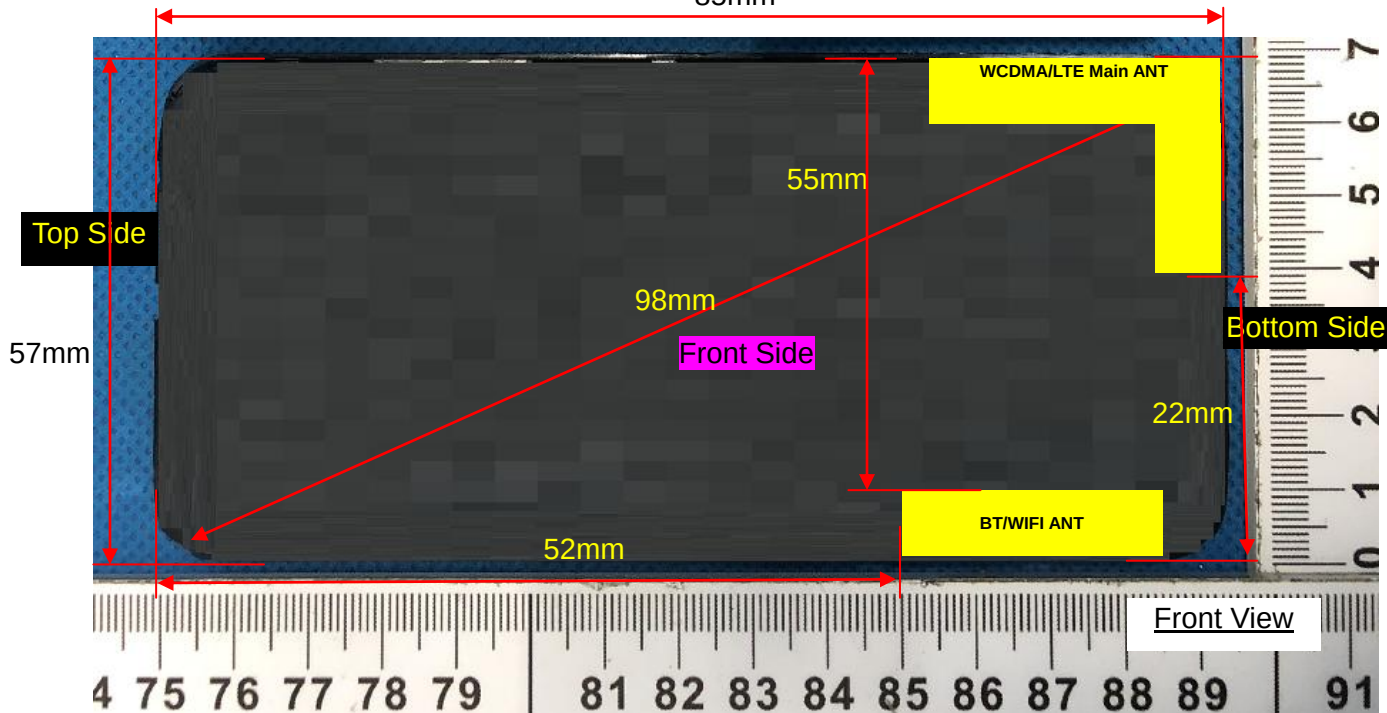
BR+EDR	Output Power (dBm)				
	Data Rates	Tune-up (dBm)	Channel		
			0CH	39CH	78CH
	1M	6.000	4.558	5.283	4.625
	2M	1.000	-0.667	-0.032	0.154
	3M	1.000	-0.094	0.501	0.568

BLE	Channel	Tune-up (dBm)	Output Power (dBm)
	0CH	5.000	4.173
	19CH	5.000	4.962
	39CH	5.000	4.301

8. Antenna Location

Right Side

85mm



Left Side

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

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:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{(\text{GHz})}}] \leq 3.0$ 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	6.00	3.98	5	2.480	1.25	3.0	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:

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

When the minimum test separation distance is $< 5 \text{ mm}$, 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	6.00	3.98	5	2.48	7.5	0.167

NOTE: Estimated SAR calculation for Bluetooth

10. SAR Results

10.1. SAR measurement Result

10.1.1. SAR measurement Result of WCDMA Band 2

Test Position of Body with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	9400/1880	RMC12.2K	0.202	0.091	1.14	22.66	23.00	0.218	2022/11/14	
Back Side	9400/1880	RMC12.2K	0.273	0.122	-0.88	22.66	23.00	0.295	2022/11/14	
Left Side	9400/1880	RMC12.2K	0.143	0.063	-2.18	22.66	23.00	0.155	2022/11/14	
Right Side	9400/1880	RMC12.2K	0.650	0.293	-0.04	22.66	23.00	0.703	2022/11/14	1#
Top Side	9400/1880	RMC12.2K	0.195	0.084	2.39	22.66	23.00	0.211	2022/11/14	
Bottom Side	9400/1880	RMC12.2K	0.423	0.183	-2.11	22.66	23.00	0.457	2022/11/14	

NOTE: Body SAR test results of WCDMA Band 2

10.1.2. SAR measurement Result of WCDMA Band 4

Test Position of Body with 0mm	Test channel /Freq	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	1413/1732.6	RMC12.2K	0.254	0.116	-3.03	23.36	23.50	0.262	2022/11/21	
Back Side	1413/1732.6	RMC12.2K	0.327	0.151	0.63	23.36	23.50	0.338	2022/11/21	
Left Side	1413/1732.6	RMC12.2K	0.174	0.079	1.99	23.36	23.50	0.180	2022/11/21	
Right Side	1413/1732.6	RMC12.2K	0.727	0.346	-1.32	23.36	23.50	0.751	2022/11/21	2#
Top Side	1413/1732.6	RMC12.2K	0.218	0.099	2.03	23.36	23.50	0.225	2022/11/21	
Bottom Side	1413/1732.6	RMC12.2K	0.451	0.206	3.09	23.36	23.50	0.466	2022/11/21	

NOTE: Body SAR test results of WCDMA Band 4

10.1.3. SAR measurement Result of WCDMA Band 5

Test Position of Body with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	4182/836.4	RMC12.2K	0.358	0.168	-1.36	22.94	23.00	0.363	2022/11/15	
Back Side	4182/836.4	RMC12.2K	0.445	0.213	3.18	22.94	23.00	0.451	2022/11/15	
Left Side	4182/836.4	RMC12.2K	0.239	0.113	-3.75	22.94	23.00	0.242	2022/11/15	
Right Side	4182/836.4	RMC12.2K	1.085	0.535	4.08	22.94	23.00	1.100	2022/11/15	3#
Right Side Repeated	4182/836.4	RMC12.2K	1.078	0.528	3.23	22.94	23.00	1.093	2022/11/15	
Top Side	4182/836.4	RMC12.2K	0.271	0.130	-3.67	22.94	23.00	0.275	2022/11/15	
Bottom Side	4182/836.4	RMC12.2K	0.684	0.327	-2.74	22.94	23.00	0.694	2022/11/15	
Right Side	4132/826.4	RMC12.2K	0.941	0.543	-1.49	22.89	23.00	0.965	2022/11/15	
Right Side	4233/846.6	RMC12.2K	0.944	0.535	-0.86	22.92	23.00	0.962	2022/11/15	

NOTE: Body SAR test results of WCDMA Band 5

10.1.4. SAR measurement Result of LTE Band 2

Test Position of Body with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	18900/1880	20M QPSK(1,49)	0.250	0.123	3.24	22.37	23.00	0.289	2022/11/14	
Back Side	18900/1880	20M QPSK(1,49)	0.293	0.144	3.35	22.37	23.00	0.339	2022/11/14	
Left Side	18900/1880	20M QPSK(1,49)	0.179	0.087	2.66	22.37	23.00	0.207	2022/11/14	
Right Side	18900/1880	20M QPSK(1,49)	0.715	0.365	-0.47	22.37	23.00	0.827	2022/11/14	6#
Top Side	18900/1880	20M QPSK(1,49)	0.207	0.100	-3.81	22.37	23.00	0.239	2022/11/14	
Bottom Side	18900/1880	20M QPSK(1,49)	0.358	0.181	3.36	22.37	23.00	0.414	2022/11/14	
Right Side	18700/1860	20M QPSK(1,49)	0.601	0.301	-1.82	22.25	23.00	0.714	2022/11/14	

Right Side	19100/1900	20M QPSK(1,49)	0.568	0.310	1.75	21.58	23.00	0.788	2022/11/14	
50%RB										
Front Side	18900/1880	20M QPSK(50,24)	0.150	0.062	3.21	21.29	21.50	0.157	2022/11/14	
Back Side	18900/1880	20M QPSK(50,24)	0.175	0.083	0.49	21.29	21.50	0.184	2022/11/14	
Left Side	18900/1880	20M QPSK(50,24)	0.100	0.044	-2.11	21.29	21.50	0.105	2022/11/14	
Right Side	18900/1880	20M QPSK(50,24)	0.370	0.200	4.49	21.29	21.50	0.388	2022/11/14	
Top Side	18900/1880	20M QPSK(50,24)	0.106	0.050	3.96	21.29	21.50	0.111	2022/11/14	
Bottom Side	18900/1880	20M QPSK(50,24)	0.189	0.094	-1.46	21.29	21.50	0.198	2022/11/14	
100%RB										
Right Side	18900/1880	20M QPSK(100,0)	0.358	0.190	0.23	21.04	21.50	0.398	2022/11/14	

NOTE: Body SAR test results of LTE Band 2

10.1.5. SAR measurement Result of LTE Band 4

Test Position of Body with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	20175/1732.5	20M QPSK(1,49)	0.210	0.098	-2.87	23.29	24.00	0.247	2022/11/21	
Back Side	20175/1732.5	20M QPSK(1,49)	0.271	0.124	-2.62	23.29	24.00	0.319	2022/11/21	
Left Side	20175/1732.5	20M QPSK(1,49)	0.142	0.064	3.03	23.29	24.00	0.167	2022/11/21	
Right Side	20175/1732.5	20M QPSK(1,49)	0.677	0.316	-0.28	23.29	24.00	0.797	2022/11/21	7#
Top Side	20175/1732.5	20M QPSK(1,49)	0.183	0.085	1.09	23.29	24.00	0.216	2022/11/21	
Bottom Side	20175/1732.5	20M QPSK(1,49)	0.325	0.149	-3.55	23.29	24.00	0.383	2022/11/21	

50%RB										
Front Side	20175/1732.5	20M QPSK(50,0)	0.107	0.059	0.35	22.41	23.00	0.123	2022/11/21	
Back Side	20175/1732.5	20M QPSK(50,0)	0.136	0.072	-2.67	22.41	23.00	0.156	2022/11/21	
Left Side	20175/1732.5	20M QPSK(50,0)	0.073	0.037	-4.66	22.41	23.00	0.084	2022/11/21	
Right Side	20175/1732.5	20M QPSK(50,0)	0.393	0.178	-0.35	22.41	23.00	0.450	2022/11/21	
Top Side	20175/1732.5	20M QPSK(50,0)	0.075	0.035	2.73	22.41	23.00	0.086	2022/11/21	
Bottom Side	20175/1732.5	20M QPSK(50,0)	0.189	0.086	-1.49	22.41	23.00	0.217	2022/11/21	

NOTE: Body SAR test results of LTE Band 4

10.1.6. SAR measurement Result of LTE Band 5

Test Position of Body with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	20525/836.5	10M QPSK(1,24)	0.084	0.056	0.43	23.16	23.50	0.091	2022/11/15	
Back Side	20525/836.5	10M QPSK(1,24)	0.120	0.080	1.20	23.16	23.50	0.130	2022/11/15	
Left Side	20525/836.5	10M QPSK(1,24)	0.058	0.038	2.15	23.16	23.50	0.063	2022/11/15	
Right Side	20525/836.5	10M QPSK(1,24)	0.260	0.176	-0.23	23.16	23.50	0.281	2022/11/15	8#
Top Side	20525/836.5	10M QPSK(1,24)	0.065	0.044	2.82	23.16	23.50	0.070	2022/11/15	
Bottom Side	20525/836.5	10M QPSK(1,24)	0.145	0.093	-2.66	23.16	23.50	0.157	2022/11/15	
50%RB										
Front Side	20525/836.5	10M QPSK(25,12)	0.044	0.032	-4.01	22.01	22.50	0.049	2022/11/15	
Back Side	20525/836.5	10M QPSK(25,12)	0.070	0.041	-0.48	22.01	22.50	0.078	2022/11/15	

Left Side	20525/836.5	10M QPSK(25,12)	0.034	0.022	-0.77	22.01	22.50	0.038	2022/11/15	
Right Side	20525/836.5	10M QPSK(25,12)	0.147	0.097	3.77	22.01	22.50	0.165	2022/11/15	
Top Side	20525/836.5	10M QPSK(25,12)	0.032	0.021	-2.12	22.01	22.50	0.036	2022/11/15	
Bottom Side	20525/836.5	10M QPSK(25,12)	0.076	0.053	4.94	22.01	22.50	0.085	2022/11/15	

NOTE: Body SAR test results of LTE Band 5

10.1.7. SAR measurement Result of LTE Band 12

Test Position of Body with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	23095/707.5	10M QPSK(1,24)	0.157	0.080	1.11	23.13	24.00	0.192	2022/11/11	
Back Side	23095/707.5	10M QPSK(1,24)	0.209	0.111	2.12	23.13	24.00	0.255	2022/11/11	
Left Side	23095/707.5	10M QPSK(1,24)	0.125	0.064	-1.89	23.13	24.00	0.153	2022/11/11	
Right Side	23095/707.5	10M QPSK(1,24)	0.522	0.277	-4.13	23.13	24.00	0.638	2022/11/11	9#
Top Side	23095/707.5	10M QPSK(1,24)	0.131	0.068	-0.70	23.13	24.00	0.160	2022/11/11	
Bottom Side	23095/707.5	10M QPSK(1,24)	0.261	0.133	-1.70	23.13	24.00	0.319	2022/11/11	
50%RB										
Front Side	23095/707.5	10M QPSK(25,12)	0.080	0.045	3.40	22.39	22.50	0.082	2022/11/11	
Back Side	23095/707.5	10M QPSK(25,12)	0.109	0.061	-1.18	22.39	22.50	0.112	2022/11/11	
Left Side	23095/707.5	10M QPSK(25,12)	0.070	0.035	-3.29	22.39	22.50	0.072	2022/11/11	
Right Side	23095/707.5	10M QPSK(25,12)	0.313	0.153	-2.88	22.39	22.50	0.321	2022/11/11	
Top Side	23095/707.5	10M	0.067	0.035	-1.35	22.39	22.50	0.069	2022/11/11	

		QPSK(25,12)								
Bottom Side	23095/707.5	10M QPSK(25,12)	0.147	0.076	-3.91	22.39	22.50	0.151	2022/11/11	

NOTE: Body SAR test results of LTE Band 12

10.1.8. SAR measurement Result of LTE Band 13

Test Position of Body with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	23230/782	10M QPSK(1,24)	0.350	0.175	-3.12	23.59	24.00	0.385	2022/11/11	
Back Side	23230/782	10M QPSK(1,24)	0.440	0.222	1.33	23.59	24.00	0.484	2022/11/11	
Left Side	23230/782	10M QPSK(1,24)	0.230	0.116	1.10	23.59	24.00	0.253	2022/11/11	
Right Side	23230/782	10M QPSK(1,24)	0.999	0.509	1.81	23.59	24.00	1.098	2022/11/11	10#
Right Side Repeated	23230/782	10M QPSK(1,24)	0.995	0.499	1.77	23.59	24.00	1.094	2022/11/11	
Top Side	23230/782	10M QPSK(1,24)	0.300	0.150	3.64	23.59	24.00	0.330	2022/11/11	
Bottom Side	23230/782	10M QPSK(1,24)	0.500	0.245	0.79	23.59	24.00	0.550	2022/11/11	
50%RB										
Front Side	23230/782	10M QPSK(25,24)	0.186	0.101	3.60	22.39	22.50	0.191	2022/11/11	
Back Side	23230/782	10M QPSK(25,24)	0.251	0.127	-4.47	22.39	22.50	0.257	2022/11/11	
Left Side	23230/782	10M QPSK(25,24)	0.127	0.061	-4.32	22.39	22.50	0.130	2022/11/11	
Right Side	23230/782	10M QPSK(25,24)	0.565	0.288	-4.75	22.39	22.50	0.579	2022/11/11	
Top Side	23230/782	10M QPSK(25,24)	0.118	0.058	3.39	22.39	22.50	0.121	2022/11/11	
Bottom Side	23230/782	10M QPSK(25,24)	0.292	0.144	-1.19	22.39	22.50	0.299	2022/11/11	

100%RB										
Right Side	23230/782	10M QPSK(50,0)	0.535	0.266	2.30	22.33	22.50	0.556	2022/11/11	

NOTE: Body SAR test results of LTE Band 13

10.1.9. SAR measurement Result of LTE Band 14

Test Position of Body with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	23330/793	10M QPSK(1,24)	0.099	0.077	-1.01	23.29	23.50	0.104	2022/11/11	
Back Side	23330/793	10M QPSK(1,24)	0.140	0.105	-3.51	23.29	23.50	0.147	2022/11/11	
Left Side	23330/793	10M QPSK(1,24)	0.068	0.051	-2.77	23.29	23.50	0.071	2022/11/11	
Right Side	23330/793	10M QPSK(1,24)	0.329	0.260	-0.27	23.29	23.50	0.345	2022/11/11	11#
Top Side	23330/793	10M QPSK(1,24)	0.093	0.073	-1.78	23.29	23.50	0.098	2022/11/11	
Bottom Side	23330/793	10M QPSK(1,24)	0.165	0.128	0.29	23.29	23.50	0.173	2022/11/11	
50%RB										
Front Side	23330/793	10M QPSK(25,24)	0.051	0.046	2.28	22.28	22.50	0.054	2022/11/11	
Back Side	23330/793	10M QPSK(25,24)	0.081	0.062	-0.74	22.28	22.50	0.085	2022/11/11	
Left Side	23330/793	10M QPSK(25,24)	0.038	0.030	1.11	22.28	22.50	0.040	2022/11/11	
Right Side	23330/793	10M QPSK(25,24)	0.187	0.148	2.69	22.28	22.50	0.197	2022/11/11	
Top Side	23330/793	10M QPSK(25,24)	0.048	0.039	-4.77	22.28	22.50	0.050	2022/11/11	
Bottom Side	23330/793	10M QPSK(25,24)	0.092	0.076	-0.62	22.28	22.50	0.097	2022/11/11	

NOTE: Body SAR test results of LTE Band 14

10.1.10. SAR measurement Result of LTE Band 66

Test Position of Body with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	132322/1745	20M QPSK(1,49)	0.297	0.134	-3.67	22.64	23.50	0.362	2022/11/21	
Back Side	132322/1745	20M QPSK(1,49)	0.418	0.198	-0.98	22.64	23.50	0.510	2022/11/21	
Left Side	132322/1745	20M QPSK(1,49)	0.223	0.104	-3.09	22.64	23.50	0.272	2022/11/21	
Right Side	132322/1745	20M QPSK(1,49)	0.928	0.440	-1.32	22.64	23.50	1.131	2022/11/21	12#
Right Side Repeated	132322/1745	20M QPSK(1,49)	0.920	0.433	0.35	22.64	23.50	1.121	2022/11/21	
Top Side	132322/1745	20M QPSK(1,49)	0.269	0.128	-2.39	22.64	23.50	0.328	2022/11/21	
Bottom Side	132322/1745	20M QPSK(1,49)	0.455	0.216	3.86	22.64	23.50	0.555	2022/11/21	
Right Side	132072/1720	20M QPSK(1,49)	0.770	0.350	-3.92	23.29	23.50	0.808	2022/11/21	
Right Side	132572/1770	20M QPSK(1,49)	0.817	0.372	-1.37	22.98	23.50	0.921	2022/11/21	
50%RB										
Front Side	132322/1745	20M QPSK(50,49)	0.150	0.079	-4.72	22.07	22.50	0.166	2022/11/21	
Back Side	132322/1745	20M QPSK(50,49)	0.231	0.114	3.64	22.07	22.50	0.255	2022/11/21	
Left Side	132322/1745	20M QPSK(50,49)	0.124	0.055	-1.84	22.07	22.50	0.137	2022/11/21	
Right Side	132322/1745	20M QPSK(50,49)	0.510	0.260	1.51	22.07	22.50	0.563	2022/11/21	
Top Side	132322/1745	20M QPSK(50,49)	0.134	0.054	-3.87	22.07	22.50	0.148	2022/11/21	
Bottom Side	132322/1745	20M QPSK(50,49)	0.230	0.122	4.36	22.07	22.50	0.254	2022/11/21	
100%RB										

Right Side	132322/1745	20M QPSK(100,0)	0.488	0.249	0.32	22.12	22.50	0.533	2022/11/21	
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NOTE: Body SAR test results of LTE Band 66

10.1.11. SAR measurement Result of LTE Band 71

Test Position of Body with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
1RB										
Front Side	133322/683	20M QPSK(1,49)	0.103	0.054	-3.06	23.35	23.50	0.107	2022/11/11	
Back Side	133322/683	20M QPSK(1,49)	0.128	0.068	3.86	23.35	23.50	0.132	2022/11/11	
Left Side	133322/683	20M QPSK(1,49)	0.080	0.041	-2.64	23.35	23.50	0.083	2022/11/11	
Right Side	133322/683	20M QPSK(1,49)	0.321	0.171	-0.31	23.35	23.50	0.332	2022/11/11	13#
Top Side	133322/683	20M QPSK(1,49)	0.096	0.051	0.96	23.35	23.50	0.099	2022/11/11	
Bottom Side	133322/683	20M QPSK(1,49)	0.161	0.083	2.64	23.35	23.50	0.167	2022/11/11	
50%RB										
Front Side	133322/683	20M QPSK(50,24)	0.056	0.030	3.97	22.37	22.50	0.058	2022/11/11	
Back Side	133322/683	20M QPSK(50,24)	0.066	0.038	-4.42	22.37	22.50	0.068	2022/11/11	
Left Side	133322/683	20M QPSK(50,24)	0.041	0.021	4.55	22.37	22.50	0.042	2022/11/11	
Right Side	133322/683	20M QPSK(50,24)	0.186	0.096	-2.06	22.37	22.50	0.192	2022/11/11	
Top Side	133322/683	20M QPSK(50,24)	0.044	0.021	4.87	22.37	22.50	0.045	2022/11/11	
Bottom Side	133322/683	20M QPSK(50,24)	0.085	0.043	0.89	22.37	22.50	0.088	2022/11/11	

NOTE: Body SAR test results of LTE Band 71

10.1.12. SAR measurement Result of WLAN 2.4G

Test Position of Body with 0mm	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	1/2412	802.11b	0.058	0.029	0.38	15.46	15.50	0.059	2022/11/18	
Back Side	1/2412	802.11b	0.070	0.035	0.97	15.46	15.50	0.071	2022/11/18	
Left Side	1/2412	802.11b	0.176	0.089	-2.71	15.46	15.50	0.178	2022/11/18	5#
Right Side	1/2412	802.11b	0.035	0.017	2.36	15.46	15.50	0.035	2022/11/18	
Top Side	1/2412	802.11b	0.048	0.024	-2.14	15.46	15.50	0.048	2022/11/18	
Bottom Side	1/2412	802.11b	0.084	0.042	-2.05	15.46	15.50	0.085	2022/11/18	

NOTE: Body SAR test results of WLAN 2.4G

10.1.13. SAR measurement Result of WLAN 5.2G

Test Position of Body with 0mm	Test channel /Freq	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g (W/Kg)	Date	Plot
			1-g	10-g						
Front Side	48/5240	802.11a	0.072	0.031	-3.83	10.67	11.00	0.078	2022/11/17	
Back Side	48/5240	802.11a	0.087	0.036	-1.63	10.67	11.00	0.094	2022/11/17	
Left Side	48/5240	802.11a	0.207	0.089	1.34	10.67	11.00	0.223	2022/11/17	4#
Right Side	48/5240	802.11a	0.048	0.020	0.81	10.67	11.00	0.052	2022/11/17	
Top Side	48/5240	802.11a	0.058	0.025	-2.43	10.67	11.00	0.063	2022/11/17	
Bottom Side	48/5240	802.11a	0.093	0.040	-2.91	10.67	11.00	0.100	2022/11/17	

NOTE: Body SAR test results of WLAN 5.2G

10.2. Simultaneous Transmission Analysis

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	0.385	0.059	0.444	N/A	N/A

	Back Side	0.510	0.071	0.581	N/A	N/A
	Left Side	0.272	0.178	0.450	N/A	N/A
	Right Side	1.131	0.035	1.166	N/A	N/A
	Top Side	0.330	0.048	0.378	N/A	N/A
	Bottom Side	0.694	0.085	0.779	N/A	N/A

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		WWAN	NII			
Body	Front Side	0.385	0.078	0.463	N/A	N/A
	Back Side	0.510	0.094	0.604	N/A	N/A
	Left Side	0.272	0.223	0.495	N/A	N/A
	Right Side	1.131	0.052	1.183	N/A	N/A
	Top Side	0.330	0.063	0.393	N/A	N/A
	Bottom Side	0.694	0.100	0.794	N/A	N/A

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		WWAN	DSS			
Body	Front Side	0.385	0.167	0.552	N/A	N/A
	Back Side	0.510	0.167	0.677	N/A	N/A
	Left Side	0.272	0.167	0.439	N/A	N/A
	Right Side	1.131	0.167	1.298	N/A	N/A
	Top Side	0.330	0.167	0.497	N/A	N/A
	Bottom Side	0.694	0.167	0.861	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 1 System Performance Check - 750MHz
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MEASUREMENT 6 System Performance Check - 5200MHz

MEASUREMENT 1

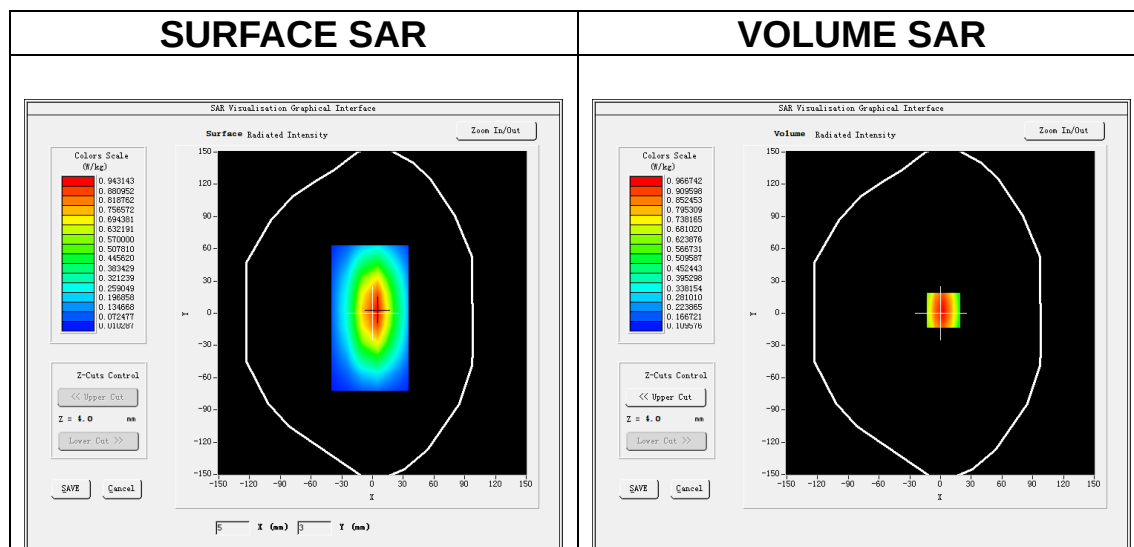
Date of measurement: 11/11/2022

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Dipole</u>
Band	<u>CW750</u>
Channels	<u>Middle</u>
Signal	<u>CW (Crest factor: 1.0)</u>
ConvF	<u>1.49</u>

B. SAR Measurement Results

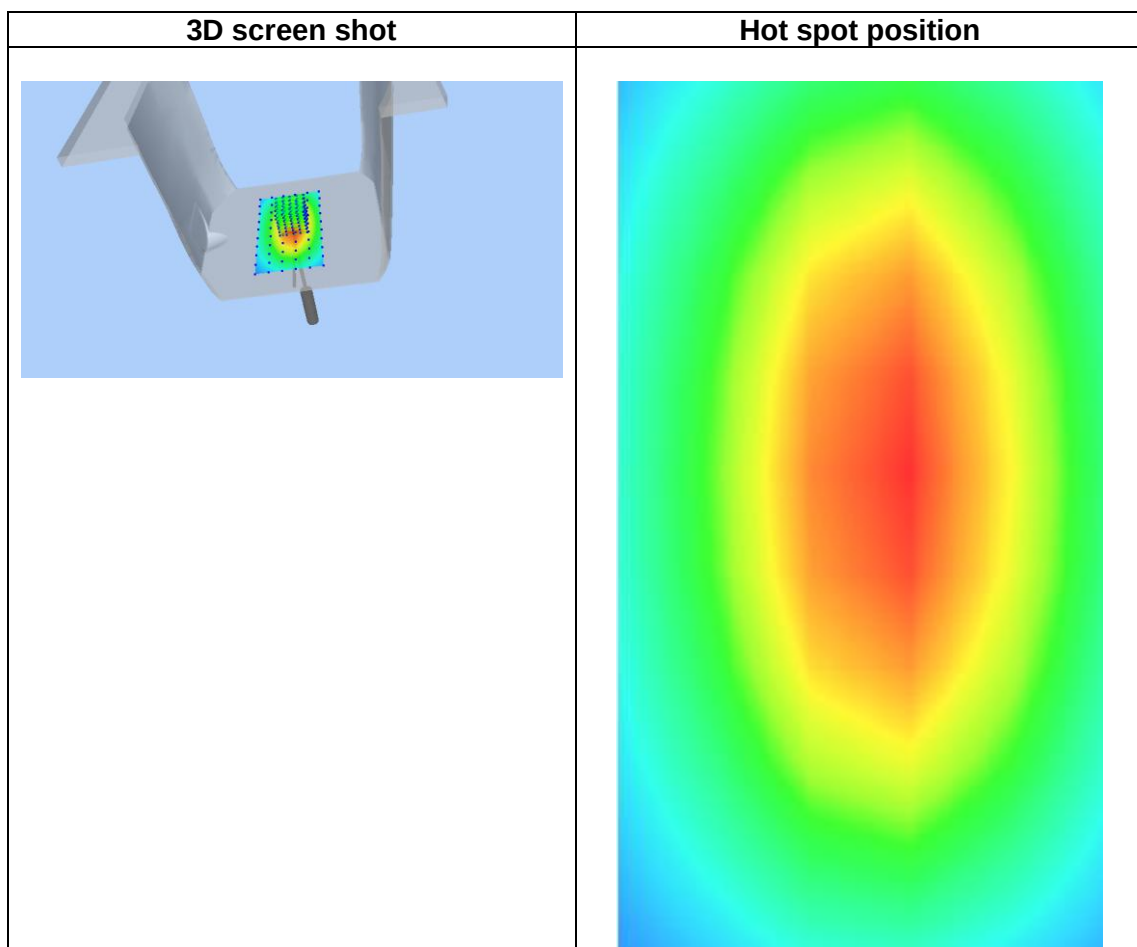
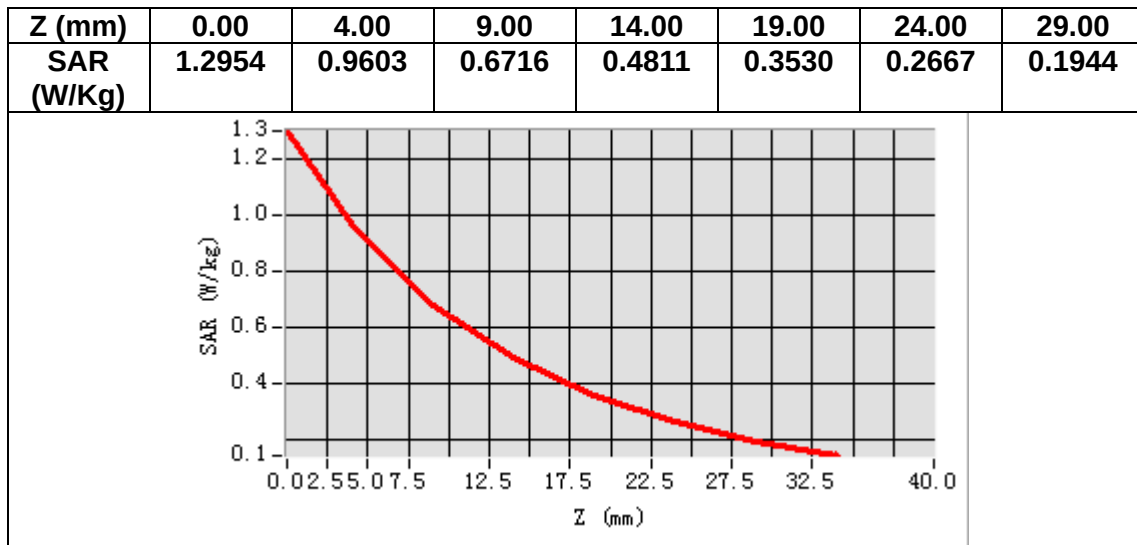
Frequency (MHz)	750.000000
Relative permittivity (real part)	40.413118
Relative permittivity (imaginary part)	21.483449
Conductivity (S/m)	0.895144
Variation (%)	0.150000



Maximum location: X=3.00, Y=3.00

SAR Peak: 1.30 W/kg

SAR 10g (W/Kg)	0.543172
SAR 1g (W/Kg)	0.902080



MEASUREMENT 2

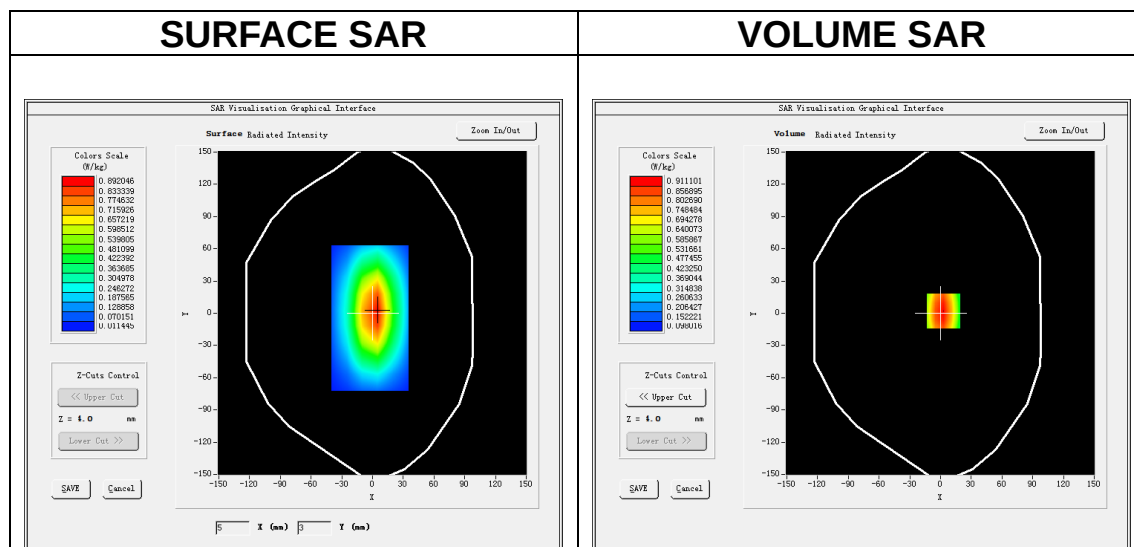
Date of measurement: 15/11/2022

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Dipole</u>
Band	<u>CW835</u>
Channels	<u>Middle</u>
Signal	<u>CW (Crest factor: 1.0)</u>
ConvF	<u>1.50</u>

B. SAR Measurement Results

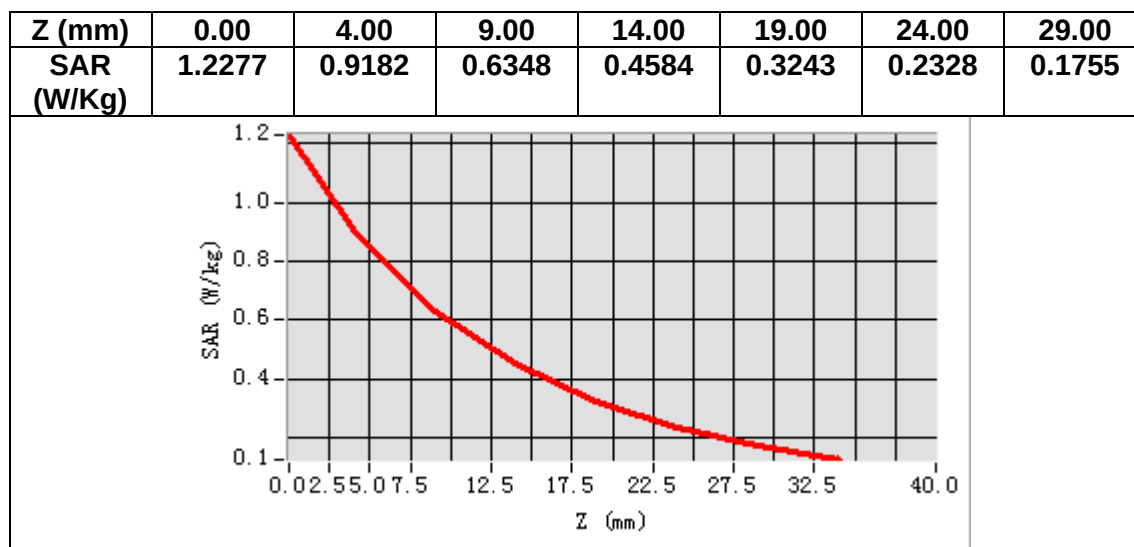
Frequency (MHz)	835.000000
Relative permittivity (real part)	41.252025
Relative permittivity (imaginary part)	20.000331
Conductivity (S/m)	0.927793
Variation (%)	-0.330000



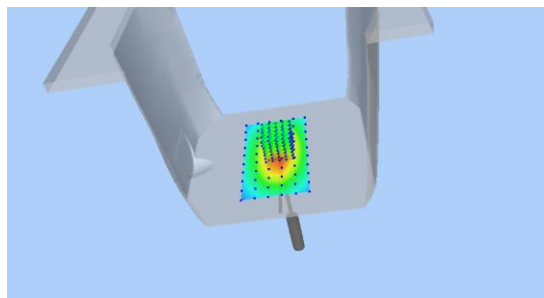
Maximum location: X=3.00, Y=2.00

SAR Peak: 1.23 W/kg

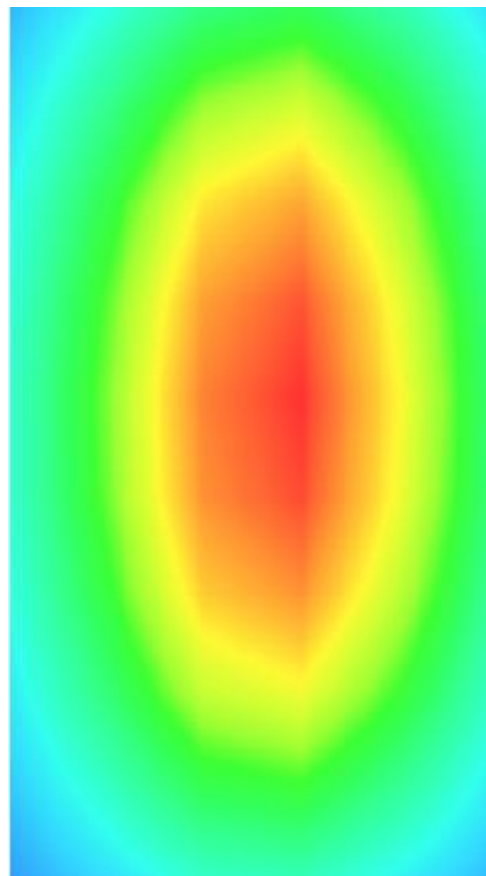
SAR 10g (W/Kg)	0.608207
SAR 1g (W/Kg)	0.903102



3D screen shot



Hot spot position



MEASUREMENT 3

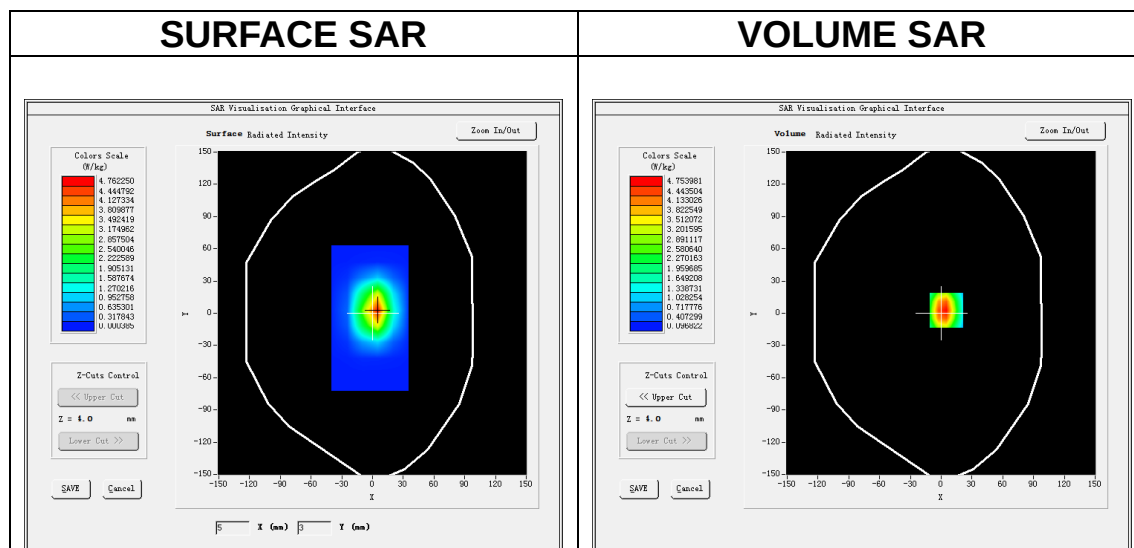
Date of measurement: 21/11/2022

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>1.73</u>

B. SAR Measurement Results

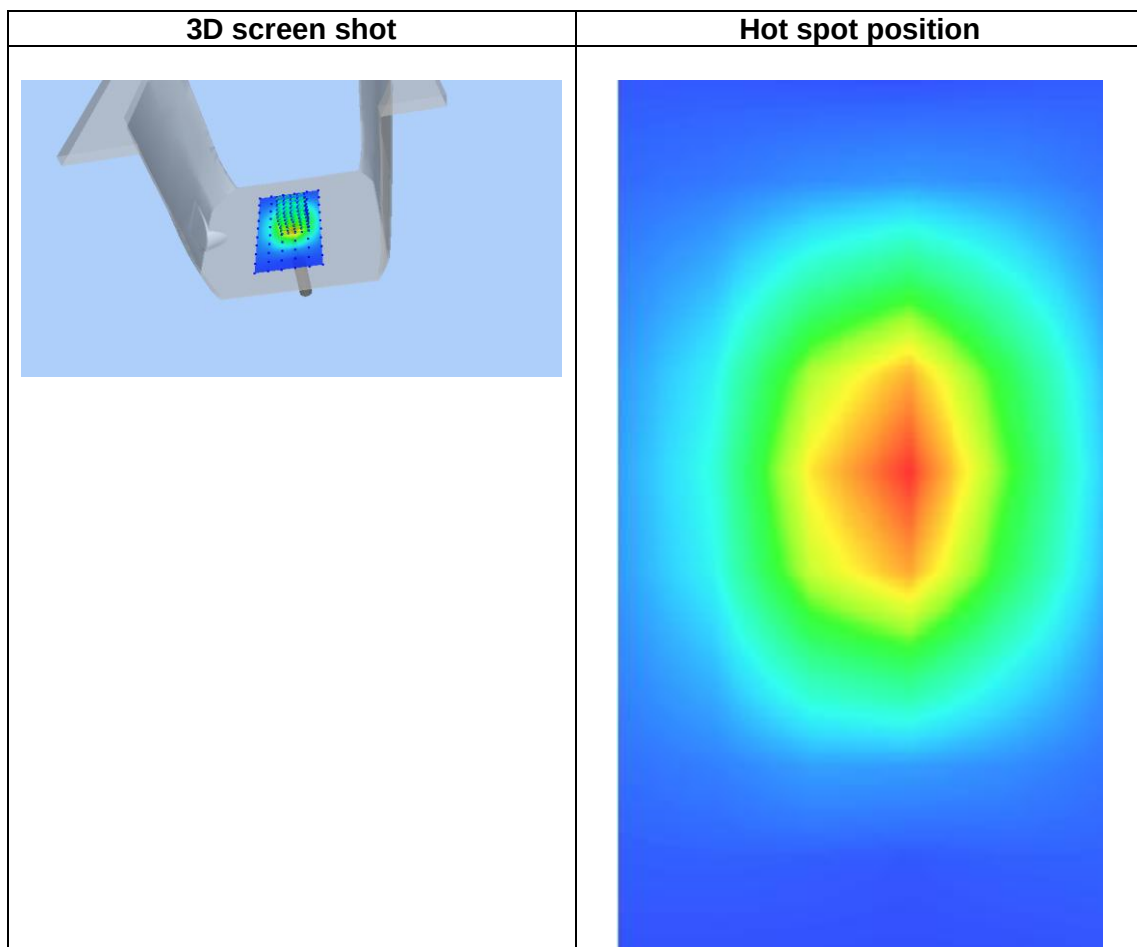
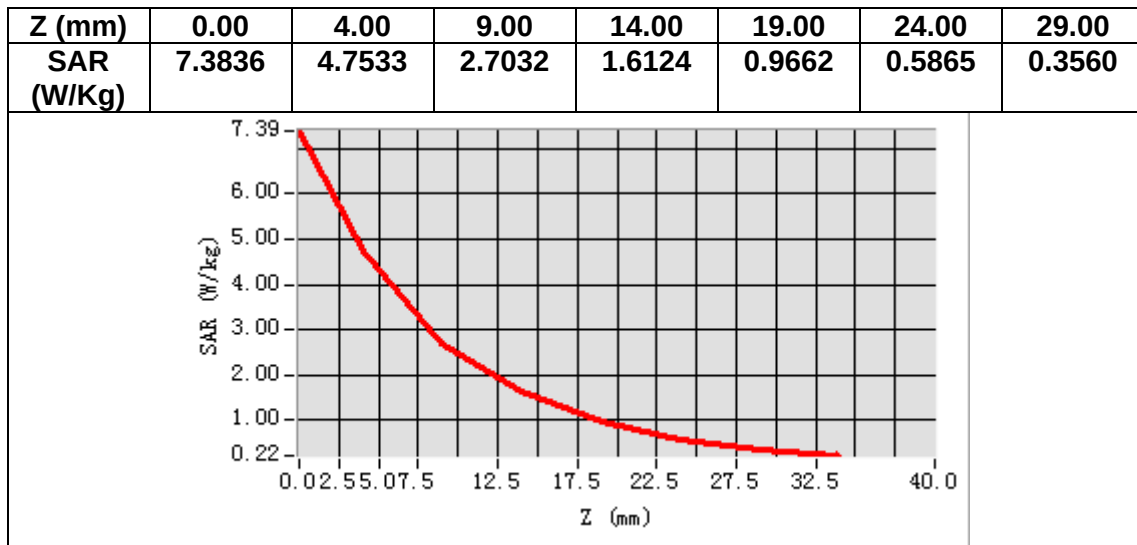
Frequency (MHz)	1800.000000
Relative permittivity (real part)	38.921625
Relative permittivity (imaginary part)	13.904764
Conductivity (S/m)	1.390476
Variation (%)	3.680000



Maximum location: X=5.00, Y=3.00

SAR Peak: 7.59 W/kg

SAR 10g (W/Kg)	1.973012
SAR 1g (W/Kg)	3.662152



MEASUREMENT 4

Date of measurement: 14/11/2022

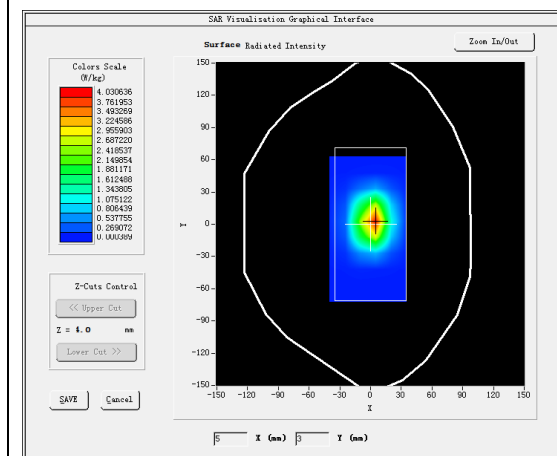
A. Experimental conditions.

<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>1.91</u>

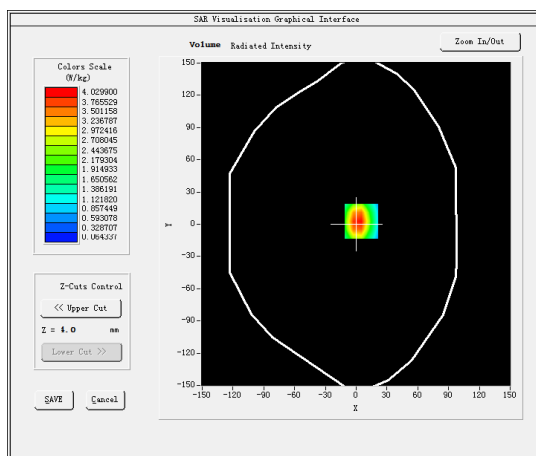
B. SAR Measurement Results

Frequency (MHz)	1900.000000
Relative permittivity (real part)	38.554289
Relative permittivity (imaginary part)	13.773882
Conductivity (S/m)	1.453910
Variation (%)	2.690000

SURFACE SAR



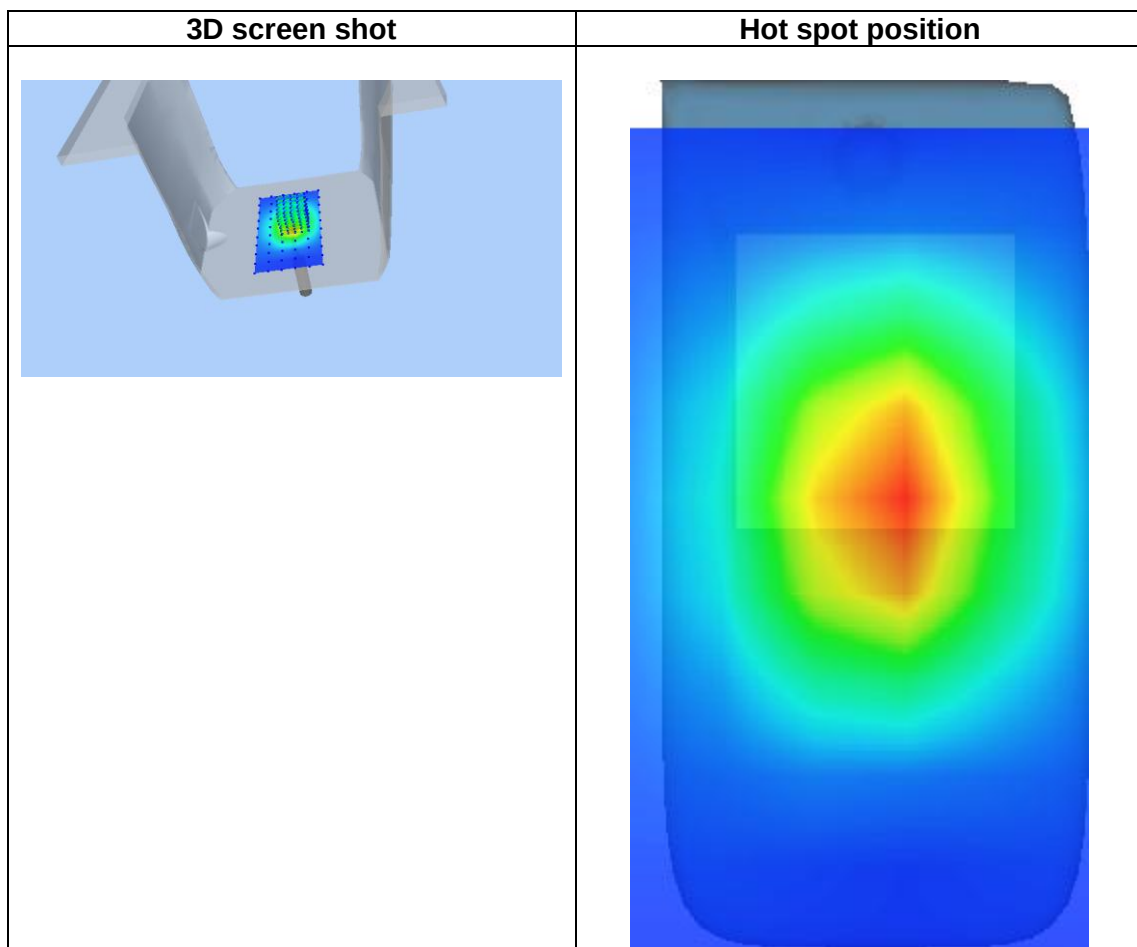
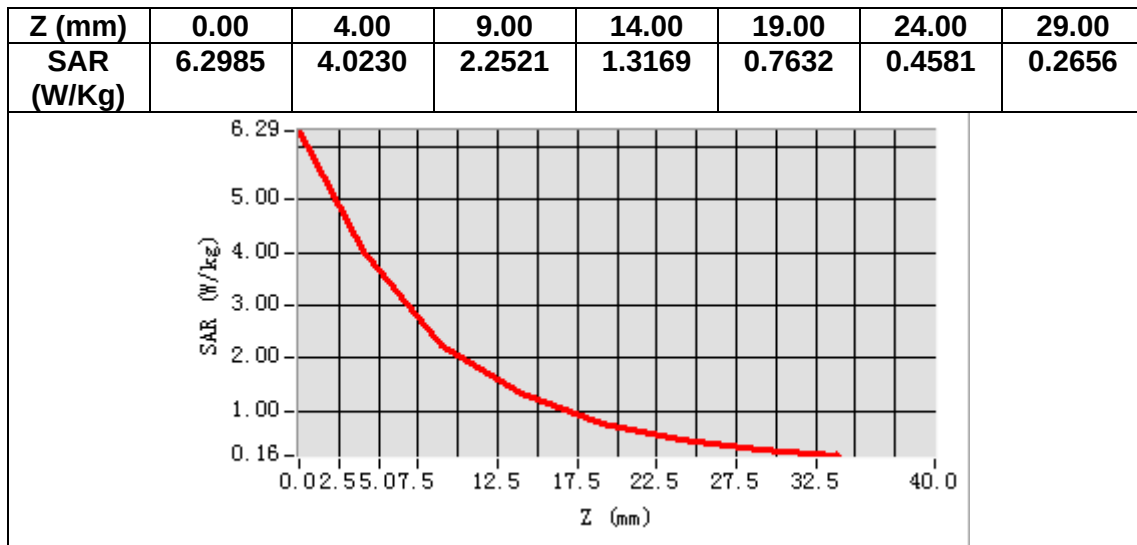
VOLUME SAR



Maximum location: X=5.00, Y=3.00

SAR Peak: 6.57 W/kg

SAR 10g (W/Kg)	2.093268
SAR 1g (W/Kg)	4.372038



MEASUREMENT 5

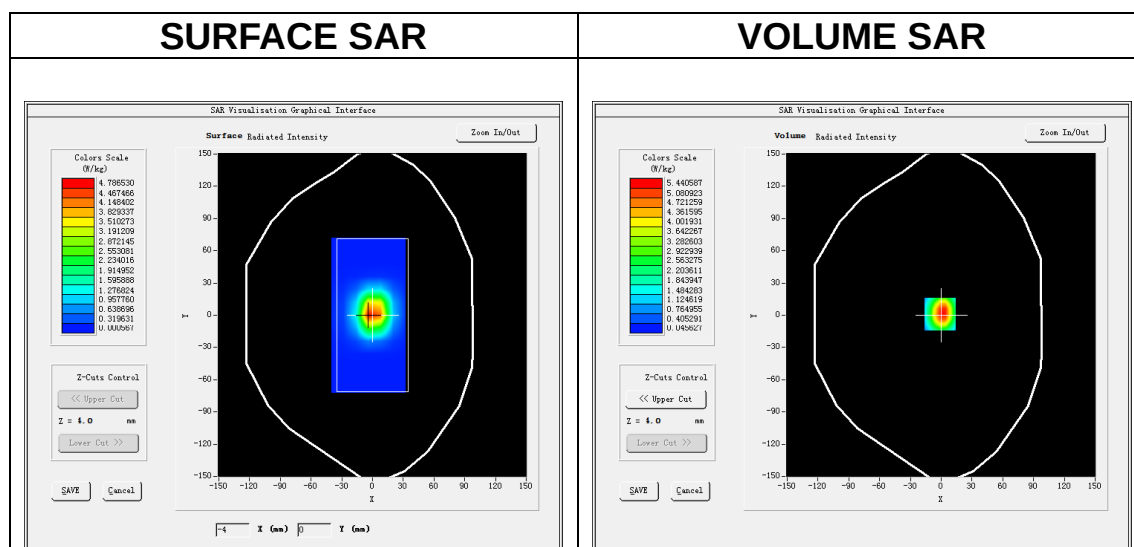
Date of measurement: 18/11/2022

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>1.98</u>

B. SAR Measurement Results

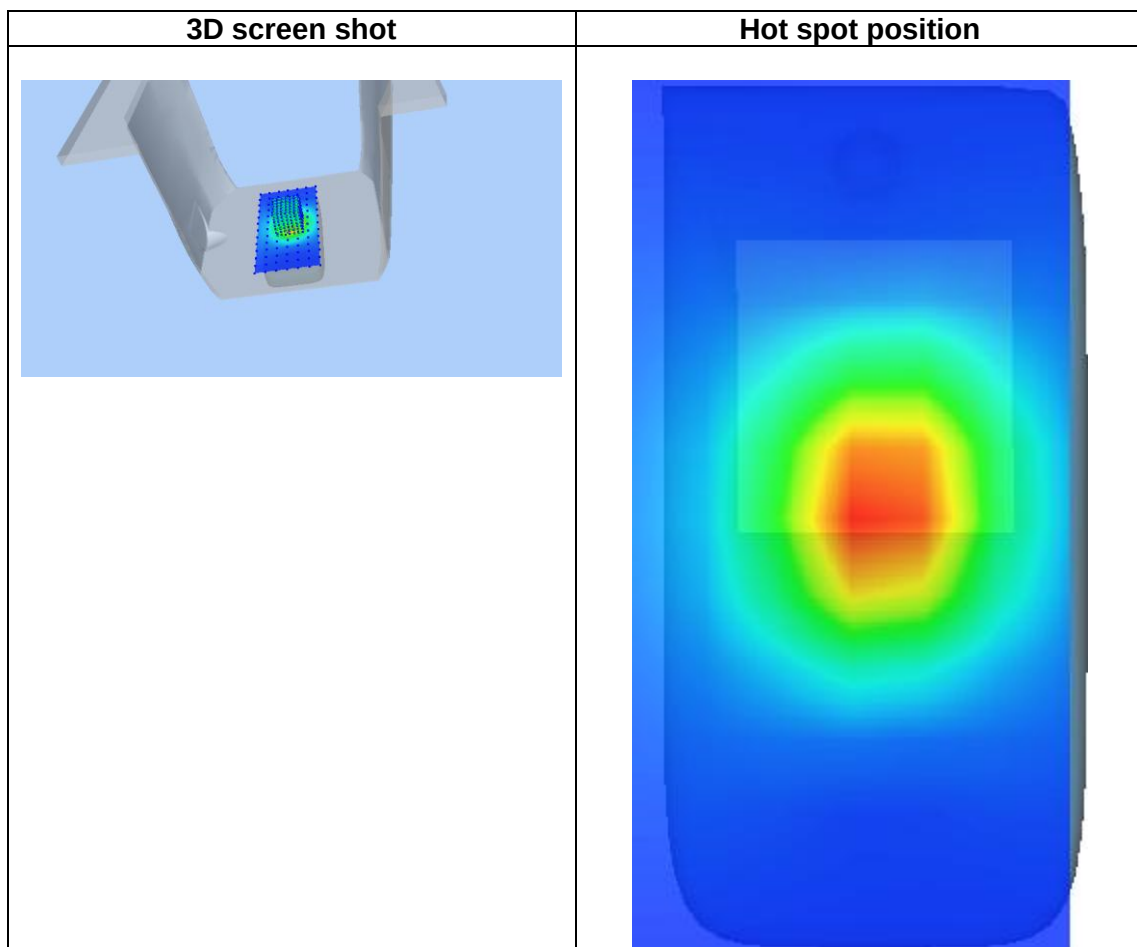
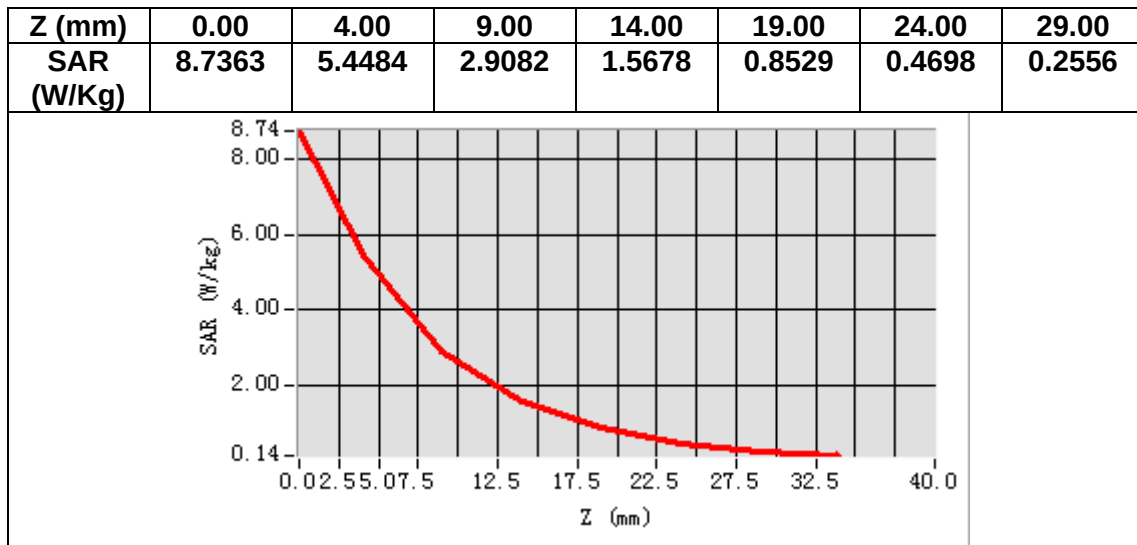
Frequency (MHz)	2450.000000
Relative permittivity (real part)	37.867995
Relative permittivity (imaginary part)	13.308427
Conductivity (S/m)	1.811425
Variation (%)	-1.850000



Maximum location: X=-1.00, Y=1.00

SAR Peak: 8.94 W/kg

SAR 10g (W/Kg)	2.258116
SAR 1g (W/Kg)	4.956283



MEASUREMENT 6

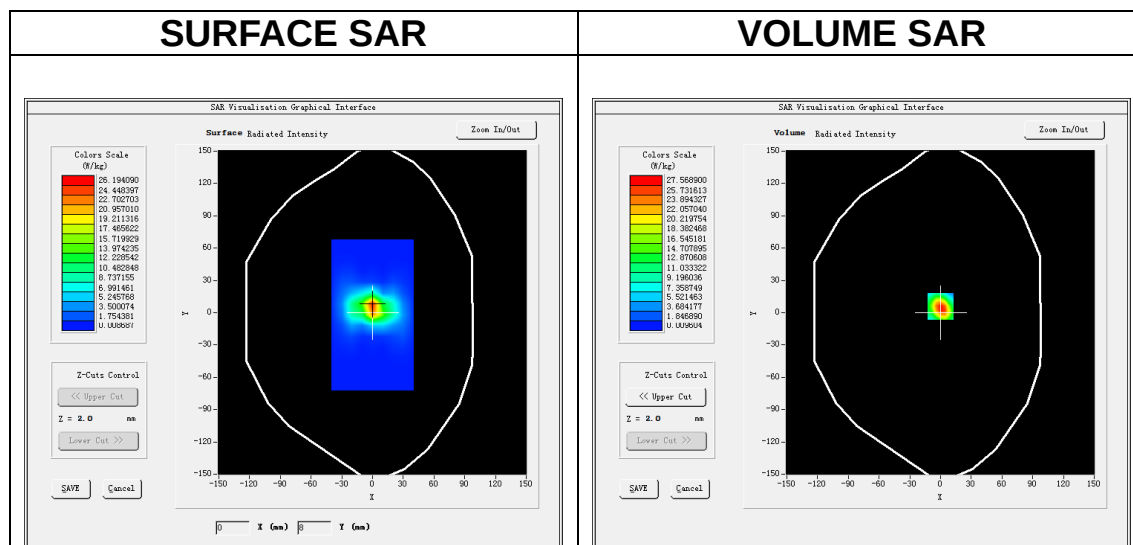
Date of measurement: 17/11/2022

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>1.80</u>

B. SAR Measurement Results

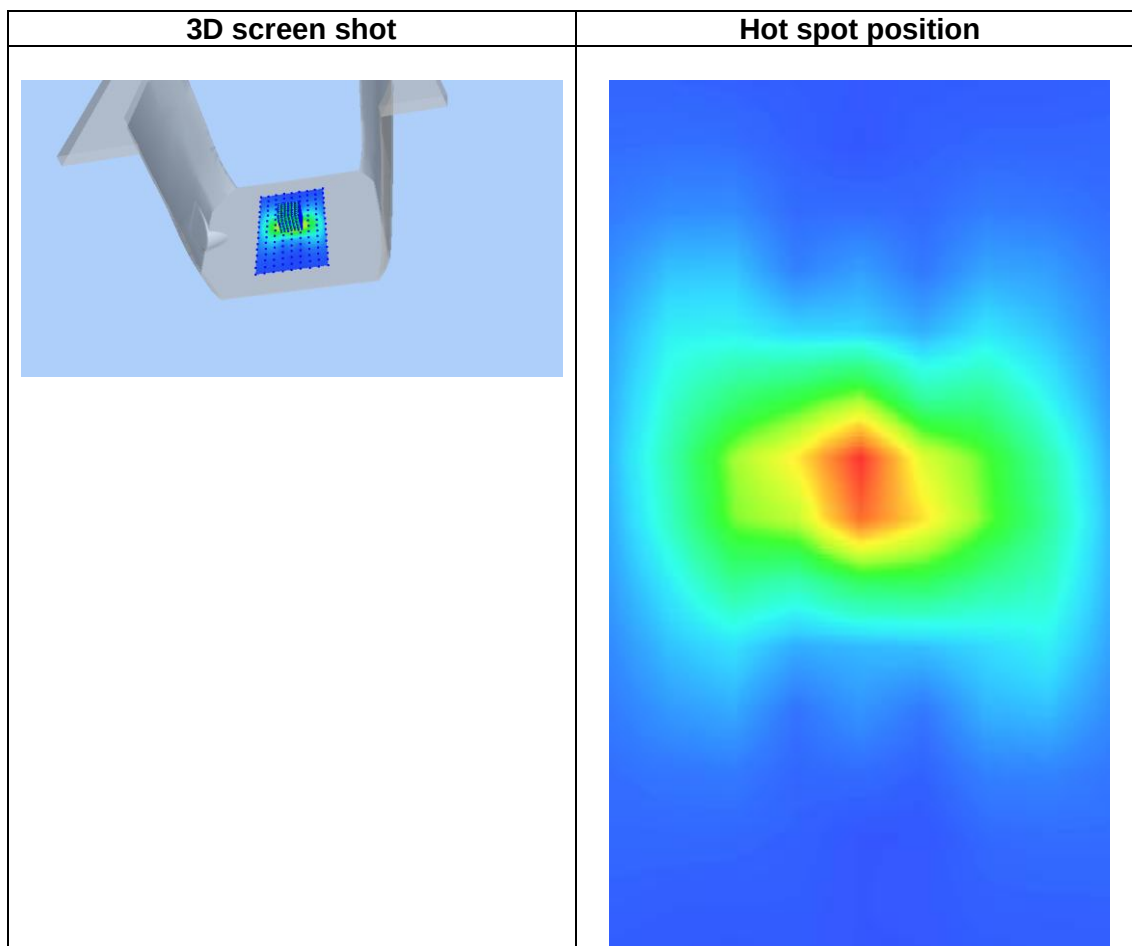
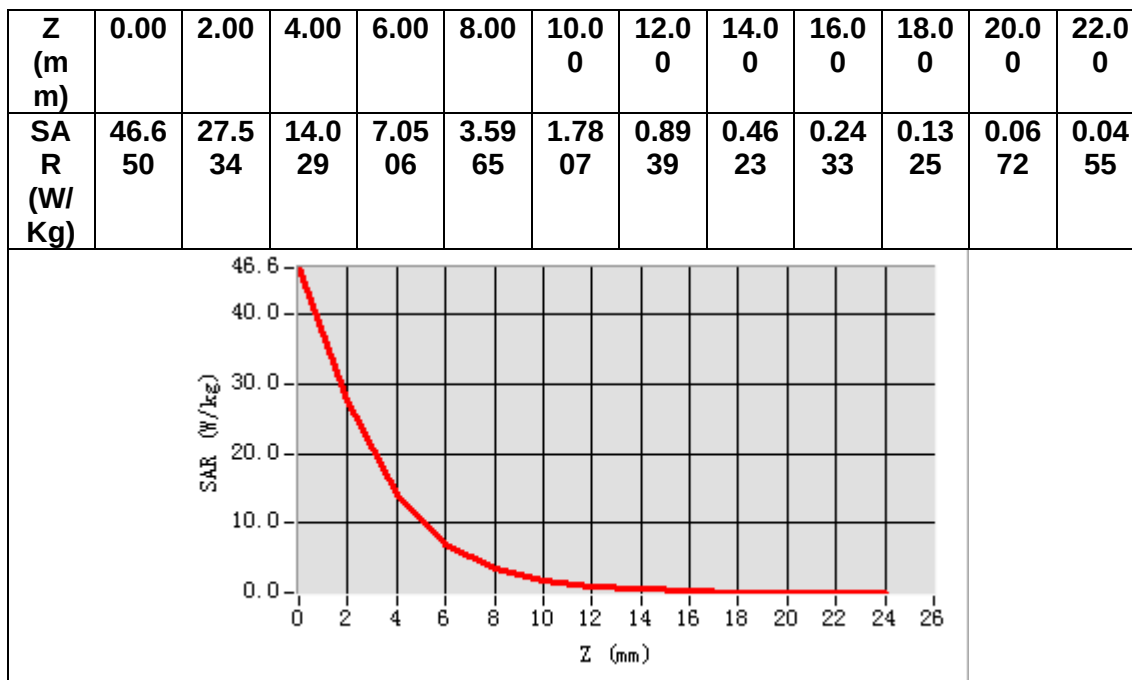
Frequency (MHz)	5200.000000
Relative permittivity (real part)	35.806922
Relative permittivity (imaginary part)	16.457523
Conductivity (S/m)	4.754396
Variation (%)	-3.580000



Maximum location: X=0.00, Y=6.00

SAR Peak: 49.61 W/kg

SAR 10g (W/Kg)	5.449392
SAR 1g (W/Kg)	17.219374



13. Appendix C. Plots of High SAR Measurement

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MEASUREMENT 9 LTE Band 12 Body
MEASUREMENT 10 LTE Band 13 Body
MEASUREMENT 11 LTE Band 14 Body
MEASUREMENT 12 LTE Band 66 Body
MEASUREMENT 13 LTE Band 71 Body

MEASUREMENT 1

Date of measurement: 14/11/2022

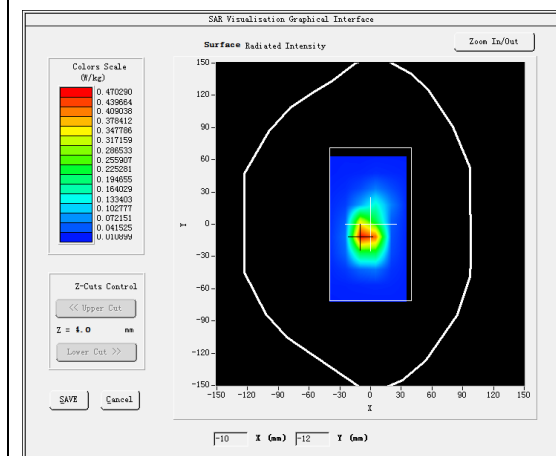
A. Experimental conditions.

<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>1.91</u>

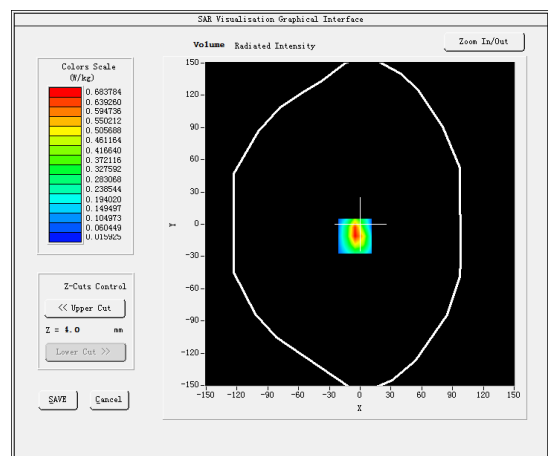
B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.640690
Relative permittivity (imaginary part)	13.791682
Conductivity (S/m)	1.440465
Variation (%)	-0.040000

SURFACE SAR



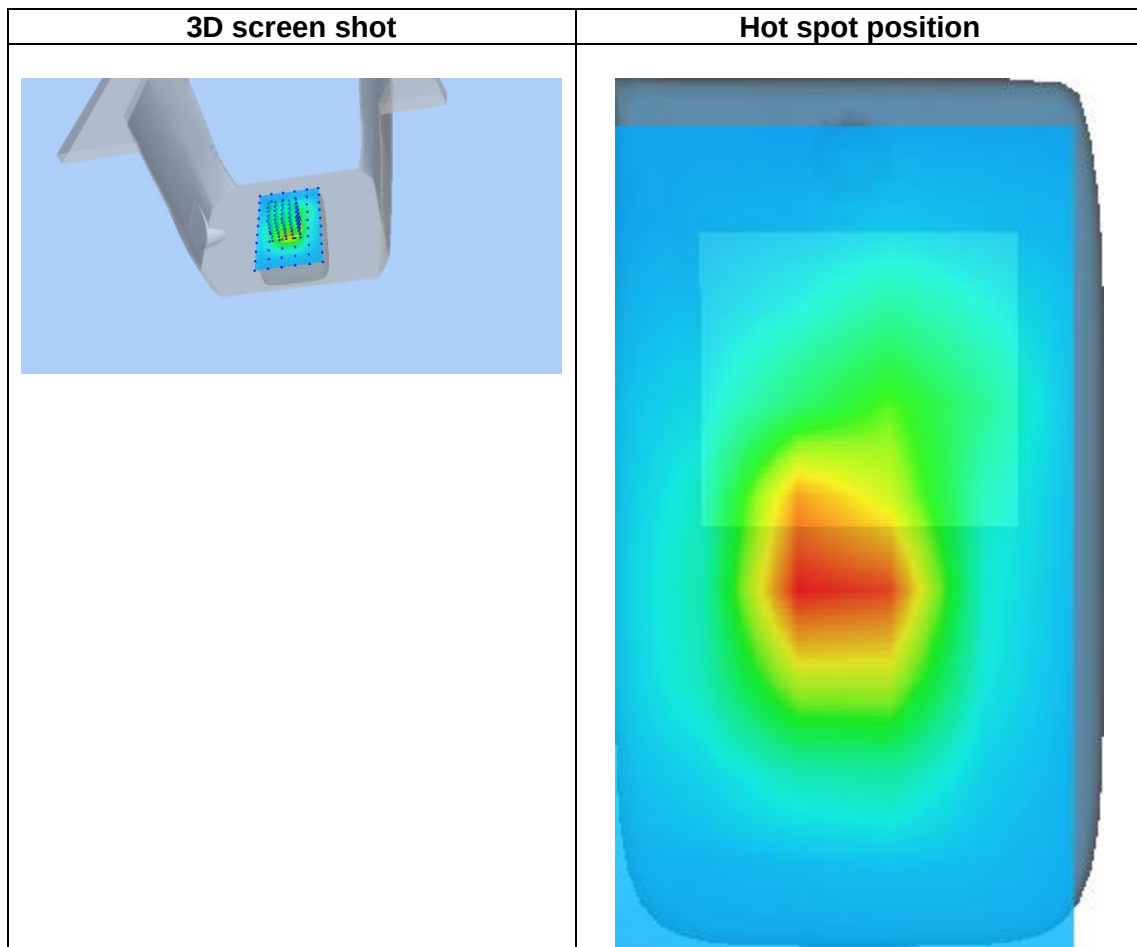
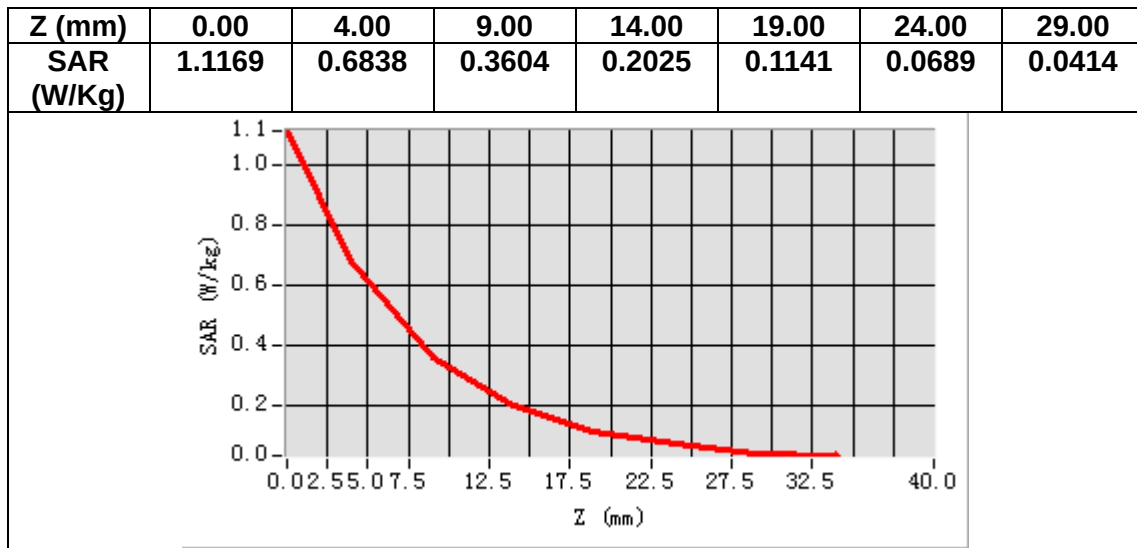
VOLUME SAR



Maximum location: X=-5.00, Y=-11.00

SAR Peak: 1.18 W/kg

SAR 10g (W/Kg)	0.293057
SAR 1g (W/Kg)	0.649718



MEASUREMENT 2

Date of measurement: 21/11/2022

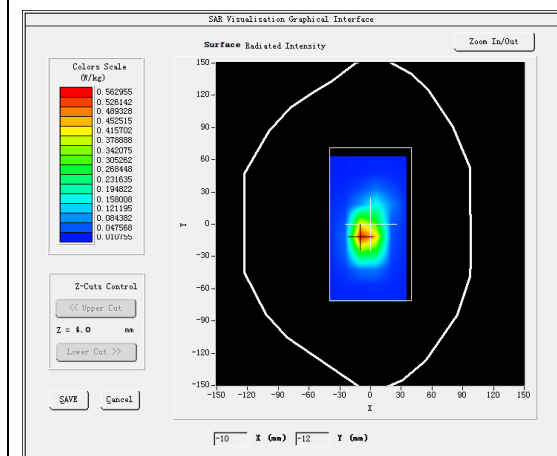
A. Experimental conditions.

<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>1.73</u>

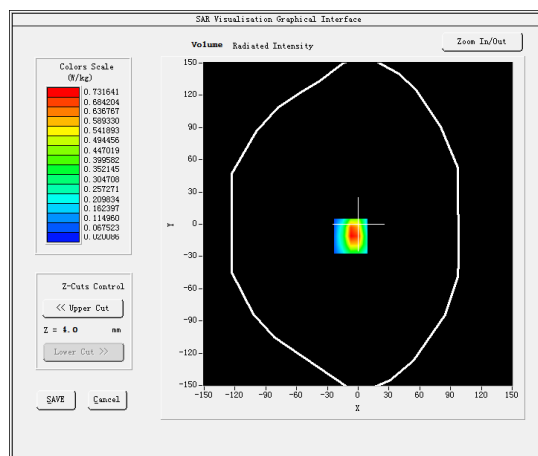
B. SAR Measurement Results

Frequency (MHz)	1732.600000
Relative permittivity (real part)	39.381325
Relative permittivity (imaginary part)	13.857064
Conductivity (S/m)	1.333357
Variation (%)	-1.320000

SURFACE SAR



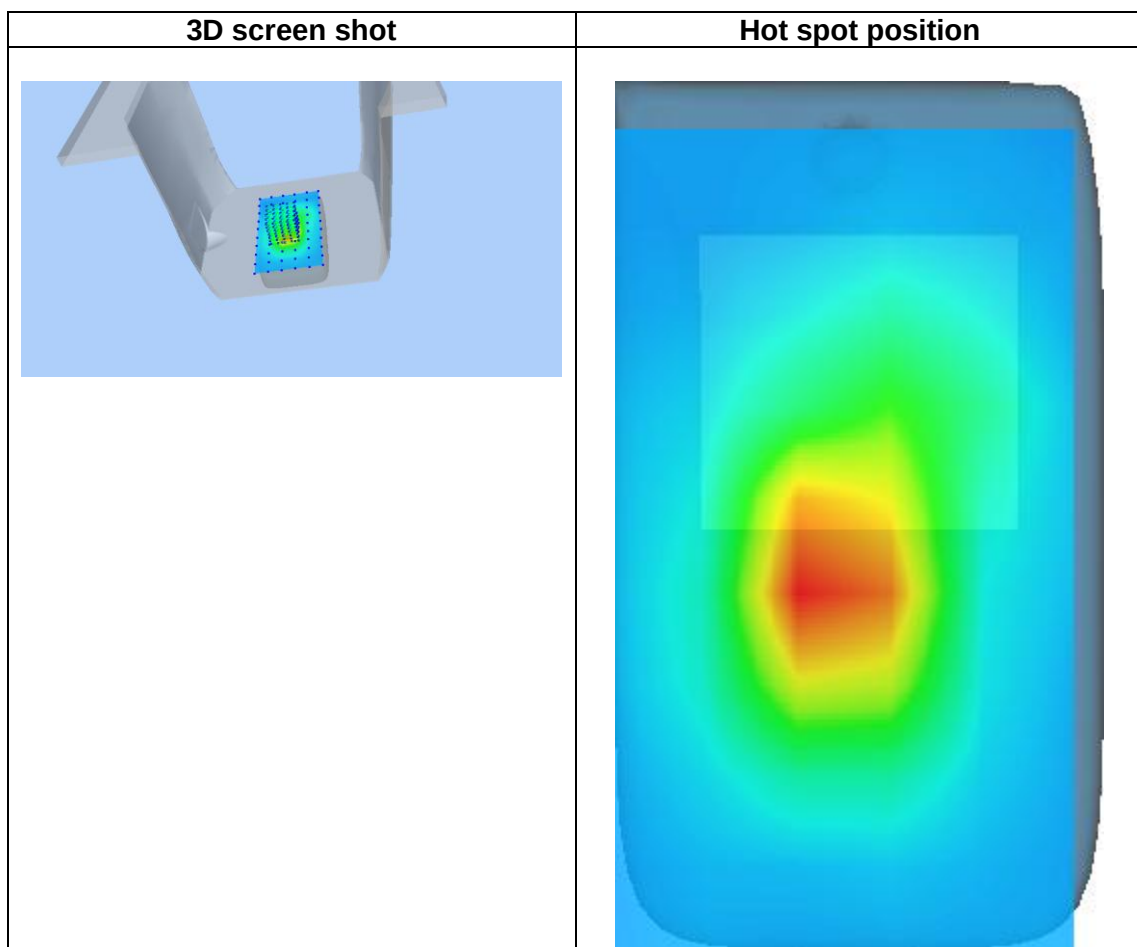
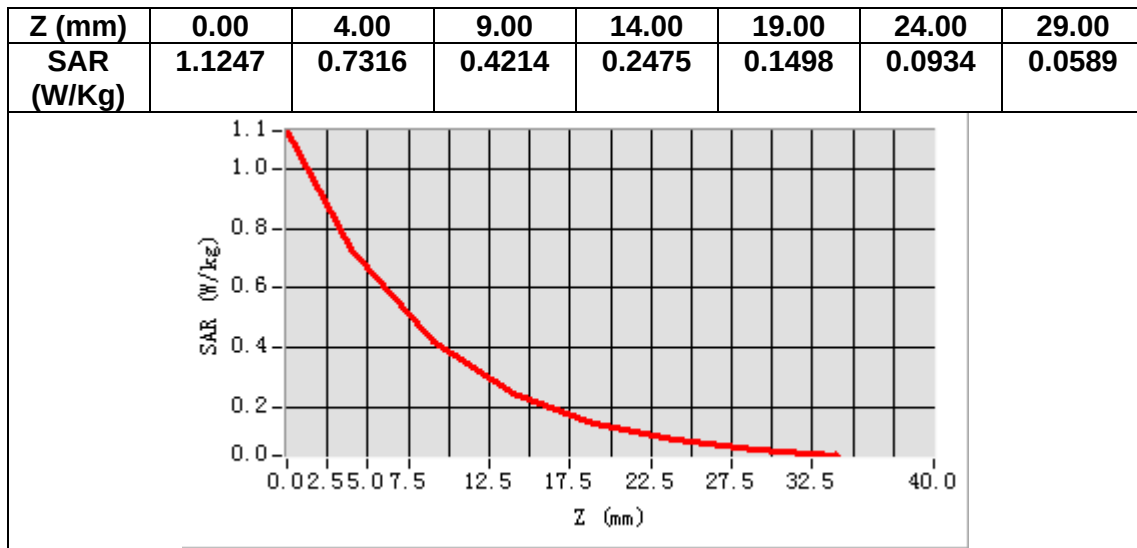
VOLUME SAR



Maximum location: X=-7.00, Y=-11.00

SAR Peak: 1.27 W/kg

SAR 10g (W/Kg)	0.345663
SAR 1g (W/Kg)	0.727299



MEASUREMENT 3

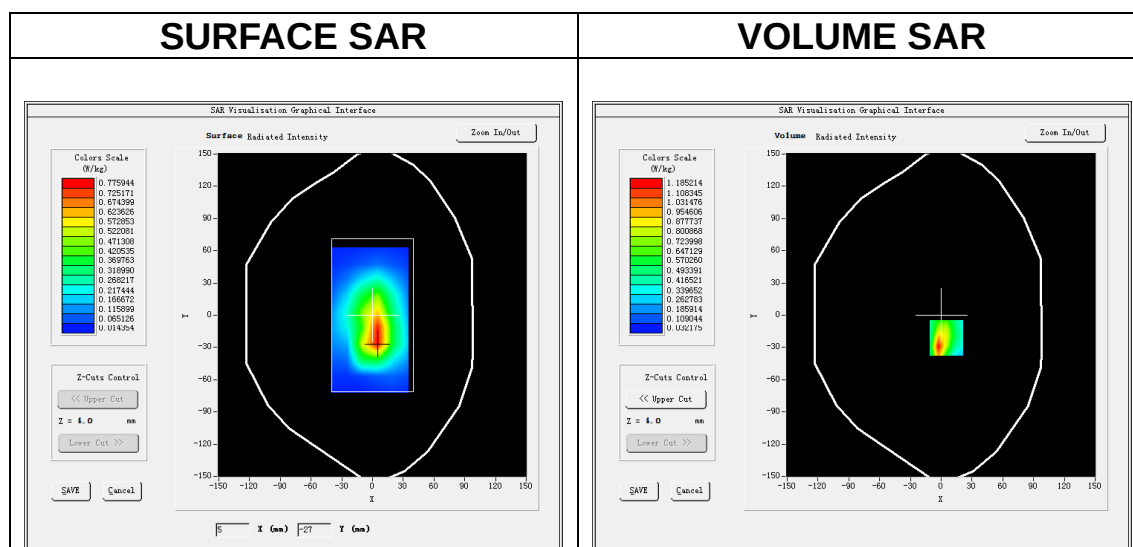
Date of measurement: 15/11/2022

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>1.50</u>

B. SAR Measurement Results

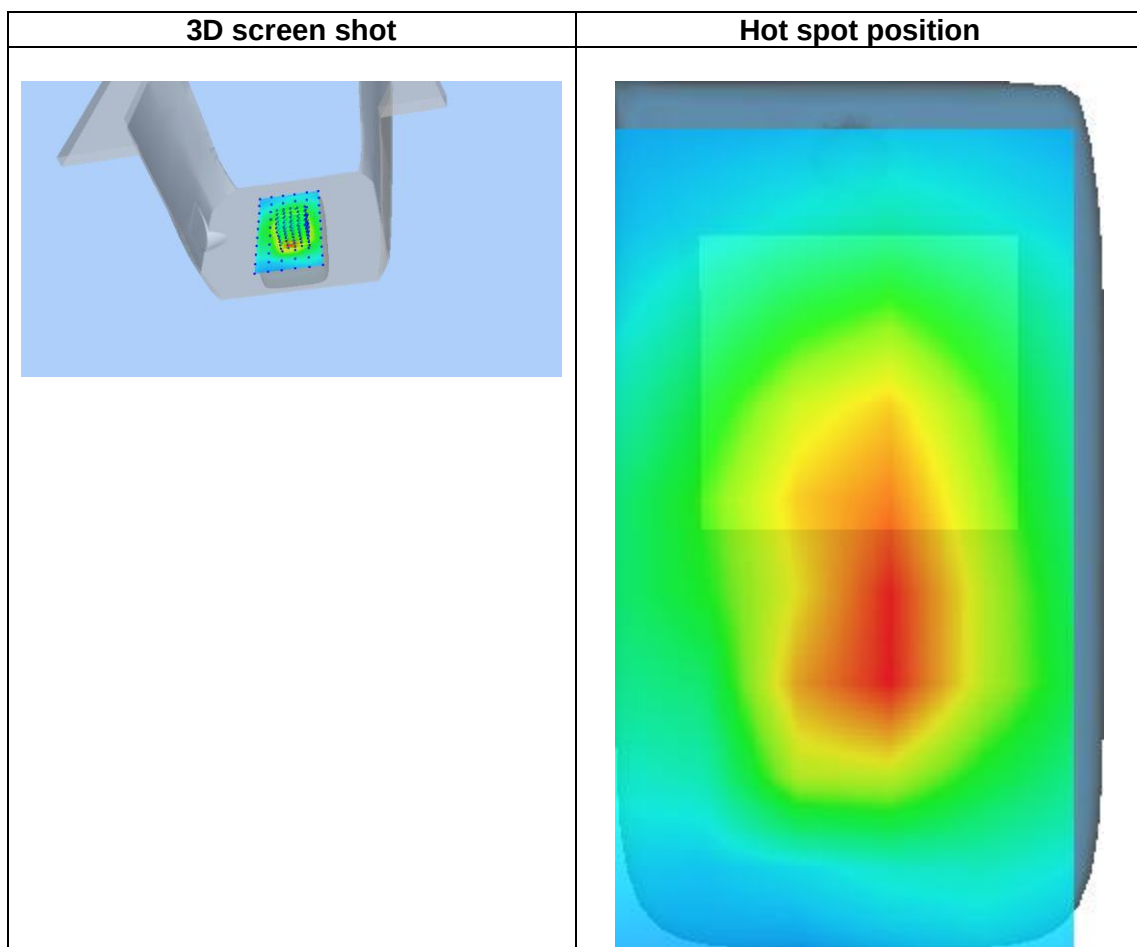
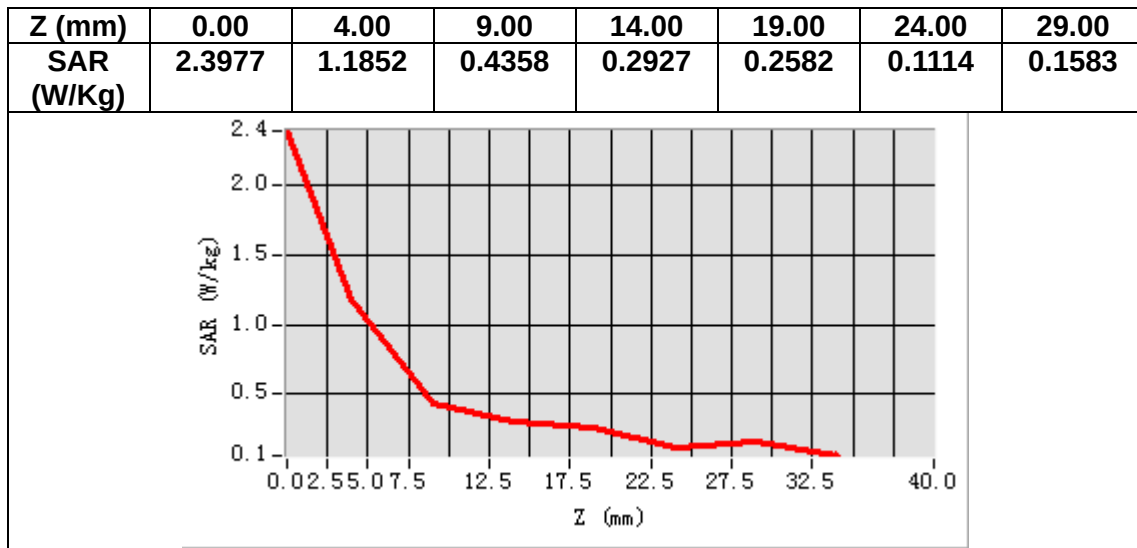
Frequency (MHz)	836.400000
Relative permittivity (real part)	41.167686
Relative permittivity (imaginary part)	20.026171
Conductivity (S/m)	0.930549
Variation (%)	4.080000



Maximum location: X=5.00, Y=-21.00

SAR Peak: 2.13 W/kg

SAR 10g (W/Kg)	0.535090
SAR 1g (W/Kg)	1.084604



MEASUREMENT 4

Date of measurement: 17/11/2022

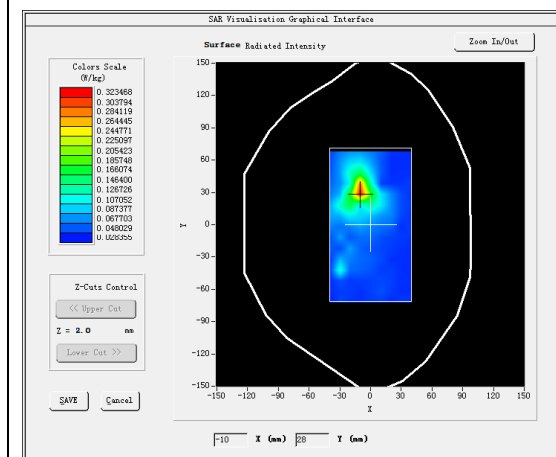
A. Experimental conditions.

<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>High</u>
<u>Signal</u>	<u>IEEE802.11a (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>1.80</u>

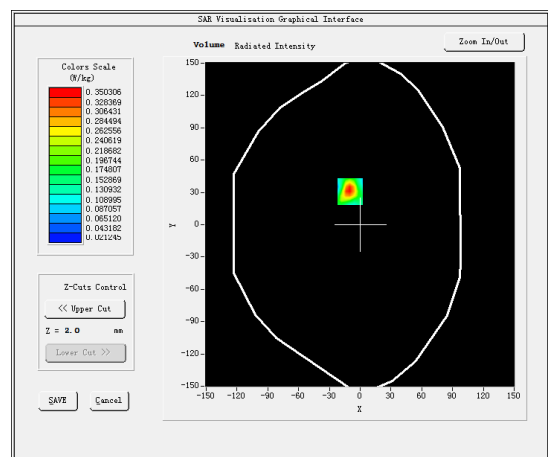
B. SAR Measurement Results

Frequency (MHz)	5240.000000
Relative permittivity (real part)	35.652398
Relative permittivity (imaginary part)	16.468908
Conductivity (S/m)	4.794282
Variation (%)	1.340000

SURFACE SAR



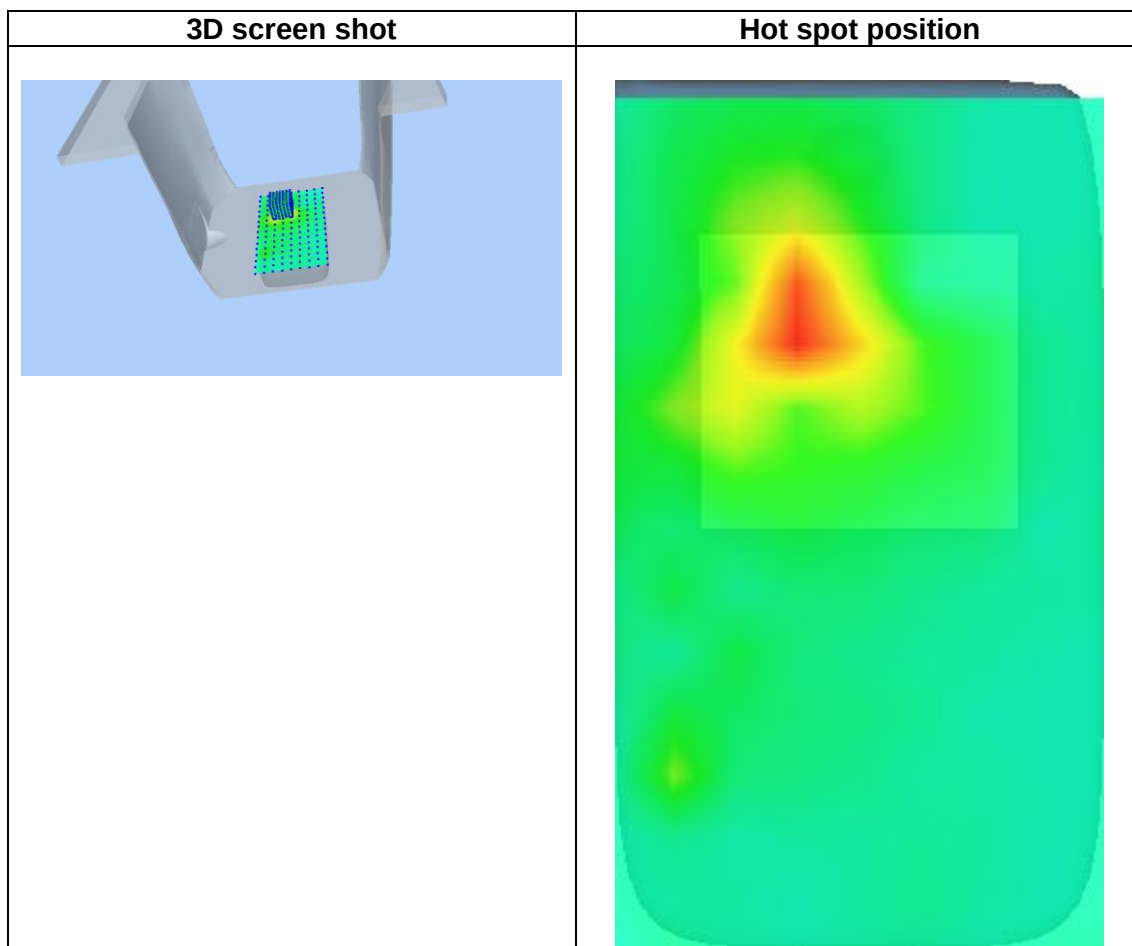
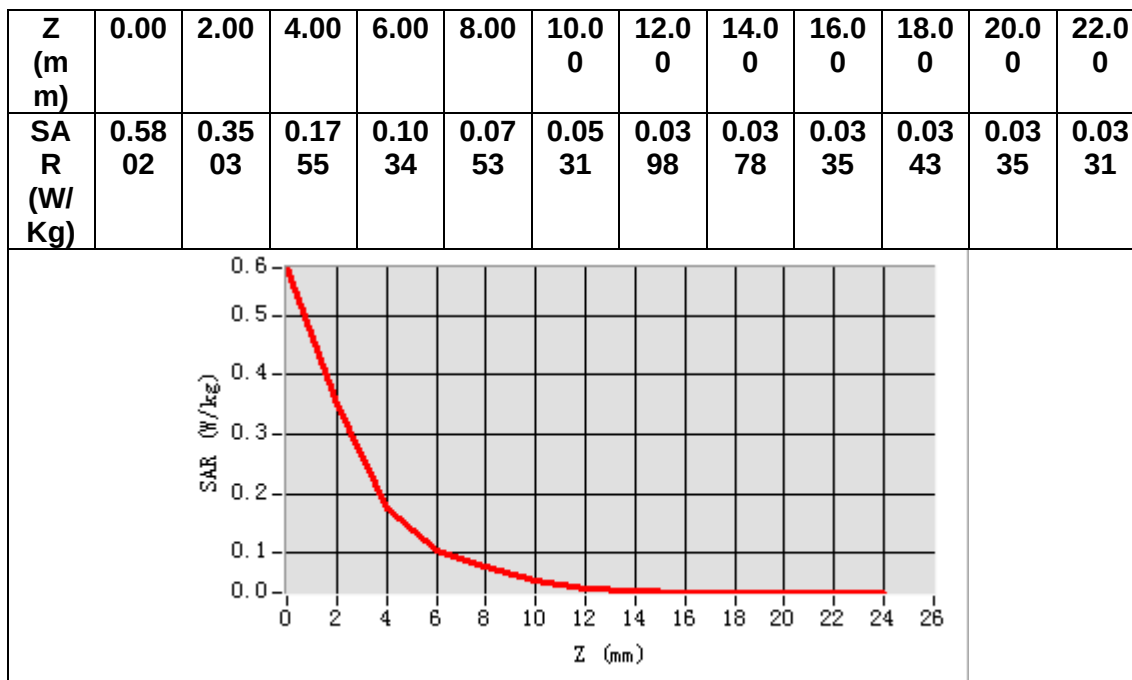
VOLUME SAR



Maximum location: X=-10.00, Y=31.00

SAR Peak: 0.62 W/kg

SAR 10g (W/Kg)	0.089480
SAR 1g (W/Kg)	0.207486



MEASUREMENT 5

Date of measurement: 18/11/2022

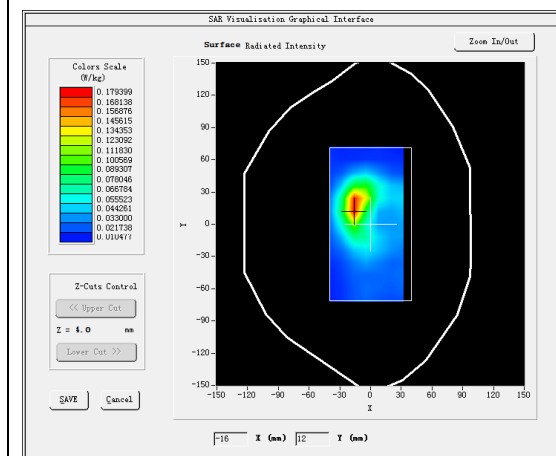
A. Experimental conditions.

<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>Low</u>
<u>Signal</u>	<u>IEEE802.11b (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>1.98</u>

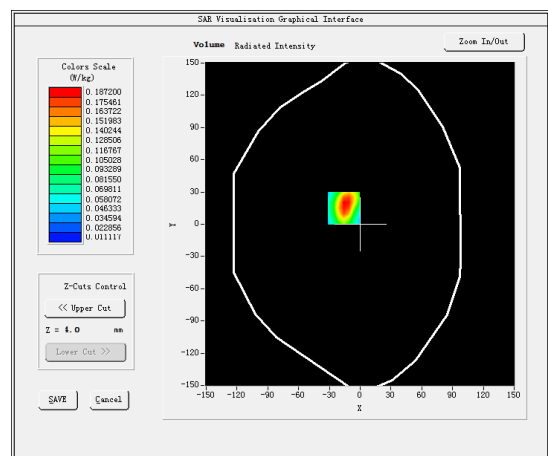
B. SAR Measurement Results

Frequency (MHz)	2412.000000
Relative permittivity (real part)	37.964695
Relative permittivity (imaginary part)	13.257627
Conductivity (S/m)	1.776522
Variation (%)	-2.710000

SURFACE SAR



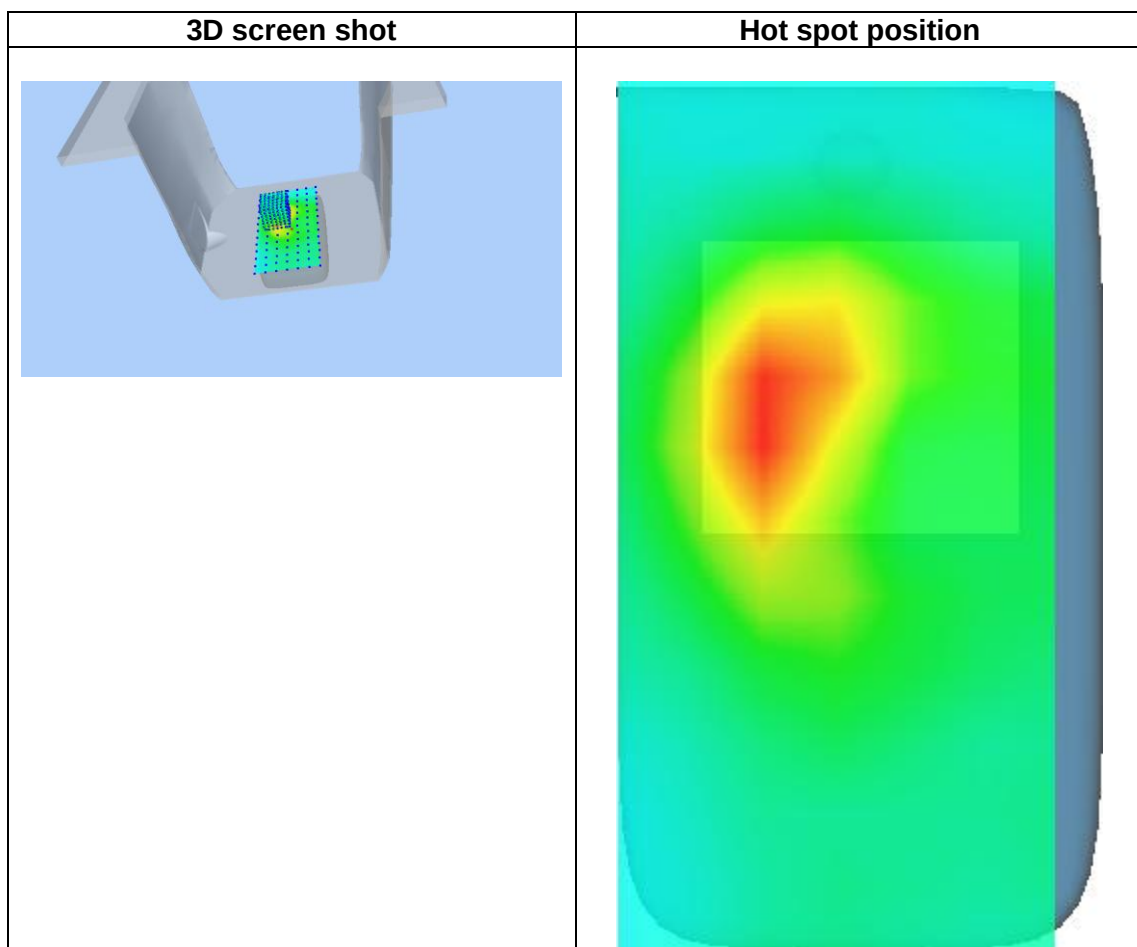
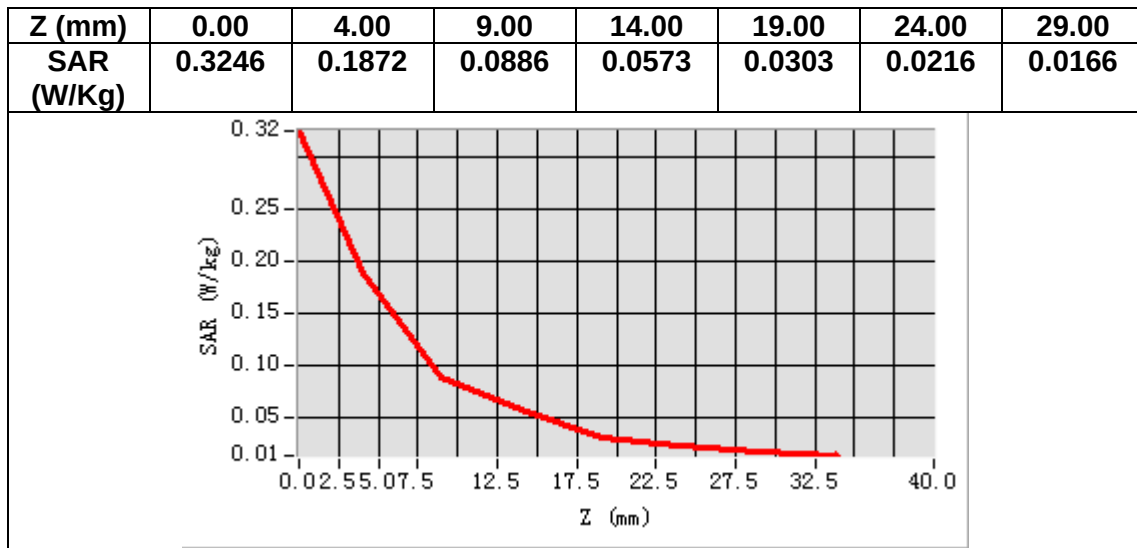
VOLUME SAR



Maximum location: X=-16.00, Y=15.00

SAR Peak: 0.31 W/kg

SAR 10g (W/Kg)	0.089483
SAR 1g (W/Kg)	0.175741



MEASUREMENT 6

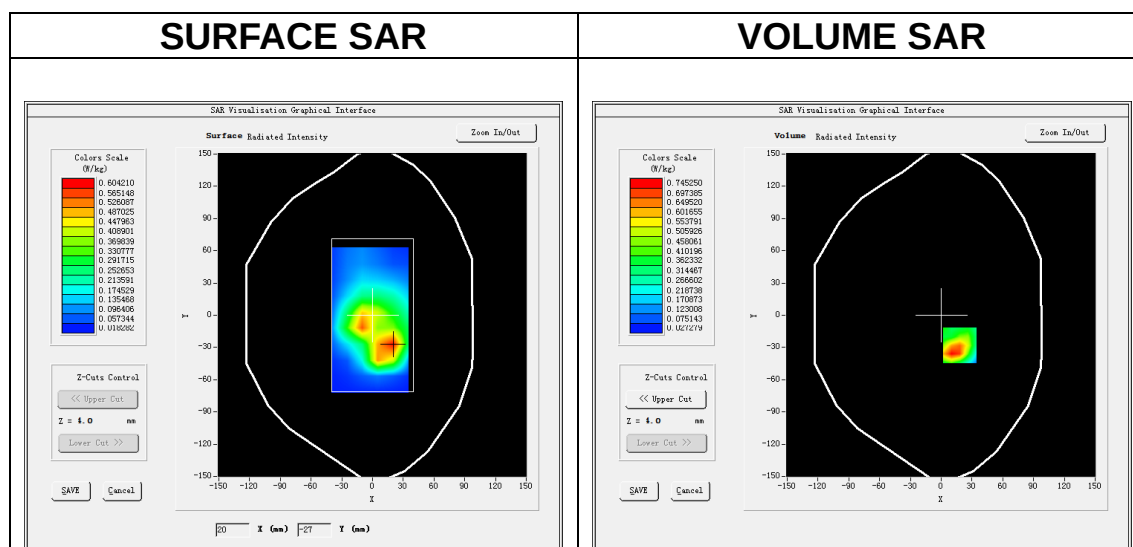
Date of measurement: 14/11/2022

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>1.91</u>

B. SAR Measurement Results

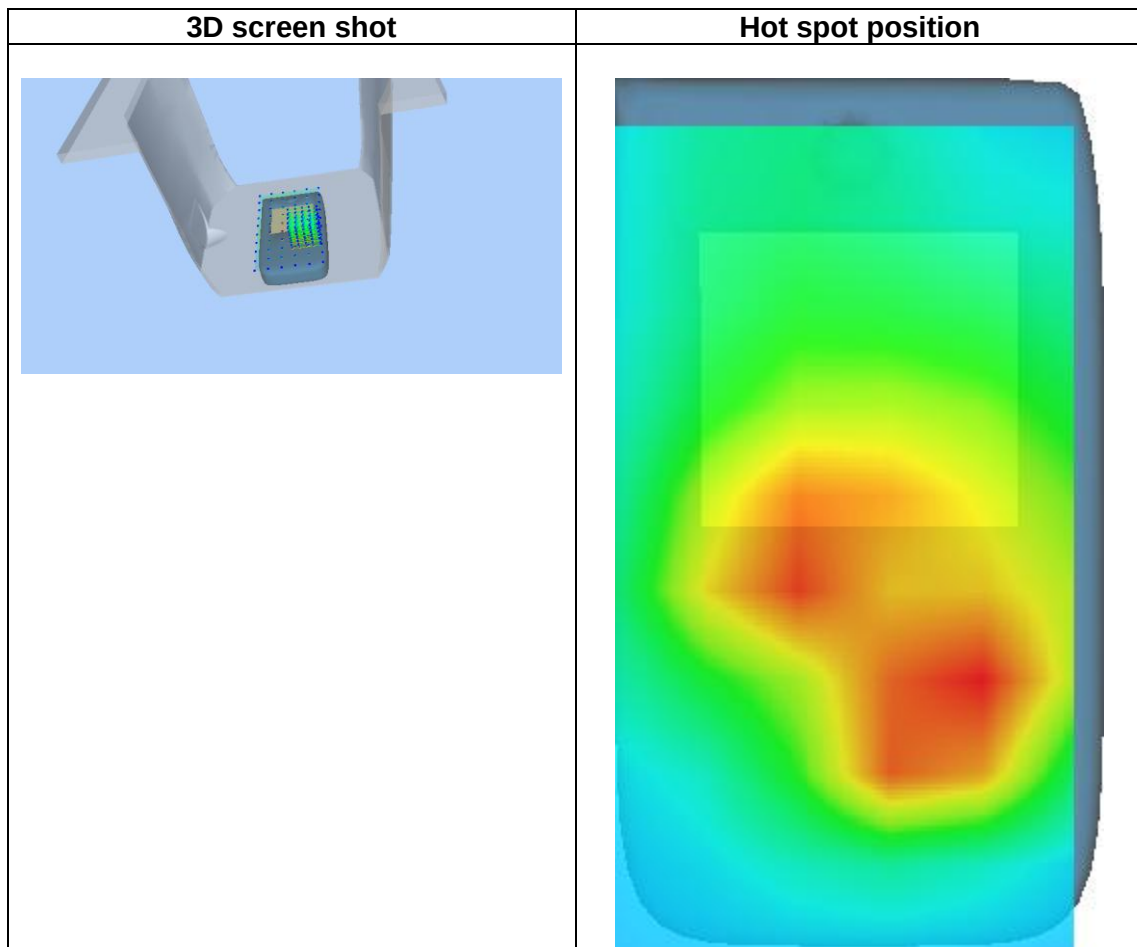
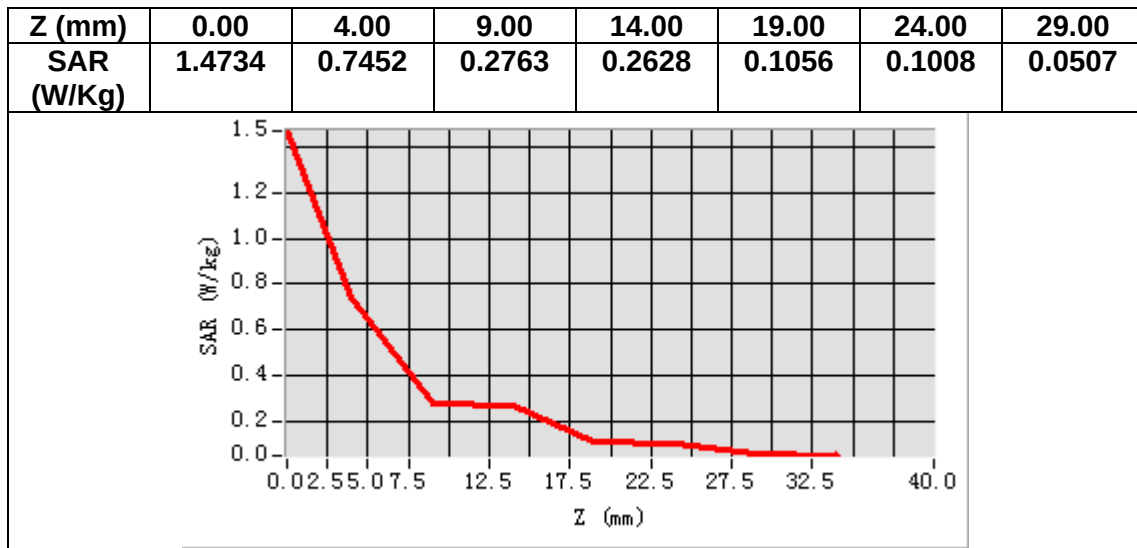
Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.640690
Relative permittivity (imaginary part)	13.791682
Conductivity (S/m)	1.440465
Variation (%)	-0.470000



Maximum location: X=18.00, Y=-28.00

SAR Peak: 1.21 W/kg

SAR 10g (W/Kg)	0.364617
SAR 1g (W/Kg)	0.714758



MEASUREMENT 7

Date of measurement: 21/11/2022

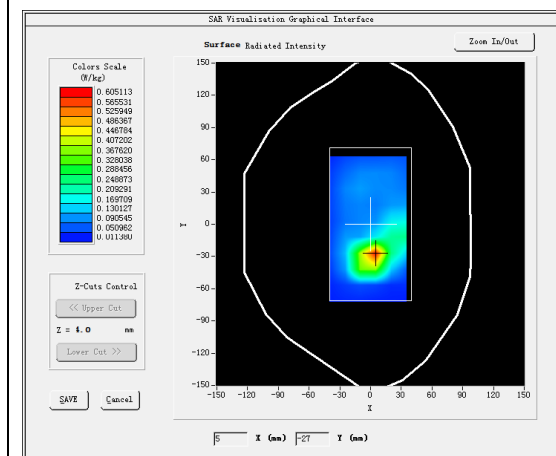
A. Experimental conditions.

<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>1.73</u>

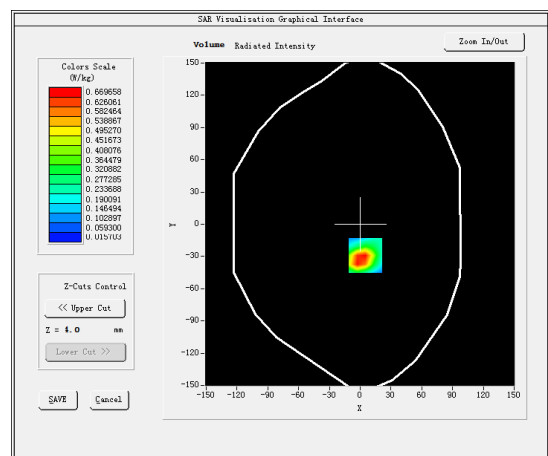
B. SAR Measurement Results

Frequency (MHz)	1732.500000
Relative permittivity (real part)	39.389225
Relative permittivity (imaginary part)	13.841914
Conductivity (S/m)	1.332284
Variation (%)	-0.280000

SURFACE SAR



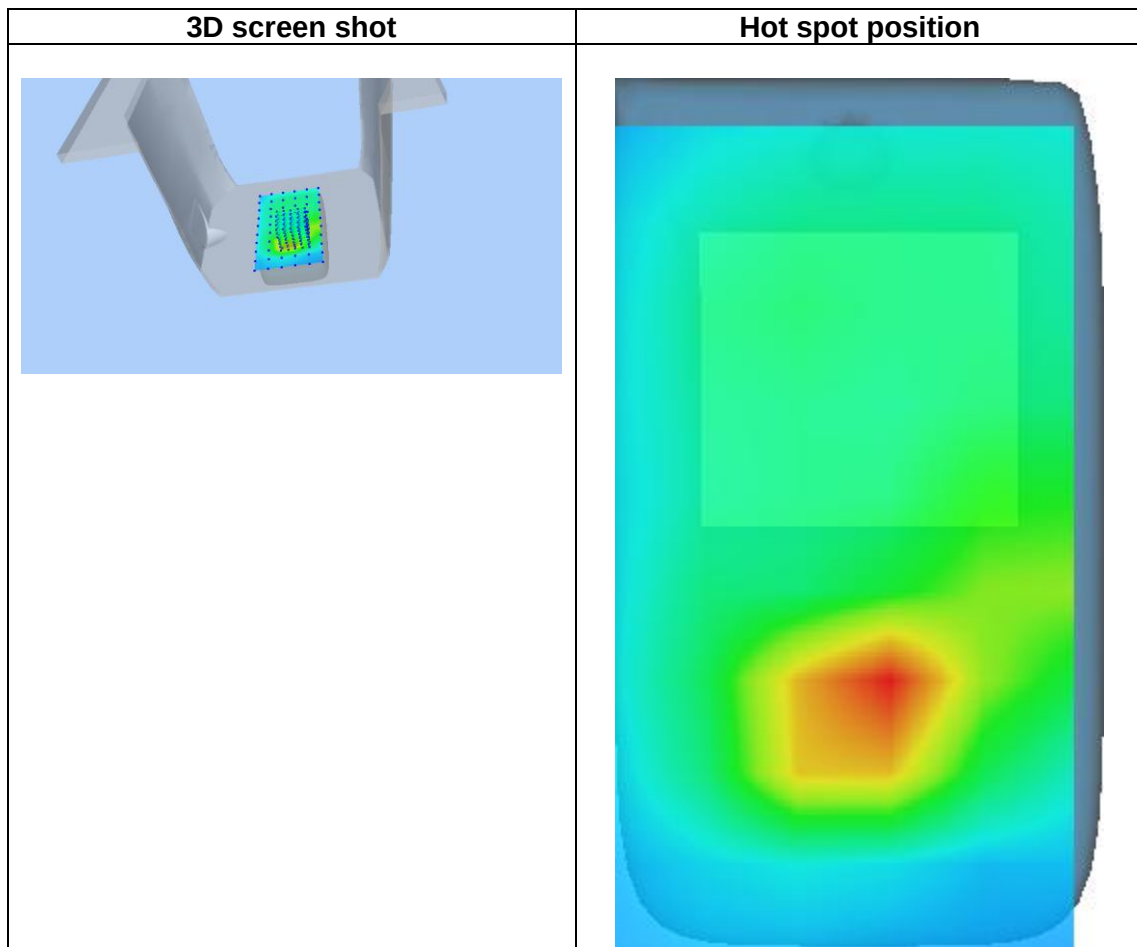
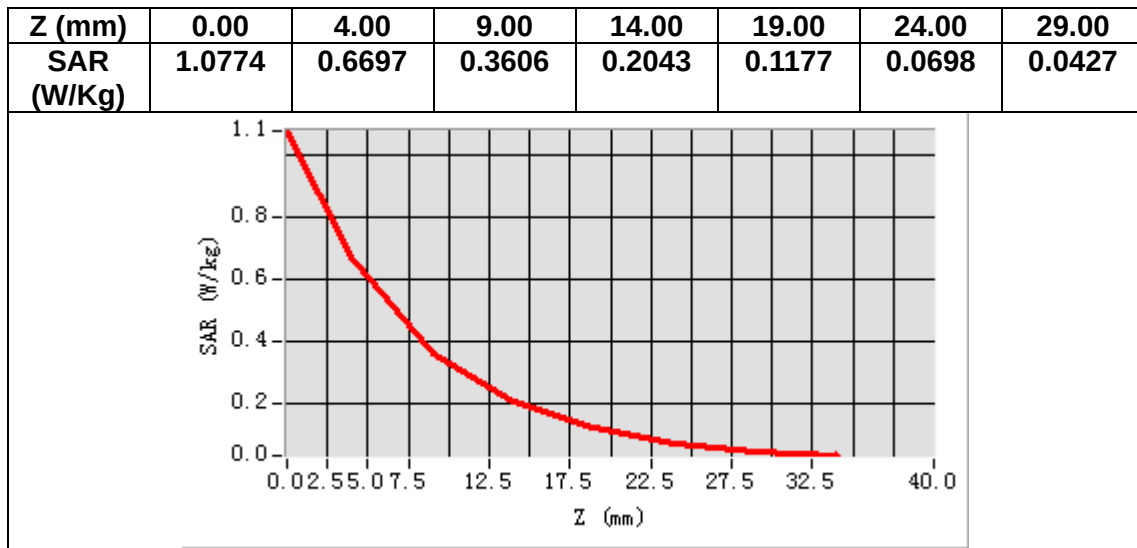
VOLUME SAR



Maximum location: X=5.00, Y=-29.00

SAR Peak: 1.19 W/kg

SAR 10g (W/Kg)	0.315566
SAR 1g (W/Kg)	0.676981



MEASUREMENT 8

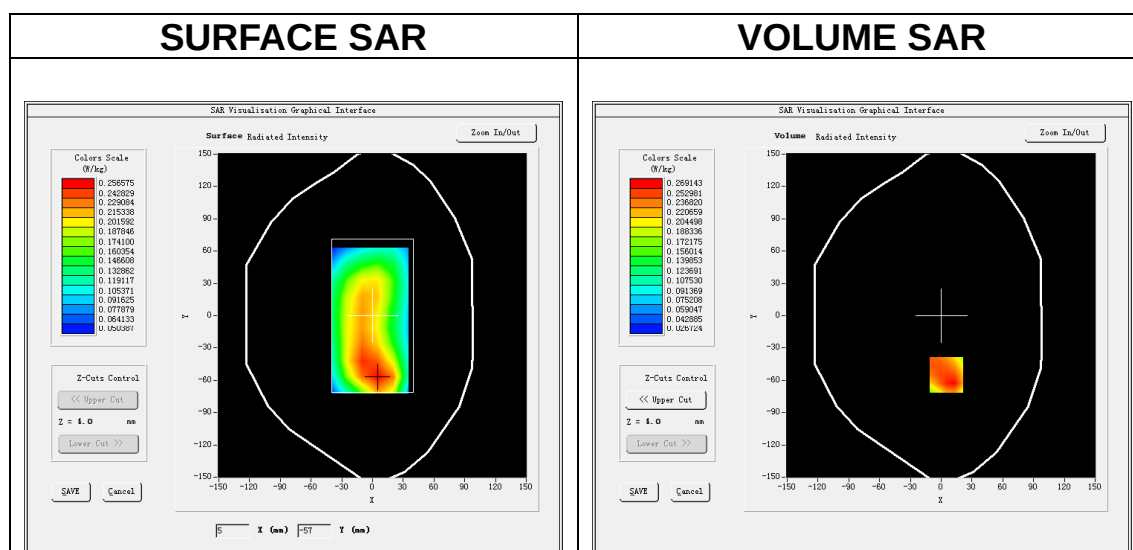
Date of measurement: 15/11/2022

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>

B. SAR Measurement Results

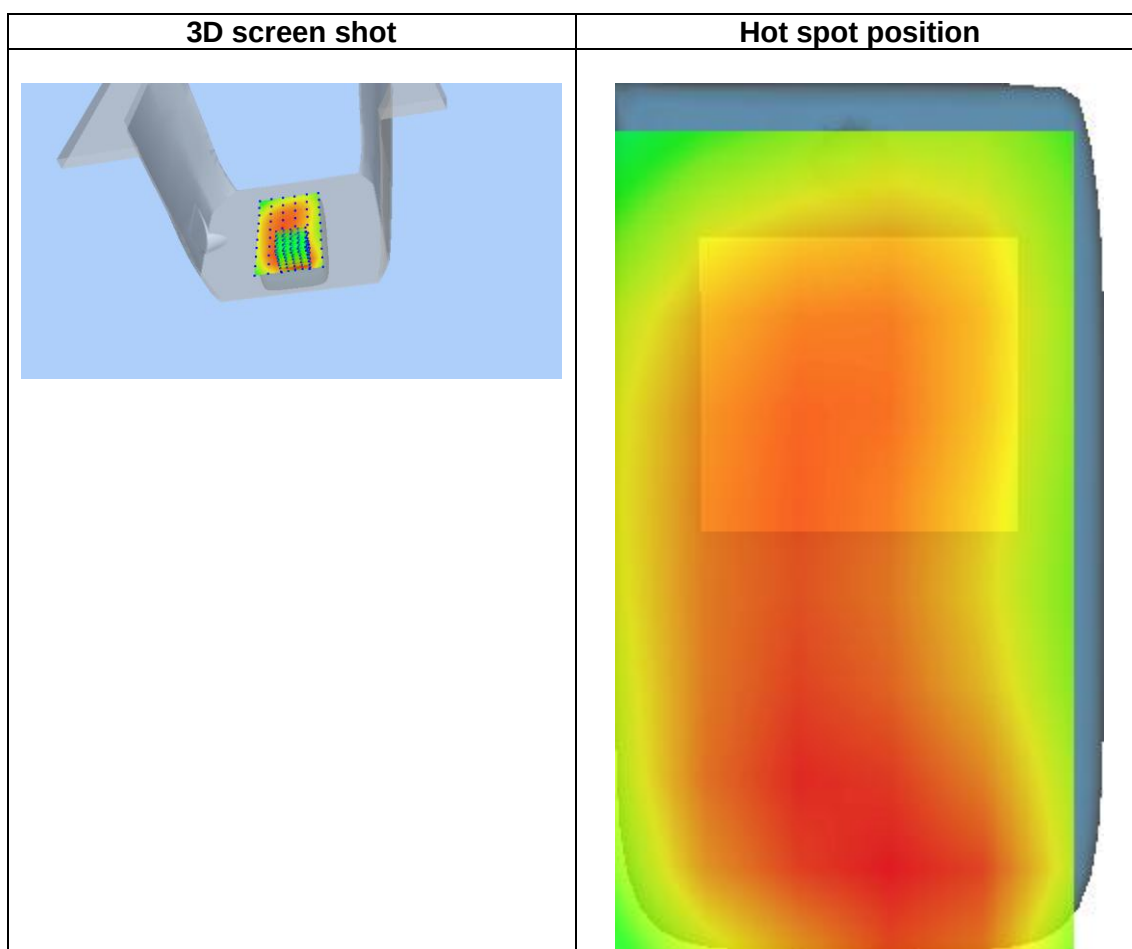
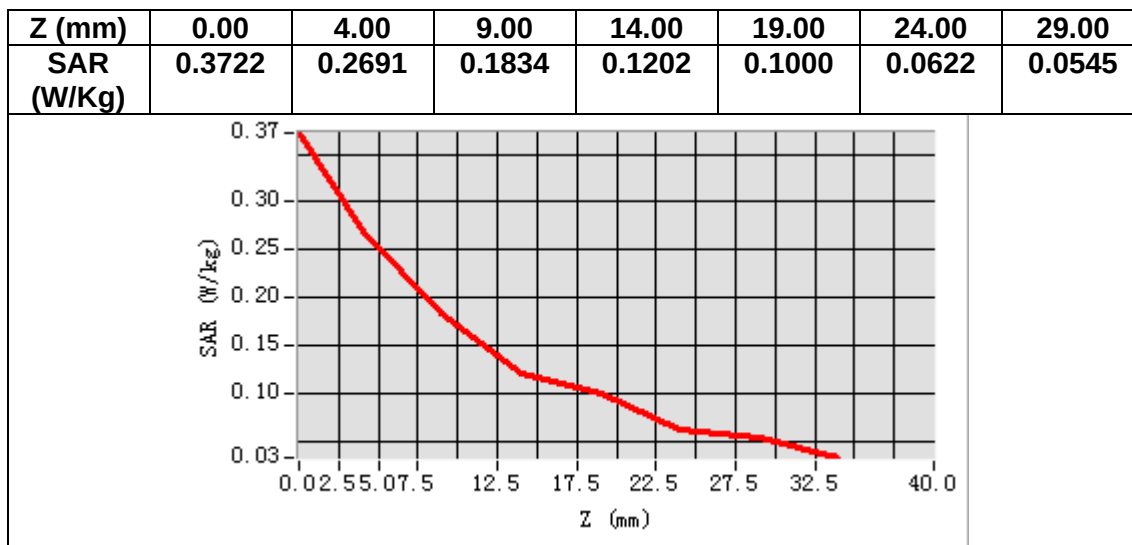
Frequency (MHz)	836.500000
Relative permittivity (real part)	41.183225
Relative permittivity (imaginary part)	20.018131
Conductivity (S/m)	0.930287
Variation (%)	-0.230000



Maximum location: X=5.00, Y=-55.00

SAR Peak: 0.37 W/kg

SAR 10g (W/Kg)	0.176079
SAR 1g (W/Kg)	0.260111



MEASUREMENT 9

Date of measurement: 11/11/2022

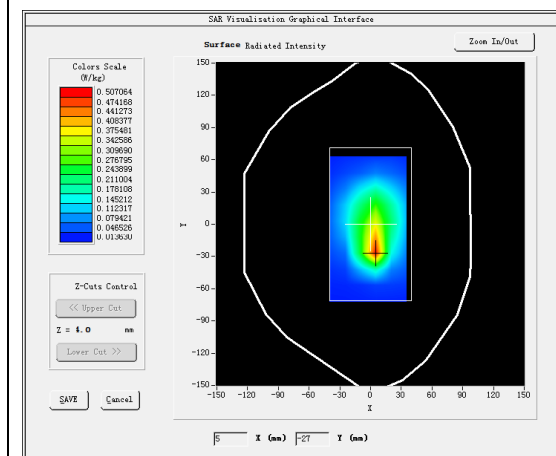
A. Experimental conditions.

<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>1.49</u>

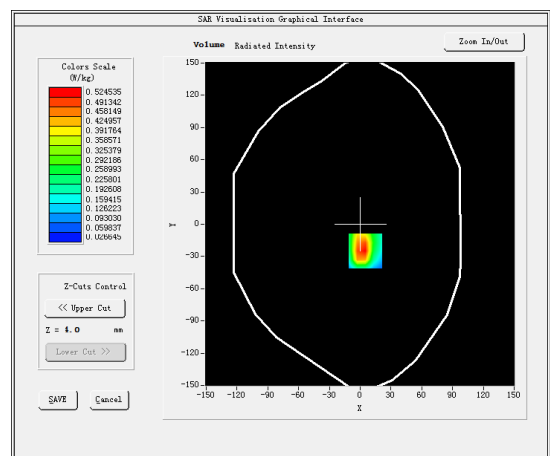
B. SAR Measurement Results

Frequency (MHz)	707.500000
Relative permittivity (real part)	40.955769
Relative permittivity (imaginary part)	21.795198
Conductivity (S/m)	0.856672
Variation (%)	-4.130000

SURFACE SAR



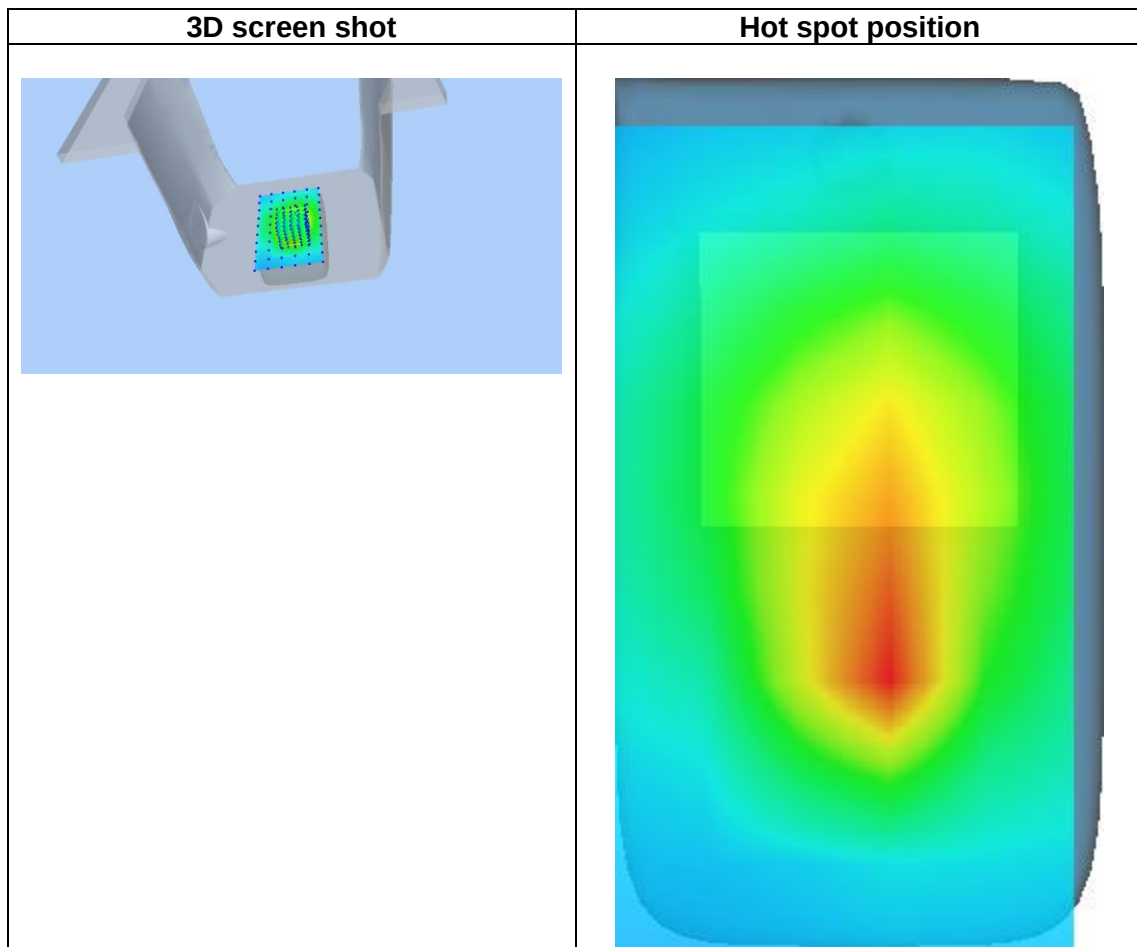
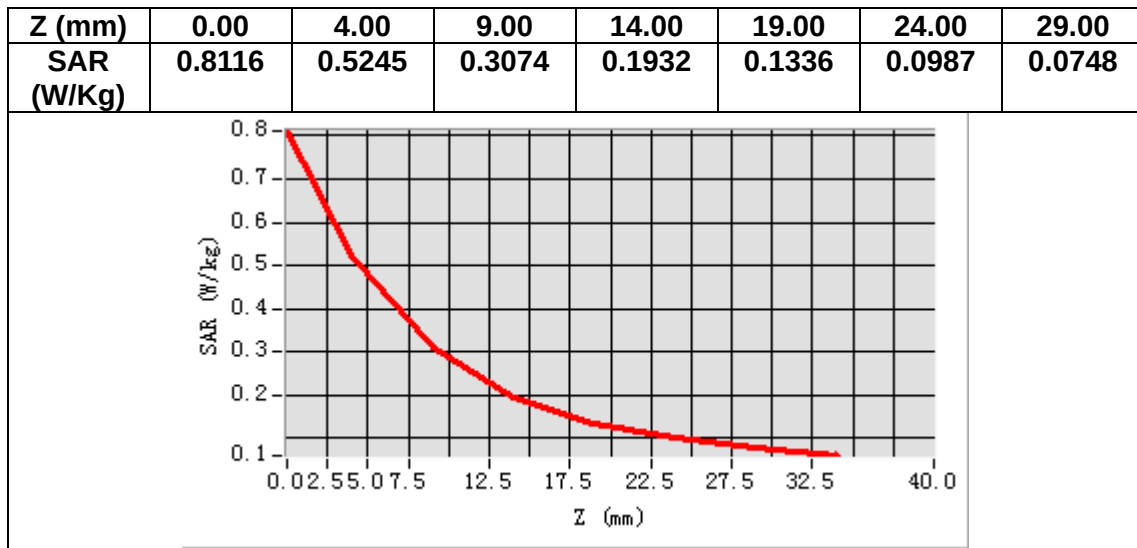
VOLUME SAR



Maximum location: X=5.00, Y=-25.00

SAR Peak: 0.91 W/kg

SAR 10g (W/Kg)	0.277404
SAR 1g (W/Kg)	0.521634



MEASUREMENT 10

Date of measurement: 11/11/2022

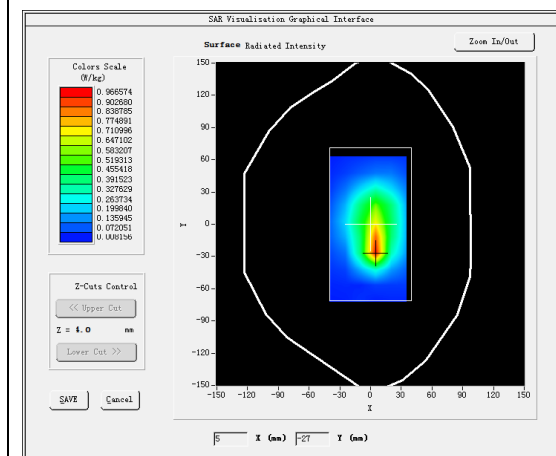
A. Experimental conditions.

<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 13</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>1.49</u>

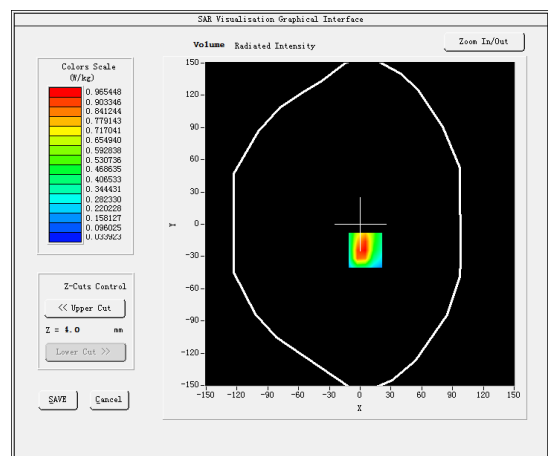
B. SAR Measurement Results

Frequency (MHz)	782.000000
Relative permittivity (real part)	40.068118
Relative permittivity (imaginary part)	21.052749
Conductivity (S/m)	0.914625
Variation (%)	1.810000

SURFACE SAR



VOLUME SAR



Maximum location: X=5.00, Y=-24.00

SAR Peak: 1.86 W/kg

SAR 10g (W/Kg)	0.508581
SAR 1g (W/Kg)	0.998981

