

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 : access-ER HF/LF/BT HID CK

Trademark : COPPERNIC

Model Name : access-ER

Family Model : N/A

FCC ID : XGK-ACERHIDCK

Report No. : S22101403920001

Prepared for

Coppernic

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TEST RESULT CERTIFICATION**Applicant's name**.....: Coppernic

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Manufacturer's Name.....: Askey Computer Corp.Address.....: 10F, No.119, JianKang RD.,Zhonghe Dist.,New Taipei City,23585
Taiwan,R.O.C Taiwan**Product description**

Product name.....: access-ER HF/LF/BT HID CK

Trademark: COPPERNIC

Model Name: access-ER

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 S221014039021

Date of Test

Date (s) of performance of tests.....: Oct. 20, 2022 ~ Nov. 02, 2022

Date of Issue: Apr. 06, 2023

Test Result: **Pass**

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※ ※ Revision History ※ ※

REV.	DESCRIPTION	ISSUED DATE	REMARK
Rev.1.0	Initial Test Report Release	Apr. 06, 2023	Jacob Chen

TABLE OF CONTENTS

1. General Information	6
1.1. RF exposure limits.....	6
1.2. Statement of Compliance	7
1.3. EUT Description	7
1.4. Test specification(s)	9
1.5. Ambient Condition.....	9
2. SAR Measurement System	10
2.1. SATIMO SAR Measurement Set-up Diagram	10
2.2. Robot	11
2.3. E-Field Probe.....	12
2.3.1. E-Field Probe Calibration	12
2.4. SAM phantoms	13
2.4.1. Technical Data	14
2.5. Device Holder	15
2.6. Test Equipment List	16
3. SAR Measurement Procedures	18
3.1. Power Reference	18
3.2. Area scan & Zoom scan.....	18
3.3. Description of interpolation/extrapolation scheme	20
3.4. Volumetric Scan	20
3.5. Power Drift	20
4. System Verification Procedure	21
4.1. Tissue Verification	21
4.1.1. Tissue Dielectric Parameter Check Results	22
4.2. System Verification Procedure	23
4.2.1. System Verification Results.....	24
5. SAR Measurement variability and uncertainty	25
5.1. SAR measurement variability.....	25
5.2. SAR measurement uncertainty	25
6. RF Exposure Positions	26
6.1. Body Worn Accessory	26
6.2. Wireless Router Devices	26
7. RF Output Power	28
7.1. GSM Conducted Power	28
7.2. WCDMA Conducted Power	29
7.3. LTE Conducted Power	30
7.4. WLAN & Bluetooth Output Power	46
7.4.1. Output Power Results Of WLAN	46
7.4.2. Output Power Results Of Bluetooth	48
7.5. Hotspot Mode on/off Consideration	48

8. Antenna Location.....	55
9. Stand-alone SAR test exclusion.....	55
10. SAR Results	56
10.1. SAR measurement results.....	56
10.1.1. SAR measurement Result of GSM850.....	56
10.1.2. SAR measurement Result of GSM1900.....	57
10.1.3. SAR measurement Result of WCDMA Band 2.....	58
10.1.4. SAR measurement Result of WCDMA Band 4.....	59
10.1.5. SAR measurement Result of WCDMA Band 5.....	60
10.1.6. SAR measurement Result of LTE Band 2	60
10.1.7. SAR measurement Result of LTE Band 4	62
10.1.8. SAR measurement Result of LTE Band 5	64
10.1.9. SAR measurement Result of LTE Band 7	65
10.1.10. SAR measurement Result of LTE Band 17	66
10.1.11. SAR measurement Result of LTE Band 26A.....	68
10.1.12. SAR measurement Result of LTE Band 26B	69
10.1.13. SAR measurement Result of LTE Band 41	70
10.1.14. SAR measurement Result of WLAN 2.4G	71
10.1.15. SAR measurement Result of WLAN 5.2G	72
10.1.16. SAR measurement Result of WLAN 5.3G	72
10.1.17. SAR measurement Result of WLAN 5.6G	73
10.2. SAR Summation Scenario.....	73
11. Appendix A. Photo documentation	74
12. Appendix B. System Check Plots.....	75
13. Appendix C. Plots of High SAR Measurement.....	94
14. Appendix D. Calibration Certificate	129

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 access are as follows.

RF Exposure Conditions		Equipment Class -Highest Reported SAR (W/kg)			
		PCT	DTS	NII	DSS
1-g Body-Worn (Separation distance of 10mm)		1.230	0.080	0.259	N/A
1-g Hotspot (Separation distance of 10mm)		1.230	0.080	0.259	N/A
Max Simultaneous Tx	Body-Worn	1.489	1.310	1.489	1.296
	Hotspot	1.489	1.310	1.489	1.296

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	access-ER HF/LF/BT HID CK		
Trade Name	COPPERNIC		
Model Name	access-ER		
Family Model	N/A		
Model Difference	N/A		
FCC ID	XGK-ACERHIDCK		
Device Phase	Identical Prototype		
Exposure Category	General population / Uncontrolled environment		
Antenna	LDS Antenna		
Battery	DC 3.85V, 4000mAh		
Hardware version	PCTA200 REV:3		
Software version	ANDROID 10		
Device Operating Configurations			
Supporting Mode(s)	GSM 850/1900, WCDMA Band 2/4/5, LTE Band 2/4/5/7/17/26/41, WLAN 2.4G/5G, Bluetooth, GPS, NFC, RFID		
Test Modulation	GSM(GMSK/8PSK), WCDMA(QPSK), LTE(QPSK/16QAM), WLAN(DSSS/OFDM), Bluetooth(GFSK, $\pi/4$ -DQPSK, 8DPSK) GPS(BPSK),NFC/RFID(ASK)		
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 17	704-716	734-746
	LTE Band 26	814-849	859-894
	LTE Band 41	2496-2690	
	WLAN 2.4G	2412-2462	
	WLAN 5.2G	5180-5240	
	WLAN 5.3G	5260-5320	
	WLAN 5.6G	5500-5700	
	NFC	13.56	
	RFID	0.125	
	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 17)		
	3, tested with power control all Max.(LTE Band 26)		
	3, tested with power control all Max.(LTE Band 41)		
Wi-Fi Hotspot mode support	Wi-Fi 2.4G/5.2G		

1.4. Test specification(s)

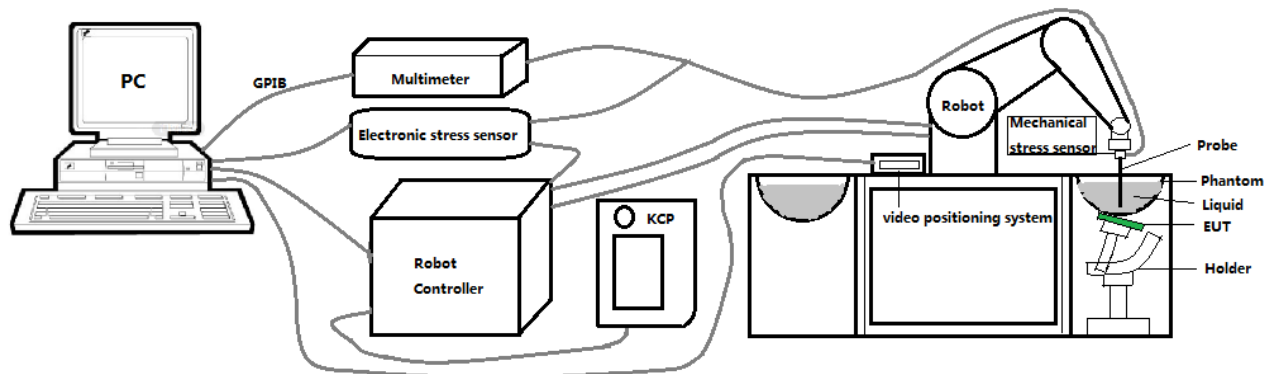
FCC 47 CFR Part 2(2.1093)
ANSI/IEEE C95.1-1992
IEEE Std 1528-2013
KDB 865664 D01 SAR measurement 100 MHz to 6 GHz
KDB 865664 D02 RF Exposure Reporting
KDB 447498 D01 General RF Exposure Guidance
KDB 248227 D01 802.11 Wi-Fi SAR
KDB 941225 D01 3G SAR Procedures
KDB 941225 D05 SAR for LTE Devices
KDB 941225 D06 Hotspot SAR

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

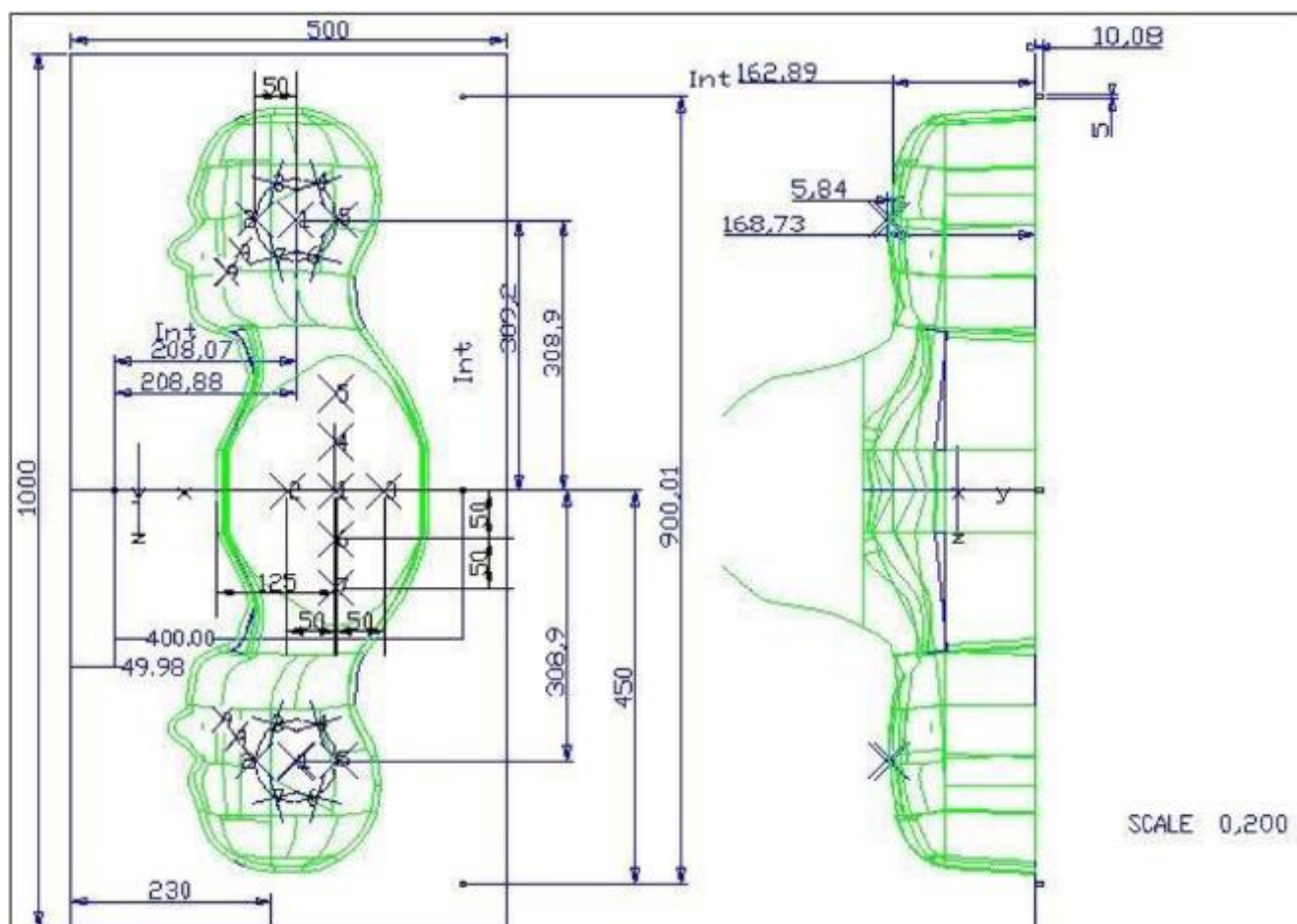
Photo of SAM phantom SN 16/15 SAM119



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

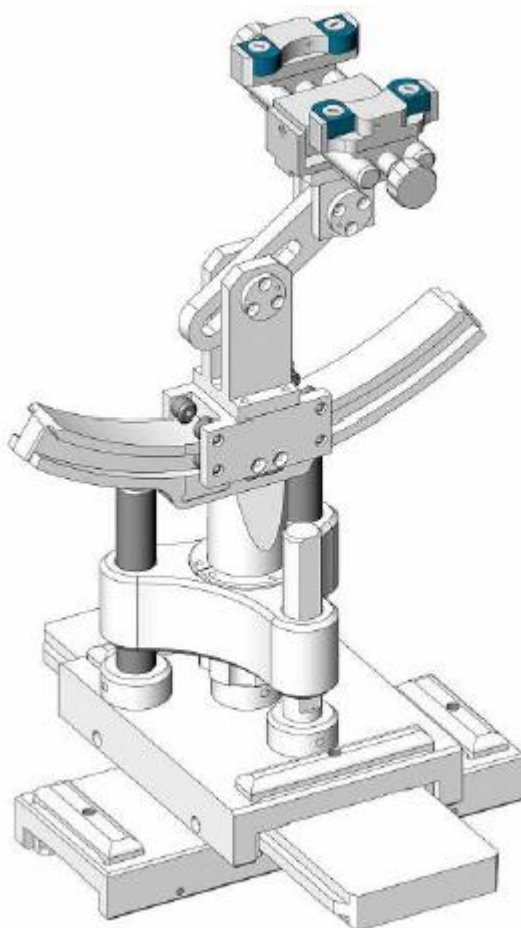


Serial Number	Left Head(mm)		Right Head(mm)		Flat Part(mm)	
SN 16/15 SAM119	2	2.02	2	2.08	1	2.09
	3	2.05	3	2.06	2	2.06
	4	2.07	4	2.07	3	2.08
	5	2.08	5	2.08	4	2.10
	6	2.05	6	2.07	5	2.10
	7	2.05	7	2.05	6	2.07
	8	2.07	8	2.06	7	2.07
	9	2.08	9	2.06	-	-

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	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	N5182A	MY47070317	Jun. 16,	Jun. 15,

		Signal Generator			2022	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 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	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: Δx_{Area} , Δy_{Area}			≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom} , Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm *	3 – 4 GHz: ≤ 5 mm * 4 – 6 GHz: ≤ 4 mm *
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 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
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

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

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

3.3. Description of interpolation/extrapolation scheme

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

An extrapolation is 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 with 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
Ingredients (% of weight)	Body Tissue									
Frequency Band (MHz)	750	835	900	1800	1900	2000	2450	2600	5200	5800
Water	50.30	50.30	50.30	69.91	69.91	71.88	71.88	71.88	79.54	79.54
NaCl	0.60	0.60	0.60	0.13	0.13	0.16	0.16	0.16	0.00	0.00
1,2-Propanediol	49.10	49.10	49.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triton X-100	0.00	0.00	0.00	9.99	9.99	19.97	19.97	19.97	11.24	11.24
DGBE	0.00	0.00	0.00	19.97	19.97	7.99	7.99	7.99	9.22	9.22

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

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

4.1.1. Tissue Dielectric Parameter Check Results

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine 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.

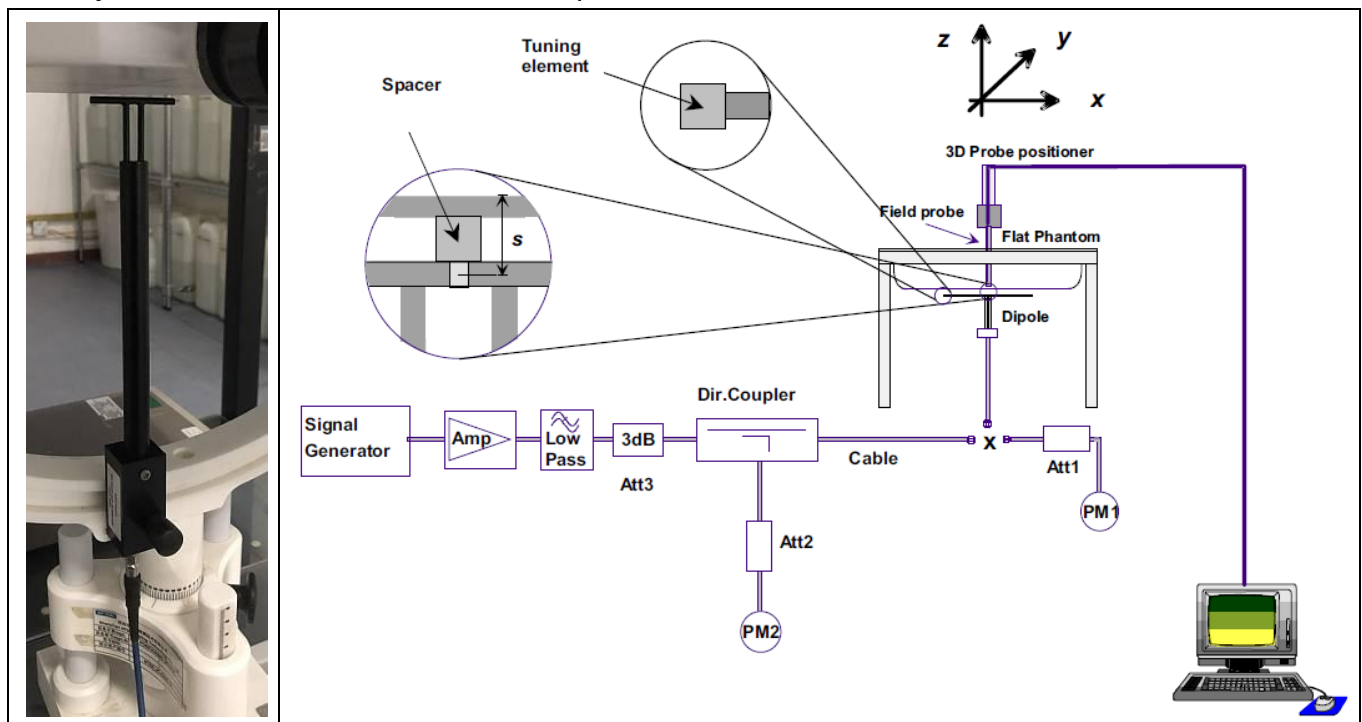
Tissue Type	Measured Frequency (MHz)	Target Tissue		Measured Tissue		Liquid Temp.	Test Date
		$\epsilon_r (\pm 5\%)$	σ (S/m) ($\pm 5\%$)	ϵ_r	σ (S/m)		
Head 750	750	41.96 (39.86~44.06)	0.89 (0.85~0.93)	40.28	0.89	21.3 °C	Oct. 29, 2022
Head 850	835	41.50 (39.43~43.58)	0.90 (0.86~0.95)	41.25	0.92	21.7 °C	Oct. 20, 2022
Head 1800	1800	40.00 (38.00~42.00)	1.40 (1.33~1.47)	38.62	1.38	21.2 °C	Oct. 28, 2022
Head 1900	1900	40.00 (38.00~42.00)	1.40 (1.33~1.47)	38.43	1.47	21.1 °C	Nov. 02, 2022
Head 2450	2450	39.20 (37.24~41.16)	1.80 (1.71~1.89)	37.57	1.77	21.2 °C	Nov. 01, 2022
Head 2600	2600	39.01 (37.06~40.96)	1.96 (1.86~2.06)	37.55	1.91	21.2 °C	Oct. 27, 2022
Head 5200	5200	36.00 (34.20~37.80)	4.66 (4.43~4.89)	35.01	4.51	21.4 °C	Oct. 21, 2022
Head 5400	5400	35.80 (34.01~37.59)	4.86 (4.62~5.10)	36.23	4.78	21.8 °C	Oct. 25, 2022
Head 5600	5600	35.50 (33.73~37.28)	5.07 (4.82~5.32)	34.80	4.91	21.8 °C	Oct. 31, 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)	7.98	5.31	21.3 °C	Oct. 29, 2022
835MHz	9.84 (8.86~10.82)	6.22 (5.60~6.84)	10.65	6.03	21.7 °C	Oct. 20, 2022
1800MHz	37.96 (34.17~41.75)	19.81 (17.83~21.79)	39.09	18.08	21.2 °C	Oct. 28, 2022
1900MHz	40.37 (36.34~44.40)	20.48 (18.44~22.52)	37.58	18.80	21.1 °C	Nov. 02, 2022
2450MHz	53.69 (48.33~59.05)	23.94 (21.55~26.33)	53.98	22.13	21.2 °C	Nov. 01, 2022
2600MHz	55.83 (50.25~61.41)	24.19 (21.78~26.60)	59.82	24.74	21.2 °C	Oct. 27, 2022
5200MHz	162.34 (146.11~178.57)	55.42 (49.88~60.96)	147.84	54.93	21.4 °C	Oct. 21, 2022
5400MHz	168.48 (151.64~185.32)	57.03 (51.33~62.73)	183.23	55.61	21.8 °C	Oct. 25, 2022
5600MHz	174.92 (157.43~192.41)	58.63 (52.77~64.49)	159.49	62.40	21.8 °C	Oct. 31, 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. Body Worn Accessory

1. Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 6.1.1). Per KDB 648474 D04, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is $< 1.2 \text{ W/kg}$, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.
2. Accessories for body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are test with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-chip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

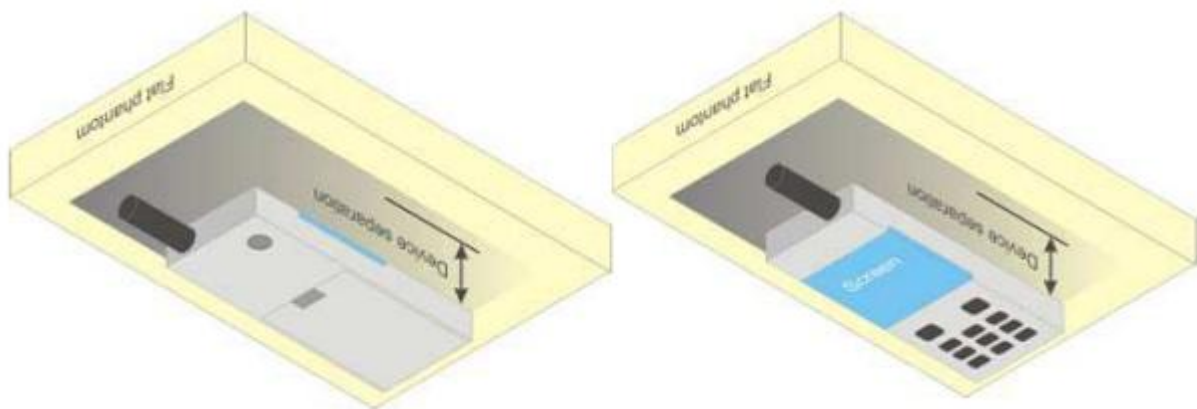


Figure 6.1.1 – Test positions for body-worn devices

6.2. Wireless Router Devices

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. 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)	33.00	32.58	32.64	32.61	23.97	23.55	23.61	23.58
GPRS(GMSK, 1 TS)	33.00	32.56	32.60	32.57	23.97	23.53	23.57	23.54
GPRS(GMSK, 2 TS)	31.00	30.49	30.50	30.46	24.98	24.47	24.48	24.44
GPRS(GMSK, 3 TS)	29.00	28.59	28.56	28.55	24.74	24.33	24.30	24.29
GPRS(GMSK, 4 TS)	27.00	26.48	26.47	26.50	23.99	23.47	23.46	23.49
EGPRS(8PSK, 1 TS)	26.50	25.93	26.44	26.06	17.47	16.90	17.41	17.03
EGPRS(8PSK, 2 TS)	25.50	25.28	25.16	24.55	19.48	19.26	19.14	18.53
EGPRS(8PSK, 3 TS)	23.00	22.11	22.94	22.19	18.74	17.85	18.68	17.93
EGPRS(8PSK, 4 TS)	21.00	20.02	20.63	20.31	17.99	17.01	17.62	17.30
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)	30.50	30.12	30.14	29.96	21.47	21.09	21.11	20.93
GPRS(GMSK, 1 TS)	30.50	30.02	30.04	29.87	21.47	20.99	21.01	20.84
GPRS(GMSK, 2 TS)	28.50	28.08	27.84	27.48	22.48	22.06	21.82	21.46
GPRS(GMSK, 3 TS)	27.00	26.68	26.39	26.00	22.74	22.42	22.13	21.74
GPRS(GMSK, 4 TS)	25.00	24.50	24.18	23.82	21.99	21.49	21.17	20.81
EGPRS(8PSK, 1 TS)	25.50	24.89	25.19	24.42	16.47	15.86	16.16	15.39
EGPRS(8PSK, 2 TS)	24.50	23.86	24.22	23.48	18.48	17.84	18.20	17.46
EGPRS(8PSK, 3 TS)	22.00	21.54	21.15	20.91	17.74	17.28	16.89	16.65
EGPRS(8PSK, 4 TS)	19.50	18.45	19.15	18.92	16.49	15.44	16.14	15.91

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	23.50	23.06	23.05	22.98	
HSDPA Sub 1	22.50	22.22	21.86	21.58	
HSDPA Sub 2	22.00	21.73	21.63	21.26	
HSDPA Sub 3	21.50	21.49	21.13	20.81	
HSDPA Sub 4	21.50	21.41	21.15	20.96	
HSUPA Sub 1	22.00	21.93	21.89	21.44	
HSUPA Sub 2	22.00	21.98	21.79	21.46	
HSUPA Sub 3	22.00	21.51	21.17	21.16	
HSUPA Sub 4	22.00	21.96	21.80	21.55	
HSUPA Sub 5	22.00	21.51	21.63	21.07	
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	23.03	22.96	22.99	
HSDPA Sub 1	22.50	22.29	21.60	22.24	
HSDPA Sub 2	22.00	21.95	21.33	21.86	
HSDPA Sub 3	22.00	21.62	20.68	21.70	
HSDPA Sub 4	22.00	21.45	20.70	21.60	
HSUPA Sub 1	22.50	21.91	21.31	22.05	
HSUPA Sub 2	22.50	22.14	21.53	22.22	
HSUPA Sub 3	22.00	21.76	21.03	21.85	
HSUPA Sub 4	22.50	22.07	21.53	22.21	
HSUPA Sub 5	22.00	21.92	21.22	21.89	
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	22.32	22.44	22.48	
HSDPA Sub 1	23.00	22.78	22.70	22.74	
HSDPA Sub 2	23.00	22.56	22.43	22.41	
HSDPA Sub 3	21.50	21.27	21.49	21.23	
HSDPA Sub 4	22.00	21.39	20.83	21.69	
HSUPA Sub 1	22.50	22.06	21.96	21.98	

HSUPA Sub 2	23.00	22.70	22.64	22.49
HSUPA Sub 3	22.50	22.16	22.05	21.98
HSUPA Sub 4	23.00	22.78	22.72	22.75
HSUPA Sub 5	22.00	21.80	21.96	21.79

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	24.00	23.89	23.80	23.71
			1	2	24.00	23.79	23.95	23.83
			1	5	24.00	23.87	23.80	23.70
			3	0	24.00	23.92	23.93	23.80
			3	1	24.00	23.87	23.93	23.81
			3	2	24.00	22.97	23.89	23.80
			6	0	23.00	22.88	23.00	22.88
		16QAM	1	0	23.50	23.07	23.05	22.99
			1	2	23.50	22.90	23.24	23.06
			1	5	23.50	22.81	23.09	22.98
			3	0	23.00	22.86	22.96	22.81
			3	1	23.00	22.82	22.92	22.87
			3	2	23.00	21.95	22.94	22.86
			6	0	22.50	21.80	22.05	21.93
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	24.00	23.74	23.84	23.75
			1	7	24.00	23.74	23.83	23.74
			1	14	24.00	23.74	23.81	23.68
			8	0	23.00	22.86	22.93	22.83
			8	4	23.00	22.88	22.94	22.85
			8	7	23.00	22.86	22.92	22.82
			15	0	23.00	22.90	22.95	22.84
		16QAM	1	0	23.50	22.90	23.09	23.01
			1	7	23.50	22.89	23.10	23.01
			1	14	23.50	22.82	23.09	22.98
			8	0	22.00	21.82	21.95	21.84

			8	4	22.00	21.83	21.96	21.88
			8	7	22.00	21.82	21.94	21.85
			15	0	22.00	21.80	21.90	21.78
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	24.00	23.64	23.76	23.70
			1	12	24.00	23.76	23.84	23.77
			1	24	24.00	23.66	23.70	23.60
			12	0	23.00	22.89	22.92	22.82
			12	6	23.00	22.89	22.97	22.88
			12	11	23.00	22.79	22.92	22.82
			25	0	23.00	22.90	22.96	22.86
		16QAM	1	0	23.50	22.81	23.03	23.02
			1	12	23.50	22.87	23.08	23.13
			1	24	23.50	22.85	23.01	22.91
			12	0	22.00	21.79	21.92	21.78
			12	6	22.00	21.83	21.94	21.87
			12	11	22.00	21.76	21.89	21.83
			25	0	22.00	21.84	21.92	21.81
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	24.00	23.72	23.85	23.87
			1	24	24.00	23.81	23.88	23.87
			1	49	24.00	23.75	23.75	23.71
			25	0	23.00	22.99	22.99	22.91
			25	12	23.00	22.94	22.98	22.93
			25	24	23.00	22.88	22.95	22.94
			50	0	23.00	22.96	22.99	22.95
		16QAM	1	0	23.50	22.91	23.06	23.21
			1	24	23.50	23.00	23.14	23.18
			1	49	23.50	22.96	23.03	23.03
			25	0	22.00	21.89	21.93	21.87
			25	12	22.00	21.85	21.95	21.91
			25	24	22.00	21.79	21.91	21.89
			50	0	22.00	21.86	21.94	21.89
Band	Band	Modulation	RB		Tune-up	Channel/Frequency(MHz)		

	Width		Configuration		(dBm)			
			RB Size	RB Offset		18675/1857.5	18900/1880	19125/1902.5
LTE Band 2	15MHz	QPSK	1	0	24.00	23.69	23.85	23.83
			1	37	24.00	23.81	23.86	23.86
			1	74	24.00	23.77	23.72	23.65
			36	0	23.50	22.98	22.99	23.02
			36	18	23.50	22.96	22.98	22.98
			36	37	23.50	22.95	22.91	22.96
			75	0	23.00	22.99	22.99	22.99
		16QAM	1	0	23.50	22.82	23.14	23.13
			1	37	23.50	23.03	23.13	23.14
			1	74	23.50	23.05	23.03	22.92
			36	0	22.00	21.91	21.95	22.00
			36	18	22.00	21.92	21.94	21.95
			36	37	22.00	21.93	21.90	21.92
			75	0	22.00	21.91	21.92	21.97
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	24.00	23.52	23.67	23.67
			1	49	24.00	23.92	23.94	23.99
			1	99	24.00	23.62	23.53	23.49
			50	0	23.50	23.14	23.07	23.17
			50	24	23.50	23.04	23.04	23.04
			50	49	23.50	23.07	22.94	23.10
			100	0	23.50	23.08	22.98	23.12
		16QAM	1	0	23.50	22.64	22.97	22.98
			1	49	23.50	23.18	23.13	23.21
			1	99	23.50	22.96	22.78	22.75
			50	0	22.50	22.02	21.99	22.14
			50	24	22.50	21.96	21.96	21.99
			50	49	22.50	22.00	21.89	22.04
			100	0	22.50	21.98	21.90	22.07

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	24.00	22.97	23.35	23.41
			1	2	24.00	23.10	23.49	23.50
			1	5	24.00	22.97	23.36	23.39
			3	0	23.50	23.02	23.41	23.43
			3	1	23.50	23.07	23.42	23.49
			3	2	23.50	23.05	23.41	23.40
			6	0	23.00	22.04	22.43	22.50
		16QAM	1	0	23.00	22.14	22.47	22.56
			1	2	23.00	22.24	22.72	22.58
			1	5	23.00	22.19	22.49	22.63
			3	0	22.50	22.00	22.43	22.34
			3	1	22.50	22.08	22.41	22.40
			3	2	22.50	22.04	22.40	22.41
			6	0	21.50	21.06	21.45	21.47
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	23.50	23.05	23.43	23.43
			1	7	23.50	23.05	23.46	23.48
			1	14	23.50	23.06	23.43	23.46
			8	0	23.00	22.05	22.43	22.51
			8	4	23.00	22.09	22.50	22.53
			8	7	23.00	22.07	22.45	22.47
			15	0	23.00	22.06	22.46	22.50
		16QAM	1	0	23.00	22.30	22.59	22.55
			1	7	23.00	22.25	22.63	22.72
			1	14	23.00	22.29	22.66	22.62
			8	0	22.00	21.03	21.45	21.53
			8	4	22.00	21.10	21.48	21.53
			8	7	22.00	21.07	21.42	21.50
			15	0	21.50	21.00	21.42	21.48
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	23.50	22.94	23.33	23.18
			1	12	23.50	23.09	23.46	23.01
			1	24	23.50	22.96	23.35	22.78
			12	0	22.50	22.03	22.44	21.87

			12	6	22.50	22.11	22.47	22.20
			12	11	22.50	22.09	22.47	22.06
			25	0	22.50	22.09	22.46	22.06
		16QAM	1	0	23.00	22.14	22.57	22.04
			1	12	23.00	22.35	22.60	22.14
			1	24	23.00	22.16	22.61	22.08
			12	0	21.50	21.01	21.38	20.89
			12	6	21.50	21.06	21.46	21.18
			12	11	21.50	21.05	21.43	21.32
			25	0	21.50	21.03	21.41	21.36
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	23.50	22.53	23.10	23.26
			1	24	23.50	22.66	23.03	23.24
			1	49	23.50	22.87	23.19	23.29
			25	0	23.00	21.60	22.23	22.42
			25	12	23.00	21.96	22.48	22.43
			25	24	23.00	22.05	22.56	22.44
			50	0	23.00	22.06	22.53	22.43
		16QAM	1	0	23.00	21.94	22.64	22.46
			1	24	23.00	21.90	22.51	22.60
			1	49	23.00	22.01	22.50	22.42
			25	0	21.50	20.74	21.38	21.34
			25	12	21.50	21.07	21.44	21.38
			25	24	21.50	21.17	21.47	21.40
			50	0	21.50	21.11	21.46	21.39
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	23.50	22.92	23.32	23.21
			1	37	23.50	22.89	23.23	23.12
			1	74	23.50	23.21	23.31	22.95
			36	0	23.00	22.10	22.44	21.89
			36	18	23.00	22.22	22.52	22.06
			36	37	23.00	22.32	22.50	22.05
			75	0	23.00	22.24	22.51	21.98
		16QAM	1	0	23.00	22.21	22.42	22.00

			1	37	23.00	22.39	22.67	22.28
			1	74	23.00	22.45	22.62	21.97
			36	0	21.50	21.06	21.38	20.93
			36	18	21.50	21.20	21.47	21.03
			36	37	21.50	21.29	21.47	21.11
			75	0	21.50	21.18	21.43	21.07
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	23.50	22.48	23.04	22.97
			1	49	23.50	22.83	23.05	23.02
			1	99	23.50	22.60	22.80	22.69
			50	0	23.00	21.69	21.95	21.89
			50	24	23.00	22.30	22.24	21.96
			50	49	23.00	22.36	22.55	21.96
			100	0	22.50	22.26	22.48	21.93
		16QAM	1	0	23.00	21.94	22.38	21.82
			1	49	23.00	22.36	22.64	22.21
			1	99	23.00	22.18	22.37	21.77
			50	0	21.50	21.04	21.28	20.91
			50	24	21.50	21.23	21.47	20.95
			50	49	21.50	21.31	21.48	20.94
			100	0	21.50	21.18	21.39	21.03

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	23.23	23.27	23.22
			1	2	23.50	23.33	23.40	23.34
			1	5	23.50	23.23	23.25	23.21
			3	0	23.50	23.27	23.32	23.31
			3	1	23.50	23.31	23.37	23.34
			3	2	23.50	23.27	23.35	23.27
			6	0	22.50	22.37	22.44	22.40
		16QAM	1	0	23.00	22.44	22.58	22.38
			1	2	23.00	22.55	22.59	22.60
			1	5	23.00	22.42	22.41	22.38
			3	0	22.50	22.34	22.36	22.33

			3	1	22.50	22.37	22.36	22.35
			3	2	22.50	22.29	22.40	22.31
			6	0	21.50	21.40	21.47	21.40
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	23.25	23.33	23.35
			1	7	23.50	23.25	23.32	23.32
			1	14	23.50	23.24	23.35	23.26
			8	0	22.50	22.33	22.42	22.42
			8	4	22.50	22.39	22.48	22.45
			8	7	22.50	22.34	22.44	22.39
			15	0	22.50	22.33	22.48	22.45
		16QAM	1	0	23.00	22.48	22.56	22.57
			1	7	23.00	22.47	22.55	22.53
			1	14	23.00	22.41	22.52	22.43
			8	0	21.50	21.35	21.40	21.38
			8	4	21.50	21.39	21.47	21.43
			8	7	21.50	21.33	21.44	21.37
			15	0	21.50	21.29	21.41	21.38
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	23.17	23.19	23.25
			1	12	23.50	23.25	23.32	23.34
			1	24	23.50	23.12	23.24	23.16
			12	0	23.00	22.34	22.41	22.43
			12	6	23.00	22.38	22.51	22.45
			12	11	23.00	22.30	22.45	22.35
			25	0	23.00	22.37	22.50	22.43
		16QAM	1	0	23.00	22.41	22.49	22.48
			1	12	23.00	22.46	22.57	22.49
			1	24	23.00	22.38	22.49	22.42
			12	0	21.50	21.30	21.37	21.34
			12	6	21.50	21.37	21.45	21.39
			12	11	21.50	21.31	21.39	21.32
			25	0	21.50	21.33	21.40	21.35
Band	Band	Modulation	RB		Tune-up	Channel/Frequency(MHz)		

	Width		Configuration		(dBm)			
			RB Size	RB Offset		20450/829	20525/836.5	20600/844
LTE Band 5	10MHz	QPSK	1	0	23.50	23.23	23.29	23.39
			1	24	23.50	23.36	23.42	23.47
			1	49	23.50	23.27	23.35	23.27
			25	0	23.00	22.44	22.52	22.63
			25	12	23.00	22.40	22.57	22.55
			25	24	23.00	22.39	22.55	22.47
			50	0	23.00	22.41	22.55	22.55
		16QAM	1	0	23.00	22.52	22.45	22.62
			1	24	23.00	22.51	22.69	22.58
			1	49	23.00	22.46	22.59	22.42
			25	0	22.00	21.39	21.44	21.54
			25	12	22.00	21.33	21.48	21.47
			25	24	22.00	21.33	21.47	21.38
			50	0	21.50	21.33	21.47	21.47

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	25.00	24.79	24.65	24.28
			1	12	25.00	24.96	24.49	24.44
			1	24	25.00	24.84	24.58	24.39
			12	0	24.50	23.92	23.79	23.46
			12	6	24.50	24.04	23.97	23.57
			12	11	24.50	24.01	23.86	23.54
			25	0	24.50	24.03	23.93	23.52
		16QAM	1	0	24.00	23.91	23.72	23.51
			1	12	24.00	23.88	23.73	23.64
			1	24	24.00	23.79	23.85	23.60
			12	0	23.00	22.60	22.67	22.47
			12	6	23.00	22.77	22.79	22.57
			12	11	23.00	22.82	22.84	22.52
			25	0	23.00	22.89	22.78	22.50
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	25.00	24.51	24.51	24.44
			1	24	25.00	24.63	24.57	24.60
			1	49	25.00	24.50	24.42	24.52
			25	0	24.00	23.62	23.56	23.58
			25	12	24.00	23.66	23.58	23.62
			25	24	24.00	23.63	23.61	23.64
			50	0	24.00	23.63	23.60	23.60
		16QAM	1	0	24.00	23.70	23.79	23.60
			1	24	24.00	23.72	23.71	23.75
			1	49	24.00	23.65	23.59	23.59
			25	0	23.00	22.54	22.49	22.50
			25	12	23.00	22.57	22.51	22.55
			25	24	23.00	22.55	22.54	22.57
			50	0	23.00	22.50	22.54	22.54
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	25.00	24.52	24.55	24.41
			1	37	25.00	24.59	24.54	24.45
			1	74	25.00	24.52	24.47	24.46
			36	0	24.00	23.68	23.62	23.56
			36	18	24.00	23.69	23.61	23.53
			36	37	24.00	23.64	23.54	23.56
			75	0	24.00	23.72	23.60	23.57
		16QAM	1	0	24.00	23.66	23.73	23.57
			1	37	24.00	23.80	23.73	23.69
			1	74	24.00	23.74	23.67	23.63
			36	0	23.00	22.60	22.53	22.51
			36	18	23.00	22.63	22.50	22.48
			36	37	23.00	22.57	22.54	22.49
			75	0	23.00	22.61	22.51	22.44
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	25.00	24.32	24.42	24.32
			1	49	25.00	24.64	24.60	24.55
			1	99	25.00	24.36	24.36	24.28
			50	0	24.00	23.74	23.59	23.62

			50	24	24.00	23.71	23.67	23.59
			50	49	24.00	23.63	23.63	23.53
			100	0	24.00	23.65	23.57	23.57
		16QAM	1	0	24.00	23.48	23.59	23.57
			1	49	24.00	23.86	23.80	23.70
			1	99	24.00	23.47	23.53	23.44
			50	0	23.00	22.63	22.50	22.56
			50	24	23.00	22.65	22.58	22.53
			50	49	23.00	22.57	22.53	22.49
			100	0	23.00	22.59	22.49	22.49

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	23.50	23.03	22.57	22.48
			1	12	23.50	22.78	22.59	22.57
			1	24	23.50	22.49	22.43	22.41
			12	0	22.00	21.76	21.67	21.64
			12	6	22.00	21.81	21.73	21.67
			12	11	22.00	21.75	21.65	21.57
			25	0	22.00	21.78	21.71	21.63
		16QAM	1	0	22.00	21.90	21.90	21.76
			1	12	22.00	21.99	21.94	21.83
			1	24	22.00	21.76	21.66	21.60
			12	0	21.00	20.74	20.67	20.57
			12	6	21.00	20.76	20.68	20.64
			12	11	21.00	20.72	20.61	20.52
			25	0	21.00	20.73	20.68	20.57
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	23.00	22.76	22.90	22.90
			1	24	23.00	22.75	22.72	22.71
			1	49	23.00	22.48	22.48	22.48
			25	0	22.00	21.81	21.80	21.77
			25	12	22.00	21.77	21.79	21.80
			25	24	22.00	21.75	21.73	21.66
			50	0	22.00	21.77	21.80	21.73

		16QAM	1	0	22.50	21.94	22.03	22.13
			1	24	22.50	22.02	21.95	22.00
			1	49	22.50	21.71	21.82	21.73
			25	0	21.00	20.78	20.75	20.70
			25	12	21.00	20.74	20.75	20.73
			25	24	21.00	20.66	20.73	20.58
			50	0	21.00	20.73	20.73	20.74

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		26697/814.7	26740/819	26783/823.3
LTE Band 26a	1.4MHz	QPSK	1	0	24.00	23.44	23.24	23.15
			1	2	24.00	23.55	23.29	23.20
			1	5	24.00	23.42	23.18	23.11
			3	0	24.00	23.53	23.31	23.21
			3	1	24.00	23.54	23.32	23.20
			3	2	24.00	23.50	23.28	23.21
			6	0	23.00	22.52	22.42	22.28
		16QAM	1	0	23.00	22.76	22.41	22.44
			1	2	23.00	22.85	22.55	22.53
			1	5	23.00	22.54	22.35	22.39
			3	0	23.00	22.48	22.25	22.24
			3	1	23.00	22.53	22.28	22.25
			3	2	23.00	22.53	22.28	22.23
			6	0	22.00	21.55	21.35	21.33

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		26705/818.5	26740/819	26775/822.5
LTE Band 26a	3MHz	QPSK	1	0	24.00	23.51	23.33	23.22
			1	7	24.00	23.47	23.27	23.18
			1	14	24.00	23.41	23.19	23.19
			8	0	23.00	22.48	22.35	22.30
			8	4	23.00	22.50	22.42	22.32
			8	7	23.00	22.47	22.38	22.29
			15	0	22.50	22.48	22.42	22.30
		16QAM	1	0	23.00	22.76	22.49	22.38
			1	7	23.00	22.61	22.44	22.42
			1	14	23.00	22.44	22.42	22.46

			8	0	21.50	21.49	21.34	21.29
			8	4	21.50	21.49	21.36	21.32
			8	7	21.50	21.42	21.34	21.28
			15	0	21.50	21.39	21.34	21.26
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		26715/816.5	26740/819	26765/821.5
LTE Band 26a	5MHz	QPSK	1	0	23.50	23.43	23.33	23.19
			1	12	23.50	23.46	23.10	23.22
			1	24	23.50	23.17	23.02	23.07
			12	0	22.50	22.34	22.37	22.32
			12	6	22.50	22.47	22.42	22.36
			12	11	22.50	22.29	22.36	22.28
			25	0	22.50	22.42	22.44	22.35
		16QAM	1	0	23.00	22.55	22.45	22.35
			1	12	23.00	22.42	22.38	22.51
			1	24	23.00	22.03	22.24	22.33
			12	0	21.50	21.35	21.33	21.26
			12	6	21.50	21.42	21.33	21.30
			12	11	21.50	21.29	21.28	21.23
			25	0	21.50	21.42	21.36	21.29
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		/	26740/819	/
LTE Band 26a	10MHz	QPSK	1	0	23.50	/	23.50	/
			1	24	23.50	/	23.39	/
			1	49	23.50	/	23.14	/
			25	0	22.50	/	22.50	/
			25	12	22.50	/	22.50	/
			25	24	22.50	/	22.41	/
			50	0	22.50	/	22.46	/
		16QAM	1	0	22.50	/	22.73	/
			1	24	22.50	/	22.43	/
			1	49	22.50	/	22.38	/
			25	0	21.50	/	21.41	/
			25	12	21.50	/	21.39	/
			25	24	21.50	/	21.34	/
			50	0	21.50	/	21.36	/

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		26797/824.7	26915/836.5	27033/848.3
LTE Band 26b	1.4MHz	QPSK	1	0	23.00	22.82	22.73	22.66
			1	2	23.00	22.74	22.81	22.74
			1	5	23.00	22.62	22.69	22.64
			3	0	23.00	22.70	22.79	22.72
			3	1	23.00	22.75	22.84	22.77
			3	2	23.00	22.68	22.80	22.71
			6	0	22.00	21.72	21.84	21.74
		16QAM	1	0	22.50	21.79	21.97	21.87
			1	2	22.50	22.07	22.05	21.86
			1	5	22.50	21.77	21.89	21.72
			3	0	22.00	21.65	21.75	21.73
			3	1	22.00	21.71	21.78	21.74
			3	2	22.00	21.68	21.74	21.62
			6	0	21.00	20.76	20.86	20.78
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		26805/825.5	26915/836.5	27025/847.5
LTE Band 26b	3MHz	QPSK	1	0	23.00	22.71	22.80	22.80
			1	7	23.00	22.70	22.81	22.77
			1	14	23.00	22.69	22.83	22.72
			8	0	22.00	21.70	21.84	21.81
			8	4	22.00	21.72	21.84	21.79
			8	7	22.00	21.71	21.84	21.79
			15	0	22.00	21.69	21.84	21.78
		16QAM	1	0	22.00	21.97	21.99	21.99
			1	7	22.00	21.90	21.97	21.96
			1	14	22.00	21.85	21.95	21.90
			8	0	21.00	20.77	20.83	20.79
			8	4	21.00	20.75	20.87	20.77
			8	7	21.00	20.75	20.84	20.74
			15	0	21.00	20.68	20.78	20.75
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB	RB		26815/826.5	26915/836.5	27015/846.5

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		26840/829	26915/836.5	26990/844
LTE Band 26b	5MHz	QPSK	1	0	23.00	22.61	22.65	22.70
			1	12	23.00	22.69	22.82	22.78
			1	24	23.00	22.59	22.69	22.60
			12	0	22.00	21.69	21.81	21.81
			12	6	22.00	21.73	21.86	21.84
			12	11	22.00	21.68	21.79	21.70
			25	0	22.00	21.70	21.83	21.83
		16QAM	1	0	22.00	21.84	21.84	21.89
			1	12	22.00	21.90	21.95	21.96
			1	24	22.00	21.82	21.84	21.79
			12	0	21.00	20.67	20.78	20.80
			12	6	21.00	20.73	20.86	20.81
			12	11	21.00	20.66	20.79	20.70
			25	0	21.00	20.65	20.79	20.78
LTE Band 26b	10MHz	QPSK	1	0	23.00	22.70	22.68	22.81
			1	24	23.00	22.78	22.90	22.88
			1	49	23.00	22.70	22.80	22.69
			25	0	22.00	21.76	21.88	21.99
			25	12	22.00	21.73	21.90	21.93
			25	24	22.00	21.76	21.84	21.81
			50	0	22.00	21.77	21.87	21.91
		16QAM	1	0	22.50	21.96	21.88	22.06
			1	24	22.50	21.86	22.10	22.01
			1	49	22.50	21.93	21.97	21.76
			25	0	21.00	20.71	20.83	20.90
			25	12	21.00	20.68	20.86	20.85
			25	24	21.00	20.70	20.81	20.73
			50	0	21.00	20.70	20.84	20.83
LTE Band 26b	15MHz	QPSK	1	0	23.00	22.63	22.62	22.70
			1	37	23.00	22.69	22.81	22.81
			1	74	23.00	22.68	22.70	22.62

			36	0	22.00	21.71	21.81	21.87
			36	18	22.00	21.76	21.85	21.85
			36	37	22.00	21.79	21.84	21.80
			75	0	22.00	21.75	21.84	21.88
		16QAM	1	0	22.50	21.76	21.75	21.82
			1	37	22.50	21.93	22.06	22.03
			1	74	22.50	21.87	21.79	21.68
			36	0	21.00	20.67	20.78	20.83
			36	18	21.00	20.75	20.81	20.84
			36	37	21.00	20.76	20.78	20.77
			75	0	21.00	20.70	20.78	20.81

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		39675/2498.5	40620/2593	41565/2687.5
LTE Band 41	5MHz	QPSK	1	0	24.50	23.88	23.92	23.95
			1	12	24.50	24.04	24.03	24.04
			1	24	24.50	23.90	23.91	23.88
			12	0	23.50	23.00	23.06	23.02
			12	6	23.50	23.05	23.10	23.03
			12	11	23.50	23.02	23.07	22.98
			25	0	23.50	22.99	23.07	23.01
		16QAM	1	0	23.50	22.93	23.04	23.08
			1	12	23.50	23.10	23.16	23.18
			1	24	23.50	22.97	23.06	23.02
			12	0	22.50	21.96	22.07	22.01
			12	6	22.50	22.00	22.08	22.04
			12	11	22.50	21.98	22.07	21.99
			25	0	22.50	21.96	22.07	22.00
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		39700/2501	40620/2593	41540/2685
LTE Band 41	10MHz	QPSK	1	0	24.50	23.94	24.01	24.06
			1	24	24.50	24.08	24.13	24.12
			1	49	24.50	23.96	24.01	23.96
			25	0	23.50	22.98	23.12	23.04
			25	12	23.50	23.08	23.15	23.09
			25	24	23.50	23.05	23.17	23.06

			50	0	23.50	23.15	23.19	23.11
		16QAM	1	0	23.50	23.05	23.15	23.19
			1	24	23.50	23.18	23.24	23.28
			1	49	23.50	23.11	23.18	23.07
			25	0	22.50	22.00	22.12	22.06
			25	12	22.50	22.15	22.10	22.08
			25	24	22.50	22.20	22.16	22.06
			50	0	22.50	22.27	22.19	22.10
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		39725/2503.5	40620/2593	41515/2682.5
LTE Band 41	15MHz	QPSK	1	0	24.50	23.84	23.95	23.94
			1	37	24.50	24.01	23.99	23.99
			1	74	24.50	23.90	23.90	23.82
			36	0	23.50	23.05	23.12	23.02
			36	18	23.50	23.13	23.11	23.04
			36	37	23.50	23.06	23.14	23.02
			75	0	23.50	23.08	23.15	23.02
		16QAM	1	0	23.50	22.96	23.08	23.08
			1	37	23.50	23.17	23.17	23.15
			1	74	23.50	23.06	23.05	22.95
			36	0	22.50	22.11	22.07	21.98
			36	18	22.50	22.23	22.11	22.01
			36	37	22.50	22.20	22.19	21.97
			75	0	22.50	22.24	22.16	22.00
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		39750/2506	40620/2593	41490/2680
LTE Band 41	20MHz	QPSK	1	0	24.50	23.69	23.82	23.76
			1	49	24.50	24.06	24.06	24.06
			1	99	24.50	23.72	23.77	23.63
			50	0	23.50	23.07	23.14	22.96
			50	24	23.50	23.17	23.22	23.08
			50	49	23.50	23.14	23.13	23.04
			100	0	23.50	23.17	23.17	23.07
		16QAM	1	0	23.50	22.81	22.95	22.89
			1	49	23.50	23.21	23.20	23.20
			1	99	23.50	22.94	22.91	22.79

			50	0	22.50	22.16	22.14	21.95
			50	24	22.50	22.29	22.25	22.09
			50	49	22.50	22.42	22.12	22.03
			100	0	22.50	22.34	22.20	22.01

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	17.00	15.42
	6	2437	17.00	16.90
	11	2462	17.00	16.57
802.11g	1	2412	14.50	14.43
	6	2437	14.50	13.99
	11	2462	14.50	14.09
802.11n HT20	1	2412	13.50	13.15
	6	2437	13.50	12.71
	11	2462	13.50	12.68
802.11n HT40	3	2422	13.00	12.22
	6	2437	13.00	12.45
	9	2452	13.00	12.90

NOTE: Power measurement results of WLAN 2.4G.

Mode	Channel	Frequency (MHz)	Tune-up (dBm)	Output Power (dBm)
802.11a	36	5180	11.00	10.75
	40	5200	11.00	10.85
	48	5240	11.00	9.72
802.11n HT20	36	5180	11.00	10.10
	40	5200	11.00	10.82
	48	5240	11.00	10.33
802.11n HT40	38	5190	11.00	10.95
	46	5230	11.00	10.86
802.11ac VHT20	36	5180	11.00	10.25
	40	5200	11.00	10.91
	48	5240	11.00	10.46
802.11ac VHT40	38	5190	11.00	10.89
	46	5230	11.00	10.73

802.11ac VHT80	42	5210	10.50	10.45
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NOTE: Power measurement results of WLAN 5.2G.

Mode	Channel	Frequency (MHz)	Tune-up (dBm)	Output Power (dBm)
802.11a	52	5260	10.50	10.47
	56	5280	10.50	9.56
	64	5320	10.50	10.24
802.11n HT20	52	5260	10.50	10.49
	56	5280	10.50	9.57
	64	5320	10.50	10.27
802.11n HT40	54	5270	11.00	10.04
	62	5310	11.00	10.80
802.11ac VHT20	52	5260	10.50	10.48
	56	5280	10.50	9.51
	64	5320	10.50	10.24
802.11ac VHT40	54	5270	11.00	10.01
	62	5310	11.00	10.80
802.11ac VHT80	58	5290	11.50	11.02

NOTE: Power measurement results of WLAN 5.3G.

Mode	Channel	Frequency (MHz)	Tune-up (dBm)	Output Power (dBm)
802.11a	100	5500	10.50	10.15
	120	5600	10.50	10.09
	140	5700	10.50	9.94
802.11n	100	5500	10.50	10.19
	120	5600	10.50	10.14
	140	5700	10.50	9.98
802.11n	102	5510	11.00	9.96
	118	5590	11.00	10.69
	134	5670	11.00	10.41
802.11ac (VHT20)	100	5500	10.50	10.25
	120	5600	10.50	10.10
	140	5700	10.50	9.97
802.11ac (VHT40)	102	5510	11.50	10.02
	118	5590	11.50	10.69
	134	5670	11.50	11.49
802.11ac	106	5530	11.00	10.51

(VHT80)	122	5610	11.00	9.51
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NOTE: Power measurement results of WLAN 5.6G.

7.4.2. Output Power Results Of Bluetooth

BR+EDR	Output Power (dBm)				
	Channel	Tune-up (dBm)	Data Rates		
			1M	2M	3M
	0CH	-7.00	-6.76	-7.44	-6.70
	39CH	-6.00	-5.62	-7.23	-6.94
	78CH	-7.00	-6.66	-8.20	-7.98

BLE	Channel	Tune-up (dBm)	Output Power (dBm)	
			Data Rates 1M	Data Rates 2M
	0CH	3.50	3.15	3.34
	19CH	5.00	4.76	4.61
	39CH	4.00	3.91	3.76

7.5. Hotspot Mode on/off Consideration

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	20.50	20.06	20.05	19.98
HSDPA Sub 1	19.50	19.22	18.86	18.58
HSDPA Sub 2	19.00	18.73	18.63	18.26
HSDPA Sub 3	18.50	18.49	18.13	17.81
HSDPA Sub 4	18.50	18.41	18.15	17.96
HSUPA Sub 1	19.00	18.93	18.89	18.44
HSUPA Sub 2	19.00	18.98	18.79	18.46
HSUPA Sub 3	19.00	18.51	18.17	18.16
HSUPA Sub 4	19.00	18.96	18.80	18.55
HSUPA Sub 5	19.00	18.51	18.63	18.07
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	19.50	19.03	18.96	18.99

HSDPA Sub 1	18.50	18.29	17.60	18.24
HSDPA Sub 2	18.00	17.95	17.33	17.86
HSDPA Sub 3	18.00	17.62	16.68	17.70
HSDPA Sub 4	18.00	17.45	16.70	17.60
HSUPA Sub 1	18.50	17.91	17.31	18.05
HSUPA Sub 2	18.50	18.14	17.53	18.22
HSUPA Sub 3	18.00	17.76	17.03	17.85
HSUPA Sub 4	18.50	18.07	17.53	18.21
HSUPA Sub 5	18.00	17.92	17.22	17.89

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	20.00	19.89	19.80	19.71
			1	2	20.00	19.79	19.95	19.83
			1	5	20.00	19.87	19.80	19.70
			3	0	20.00	19.92	19.93	19.80
			3	1	20.00	19.87	19.93	19.81
			3	2	20.00	18.97	19.89	19.80
		16QAM	6	0	19.00	18.88	19.00	18.88
			1	0	19.50	19.07	19.05	18.99
			1	2	19.50	18.90	19.24	19.06
			1	5	19.50	18.81	19.09	18.98
			3	0	19.00	18.86	18.96	18.81
			3	1	19.00	18.82	18.92	18.87
			3	2	19.00	17.95	18.94	18.86
			6	0	18.50	17.80	18.05	17.93
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	20.00	19.74	19.84	19.75
			1	7	20.00	19.74	19.83	19.74
			1	14	20.00	19.74	19.81	19.68
			8	0	19.00	18.86	18.93	18.83
			8	4	19.00	18.88	18.94	18.85
			8	7	19.00	18.86	18.92	18.82
			15	0	19.00	18.90	18.95	18.84
		16QAM	1	0	19.50	18.90	19.09	19.01

			1	7	19.50	18.89	19.10	19.01
			1	14	19.50	18.82	19.09	18.98
			8	0	18.00	17.82	17.95	17.84
			8	4	18.00	17.83	17.96	17.88
			8	7	18.00	17.82	17.94	17.85
			15	0	18.00	17.80	17.90	17.78
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	20.00	19.64	19.76	19.70
			1	12	20.00	19.76	19.84	19.77
			1	24	20.00	19.66	19.70	19.60
			12	0	19.00	18.89	18.92	18.82
			12	6	19.00	18.89	18.97	18.88
			12	11	19.00	18.79	18.92	18.82
			25	0	19.00	18.90	18.96	18.86
		16QAM	1	0	19.50	18.81	19.03	19.02
			1	12	19.50	18.87	19.08	19.13
			1	24	19.50	18.85	19.01	18.91
			12	0	18.00	17.79	17.92	17.78
			12	6	18.00	17.83	17.94	17.87
			12	11	18.00	17.76	17.89	17.83
			25	0	18.00	17.84	17.92	17.81
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	20.00	19.72	19.85	19.87
			1	24	20.00	19.81	19.88	19.87
			1	49	20.00	19.75	19.75	19.71
			25	0	19.00	18.99	18.99	18.91
			25	12	19.00	18.94	18.98	18.93
			25	24	19.00	18.88	18.95	18.94
			50	0	19.00	18.96	18.99	18.95
		16QAM	1	0	19.50	18.91	19.06	19.21
			1	24	19.50	19.00	19.14	19.18
			1	49	19.50	18.96	19.03	19.03
			25	0	18.00	17.89	17.93	17.87
			25	12	18.00	17.85	17.95	17.91

			25	24	18.00	17.79	17.91	17.89
			50	0	18.00	17.86	17.94	17.89
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	20.00	19.69	19.85	19.83
			1	37	20.00	19.81	19.86	19.86
			1	74	20.00	19.77	19.72	19.65
			36	0	19.50	18.98	18.99	19.02
			36	18	19.50	18.96	18.98	18.98
			36	37	19.50	18.95	18.91	18.96
			75	0	19.00	18.99	18.99	18.99
		16QAM	1	0	19.50	18.82	19.14	19.13
			1	37	19.50	19.03	19.13	19.14
			1	74	19.50	19.05	19.03	18.92
			36	0	18.00	17.91	17.95	18.00
			36	18	18.00	17.92	17.94	17.95
			36	37	18.00	17.93	17.90	17.92
			75	0	18.00	17.91	17.92	17.97
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	20.00	19.52	19.67	19.67
			1	49	20.00	19.92	19.94	19.99
			1	99	20.00	19.62	19.53	19.49
			50	0	19.50	19.14	19.07	19.17
			50	24	19.50	19.04	19.04	19.04
			50	49	19.50	19.07	18.94	19.10
			100	0	19.50	19.08	18.98	19.12
		16QAM	1	0	19.50	18.64	18.97	18.98
			1	49	19.50	19.18	19.13	19.21
			1	99	19.50	18.96	18.78	18.75
			50	0	18.50	18.02	17.99	18.14
			50	24	18.50	17.96	17.96	17.99
			50	49	18.50	18.00	17.89	18.04
			100	0	18.50	17.98	17.90	18.07

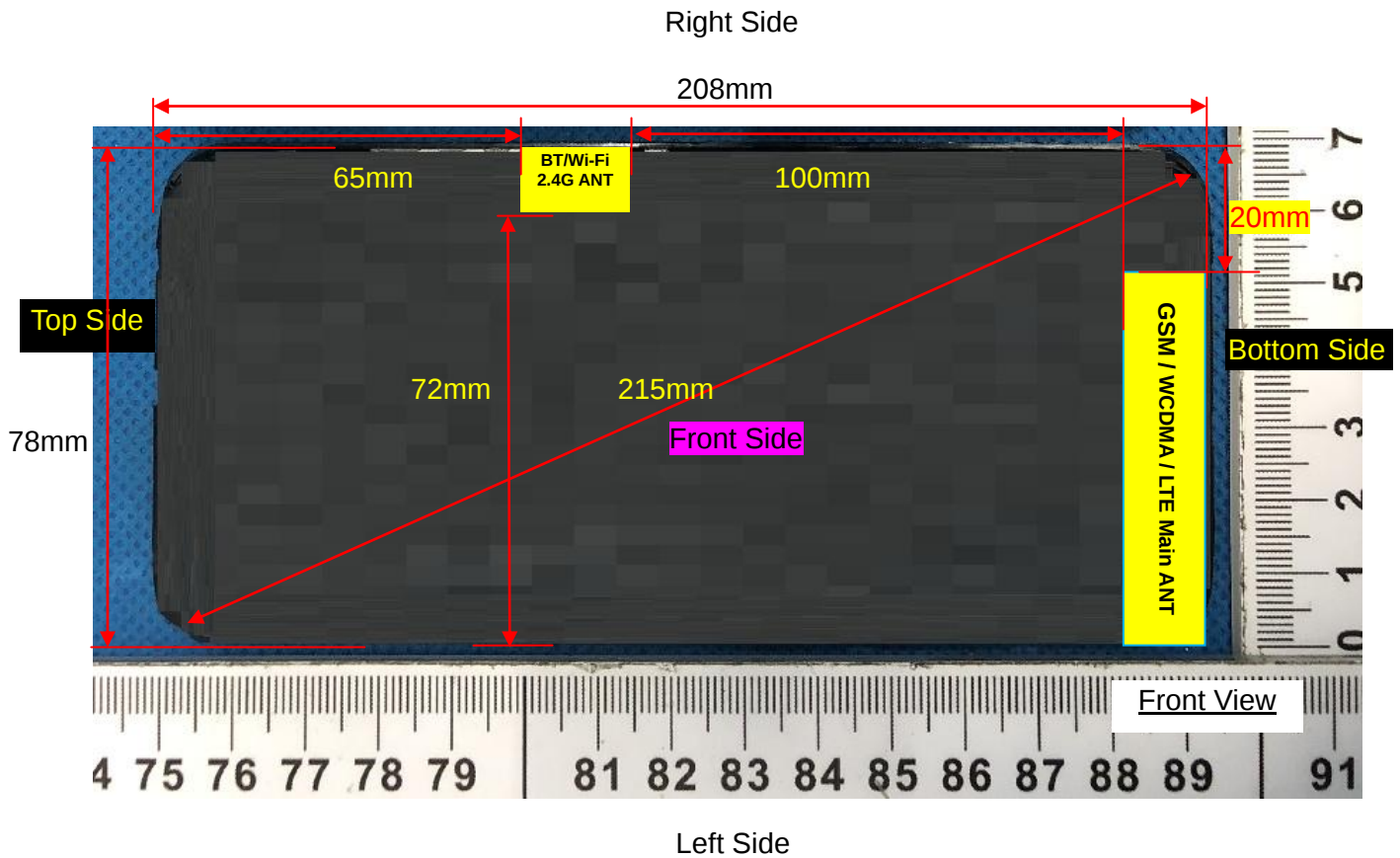
Band	Band	Modulation	RB	Tune-up	Channel/Frequency(MHz)
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	Width		Configuration		(dBm)			
			RB Size	RB Offset		19957/1710.7	20175/1732.5	20393/1754.3
LTE Band 4	1.4MHz	QPSK	1	0	19.00	17.97	18.35	18.41
			1	2	19.00	18.10	18.49	18.50
			1	5	19.00	17.97	18.36	18.39
			3	0	18.50	18.02	18.41	18.43
			3	1	18.50	18.07	18.42	18.49
			3	2	18.50	18.05	18.41	18.40
			6	0	18.00	17.04	17.43	17.50
		16QAM	1	0	18.00	17.14	17.47	17.56
			1	2	18.00	17.24	17.72	17.58
			1	5	18.00	17.19	17.49	17.63
			3	0	17.50	17.00	17.43	17.34
			3	1	17.50	17.08	17.41	17.40
			3	2	17.50	17.04	17.40	17.41
			6	0	16.50	16.06	16.45	16.47
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	18.50	18.05	18.43	18.43
			1	7	18.50	18.05	18.46	18.48
			1	14	18.50	18.06	18.43	18.46
			8	0	18.00	17.05	17.43	17.51
			8	4	18.00	17.09	17.50	17.53
			8	7	18.00	17.07	17.45	17.47
			15	0	18.00	17.06	17.46	17.50
		16QAM	1	0	18.00	17.30	17.59	17.55
			1	7	18.00	17.25	17.63	17.72
			1	14	18.00	17.29	17.66	17.62
			8	0	17.00	16.03	16.45	16.53
			8	4	17.00	16.10	16.48	16.53
			8	7	17.00	16.07	16.42	16.50
			15	0	16.50	16.00	16.42	16.48
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	5MHz	QPSK	1	0	18.50	17.94	18.33	18.18

Band 4			1	12	18.50	18.09	18.46	18.01
			1	24	18.50	17.96	18.35	17.78
			12	0	17.50	17.03	17.44	16.87
			12	6	17.50	17.11	17.47	17.20
			12	11	17.50	17.09	17.47	17.06
			25	0	17.50	17.09	17.46	17.06
		16QAM	1	0	18.00	17.14	17.57	17.04
			1	12	18.00	17.35	17.60	17.14
			1	24	18.00	17.16	17.61	17.08
			12	0	16.50	16.01	16.38	15.89
			12	6	16.50	16.06	16.46	16.18
			12	11	16.50	16.05	16.43	16.32
			25	0	16.50	16.03	16.41	16.36
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	18.50	17.53	18.10	18.26
			1	24	18.50	17.66	18.03	18.24
			1	49	18.50	17.87	18.19	18.29
			25	0	18.00	16.60	17.23	17.42
			25	12	18.00	16.96	17.48	17.43
			25	24	18.00	17.05	17.56	17.44
			50	0	18.00	17.06	17.53	17.43
		16QAM	1	0	18.00	16.94	17.64	17.46
			1	24	18.00	16.90	17.51	17.60
			1	49	18.00	17.01	17.50	17.42
			25	0	16.50	15.74	16.38	16.34
			25	12	16.50	16.07	16.44	16.38
			25	24	16.50	16.17	16.47	16.40
			50	0	16.50	16.11	16.46	16.39
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	18.50	17.92	18.32	18.21
			1	37	18.50	17.89	18.23	18.12
			1	74	18.50	18.21	18.31	17.95
			36	0	18.00	17.10	17.44	16.89
			36	18	18.00	17.22	17.52	17.06

			36	37	18.00	17.32	17.50	17.05
			75	0	18.00	17.24	17.51	16.98
		16QAM	1	0	18.00	17.21	17.42	17.00
			1	37	18.00	17.39	17.67	17.28
			1	74	18.00	17.45	17.62	16.97
			36	0	16.50	16.06	16.38	15.93
			36	18	16.50	16.20	16.47	16.03
			36	37	16.50	16.29	16.47	16.11
			75	0	16.50	16.18	16.43	16.07
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	18.50	17.48	18.04	17.97
			1	49	18.50	17.83	18.05	18.02
			1	99	18.50	17.60	17.80	17.69
			50	0	18.00	16.69	16.95	16.89
			50	24	18.00	17.30	17.24	16.96
			50	49	18.00	17.36	17.55	16.96
			100	0	17.50	17.26	17.48	16.93
		16QAM	1	0	18.00	16.94	17.38	16.82
			1	49	18.00	17.36	17.64	17.21
			1	99	18.00	17.18	17.37	16.77
			50	0	16.50	16.04	16.28	15.91
			50	24	16.50	16.23	16.47	15.95
			50	49	16.50	16.31	16.48	15.94
			100	0	16.50	16.18	16.39	16.03

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
WWAN Main ANT	≤ 25mm	≤ 25mm	≤ 25mm	≤ 25mm	> 25mm	≤ 25mm
WLAN & Bluetooth	≤ 25mm	≤ 25mm	> 25mm	≤ 25mm	> 25mm	>25mm
Positions for SAR tests						
Antennas	Front Side	Back Side	Left Side	Right Side	Top Side	Bottom Side
WWAN Main ANT	Yes	Yes	Yes	Yes	NO	Yes
WLAN & Bluetooth	Yes	Yes	NO	Yes	NO	NO

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:

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

- f_{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	5.00	3.16	5	2.480	0.99	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 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	5.00	3.16	10	2.48	7.5	0.066
Bluetooth	Hotspot	5.00	3.16	10	2.48	7.5	0.066

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 10mm	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 2TS)	0.598	0.362	-1.06	30.50	31.00	0.671	2022/10/20	
Back Side	189/836.4	GPRS(GMSK 2TS)	0.882	0.499	-3.17	30.50	31.00	0.990	2022/10/20	
Back Side Repeated	189/836.4	GPRS(GMSK 2TS)	0.871	0.490	1.29	30.50	31.00	0.977	2022/10/20	
Back Side	128/824.2	GPRS(GMSK 2TS)	0.815	0.470	-1.41	30.49	31.00	0.917	2022/10/20	
Back Side	251/848.8	GPRS(GMSK 2TS)	0.875	0.497	-1.67	30.46	31.00	0.991	2022/10/20	

NOTE: Body-worn SAR test results of GSM850

Test Position of Hotspot with 10mm	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 2TS)	0.598	0.362	-1.06	30.50	31.00	0.671	2022/10/20	
Back Side	189/836.4	GPRS(GMSK 2TS)	0.882	0.499	-3.17	30.50	31.00	0.990	2022/10/20	1#
Back Side Repeated	189/836.4	GPRS(GMSK 2TS)	0.871	0.490	1.29	30.50	31.00	0.977	2022/10/20	
Left Side	189/836.4	GPRS(GMSK 2TS)	0.255	0.141	-1.69	30.50	31.00	0.286	2022/10/20	
Right Side	189/836.4	GPRS(GMSK 2TS)	0.252	0.136	1.04	30.50	31.00	0.283	2022/10/20	
Bottom Side	189/836.4	GPRS(GMSK 2TS)	0.446	0.245	-0.30	30.50	31.00	0.500	2022/10/20	
Back Side	128/824.2	GPRS(GMSK 2TS)	0.815	0.470	-1.41	30.49	31.00	0.917	2022/10/20	
Back Side	251/848.8	GPRS(GMSK 2TS)	0.875	0.497	-1.67	30.46	31.00	0.991	2022/10/20	

NOTE: Hotspot SAR test results of GSM850

10.1.2. SAR measurement Result of GSM1900

Test Position of Body-worn with 10mm	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	661/1880	GPRS(GMSK 3TS)	0.528	0.262	-0.87	26.39	27.00	0.608	2022/11/2	
Back Side	661/1880	GPRS(GMSK 3TS)	0.851	0.431	-0.06	26.39	27.00	0.979	2022/11/2	
Back Side	512/1850.2	GPRS(GMSK 3TS)	1.088	0.635	1.23	26.68	27.00	1.171	2022/11/2	
Back Side Repeated	512/1850.2	GPRS(GMSK 3TS)	1.080	0.633	0.30	26.68	27.00	1.163	2022/11/2	
Back Side	810/1909.8	GPRS(GMSK 3TS)	0.501	0.261	2.31	26.00	27.00	0.631	2022/11/2	

NOTE: Body-worn SAR test results of GSM1900

Test Position of Hotspot with 10mm	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	661/1880	GPRS(GMSK 3TS)	0.528	0.262	-0.87	26.39	27.00	0.608	2022/11/2	
Back Side	661/1880	GPRS(GMSK 3TS)	0.851	0.431	-0.06	26.39	27.00	0.979	2022/11/2	
Left Side	661/1880	GPRS(GMSK 3TS)	0.270	0.131	-0.74	26.39	27.00	0.311	2022/11/2	
Right Side	661/1880	GPRS(GMSK 3TS)	0.264	0.128	-2.72	26.39	27.00	0.304	2022/11/2	
Bottom Side	661/1880	GPRS(GMSK 3TS)	0.445	0.219	-0.42	26.39	27.00	0.512	2022/11/2	
Back Side	512/1850.2	GPRS(GMSK 3TS)	1.088	0.635	1.23	26.68	27.00	1.171	2022/11/2	2#
Back Side Repeated	512/1850.2	GPRS(GMSK 3TS)	1.080	0.633	0.30	26.68	27.00	1.163	2022/11/2	
Back Side	810/1909.8	GPRS(GMSK 3TS)	0.501	0.261	2.31	26.00	27.00	0.631	2022/11/2	

NOTE: Hotspot SAR test results of GSM1900

10.1.3. SAR measurement Result of WCDMA Band 2

Test Position of Body-worn with 15mm	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	0.558	0.297	-2.55	23.05	23.50	0.619	2022/11/2	
Back Side	9400/1880	RMC12.2K	0.899	0.478	2.32	23.05	23.50	0.997	2022/11/2	
Back Side	9262/1852.4	RMC12.2K	1.011	0.601	0.42	23.06	23.50	1.119	2022/11/2	
Back Side Repeated	9262/1852.4	RMC12.2K	1.002	0.595	1.19	23.06	23.50	1.109	2022/11/2	
Back Side	9538/1907.6	RMC12.2K	0.766	0.398	-0.35	22.98	23.50	0.863	2022/11/2	

NOTE: Body-worn SAR test results of WCDMA Band 2

Test Position of Hotspot with 10mm	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	0.576	0.278	-2.57	23.05	23.50	0.639	2022/11/2	
Back Side	9400/1880	RMC12.2K	0.943	0.480	-0.73	23.05	23.50	1.046	2022/11/2	
Left Side	9400/1880	RMC12.2K	0.279	0.142	3.31	23.05	23.50	0.309	2022/11/2	
Right Side	9400/1880	RMC12.2K	0.270	0.133	0.73	23.05	23.50	0.299	2022/11/2	
Bottom Side	9400/1880	RMC12.2K	0.466	0.227	-0.09	23.05	23.50	0.517	2022/11/2	
Back Side	9262/1852.4	RMC12.2K	1.062	0.594	-1.38	23.06	23.50	1.175	2022/11/2	3#
Back Side Repeated	9262/1852.4	RMC12.2K	1.055	0.586	0.31	23.06	23.50	1.167	2022/11/2	
Back Side	9538/1907.6	RMC12.2K	0.717	0.365	-1.43	22.98	23.50	0.808	2022/11/2	

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 15mm	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	0.354	0.195	1.30	22.96	23.50	0.401	2022/10/28	
Back Side	1413/1732.6	RMC12.2K	0.575	0.316	4.22	22.96	23.50	0.651	2022/10/28	

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

Test Position of Hotspot with 10mm	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	0.654	0.331	1.90	22.96	23.50	0.741	2022/10/28	
Back Side	1413/1732.6	RMC12.2K	1.041	0.548	-1.42	22.96	23.50	1.179	2022/10/28	
Left Side	1413/1732.6	RMC12.2K	0.324	0.162	0.30	22.96	23.50	0.367	2022/10/28	
Right Side	1413/1732.6	RMC12.2K	0.318	0.162	0.19	22.96	23.50	0.360	2022/10/28	
Bottom Side	1413/1732.6	RMC12.2K	0.535	0.273	-2.35	22.96	23.50	0.606	2022/10/28	
Back Side	1312/1712.4	RMC12.2K	1.025	0.540	-1.35	23.03	23.50	1.142	2022/10/28	
Back Side	1513/1752.6	RMC12.2K	1.029	0.599	-1.13	22.99	23.50	1.157	2022/10/28	4#
Back Side Repeated	1513/1752.6	RMC12.2K	1.024	0.597	0.34	22.99	23.50	1.152	2022/10/28	

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 10mm	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	0.456	0.308	-1.39	22.44	22.50	0.462	2022/10/20	
Back Side	4182/836.4	RMC12.2K	0.713	0.502	-0.18	22.44	22.50	0.723	2022/10/20	

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

Test Position of Hotspot with 10mm	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	0.456	0.308	-1.39	22.44	22.50	0.462	2022/10/20	
Back Side	4182/836.4	RMC12.2K	0.713	0.502	-0.18	22.44	22.50	0.723	2022/10/20	5#
Left Side	4182/836.4	RMC12.2K	0.216	0.148	3.63	22.44	22.50	0.219	2022/10/20	
Right Side	4182/836.4	RMC12.2K	0.219	0.151	1.36	22.44	22.50	0.222	2022/10/20	
Bottom Side	4182/836.4	RMC12.2K	0.375	0.251	2.06	22.44	22.50	0.380	2022/10/20	

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 15mm	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)	0.654	0.349	-1.47	23.94	24.00	0.663	2022/11/2	
Back Side	18900/1880	20M QPSK(1,49)	1.082	0.595	0.29	23.94	24.00	1.097	2022/11/2	
Back Side Repeated	18900/1880	20M QPSK(1,49)	1.075	0.585	1.23	23.94	24.00	1.090	2022/11/2	
Back Side	18700/1860	20M QPSK(1,49)	0.872	0.455	-0.89	23.92	24.00	0.888	2022/11/2	

Back Side	19100/1900	20M QPSK(1,49)	0.928	0.505	-2.83	23.99	24.00	0.930	2022/11/2	
50%RB										
Front Side	18900/1880	20M QPSK(50,0)	0.336	0.193	-4.74	23.07	23.50	0.371	2022/11/2	
Back Side	18900/1880	20M QPSK(50,0)	0.550	0.345	-2.06	23.07	23.50	0.607	2022/11/2	
100%RB										
Back Side	18900/1880	20M QPSK(100,0)	0.542	0.336	0.31	22.98	23.50	0.611	2022/11/2	

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

Test Position of Hotspot with 10mm	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)	0.684	0.366	3.79	23.94	24.00	0.694	2022/11/2	
Back Side	18900/1880	20M QPSK(1,49)	1.114	0.601	0.42	23.94	24.00	1.129	2022/11/2	10#
Back Side Repeated	18900/1880	20M QPSK(1,49)	1.106	0.594	1.19	23.94	24.00	1.121	2022/11/2	
Left Side	18900/1880	20M QPSK(1,49)	0.210	0.110	2.59	23.94	24.00	0.213	2022/11/2	
Right Side	18900/1880	20M QPSK(1,49)	0.152	0.080	3.44	23.94	24.00	0.154	2022/11/2	
Bottom Side	18900/1880	20M QPSK(1,49)	0.448	0.232	-3.48	23.94	24.00	0.454	2022/11/2	
Back Side	18700/1860	20M QPSK(1,49)	0.904	0.478	-0.77	23.92	24.00	0.921	2022/11/2	
Back Side	19100/1900	20M QPSK(1,49)	0.954	0.504	2.76	23.99	24.00	0.956	2022/11/2	
50%RB										
Front Side	18900/1880	20M QPSK(50,49)	0.346	0.207	3.92	23.07	23.50	0.382	2022/11/2	
Back Side	18900/1880	20M QPSK(50,49)	0.654	0.326	3.90	23.07	23.50	0.722	2022/11/2	
Left Side	18900/1880	20M	0.103	0.058	1.88	23.07	23.50	0.114	2022/11/2	

		QPSK(50,49)								
Right Side	18900/1880	20M QPSK(50,49)	0.072	0.041	2.59	23.07	23.50	0.079	2022/11/2	
Bottom Side	18900/1880	20M QPSK(50,49)	0.242	0.119	-1.76	23.07	23.50	0.267	2022/11/2	
100%RB										
Back Side	18900/1880	20M QPSK(100,0)	0.643	0.317	1.19	22.98	23.50	0.725	2022/11/2	

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 15mm	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)	0.696	0.390	-0.79	23.05	23.50	0.772	2022/10/28	
Back Side	20175/1732.5	20M QPSK(1,49)	1.060	0.622	-1.11	23.05	23.50	1.176	2022/10/28	11#
Back Side Repeated	20175/1732.5	20M QPSK(1,49)	1.056	0.616	0.34	23.05	23.50	1.171	2022/10/28	
Back Side	20050/1720	20M QPSK(1,49)	0.928	0.499	3.73	22.83	23.50	1.083	2022/10/28	
Back Side	20300/1745	20M QPSK(1,49)	0.986	0.530	-2.03	23.02	23.50	1.101	2022/10/28	
50%RB										
Front Side	20175/1732.5	20M QPSK(50,49)	0.358	0.227	0.53	22.55	23.00	0.397	2022/10/28	
Back Side	20175/1732.5	20M QPSK(50,49)	0.560	0.372	1.49	22.55	23.00	0.621	2022/10/28	
100%RB										
Back Side	20175/1732.5	20M QPSK(100,0)	0.550	0.367	0.23	22.48	22.50	0.553	2022/10/28	

NOTE: Body SAR test results of LTE Band 4

Test	Test channel	Mode	SAR Value	Power	Conducted	Tune-up	Scaled	Date	Plot
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Position of Hotspot with 10mm	/Freq.		(W/kg)		Drift(%)	Power (dBm)	Power (dBm)	SAR 1-g (W/Kg)		
			1-g	10-g						
1RB										
Front Side	20175/1732.5	20M QPSK(1,49)	0.492	0.249	2.07	23.05	23.50	0.546	2022/10/28	
Back Side	20175/1732.5	20M QPSK(1,49)	0.792	0.422	4.12	23.05	23.50	0.878	2022/10/28	
Back Side Repeated	20175/1732.5	20M QPSK(1,49)	0.787	0.416	0.32	23.05	23.50	0.873	2022/10/28	
Left Side	20175/1732.5	20M QPSK(1,49)	0.249	0.131	3.19	23.05	23.50	0.276	2022/10/28	
Right Side	20175/1732.5	20M QPSK(1,49)	0.240	0.127	3.18	23.05	23.50	0.266	2022/10/28	
Bottom Side	20175/1732.5	20M QPSK(1,49)	0.410	0.210	1.93	23.05	23.50	0.455	2022/10/28	
Back Side	20050/1720	20M QPSK(1,49)	0.640	0.327	1.79	22.83	23.50	0.747	2022/10/28	
Back Side	20300/1745	20M QPSK(1,49)	0.689	0.363	0.97	23.02	23.50	0.770	2022/10/28	
50%RB										
Front Side	20175/1732.5	20M QPSK(50,49)	0.257	0.131	-0.94	22.55	23.00	0.285	2022/10/28	
Back Side	20175/1732.5	20M QPSK(50,49)	0.445	0.225	1.59	22.55	23.00	0.494	2022/10/28	
Left Side	20175/1732.5	20M QPSK(50,49)	0.132	0.077	-2.49	22.55	23.00	0.146	2022/10/28	
Right Side	20175/1732.5	20M QPSK(50,49)	0.144	0.072	-2.14	22.55	23.00	0.160	2022/10/28	
Bottom Side	20175/1732.5	20M QPSK(50,49)	0.222	0.112	0.02	22.55	23.00	0.246	2022/10/28	
100%RB										
Back Side	20175/1732.5	20M QPSK(100,0)	0.438	0.217	0.32	22.48	22.50	0.440	2022/10/28	

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 10mm	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)	0.324	0.246	0.09	23.42	23.50	0.330	2022/10/20	
Back Side	20525/836.5	10M QPSK(1,24)	0.500	0.395	-0.90	23.42	23.50	0.509	2022/10/20	12#
50%RB										
Front Side	20525/836.5	10M QPSK(25,12)	0.163	0.131	3.05	22.57	23.00	0.180	2022/10/20	
Back Side	20525/836.5	10M QPSK(25,12)	0.293	0.217	3.82	22.57	23.00	0.323	2022/10/20	

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

Test Position of Hotspot with 10mm	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(1,0)	0.324	0.246	0.09	23.42	23.50	0.330	2022/10/20	
Back Side	20525/836.5	10M QPSK(1,0)	0.500	0.395	-0.90	23.42	23.50	0.509	2022/10/20	12#
Left Side	20525/836.5	10M QPSK(1,0)	0.165	0.128	2.37	23.42	23.50	0.168	2022/10/20	
Right Side	20525/836.5	10M QPSK(1,0)	0.156	0.121	3.98	23.42	23.50	0.159	2022/10/20	
Bottom Side	20525/836.5	10M QPSK(1,0)	0.260	0.197	-0.36	23.42	23.50	0.265	2022/10/20	
50%RB										
Front Side	20525/836.5	10M QPSK(25,12)	0.163	0.131	3.05	22.57	23.00	0.180	2022/10/20	
Back Side	20525/836.5	10M	0.293	0.217	3.82	22.57	23.00	0.323	2022/10/20	

		QPSK(25,12)								
Left Side	20525/836.5	10M QPSK(25,12)	0.094	0.071	-0.13	22.57	23.00	0.104	2022/10/20	
Right Side	20525/836.5	10M QPSK(25,12)	0.085	0.071	-1.18	22.57	23.00	0.094	2022/10/20	
Bottom Side	20525/836.5	10M QPSK(25,12)	0.132	0.100	-0.68	22.57	23.00	0.146	2022/10/20	

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 10mm	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(1,49)	0.708	0.302	0.28	24.60	25.00	0.776	2022/10/27	
Back Side	21100/2535	20M QPSK(1,49)	1.071	0.521	-0.86	24.60	25.00	1.174	2022/10/27	
Back Side	20850/2510	20M QPSK(1,49)	1.049	0.478	-1.15	24.60	25.00	1.150	2022/10/27	
Back Side	21350/2560	20M QPSK(1,49)	1.109	0.528	-0.43	24.60	25.00	1.216	2022/10/27	
Back Side Repeated	21350/2560	20M QPSK(1,49)	1.100	0.522	0.30	24.60	25.00	1.206	2022/10/27	
50%RB										
Front Side	21100/2535	20M QPSK(50,24)	0.372	0.175	-3.24	23.67	24.00	0.401	2022/10/27	
Back Side	21100/2535	20M QPSK(50,24)	0.601	0.305	2.05	23.67	24.00	0.648	2022/10/27	
100%RB										
Back Side	21100/2535	20M QPSK(100,0)	0.577	0.267	1.06	23.57	24.00	0.637	2022/10/27	

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

Test Position of Hotspot	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g	Date	Plot
			1-g	10-g						

with 10mm								(W/Kg)		
1RB										
Front Side	21100/2535	20M QPSK(1,49)	0.708	0.302	0.28	24.60	25.00	0.776	2022/10/27	
Back Side	21100/2535	20M QPSK(1,49)	1.071	0.521	-0.86	24.60	25.00	1.174	2022/10/27	
Left Side	21100/2535	20M QPSK(1,49)	0.354	0.151	-2.61	24.60	25.00	0.388	2022/10/27	
Right Side	21100/2535	20M QPSK(1,49)	0.354	0.158	2.53	24.60	25.00	0.388	2022/10/27	
Bottom Side	21100/2535	20M QPSK(1,49)	0.600	0.264	-1.81	24.60	25.00	0.658	2022/10/27	
Back Side	20850/2510	20M QPSK(1,49)	1.049	0.478	-1.15	24.64	25.00	1.140	2022/10/27	
Back Side	21350/2560	20M QPSK(1,49)	1.109	0.528	-0.43	24.55	25.00	1.230	2022/10/27	13#
Back Side Repeated	21350/2560	20M QPSK(1,49)	1.100	0.522	0.30	24.55	25.00	1.220	2022/10/27	
50%RB										
Front Side	21100/2535	20M QPSK(50,24)	0.372	0.175	-3.24	23.67	24.00	0.401	2022/10/27	
Back Side	21100/2535	20M QPSK(50,24)	0.601	0.305	2.05	23.67	24.00	0.648	2022/10/27	
Left Side	21100/2535	20M QPSK(50,24)	0.196	0.076	-2.83	23.67	24.00	0.211	2022/10/27	
Right Side	21100/2535	20M QPSK(50,24)	0.209	0.081	-0.93	23.67	24.00	0.225	2022/10/27	
Bottom Side	21100/2535	20M QPSK(50,24)	0.313	0.136	0.55	23.67	24.00	0.338	2022/10/27	
100%RB										
Back Side	21100/2535	20M QPSK(100,0)	0.577	0.267	1.06	23.57	24.00	0.637	2022/10/27	

NOTE: Hotspot SAR test results of LTE Band 7

10.1.10. SAR measurement Result of LTE Band 17

Test Position of Body-worn	Test channel /Freq.	Mode	SAR Value (W/kg)		Power Drift(%)	Conducted Power (dBm)	Tune-up Power (dBm)	Scaled SAR 1-g	Date	Plot
			1-g	10-g						

with 10mm								(W/Kg)		
1RB										
Front Side	23790/710	10M QPSK(1,0)	0.228	0.194	-0.99	22.90	23.00	0.233	2022/10/29	
Back Side	23790/710	10M QPSK(1,0)	0.365	0.314	-1.07	22.90	23.00	0.374	2022/10/29	
50%RB										
Front Side	23790/710	10M QPSK(25,0)	0.128	0.103	1.90	21.50	22.00	0.144	2022/10/29	
Back Side	23790/710	10M QPSK(25,0)	0.187	0.157	2.69	21.50	22.00	0.210	2022/10/29	

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

Test Position of Hotspot with 10mm	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(1,0)	0.228	0.194	-0.99	22.90	23.00	0.233	2022/10/29	
Back Side	23790/710	10M QPSK(1,0)	0.365	0.314	-1.07	22.90	23.00	0.374	2022/10/29	14#
Left Side	23790/710	10M QPSK(1,0)	0.111	0.093	-0.51	22.90	23.00	0.114	2022/10/29	
Right Side	23790/710	10M QPSK(1,0)	0.117	0.099	1.05	22.90	23.00	0.120	2022/10/29	
Bottom Side	23790/710	10M QPSK(1,0)	0.205	0.169	-2.76	22.90	23.00	0.210	2022/10/29	
50%RB										
Front Side	23790/710	10M QPSK(25,0)	0.128	0.103	1.90	21.50	22.00	0.144	2022/10/29	
Back Side	23790/710	10M QPSK(25,0)	0.187	0.157	2.69	21.50	22.00	0.210	2022/10/29	
Left Side	23790/710	10M QPSK(25,0)	0.065	0.050	-2.51	21.50	22.00	0.073	2022/10/29	
Right Side	23790/710	10M QPSK(25,0)	0.064	0.053	4.42	21.50	22.00	0.072	2022/10/29	
Bottom Side	23790/710	10M QPSK(25,0)	0.110	0.091	-1.18	21.50	22.00	0.123	2022/10/29	

NOTE: Hotspot SAR test results of LTE Band 17

10.1.11. SAR measurement Result of LTE Band 26A

Test Position of Body-worn with 10mm	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	26740/819	10M QPSK(1,0)	0.282	0.227	1.74	23.50	23.50	0.282	2022/10/20	
Back Side	26740/819	10M QPSK(1,0)	0.452	0.364	0.94	23.50	23.50	0.452	2022/10/20	
50%RB										
Front Side	26740/819	10M QPSK(25,12)	0.153	0.123	-1.41	22.50	22.50	0.153	2022/10/20	
Back Side	26740/819	10M QPSK(25,12)	0.263	0.191	2.78	22.50	22.50	0.263	2022/10/20	

NOTE: Body-worn SAR test results of LTE Band 26A

Test Position of Hotspot with 10mm	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	26740/819	10M QPSK(1,0)	0.282	0.227	1.74	23.50	23.50	0.282	2022/10/20	
Back Side	26740/819	10M QPSK(1,0)	0.452	0.364	0.94	23.50	23.50	0.452	2022/10/20	15#
Left Side	26740/819	10M QPSK(1,0)	0.150	0.121	-3.46	23.50	23.50	0.150	2022/10/20	
Right Side	26740/819	10M QPSK(1,0)	0.141	0.111	-1.47	23.50	23.50	0.141	2022/10/20	
Bottom Side	26740/819	10M QPSK(1,0)	0.245	0.189	-1.46	23.50	23.50	0.245	2022/10/20	
50%RB										
Front Side	26740/819	10M QPSK(25,12)	0.153	0.123	-1.41	22.50	22.50	0.153	2022/10/20	
Back Side	26740/819	10M QPSK(25,12)	0.263	0.191	2.78	22.50	22.50	0.263	2022/10/20	
Left Side	26740/819	10M	0.084	0.072	-4.43	22.50	22.50	0.084	2022/10/20	

		QPSK(25,12)								
Right Side	26740/819	10M QPSK(25,12)	0.073	0.059	1.21	22.50	22.50	0.073	2022/10/20	
Bottom Side	26740/819	10M QPSK(25,12)	0.134	0.101	0.27	22.50	22.50	0.134	2022/10/20	

NOTE: Hotspot SAR test results of LTE Band 26A

10.1.12. SAR measurement Result of LTE Band 26B

Test Position of Body-worn with 10mm	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	26865/831.5	15M QPSK(1,37)	0.312	0.244	1.98	22.81	23.00	0.326	2022/10/20	
Back Side	26865/831.5	15M QPSK(1,37)	0.482	0.381	-1.03	22.81	23.00	0.504	2022/10/20	
50%RB										
Front Side	26865/831.5	15M QPSK(36,37)	0.164	0.144	3.81	21.84	22.00	0.170	2022/10/20	
Back Side	26865/831.5	15M QPSK(36,37)	0.250	0.191	1.87	21.84	22.00	0.259	2022/10/20	

NOTE: Body-worn SAR test results of LTE Band 26B

Test Position of Hotspot with 10mm	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	26865/831.5	15M QPSK(1,37)	0.312	0.244	1.98	22.81	23.00	0.326	2022/10/20	
Back Side	26865/831.5	15M QPSK(1,37)	0.482	0.381	-1.03	22.81	23.00	0.504	2022/10/20	16#
Left Side	26865/831.5	15M QPSK(1,37)	0.156	0.123	0.46	22.81	23.00	0.163	2022/10/20	
Right Side	26865/831.5	15M	0.147	0.116	0.18	22.81	23.00	0.154	2022/10/20	

Test Position of Hotspot with 10mm	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	40620/2593	20M QPSK(1,49)	0.348	0.145	-0.17	24.06	24.50	0.385	2022/10/27	
Back Side	40620/2593	20M QPSK(1,49)	0.577	0.250	-1.00	24.06	24.50	0.639	2022/10/27	17#
Left Side	40620/2593	20M QPSK(1,49)	0.186	0.081	-1.89	24.06	24.50	0.206	2022/10/27	
Right Side	40620/2593	20M QPSK(1,49)	0.186	0.078	-3.51	24.06	24.50	0.206	2022/10/27	
Bottom Side	40620/2593	20M QPSK(1,49)	0.295	0.124	-2.61	24.06	24.50	0.326	2022/10/27	
50%RB										
Front Side	40620/2593	20M QPSK(50,24)	0.180	0.074	-4.52	23.22	23.50	0.192	2022/10/27	
Back Side	40620/2593	20M QPSK(50,24)	0.308	0.136	2.23	23.22	23.50	0.329	2022/10/27	
Left Side	40620/2593	20M QPSK(50,24)	0.094	0.046	-2.39	23.22	23.50	0.100	2022/10/27	
Right Side	40620/2593	20M QPSK(50,24)	0.097	0.043	-1.48	23.22	23.50	0.103	2022/10/27	
Bottom Side	40620/2593	20M QPSK(50,24)	0.158	0.063	-3.90	23.22	23.50	0.169	2022/10/27	

NOTE: Hotspot SAR test results of LTE Band 41

10.1.14. SAR measurement Result of WLAN 2.4G

Test Position of Body-worn with 10mm	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	0.054	0.029	-3.71	16.90	17.00	0.055	2022/11/1	
Back Side	6/2437	802.11b	0.078	0.044	0.30	16.90	17.00	0.080	2022/11/1	

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

Test Position of Hotspot with 10mm	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	0.054	0.029	-3.71	16.90	17.00	0.055	2022/11/1	
Back Side	6/2437	802.11b	0.078	0.044	0.30	16.90	17.00	0.080	2022/11/1	9#

Right Side	6/2437	802.11b	0.055	0.030	-2.80	16.90	17.00	0.056	2022/11/1	
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NOTE: Hotspot SAR test results of WLAN 2.4G

10.1.15. SAR measurement Result of WLAN 5.2G

Test Position of Body-worn with 10mm	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	38/5190	802.11n H40	0.234	0.098	-2.99	10.95	11.00	0.237	2022/10/21	
Back Side	38/5190	802.11n H40	0.256	0.121	-0.42	10.95	11.00	0.259	2022/10/21	

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

Test Position of Hotspot with 10mm	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	38/5190	802.11n H40	0.234	0.098	-2.99	10.95	11.00	0.237	2022/10/21	
Back Side	38/5190	802.11n H40	0.256	0.121	-0.42	10.95	11.00	0.259	2022/10/21	6#
Right Side	38/5190	802.11n H40	0.190	0.080	-2.94	10.95	11.00	0.192	2022/10/21	

NOTE: Hotspot SAR test results of WLAN 5.2G

10.1.16. SAR measurement Result of WLAN 5.3G

Test Position of Body-worn with 10mm	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	62/5310	802.11ac VHT40	0.216	0.090	-1.69	10.80	11.00	0.226	2022/10/25	
Back Side	62/5310	802.11ac VHT40	0.231	0.105	-3.50	10.80	11.00	0.242	2022/10/25	7#

NOTE: Body-worn SAR test results of WLAN 5.3G. WLAN 5.3G do not support hotspot mode.

10.1.17. SAR measurement Result of WLAN 5.6G

Test Position of Body-worn with 10mm	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	118/5590	802.11ac VHT40	0.228	0.086	-3.46	10.69	11.00	0.245	2022/10/31	
Back Side	118/5590	802.11ac VHT40	0.240	0.110	0.19	10.69	11.00	0.258	2022/10/31	8#

NOTE: Body-worn SAR test results of WLAN 5.6G. WLAN 5.6G do not support hotspot mode.

10.2. SAR Summation Scenario

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

- Scalar SAR summation < 1.6W/kg.
- $SPLSR = (SAR_1 + SAR_2)^{1.5} / (\text{min. separation distance, mm})$, 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 $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary.

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		WWAN	DTS			
Body-Worn	Front Side	0.741	0.055	0.796	N/A	N/A
	Back Side	1.230	0.080	1.310	N/A	N/A
Hotspot	Front Side	0.741	0.055	0.796	N/A	N/A
	Back Side	1.230	0.080	1.310	N/A	N/A
	Left Side	0.388	N/A	0.388	N/A	N/A
	Right Side	0.388	0.056	0.444	N/A	N/A
	Top Side	N/A	N/A	N/A	N/A	N/A
	Bottom Side	0.658	N/A	0.658	N/A	N/A

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		WWAN	NII			
Body-Worn	Front Side	0.741	0.245	0.986	N/A	N/A
	Back Side	1.230	0.259	1.489	N/A	N/A
Hotspot	Front Side	0.741	0.245	0.986	N/A	N/A
	Back Side	1.230	0.259	1.489	N/A	N/A
	Left Side	0.388	N/A	0.388	N/A	N/A

	Right Side	0.388	0.192	0.580	N/A	N/A
	Top Side	N/A	N/A	N/A	N/A	N/A
	Bottom Side	0.658	N/A	0.658	N/A	N/A

Test Position		Scaled SAR _{MAX}		Σ 1-g SAR (W/Kg)	SPLSR	Remark
		WWAN	DSS			
Body-Worn	Front Side	0.741	0.066	0.807	N/A	N/A
	Back Side	1.230	0.066	1.296	N/A	N/A
Hotspot	Front Side	0.741	0.066	0.807	N/A	N/A
	Back Side	1.230	0.066	1.296	N/A	N/A
	Left Side	0.388	N/A	0.388	N/A	N/A
	Right Side	0.388	0.066	0.454	N/A	N/A
	Top Side	N/A	N/A	N/A	N/A	N/A
	Bottom Side	0.658	N/A	0.658	N/A	N/A

11. Appendix A. Photo documentation

Refer to appendix Test Setup photo---SAR

12. Appendix B. System Check Plots

Table of contents
MEASUREMENT 1 System Performance Check - 750MHz
MEASUREMENT 2 System Performance Check - 835MHz
MEASUREMENT 3 System Performance Check - 1800MHz
MEASUREMENT 4 System Performance Check - 1900MHz
MEASUREMENT 5 System Performance Check - 2450MHz
MEASUREMENT 6 System Performance Check - 2600MHz
MEASUREMENT 7 System Performance Check - 5200MHz
MEASUREMENT 8 System Performance Check - 5400MHz
MEASUREMENT 9 System Performance Check - 5600MHz

MEASUREMENT 1

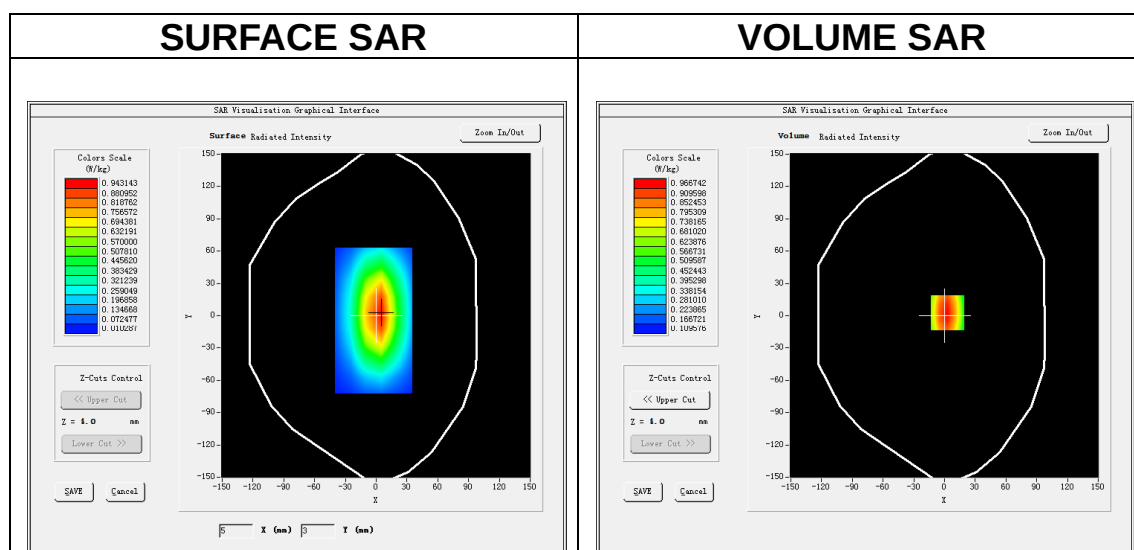
Date of measurement: 29/10/2022

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

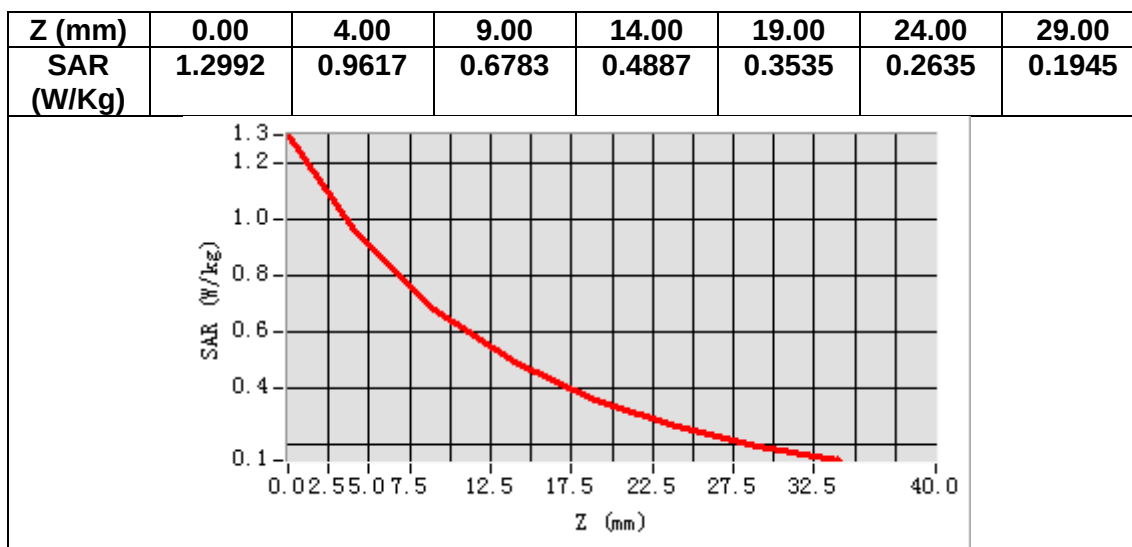
Frequency (MHz)	750.000000
Relative permittivity (real part)	40.277717
Relative permittivity (imaginary part)	21.363391
Conductivity (S/m)	0.890141
Variation (%)	2.730000



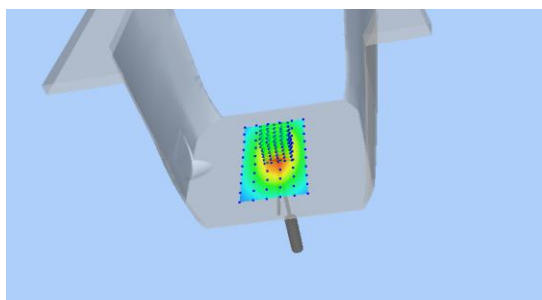
Maximum location: X=3.00, Y=3.00

SAR Peak: 1.30 W/kg

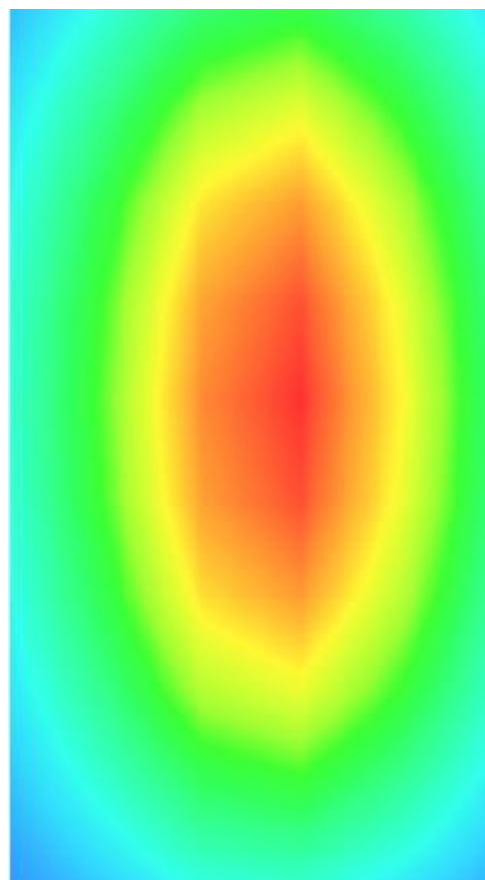
SAR 10g (W/Kg)	0.531332
SAR 1g (W/Kg)	0.798321



3D screen shot



Hot spot position



MEASUREMENT 2

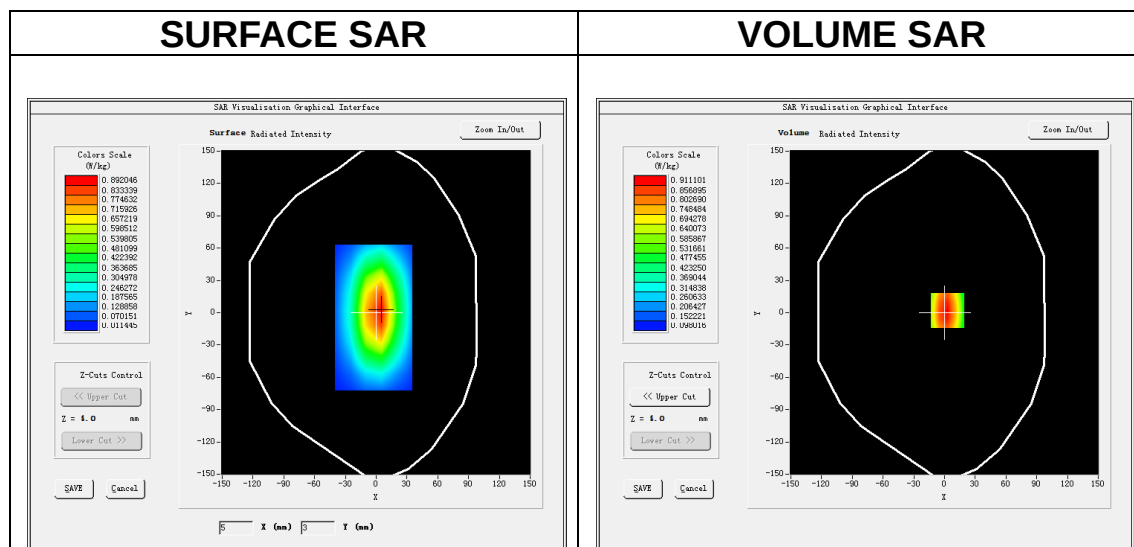
Date of measurement: 20/10/2022

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

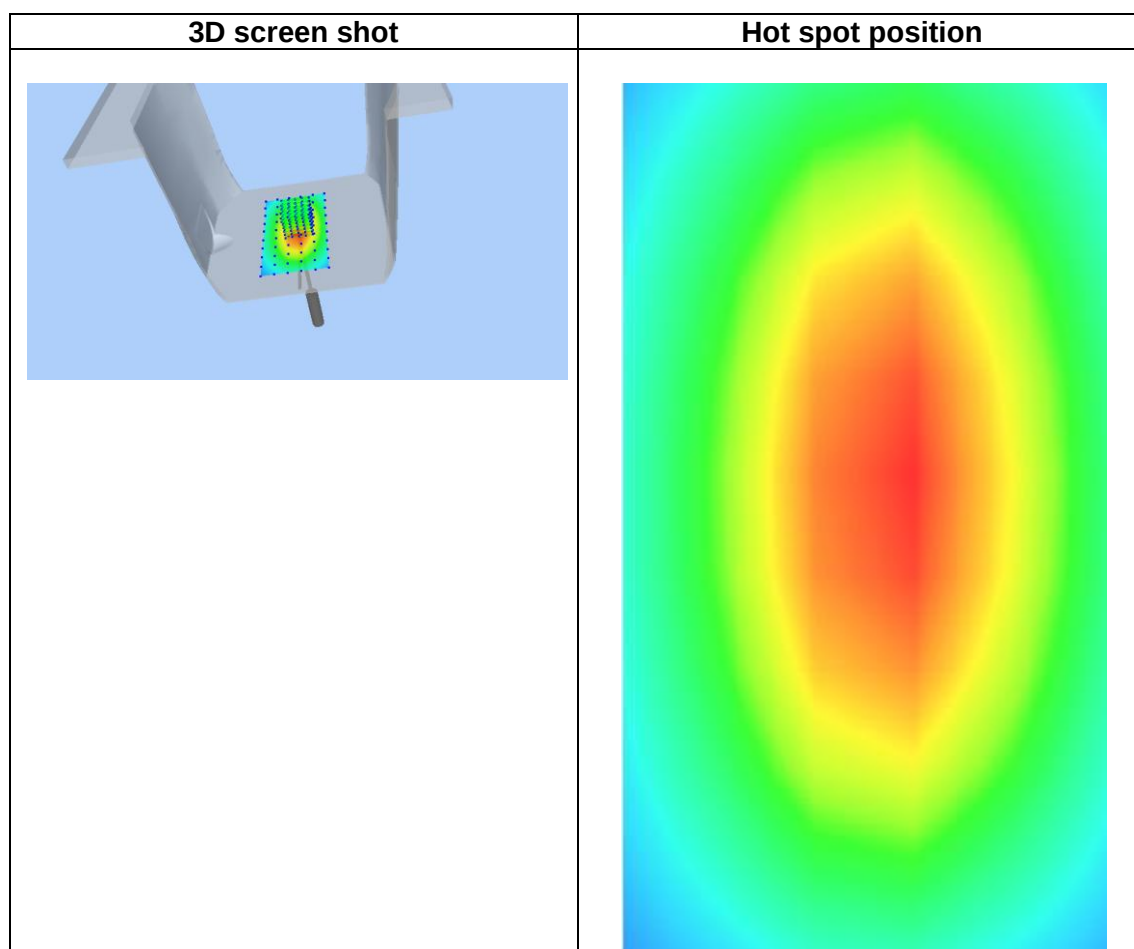
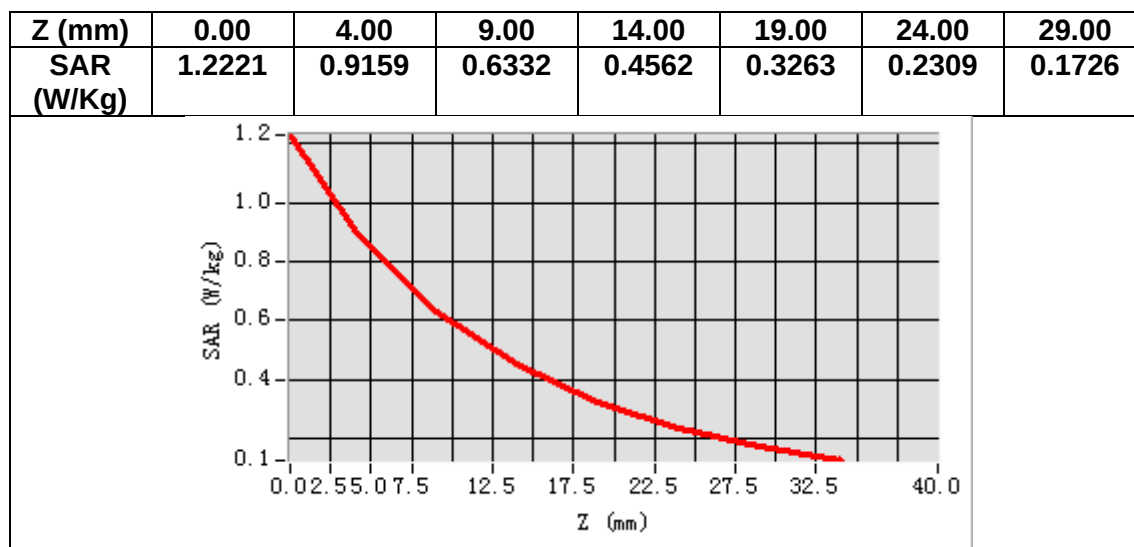
Frequency (MHz)	835.000000
Relative permittivity (real part)	41.250045
Relative permittivity (imaginary part)	19.800331
Conductivity (S/m)	0.918515
Variation (%)	-2.720000



Maximum location: X=3.00, Y=2.00

SAR Peak: 1.23 W/kg

SAR 10g (W/Kg)	0.603333
SAR 1g (W/Kg)	1.065172



MEASUREMENT 3

Date of measurement: 28/10/2022

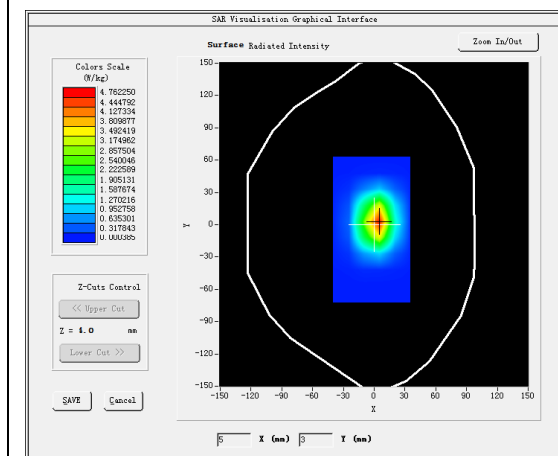
A. Experimental conditions.

<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>

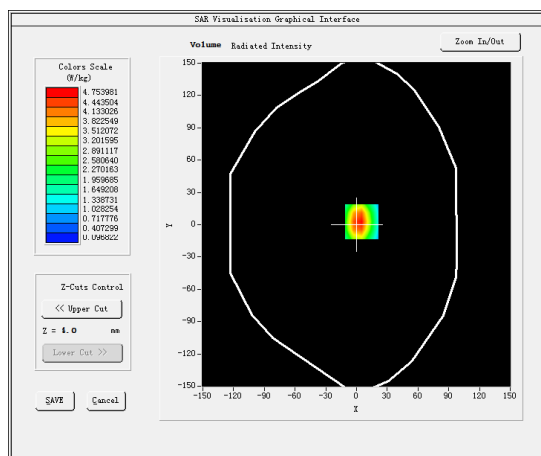
B. SAR Measurement Results

Frequency (MHz)	1800.000000
Relative permittivity (real part)	38.621625
Relative permittivity (imaginary part)	13.804764
Conductivity (S/m)	1.380476
Variation (%)	2.980000

SURFACE SAR



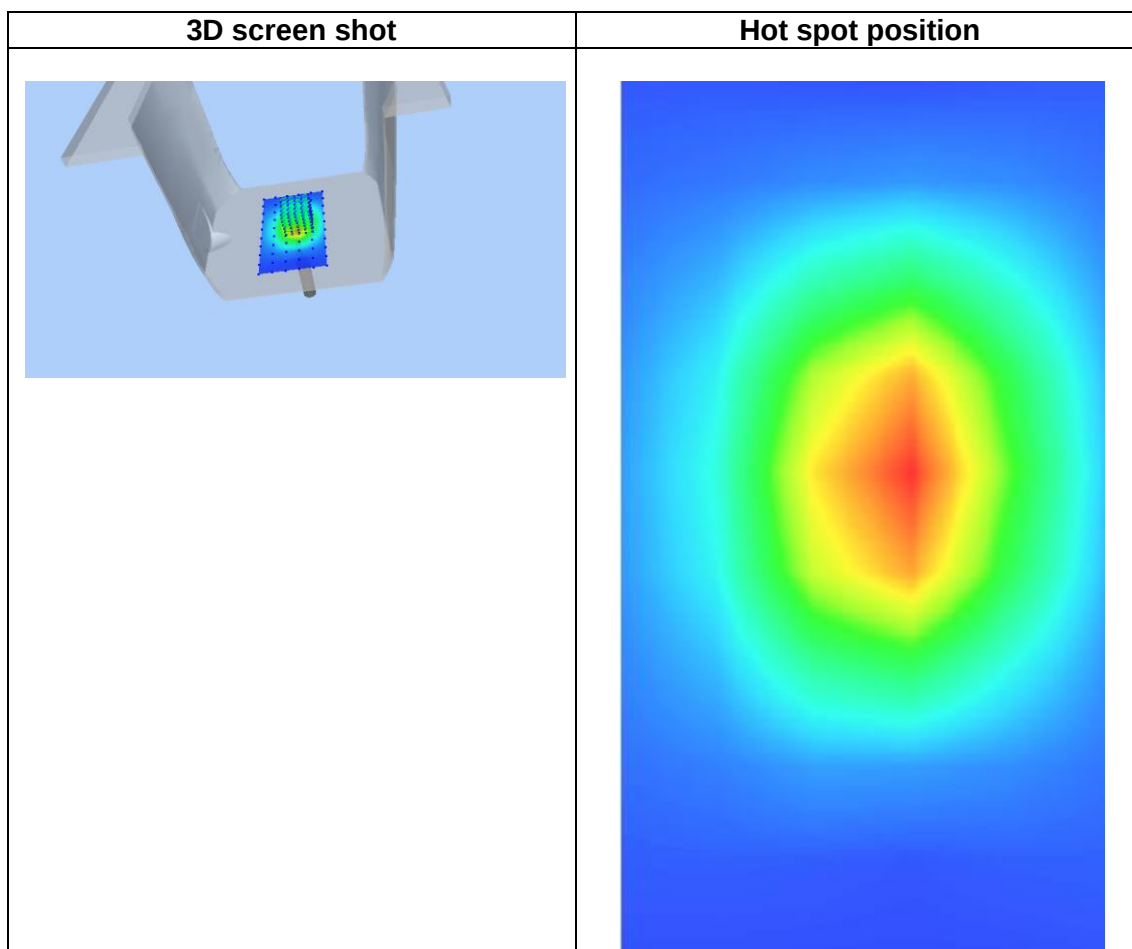
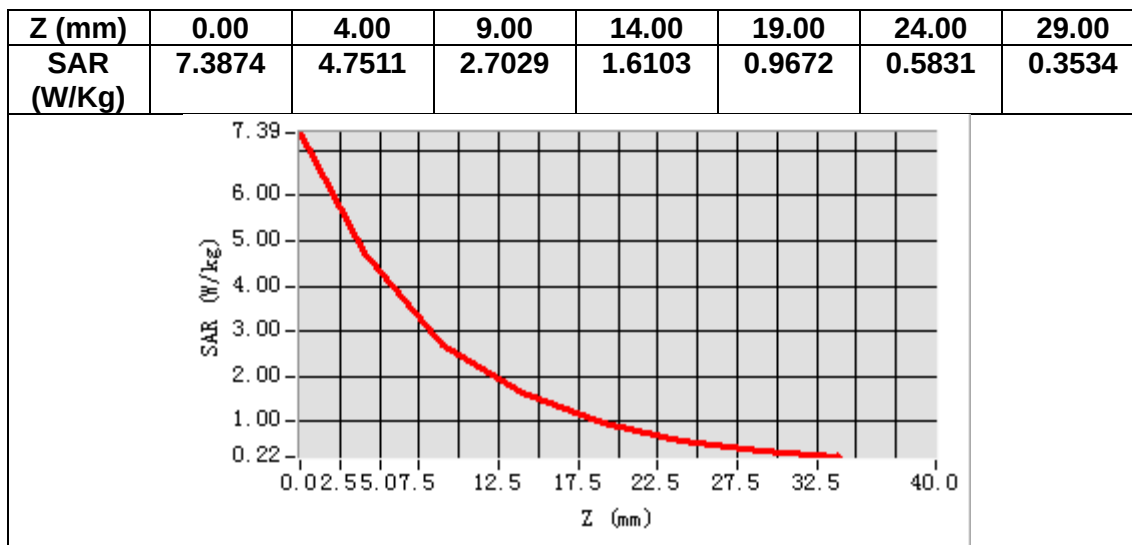
VOLUME SAR



Maximum location: X=5.00, Y=3.00

SAR Peak: 7.59 W/kg

SAR 10g (W/Kg)	1.808307
SAR 1g (W/Kg)	3.909066



MEASUREMENT 4

Date of measurement: 2/11/2022

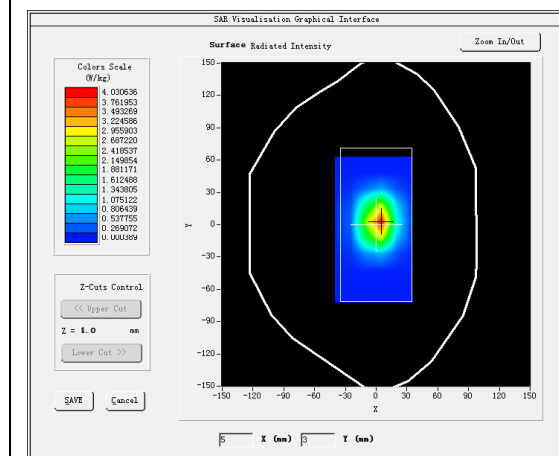
A. Experimental conditions.

<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>

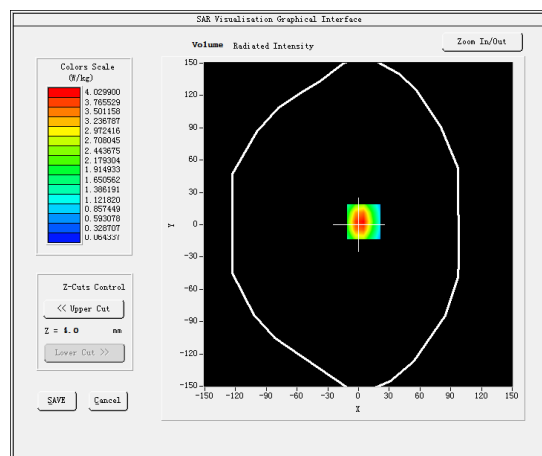
B. SAR Measurement Results

Frequency (MHz)	1900.000000
Relative permittivity (real part)	38.431278
Relative permittivity (imaginary part)	13.883294
Conductivity (S/m)	1.465459
Variation (%)	2.220000

SURFACE SAR



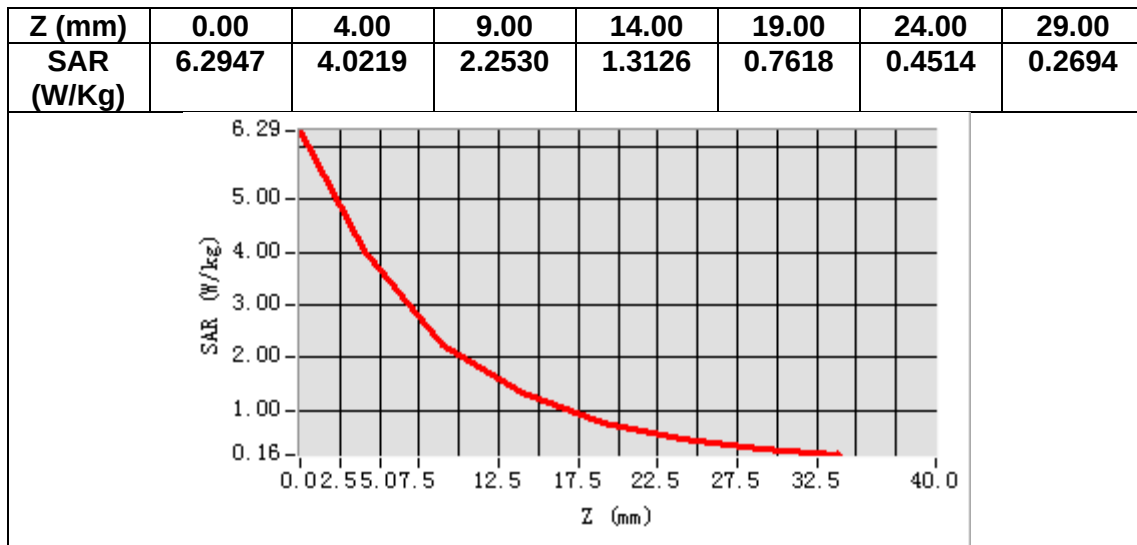
VOLUME SAR



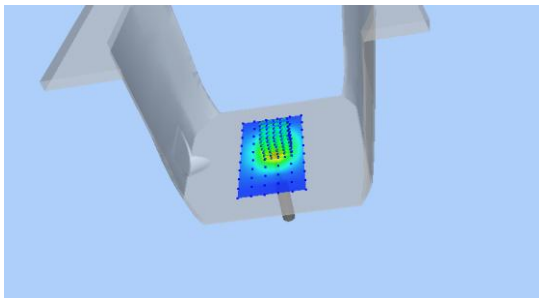
Maximum location: X=5.00, Y=3.00

SAR Peak: 6.57 W/kg

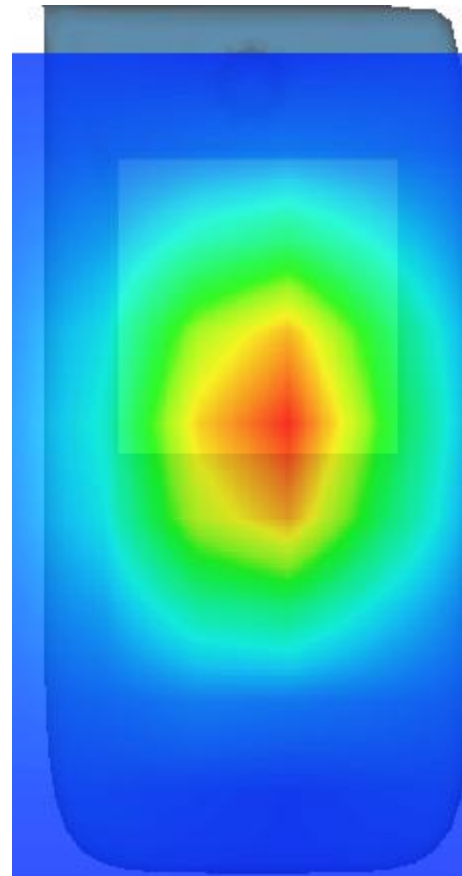
SAR 10g (W/Kg)	1.880347
SAR 1g (W/Kg)	3.758221



3D screen shot



Hot spot position



MEASUREMENT 5

Date of measurement: 1/11/2022

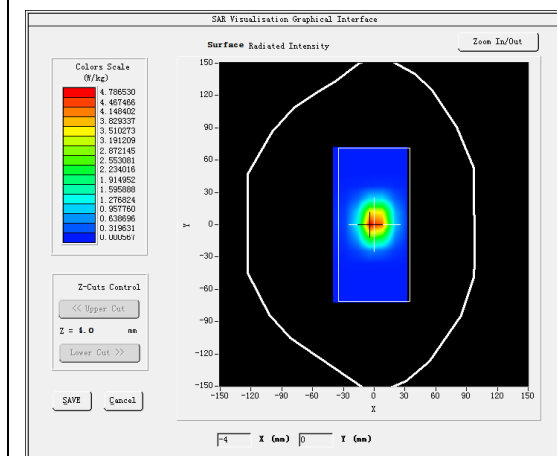
A. Experimental conditions.

<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>

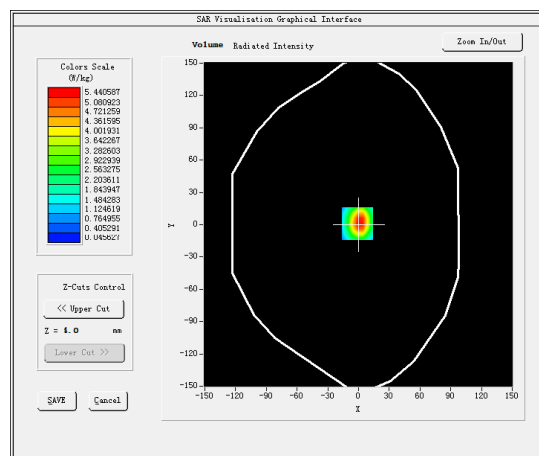
B. SAR Measurement Results

Frequency (MHz)	2450.000000
Relative permittivity (real part)	37.567995
Relative permittivity (imaginary part)	13.008427
Conductivity (S/m)	1.770591
Variation (%)	1.290000

SURFACE SAR



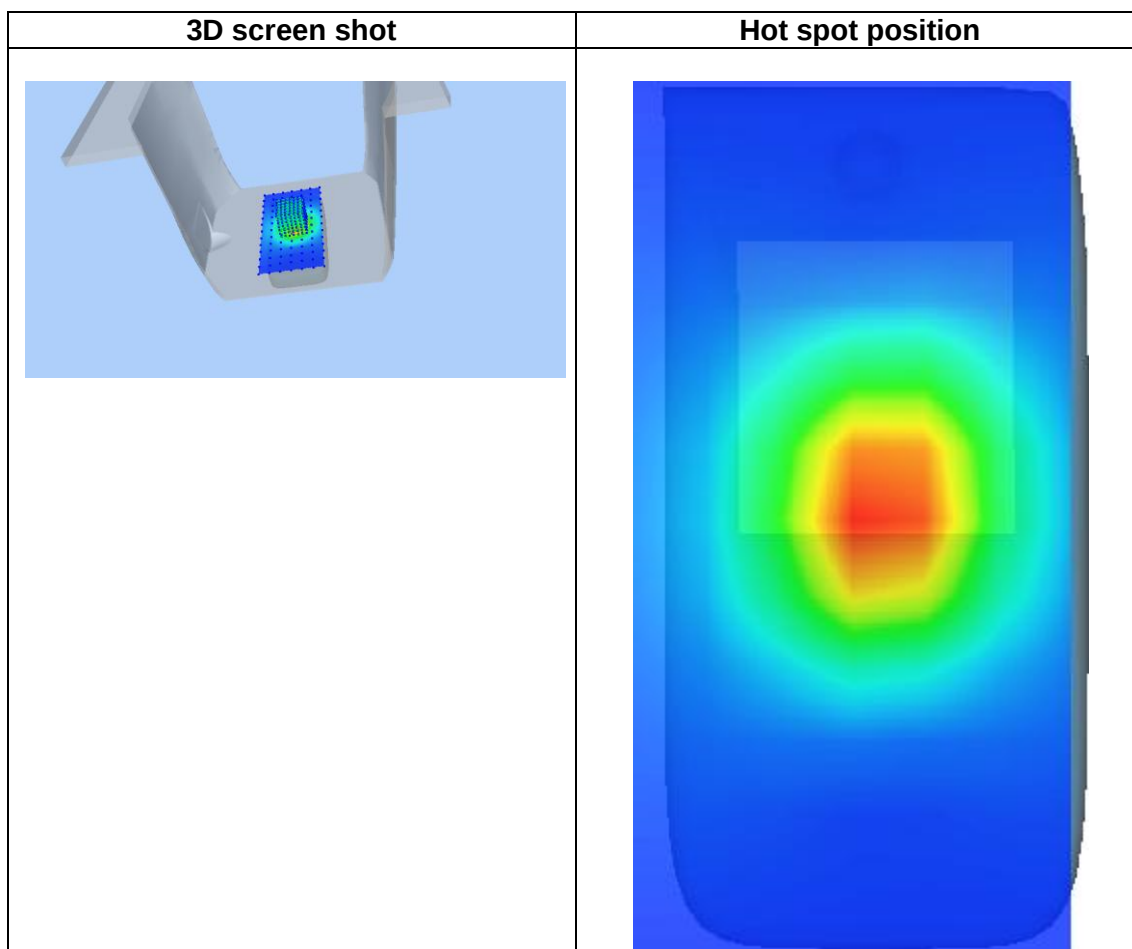
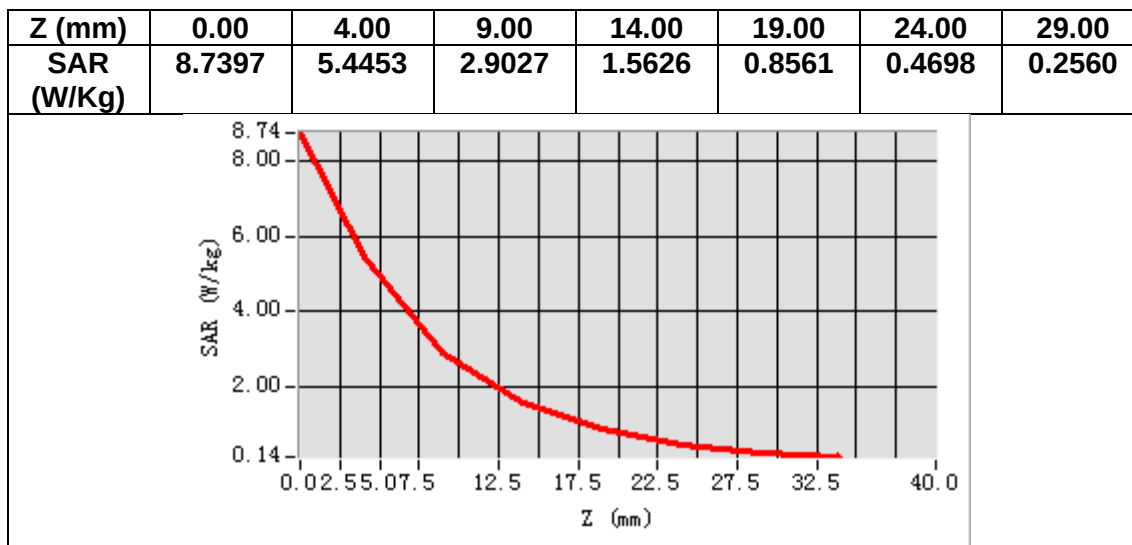
VOLUME SAR



Maximum location: X=-1.00, Y=1.00

SAR Peak: 8.94 W/kg

SAR 10g (W/Kg)	2.213106
SAR 1g (W/Kg)	5.398340



MEASUREMENT 6

Date of measurement: 27/10/2022

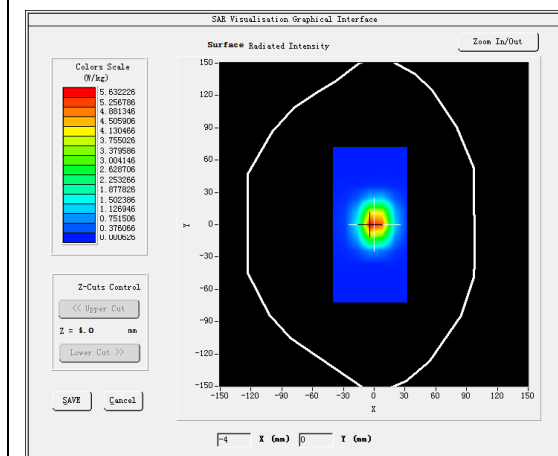
A. Experimental conditions.

<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>CW2600</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>CW (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>1.87</u>

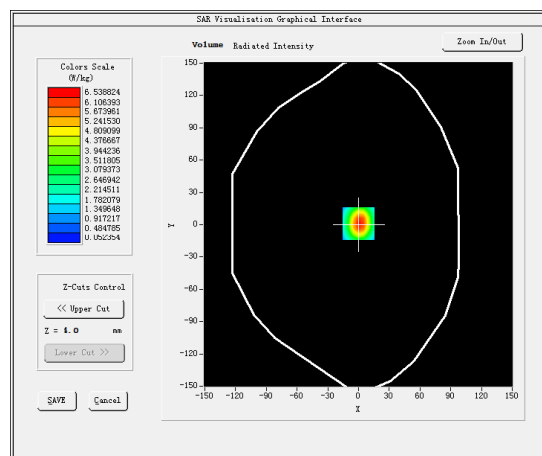
B. SAR Measurement Results

Frequency (MHz)	2600.000000
Relative permittivity (real part)	37.549729
Relative permittivity (imaginary part)	13.192469
Conductivity (S/m)	1.905579
Variation (%)	0.250000

SURFACE SAR



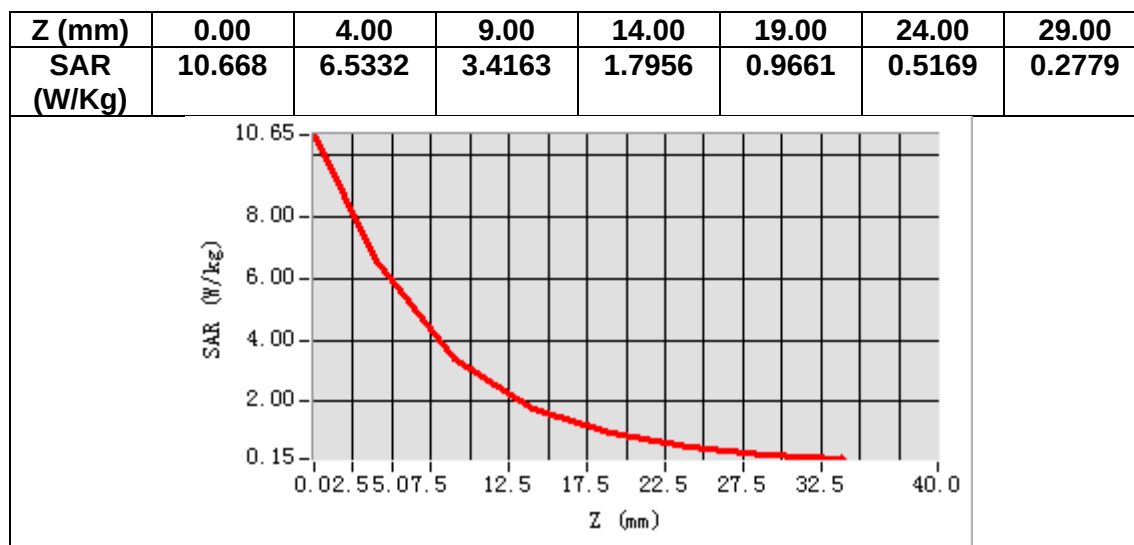
VOLUME SAR



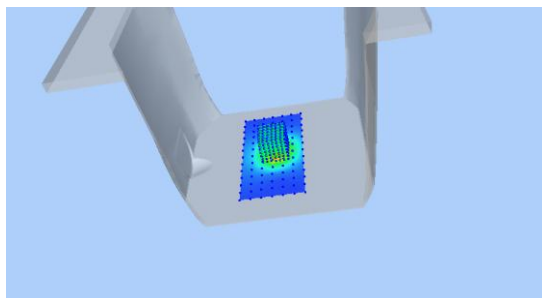
Maximum location: X=0.00, Y=1.00

SAR Peak: 10.67 W/kg

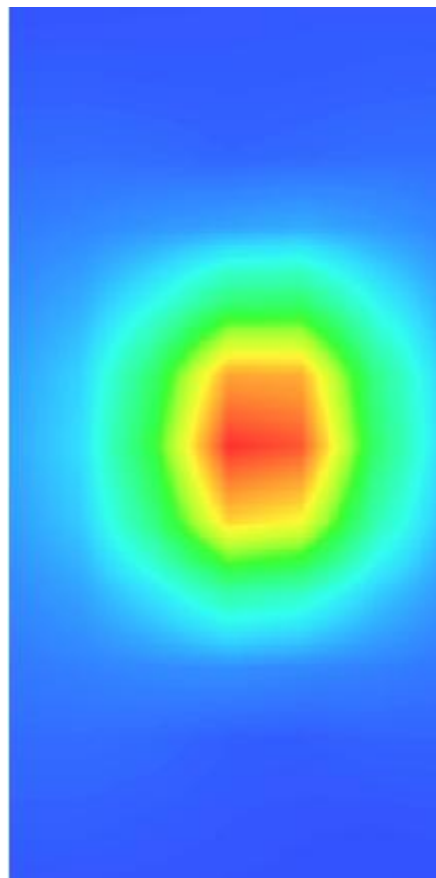
SAR 10g (W/Kg)	2.474037
SAR 1g (W/Kg)	5.982199



3D screen shot



Hot spot position



MEASUREMENT 7

Date of measurement: 21/10/2022

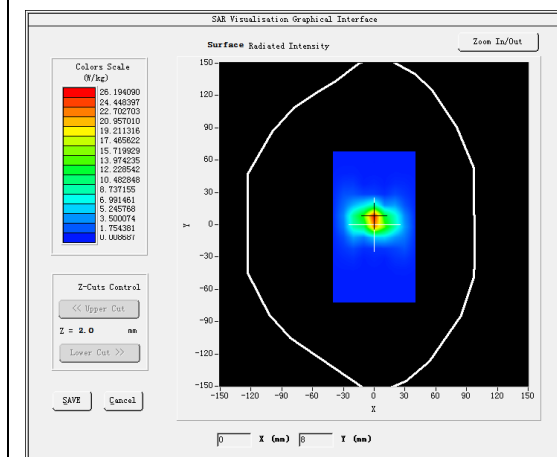
A. Experimental conditions.

<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>

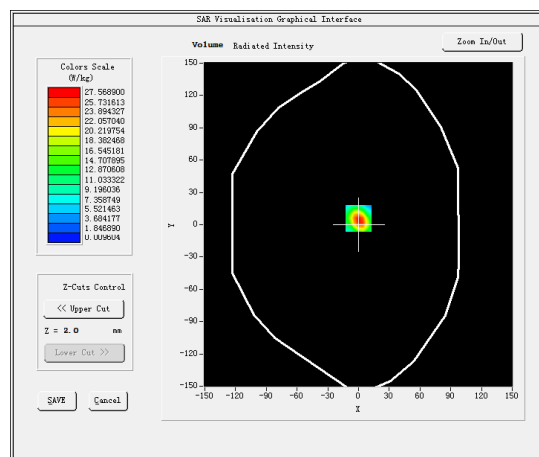
B. SAR Measurement Results

Frequency (MHz)	5200.000000
Relative permittivity (real part)	35.006922
Relative permittivity (imaginary part)	15.607523
Conductivity (S/m)	4.508840
Variation (%)	2.800000

SURFACE SAR



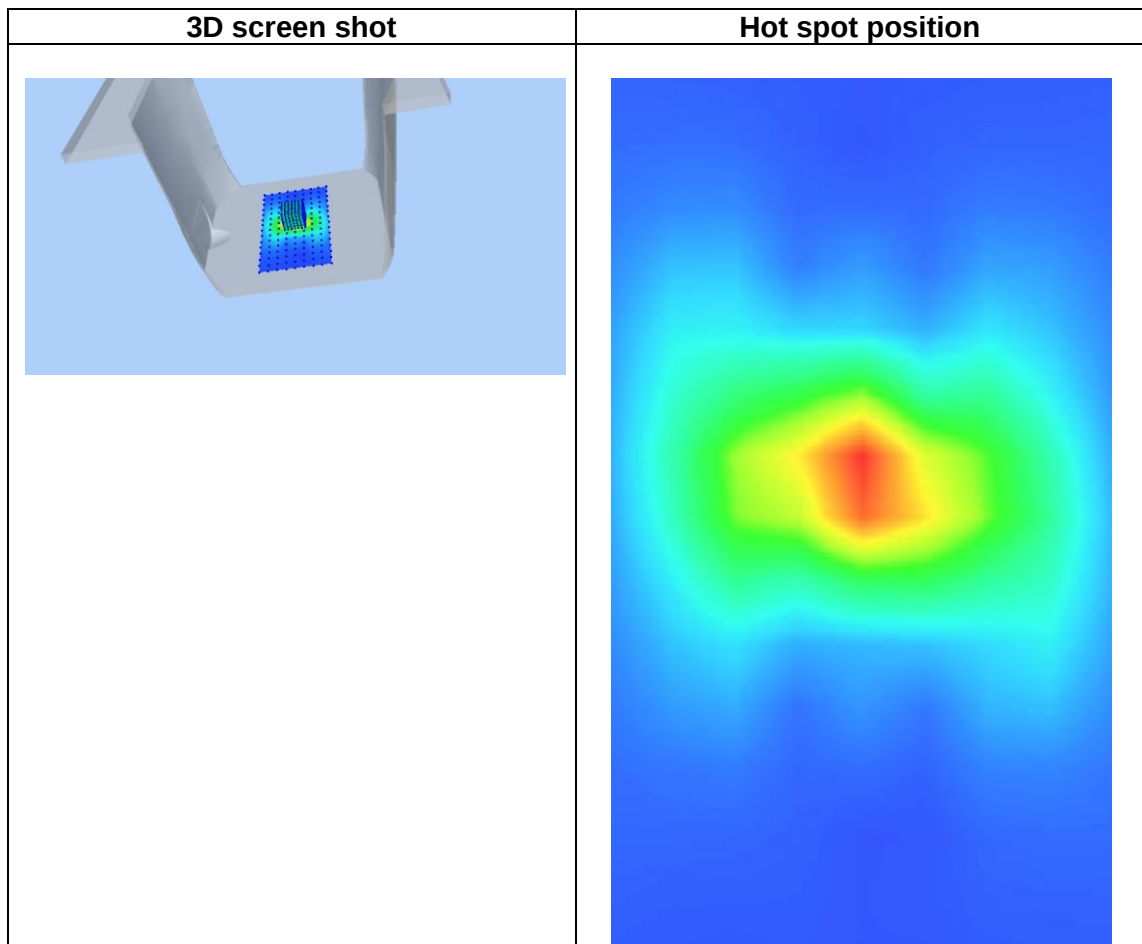
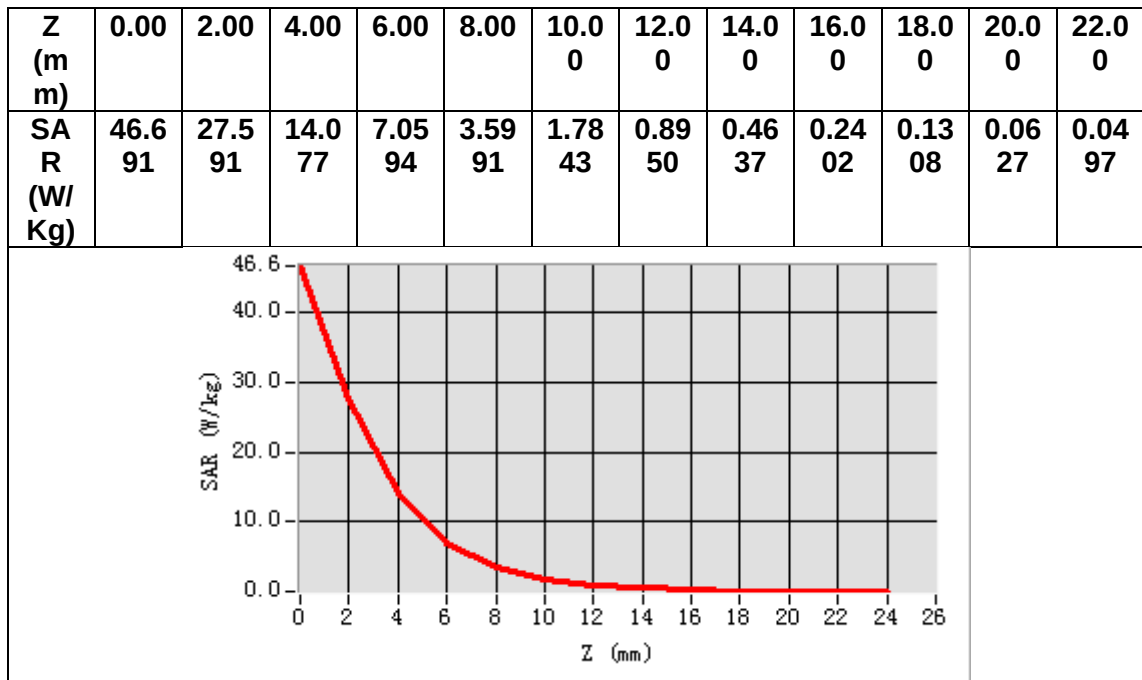
VOLUME SAR



Maximum location: X=0.00, Y=6.00

SAR Peak: 49.61 W/kg

SAR 10g (W/Kg)	5.493162
SAR 1g (W/Kg)	14.784032



MEASUREMENT 8

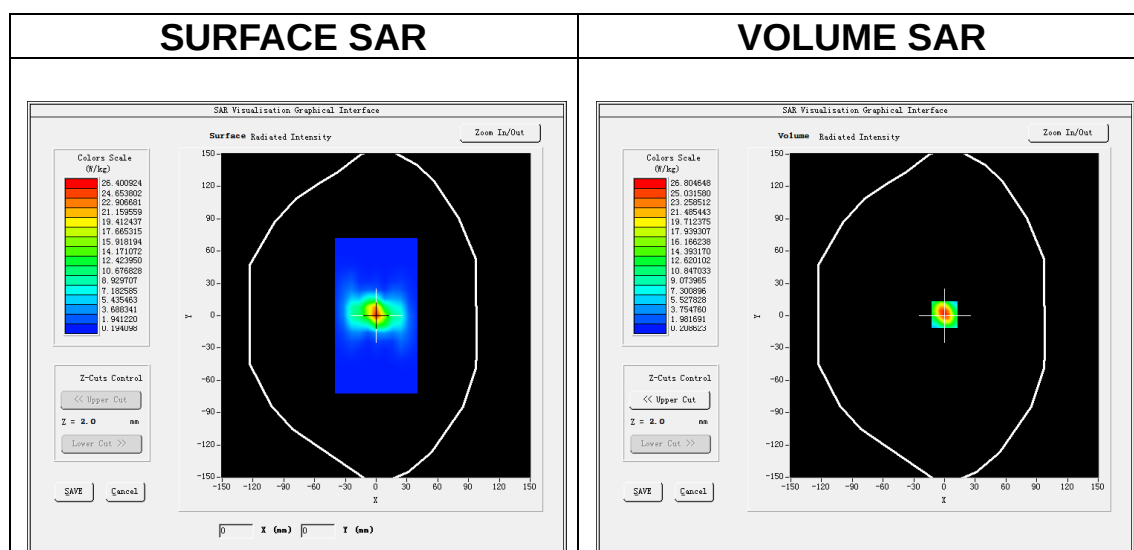
Date of measurement: 25/10/2022

A. Experimental conditions.

Area Scan	<u>dx=10mm dy=10mm, h= 2.00 mm</u>
ZoomScan	<u>7x7x12,dx=4mm dy=4mm dz=2mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Dipole</u>
Band	<u>CW5400</u>
Channels	<u>Middle</u>
Signal	<u>CW (Crest factor: 1.0)</u>
ConvF	<u>2.05</u>

B. SAR Measurement Results

Frequency (MHz)	5400.000000
Relative permittivity (real part)	36.227219
Relative permittivity (imaginary part)	15.934159
Conductivity (S/m)	4.780248
Variation (%)	1.350000

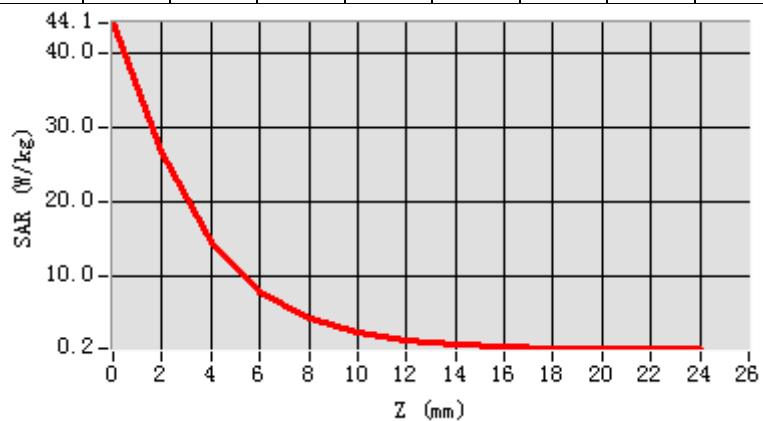


Maximum location: X=0.00, Y=1.00

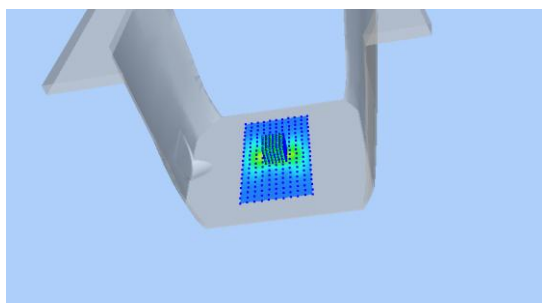
SAR Peak: 46.18 W/kg

SAR 10g (W/Kg)	5.561443
SAR 1g (W/Kg)	18.323135

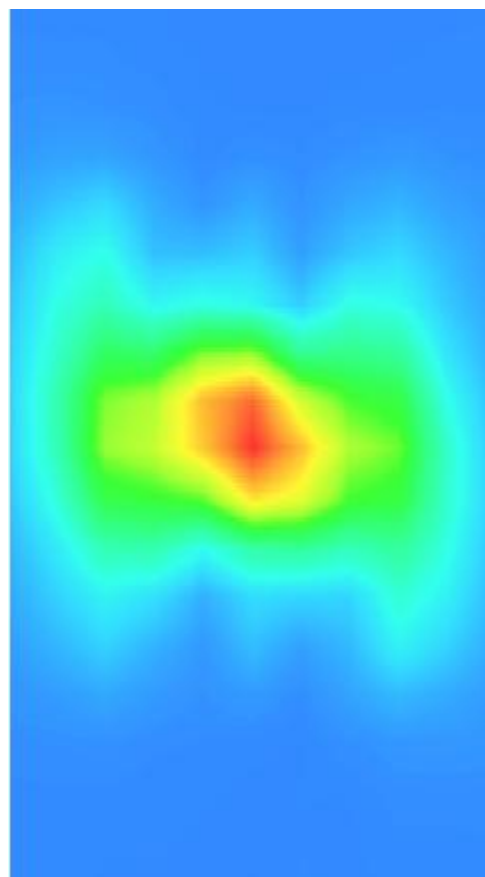
Z (m m)	0.00	2.00	4.00	6.00	8.00	10.0 0	12.0 0	14.0 0	16.0 0	18.0 0	20.0 0	22.0 0
SAR (W/ Kg)	44.0 730	26.8 035	14.6 104	7.81 78	4.22 99	2.32 49	1.32 38	0.78 16	0.50 67	0.37 59	0.28 58	0.26 60



3D screen shot



Hot spot position



MEASUREMENT 9

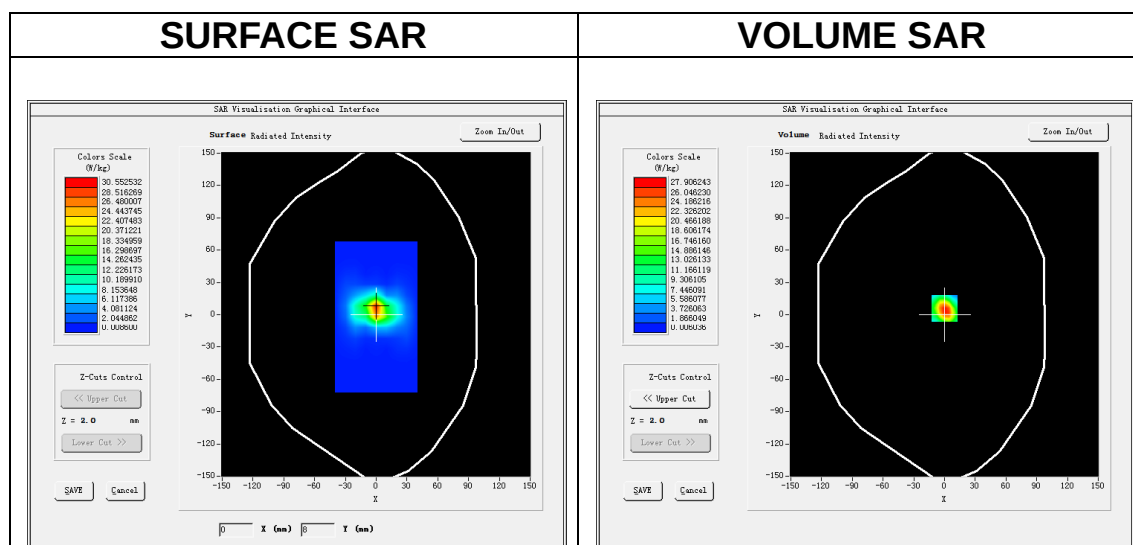
Date of measurement: 31/10/2022

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>CW5600</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>CW (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.16</u>

B. SAR Measurement Results

Frequency (MHz)	5600.000000
Relative permittivity (real part)	34.800423
Relative permittivity (imaginary part)	15.776507
Conductivity (S/m)	4.908247
Variation (%)	-0.500000

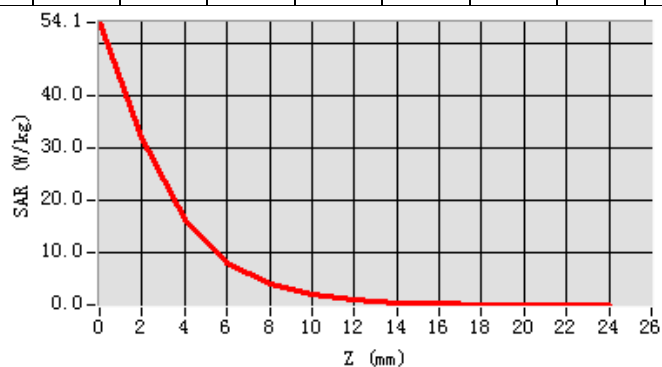


Maximum location: X=0.00, Y=6.00

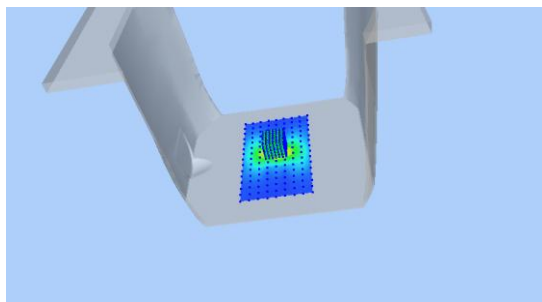
SAR Peak: 51.23 W/kg

SAR 10g (W/Kg)	6.240228
SAR 1g (W/Kg)	15.949190

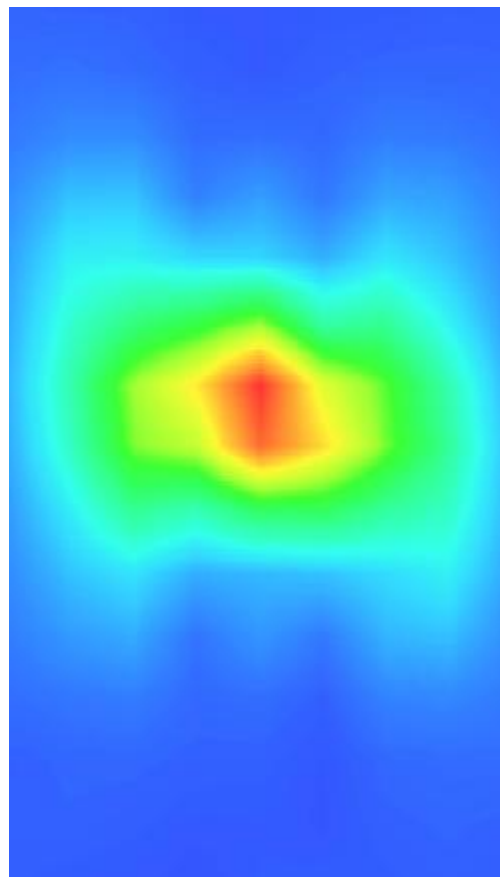
Z (m m)	0.00	2.00	4.00	6.00	8.00	10.0 0	12.0 0	14.0 0	16.0 0	18.0 0	20.0 0	22.0 0
SAR (W/ Kg)	54.1 36	31.9 48	16.3 44	8.17 66	4.08 90	3.81 50	1.03 61	0.46 44	0.27 95	0.13 72	0.07 88	0.05 38



3D screen shot



Hot spot position



13. Appendix C. Plots of High SAR Measurement

Table of contents
MEASUREMENT 1 GSM 850 Body
MEASUREMENT 2 GSM 1900 Body
MEASUREMENT 3 WCDMA Band 2 Body
MEASUREMENT 4 WCDMA Band 4 Body
MEASUREMENT 5 WCDMA Band 5 Body
MEASUREMENT 6 WLAN 5.2G Body
MEASUREMENT 7 WLAN 5.3G Body
MEASUREMENT 8 WLAN 5.6G Body
MEASUREMENT 9 WLAN 2.4G Body
MEASUREMENT 10 LTE Band 2 Body
MEASUREMENT 11 LTE Band 4 Body
MEASUREMENT 12 LTE Band 5 Body
MEASUREMENT 13 LTE Band 7 Body
MEASUREMENT 14 LTE Band 17 Body
MEASUREMENT 15 LTE Band 26A Body
MEASUREMENT 16 LTE Band 26B Body
MEASUREMENT 17 LTE Band 41 Body

MEASUREMENT 1

Date of measurement: 20/10/2022

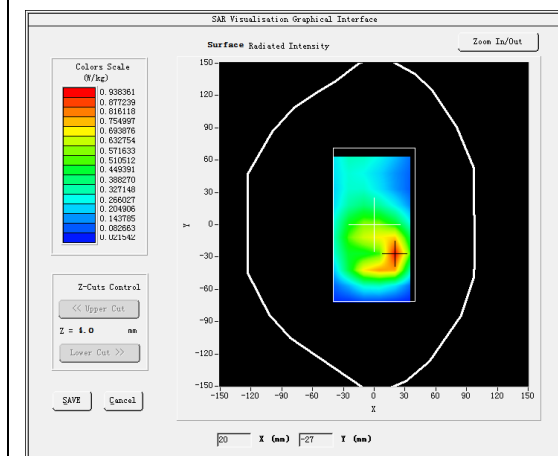
A. Experimental conditions.

<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>GSM850</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>TDMA (Crest factor: 2.0)</u>
<u>ConvF</u>	<u>1.50</u>

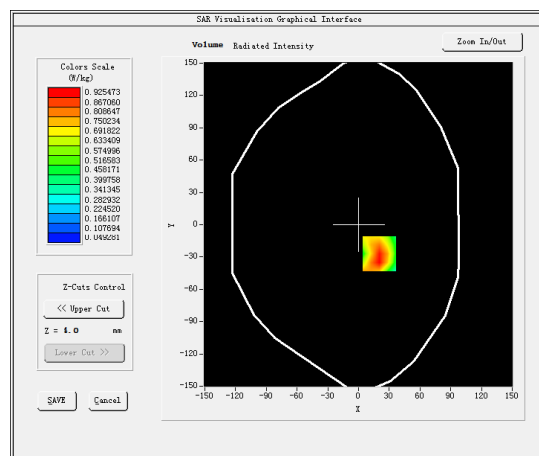
B. SAR Measurement Results

Frequency (MHz)	836.400000
Relative permittivity (real part)	41.165707
Relative permittivity (imaginary part)	19.826172
Conductivity (S/m)	0.921256
Variation (%)	-0.370000

SURFACE SAR



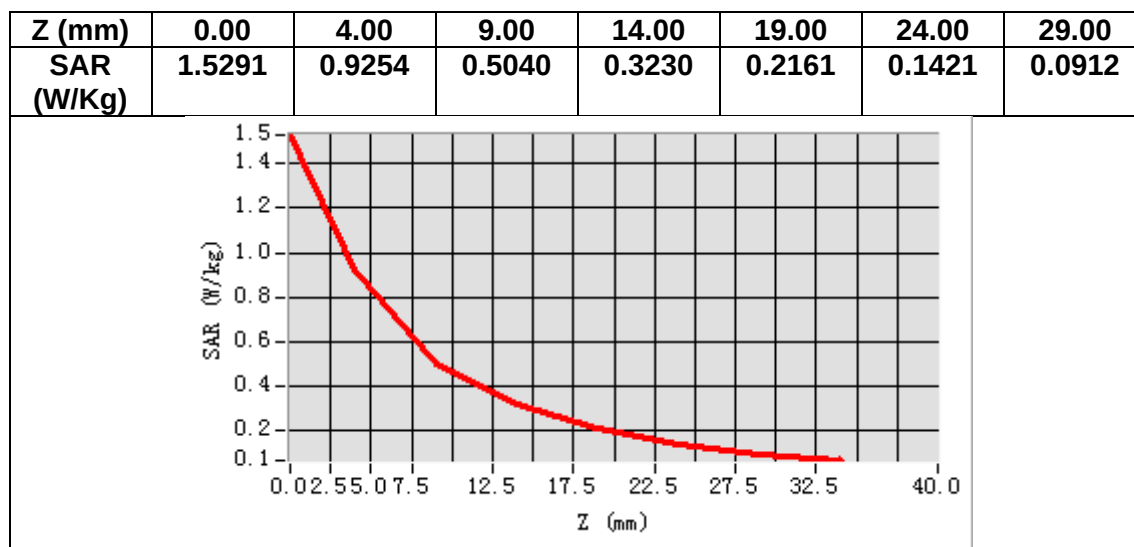
VOLUME SAR



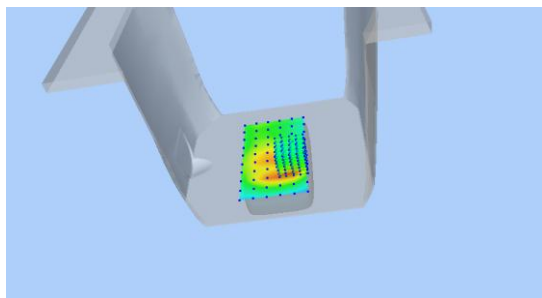
Maximum location: X=20.00, Y=-27.00

SAR Peak: 1.46 W/kg

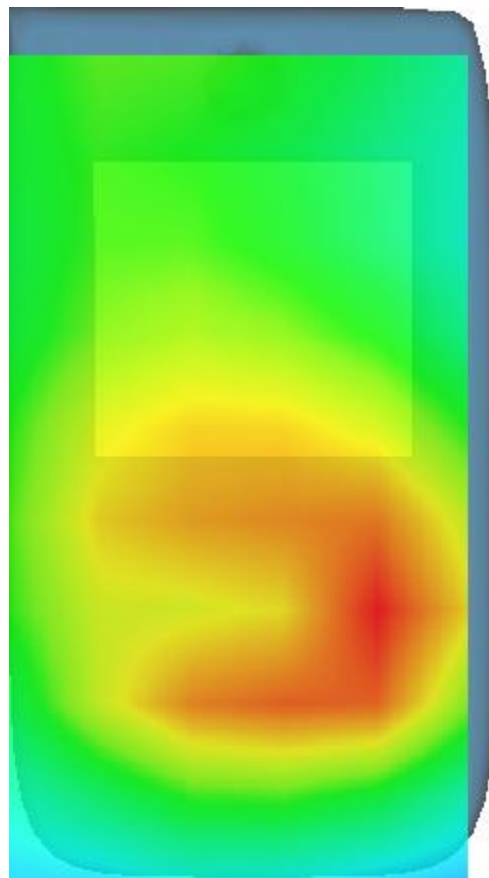
SAR 10g (W/Kg)	0.498241
SAR 1g (W/Kg)	0.882147



3D screen shot



Hot spot position



MEASUREMENT 2

Date of measurement: 2/11/2022

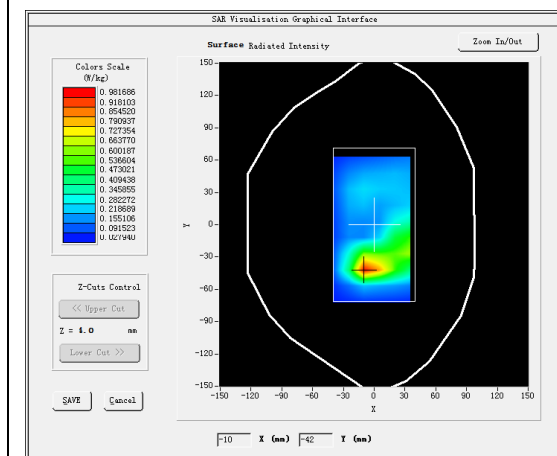
A. Experimental conditions.

<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>GSM1900</u>
<u>Channels</u>	<u>Low</u>
<u>Signal</u>	<u>TDMA (Crest factor: 4.0)</u>
<u>ConvF</u>	<u>1.91</u>

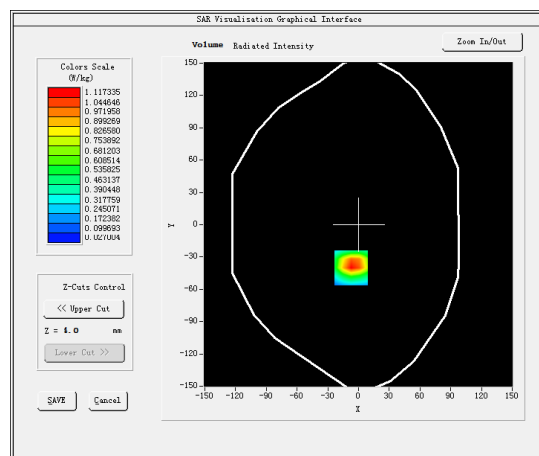
B. SAR Measurement Results

Frequency (MHz)	1850.200000
Relative permittivity (real part)	38.711678
Relative permittivity (imaginary part)	13.921674
Conductivity (S/m)	1.430993
Variation (%)	1.230000

SURFACE SAR



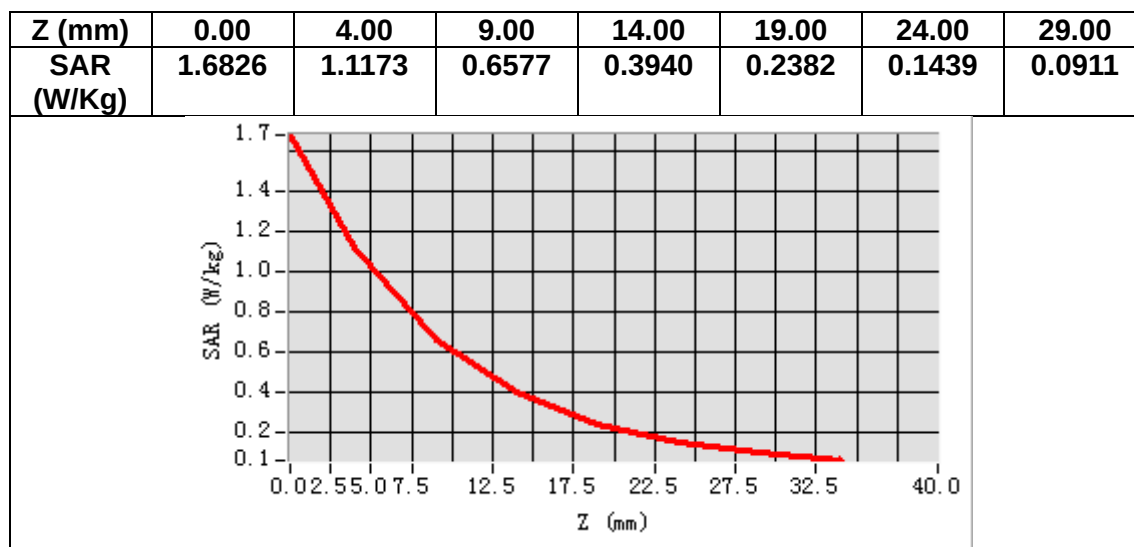
VOLUME SAR



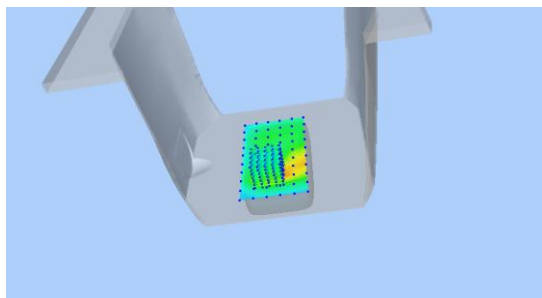
Maximum location: X=-7.00, Y=-40.00

SAR Peak: 1.80 W/kg

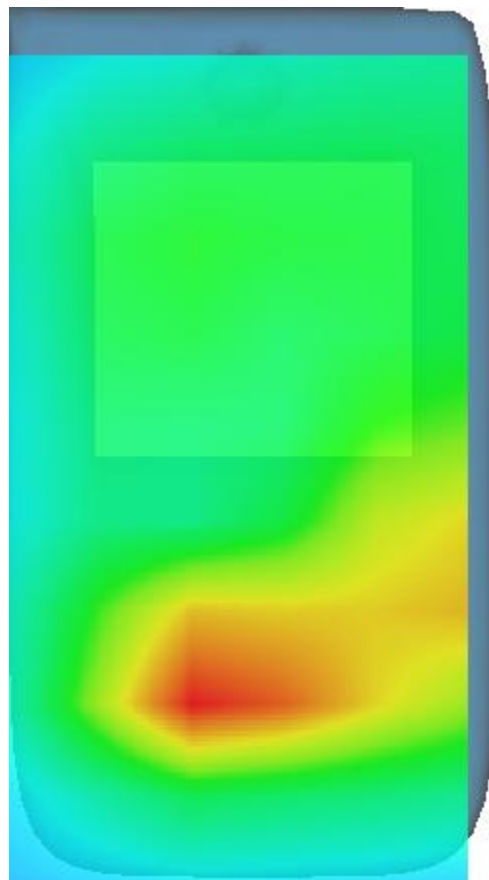
SAR 10g (W/Kg)	0.635319
SAR 1g (W/Kg)	1.087978



3D screen shot



Hot spot position



MEASUREMENT 3

Date of measurement: 2/11/2022

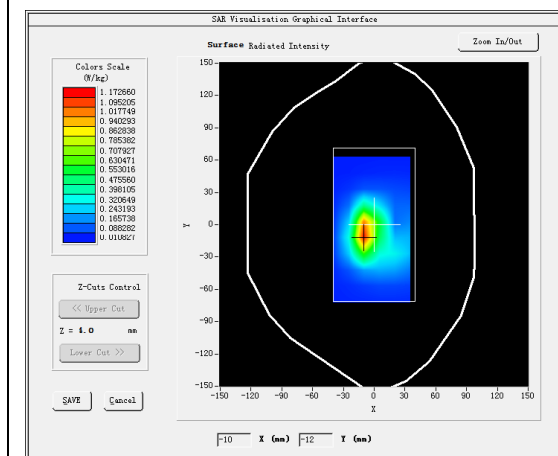
A. Experimental conditions.

<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>Low</u>
<u>Signal</u>	<u>WCDMA (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>1.91</u>

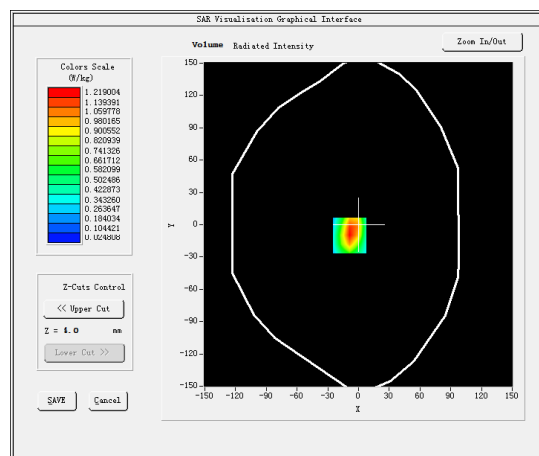
B. SAR Measurement Results

Frequency (MHz)	1852.400000
Relative permittivity (real part)	38.645557
Relative permittivity (imaginary part)	13.926774
Conductivity (S/m)	1.433220
Variation (%)	-1.380000

SURFACE SAR



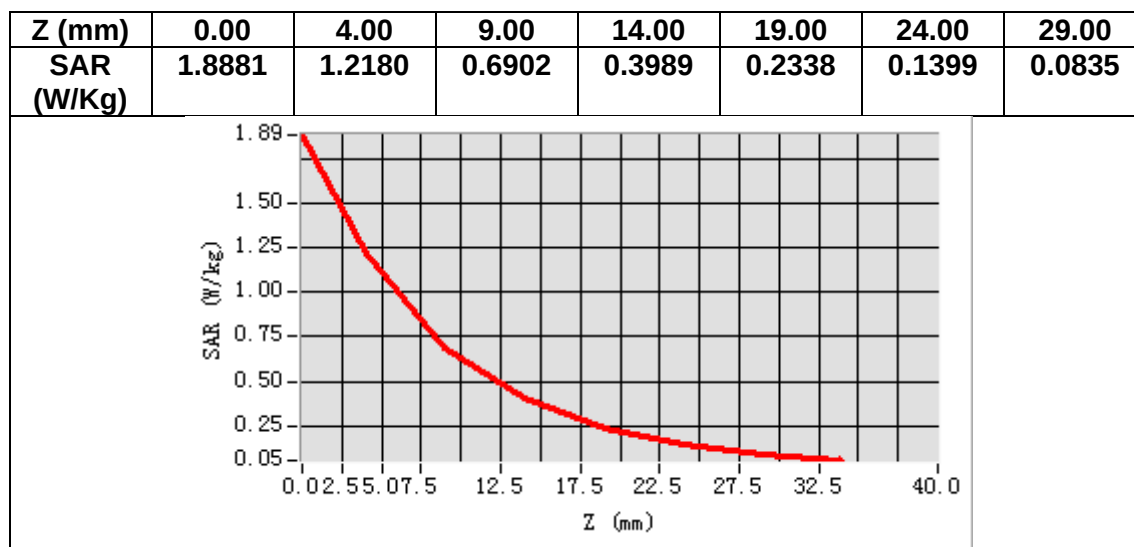
VOLUME SAR



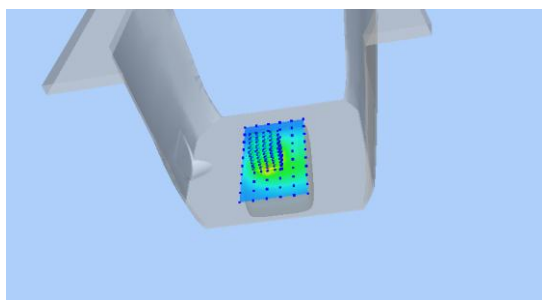
Maximum location: X=-9.00, Y=-10.00

SAR Peak: 1.94 W/kg

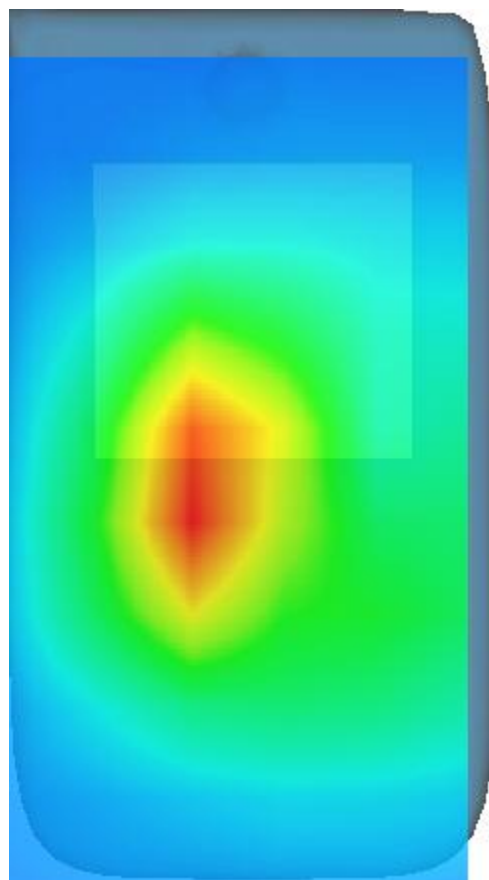
SAR 10g (W/Kg)	0.594201
SAR 1g (W/Kg)	1.062234



3D screen shot



Hot spot position



MEASUREMENT 4

Date of measurement: 28/10/2022

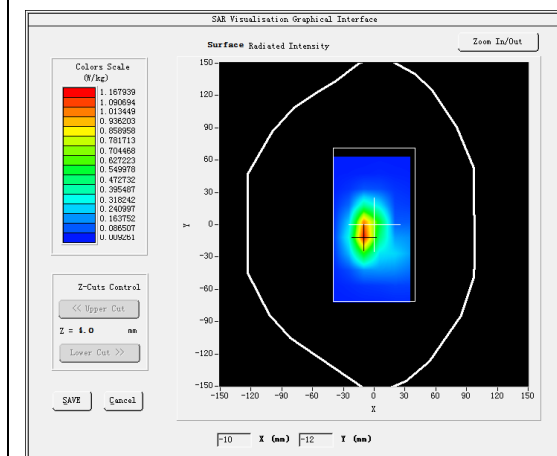
A. Experimental conditions.

<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>High</u>
<u>Signal</u>	<u>WCDMA (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>1.73</u>

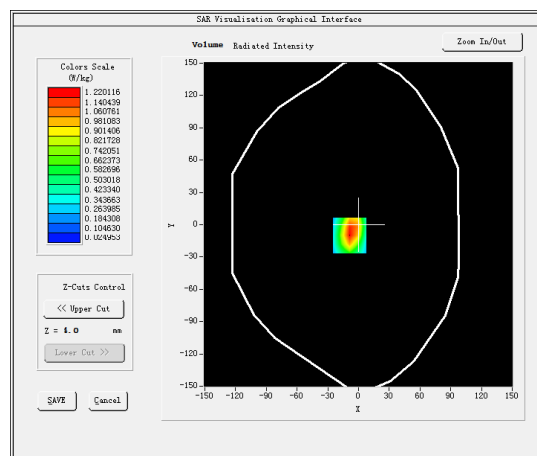
B. SAR Measurement Results

Frequency (MHz)	1752.600000
Relative permittivity (real part)	38.951023
Relative permittivity (imaginary part)	13.767764
Conductivity (S/m)	1.340062
Variation (%)	-1.130000

SURFACE SAR



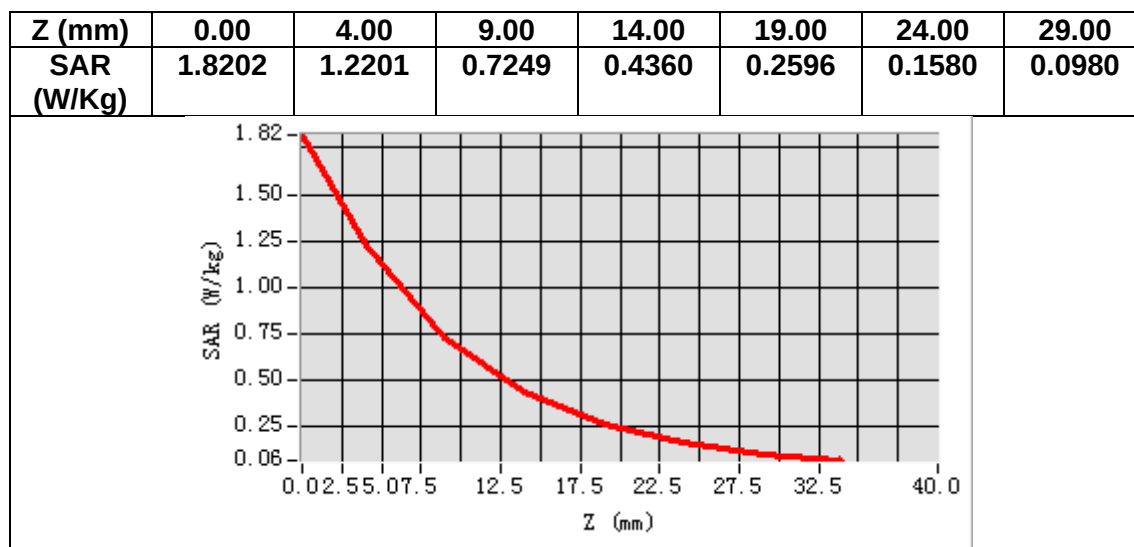
VOLUME SAR



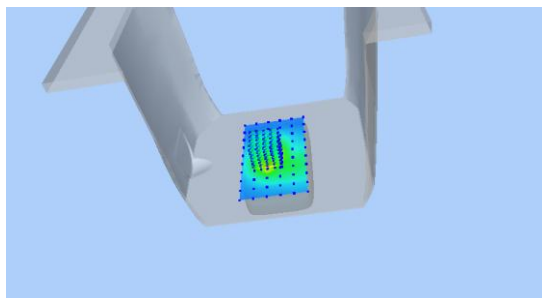
Maximum location: X=-9.00, Y=-10.00

SAR Peak: 1.90 W/kg

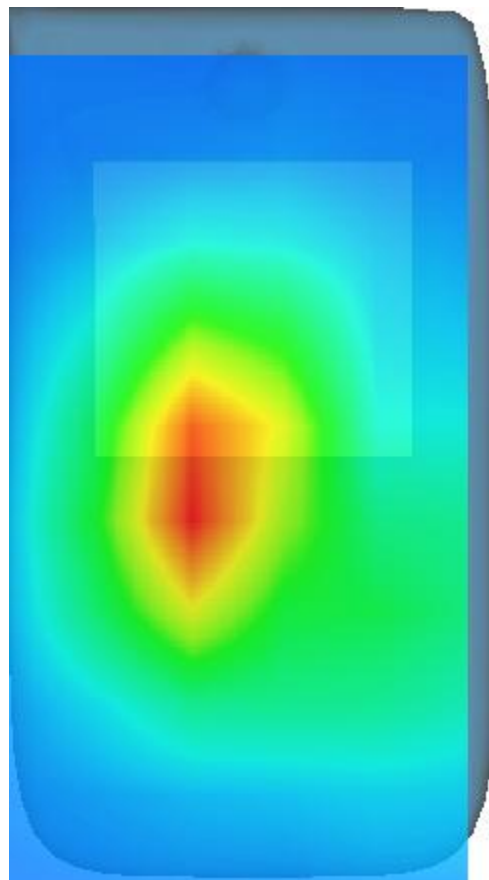
SAR 10g (W/Kg)	0.599012
SAR 1g (W/Kg)	1.029230



3D screen shot



Hot spot position



MEASUREMENT 5

Date of measurement: 20/10/2022

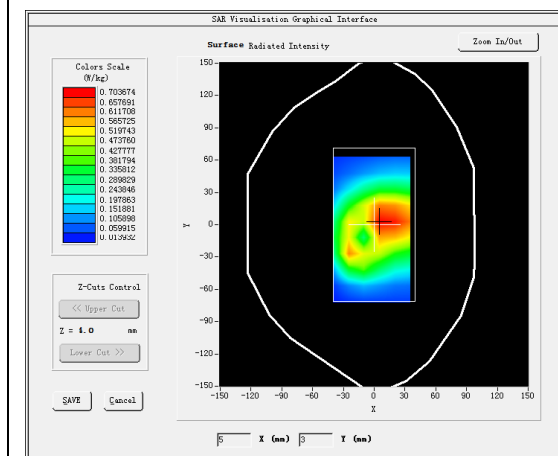
A. Experimental conditions.

<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>

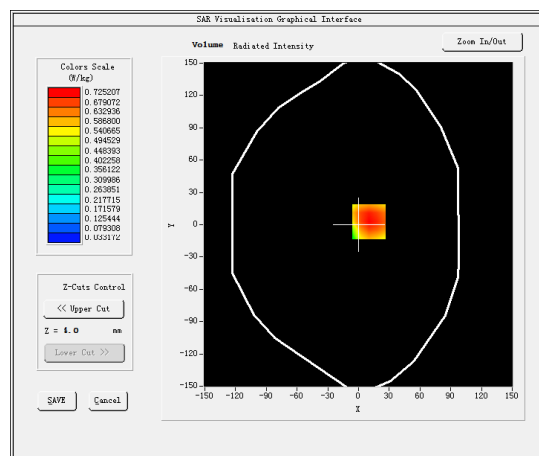
B. SAR Measurement Results

Frequency (MHz)	836.400000
Relative permittivity (real part)	41.165707
Relative permittivity (imaginary part)	19.826172
Conductivity (S/m)	0.921256
Variation (%)	-0.180000

SURFACE SAR



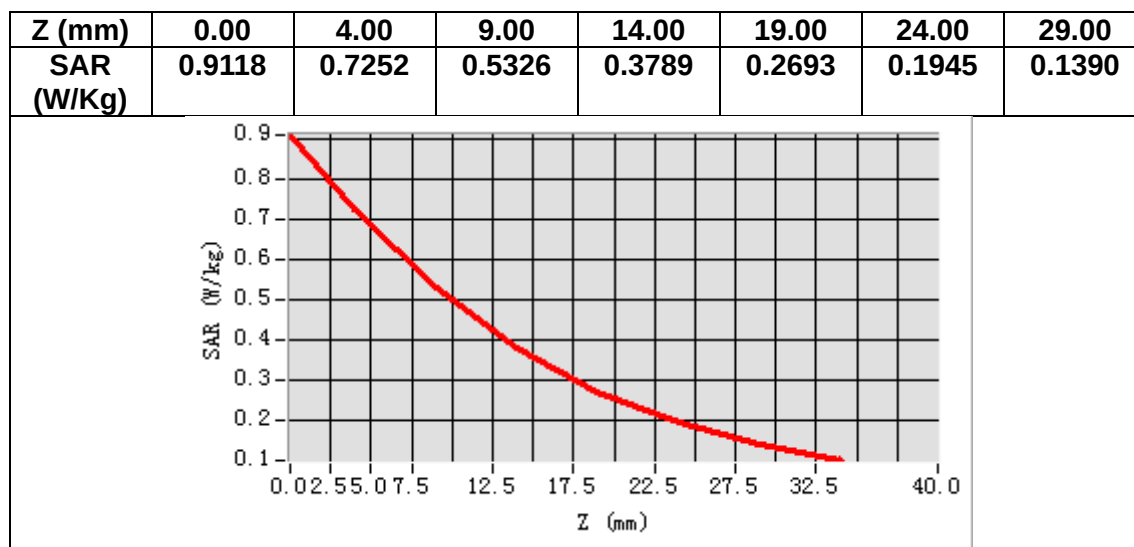
VOLUME SAR



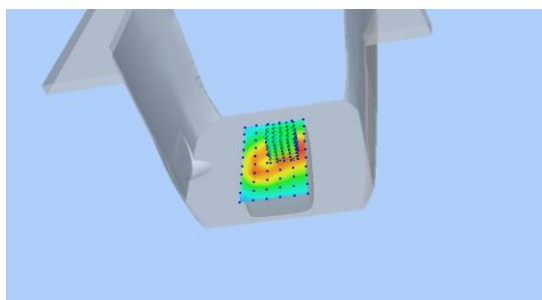
Maximum location: X=10.00, Y=3.00

SAR Peak: 0.94 W/kg

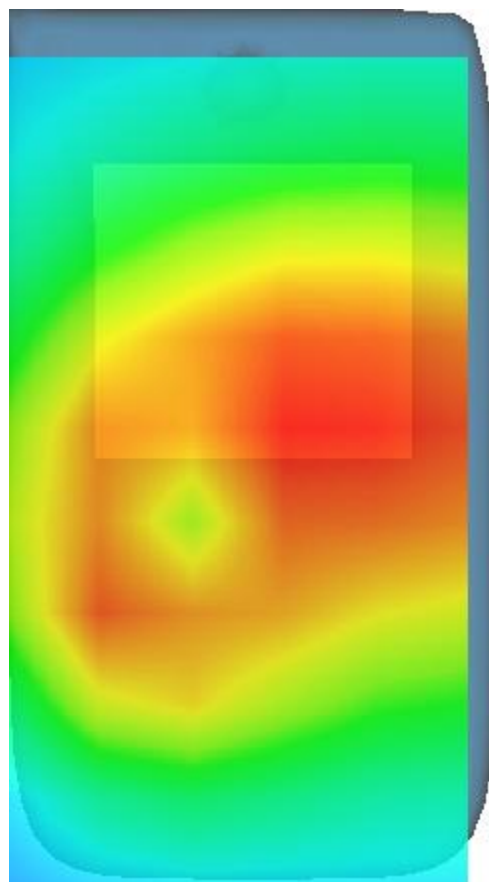
SAR 10g (W/Kg)	0.502164
SAR 1g (W/Kg)	0.712709



3D screen shot



Hot spot position



MEASUREMENT 6

Date of measurement: 21/10/2022

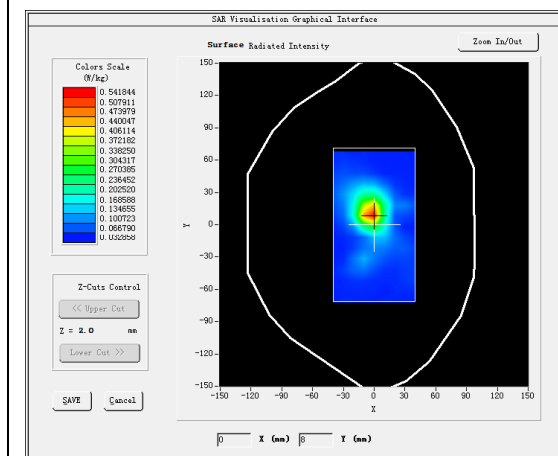
A. Experimental conditions.

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

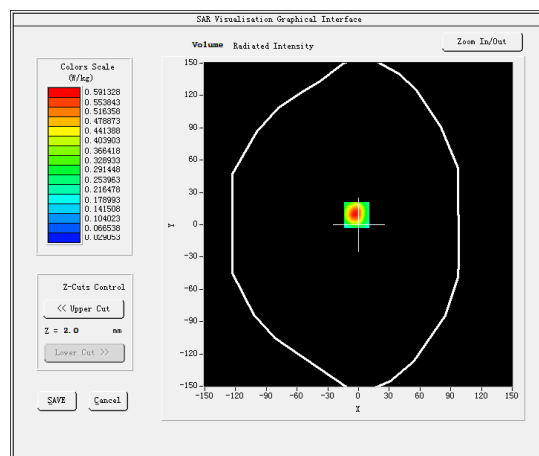
B. SAR Measurement Results

Frequency (MHz)	5190.000000
Relative permittivity (real part)	34.921220
Relative permittivity (imaginary part)	15.413946
Conductivity (S/m)	4.444354
Variation (%)	-0.420000

SURFACE SAR



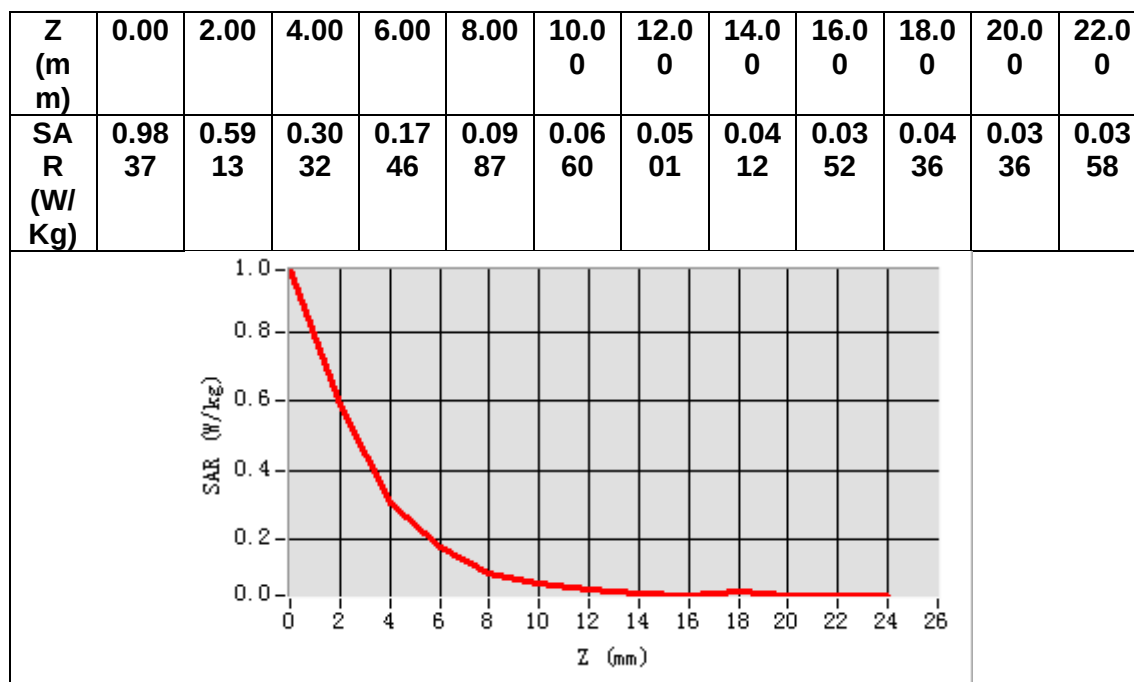
VOLUME SAR



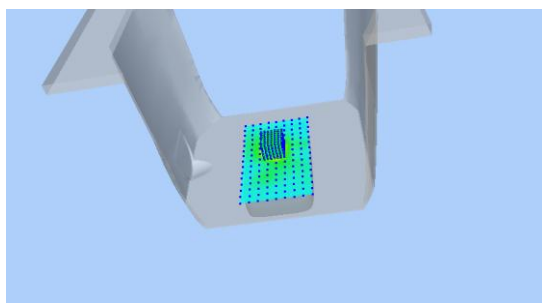
Maximum location: X=-2.00, Y=9.00

SAR Peak: 1.06 W/kg

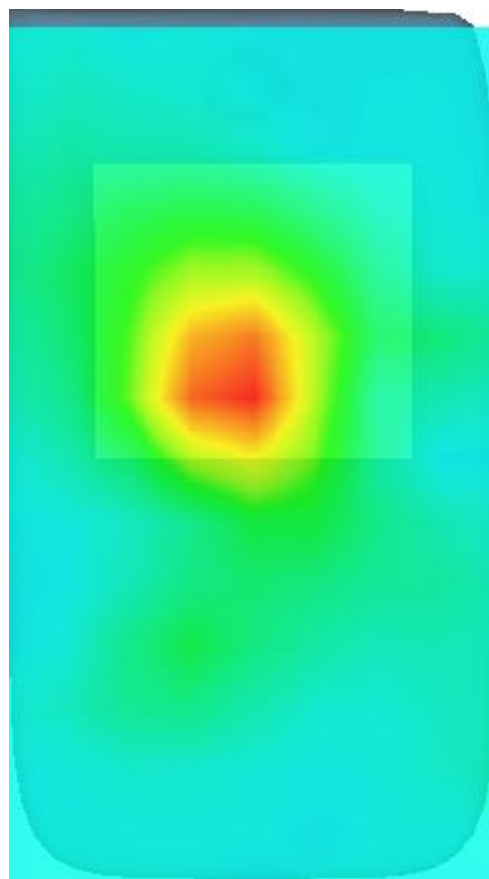
SAR 10g (W/Kg)	0.120708
SAR 1g (W/Kg)	0.256345



3D screen shot



Hot spot position



MEASUREMENT 7

Date of measurement: 25/10/2022

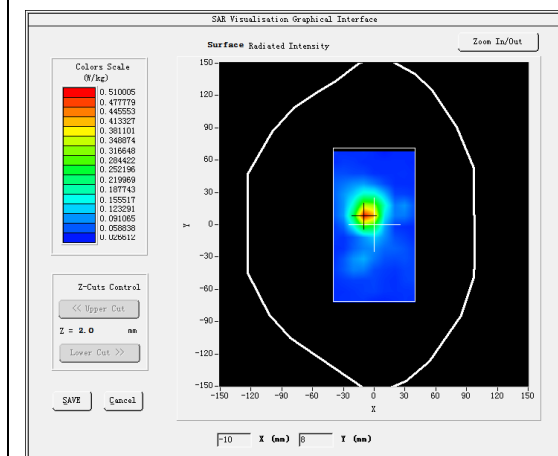
A. Experimental conditions.

<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 802.11ac U-NII</u>
<u>Channels</u>	<u>High</u>
<u>Signal</u>	<u>IEEE802.11ac (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.05</u>

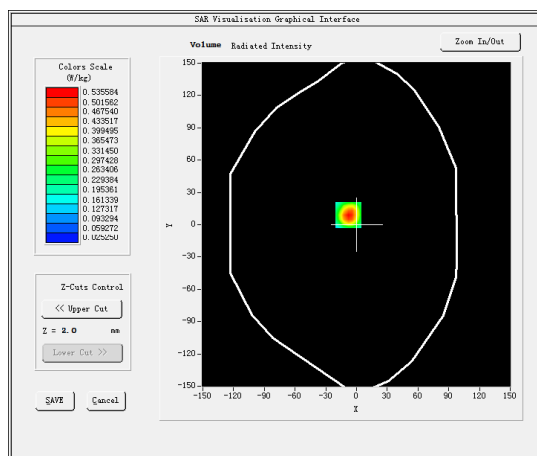
B. SAR Measurement Results

Frequency (MHz)	5310.000000
Relative permittivity (real part)	36.493966
Relative permittivity (imaginary part)	15.803063
Conductivity (S/m)	4.661904
Variation (%)	-3.500000

SURFACE SAR



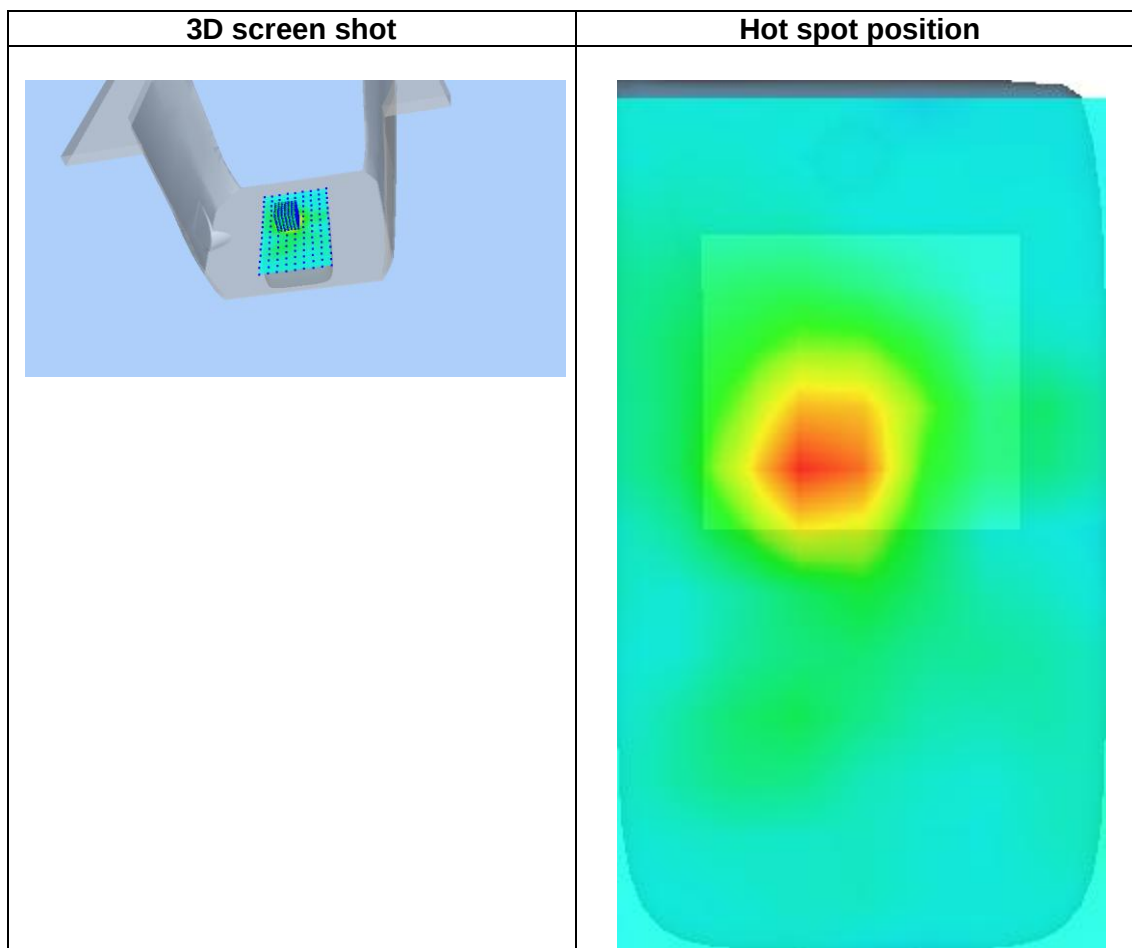
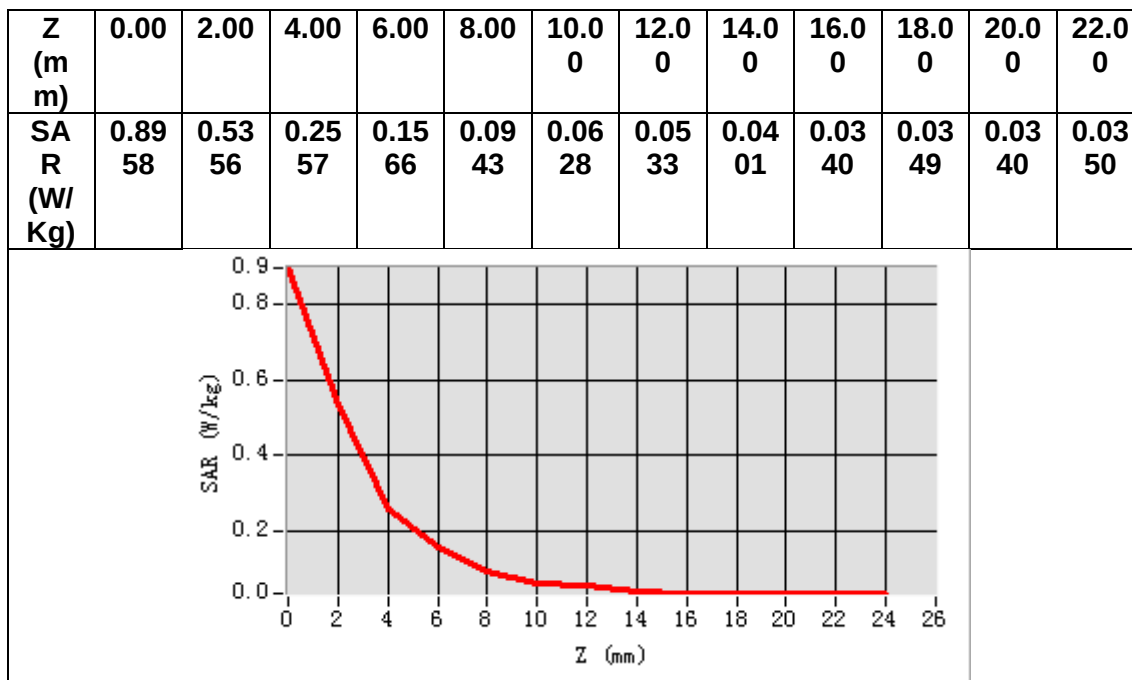
VOLUME SAR



Maximum location: X=-8.00, Y=9.00

SAR Peak: 0.94 W/kg

SAR 10g (W/Kg)	0.105462
SAR 1g (W/Kg)	0.231056



MEASUREMENT 8

Date of measurement: 31/10/2022

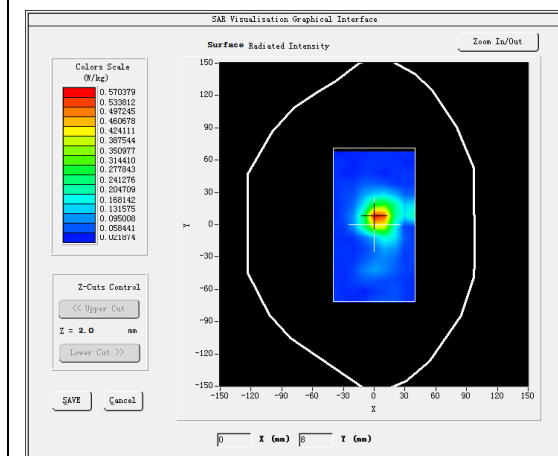
A. Experimental conditions.

<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 802.11ac U-NII</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>IEEE802.11ac (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.16</u>

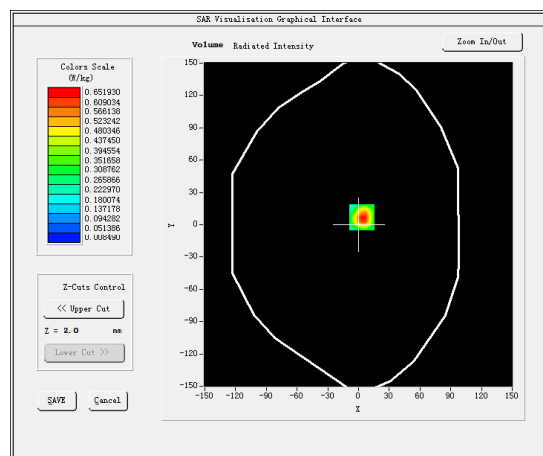
B. SAR Measurement Results

Frequency (MHz)	5590.000000
Relative permittivity (real part)	34.714721
Relative permittivity (imaginary part)	15.582930
Conductivity (S/m)	4.839365
Variation (%)	0.190000

SURFACE SAR



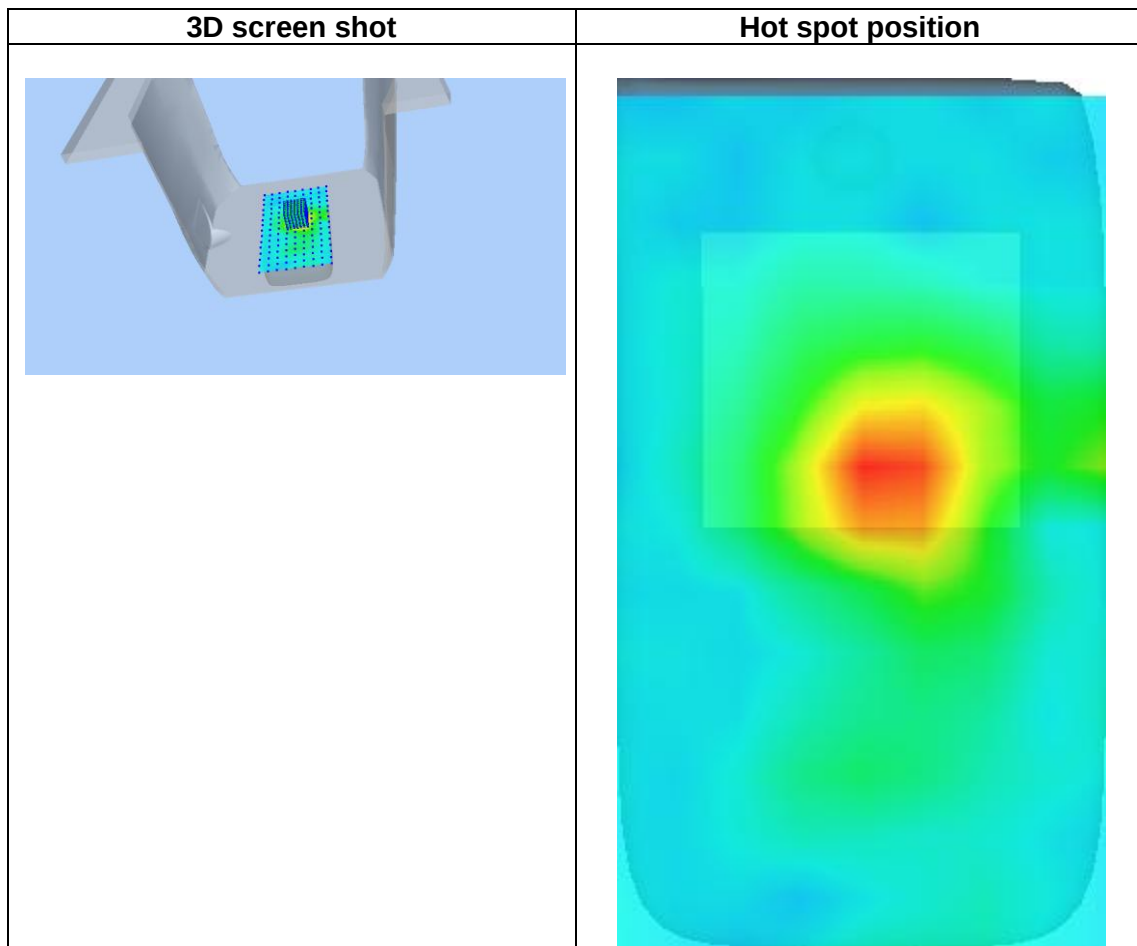
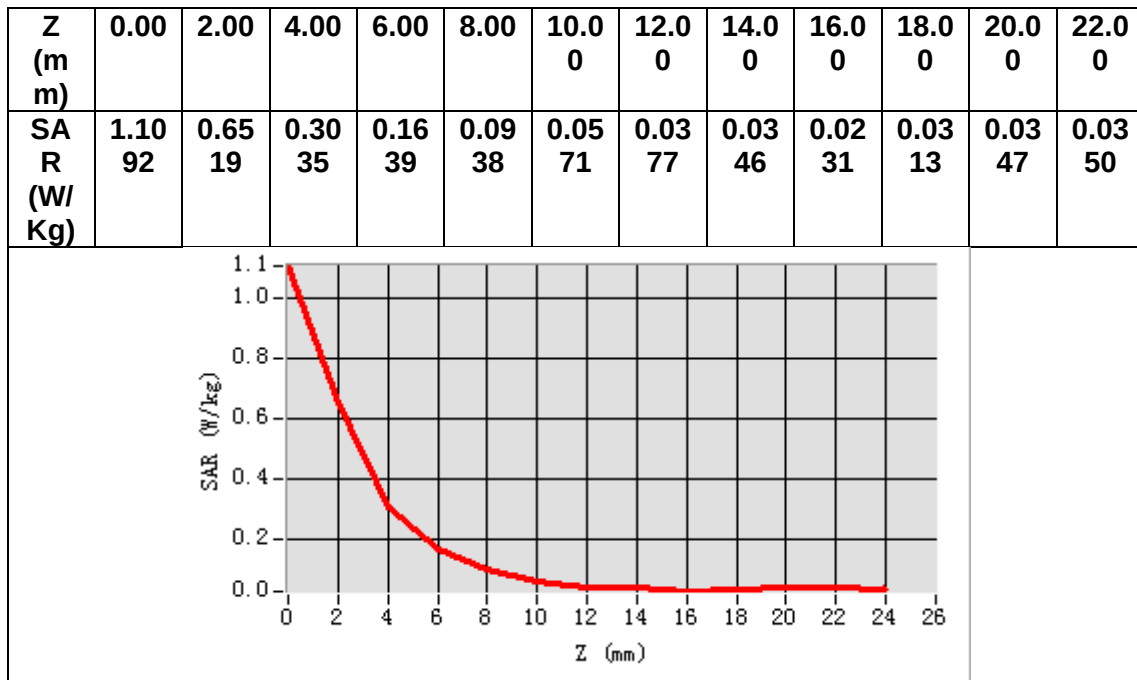
VOLUME SAR



Maximum location: X=3.00, Y=7.00

SAR Peak: 1.18 W/kg

SAR 10g (W/Kg)	0.110236
SAR 1g (W/Kg)	0.240320



MEASUREMENT 9

Date of measurement: 1/11/2022

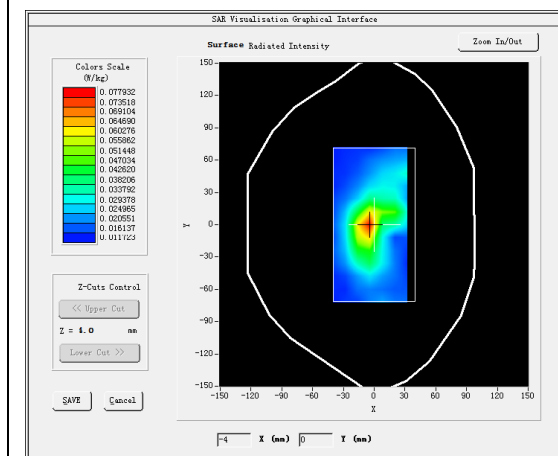
A. Experimental conditions.

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

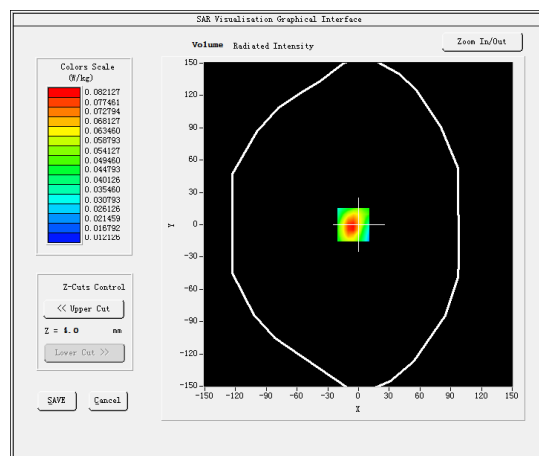
B. SAR Measurement Results

Frequency (MHz)	2437.000000
Relative permittivity (real part)	37.620095
Relative permittivity (imaginary part)	12.926927
Conductivity (S/m)	1.750162
Variation (%)	0.300000

SURFACE SAR



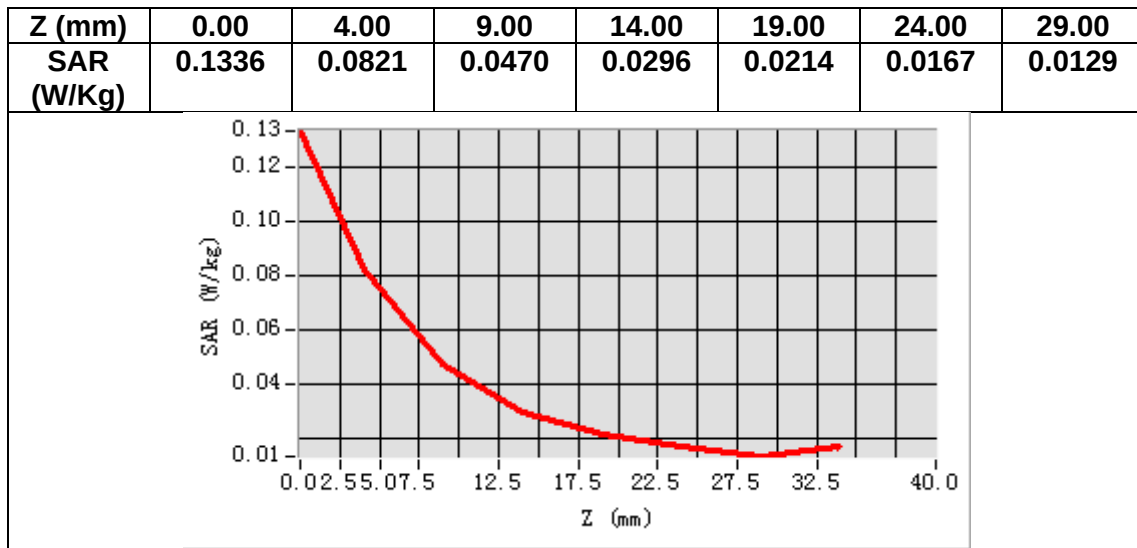
VOLUME SAR



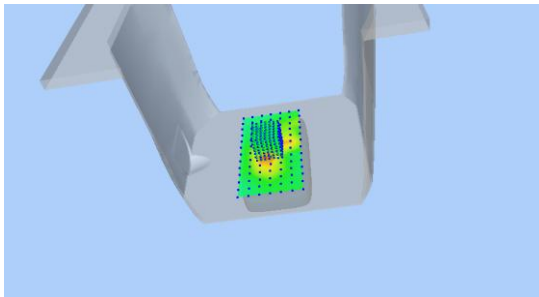
Maximum location: X=-5.00, Y=0.00

SAR Peak: 0.13 W/kg

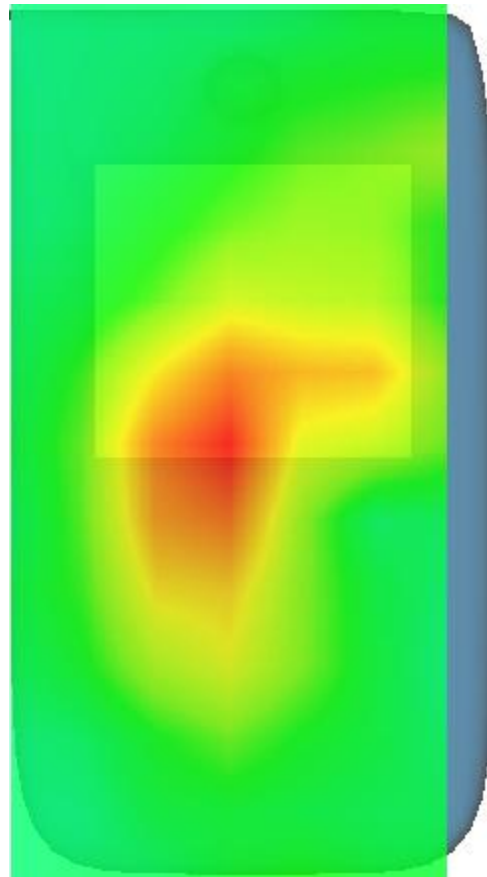
SAR 10g (W/Kg)	0.044004
SAR 1g (W/Kg)	0.077827



3D screen shot



Hot spot position



MEASUREMENT 10

Date of measurement: 2/11/2022

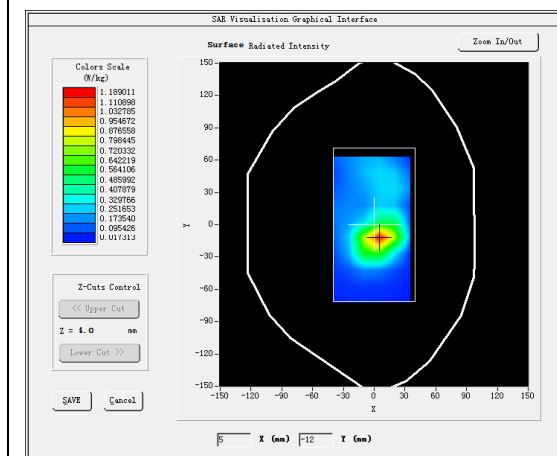
A. Experimental conditions.

<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>

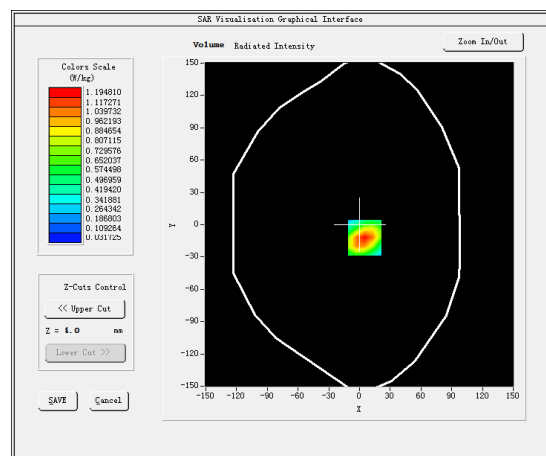
B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.517678
Relative permittivity (imaginary part)	13.901094
Conductivity (S/m)	1.451892
Variation (%)	0.420000

SURFACE SAR



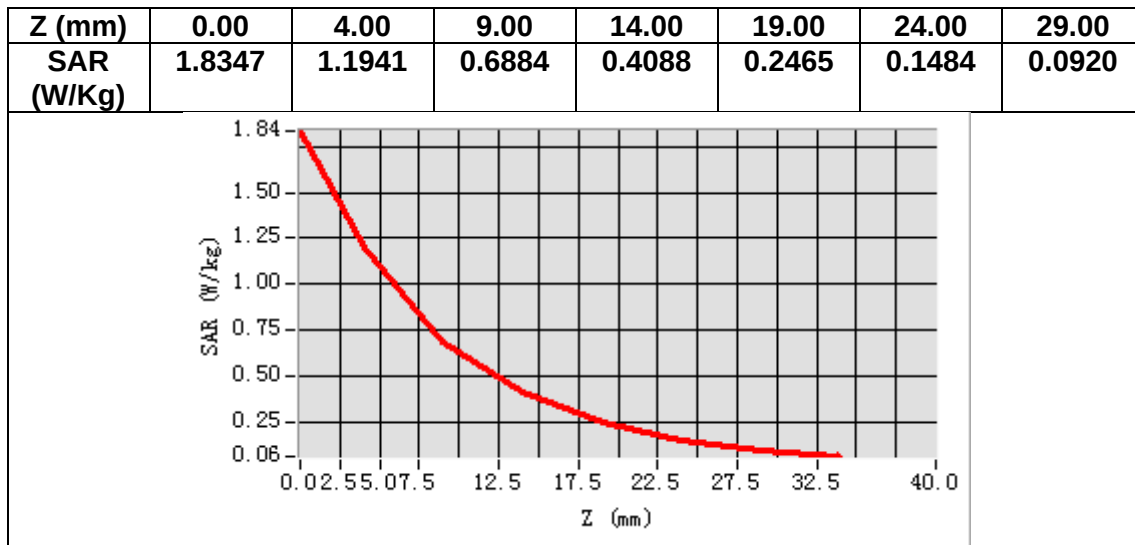
VOLUME SAR



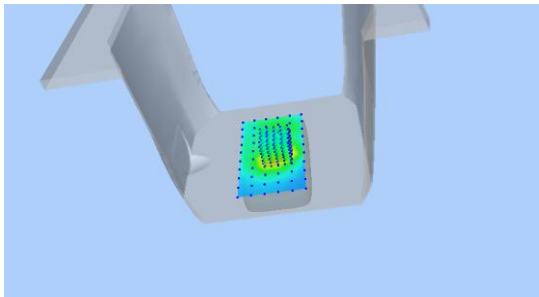
Maximum location: X=5.00, Y=-12.00

SAR Peak: 1.83 W/kg

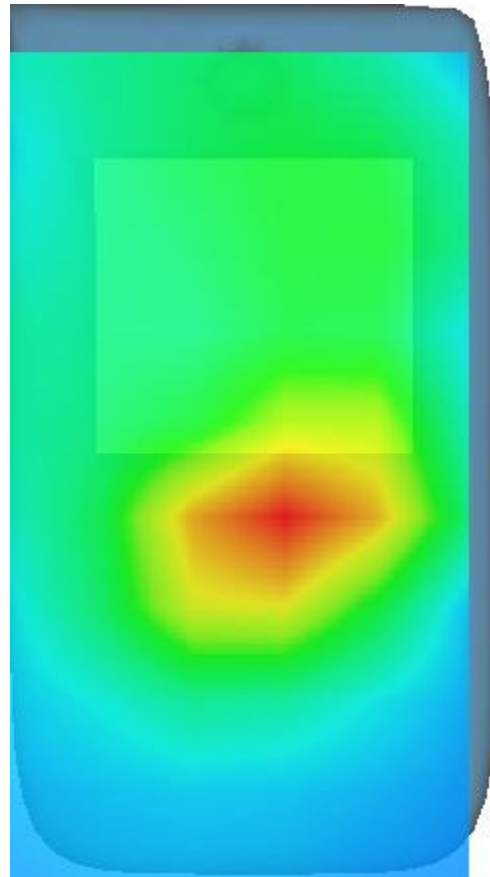
SAR 10g (W/Kg)	0.601248
SAR 1g (W/Kg)	1.114023



3D screen shot



Hot spot position



MEASUREMENT 11

Date of measurement: 28/10/2022

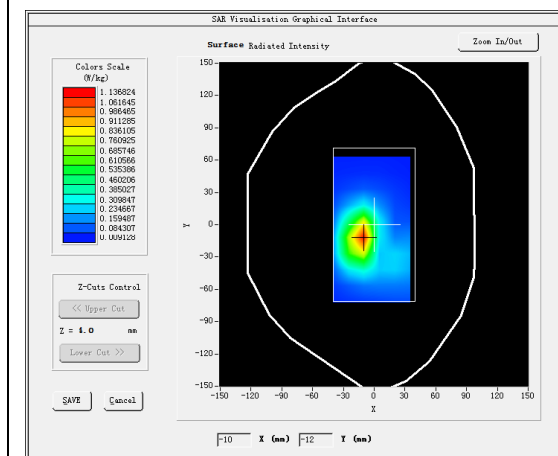
A. Experimental conditions.

<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>

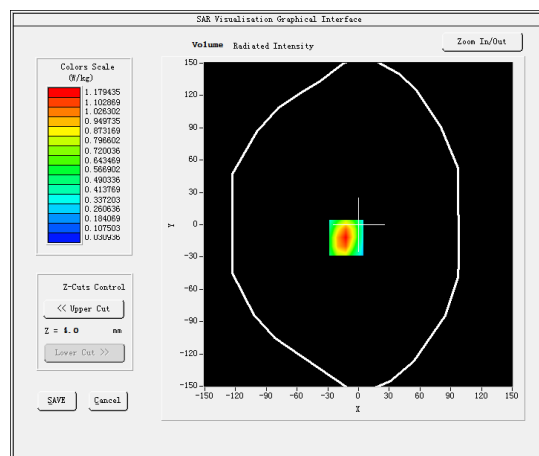
B. SAR Measurement Results

Frequency (MHz)	1732.500000
Relative permittivity (real part)	39.089226
Relative permittivity (imaginary part)	13.741914
Conductivity (S/m)	1.322659
Variation (%)	-1.110000

SURFACE SAR



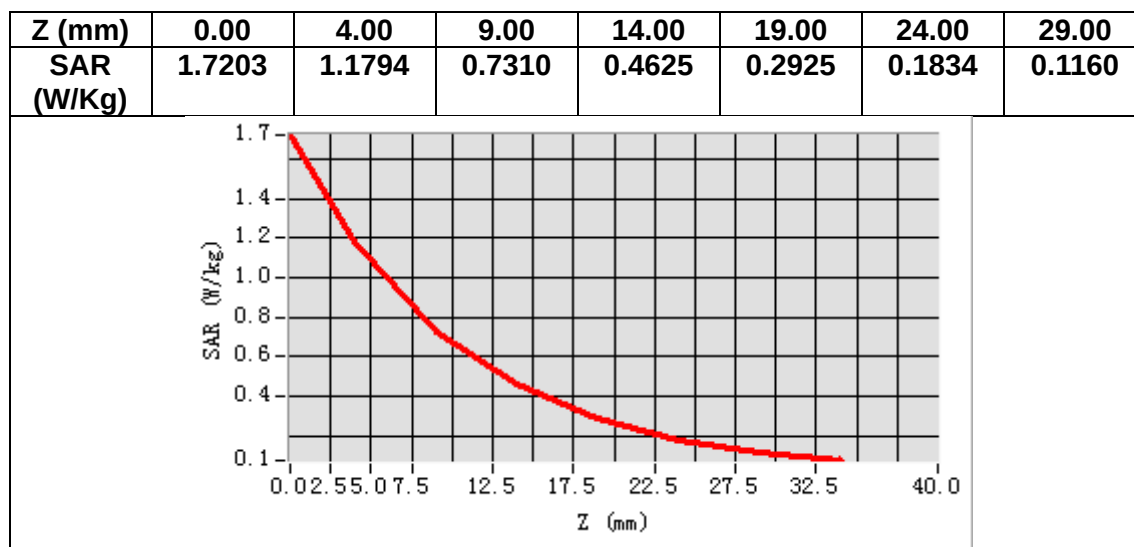
VOLUME SAR



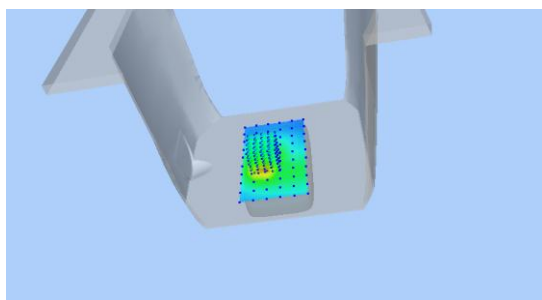
Maximum location: X=-12.00, Y=-12.00

SAR Peak: 1.71 W/kg

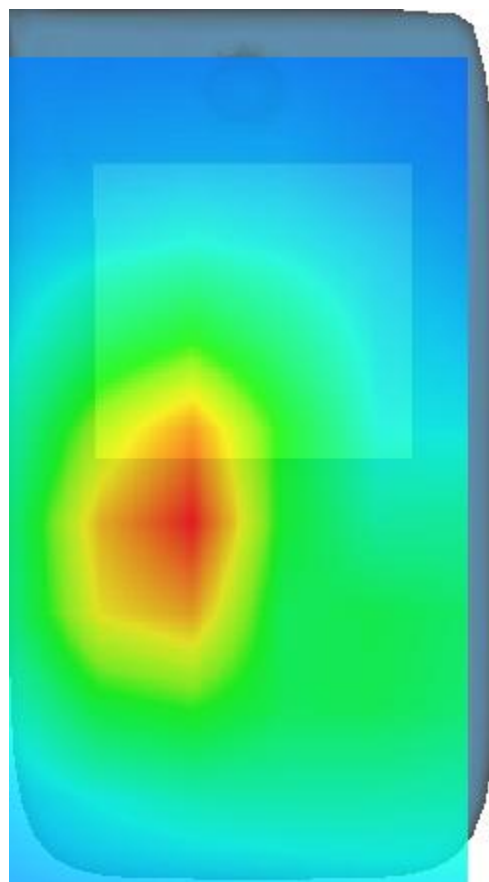
SAR 10g (W/Kg)	0.622171
SAR 1g (W/Kg)	1.060250



3D screen shot



Hot spot position



MEASUREMENT 12

Date of measurement: 20/10/2022

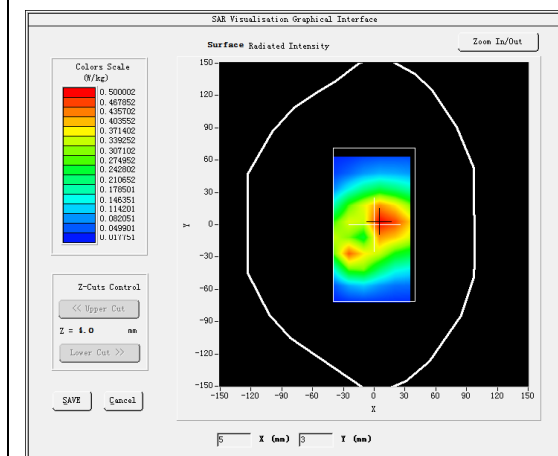
A. Experimental conditions.

<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>
<u>ConvF</u>	<u>1.50</u>

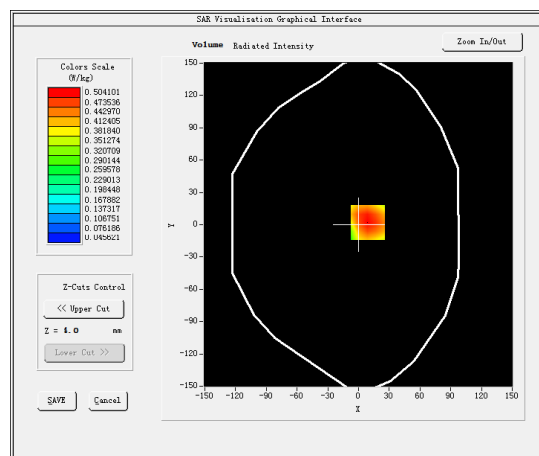
B. SAR Measurement Results

Frequency (MHz)	836.500000
Relative permittivity (real part)	41.168297
Relative permittivity (imaginary part)	19.824831
Conductivity (S/m)	0.921304
Variation (%)	-0.900000

SURFACE SAR



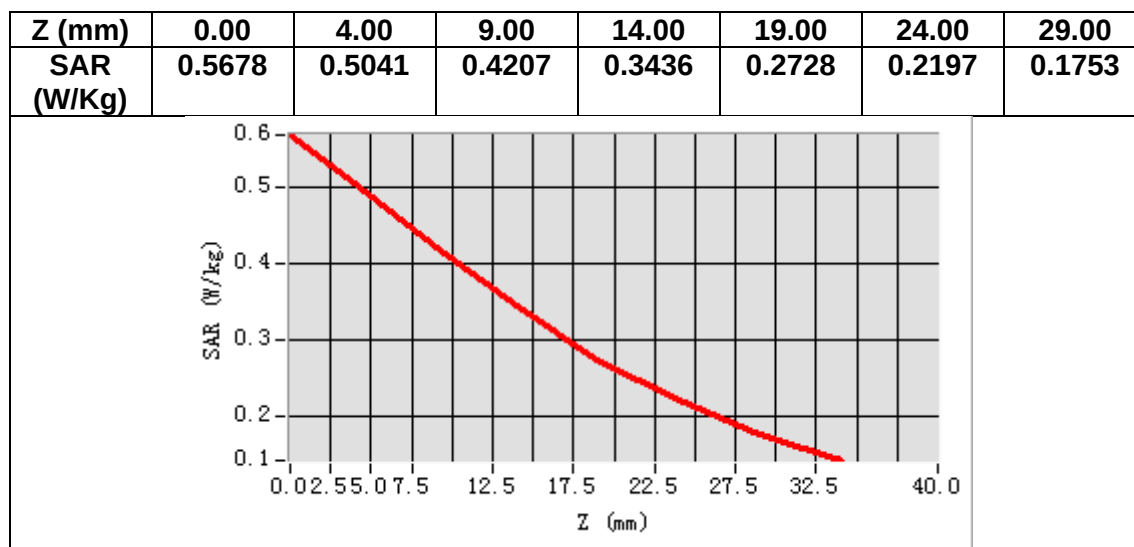
VOLUME SAR



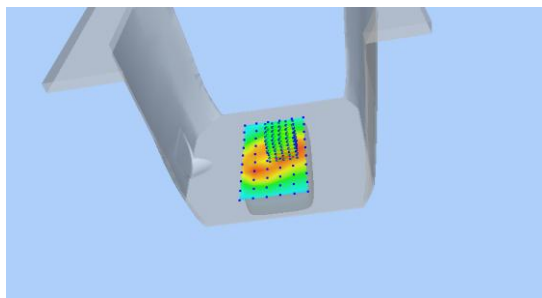
Maximum location: X=9.00, Y=2.00

SAR Peak: 0.59 W/kg

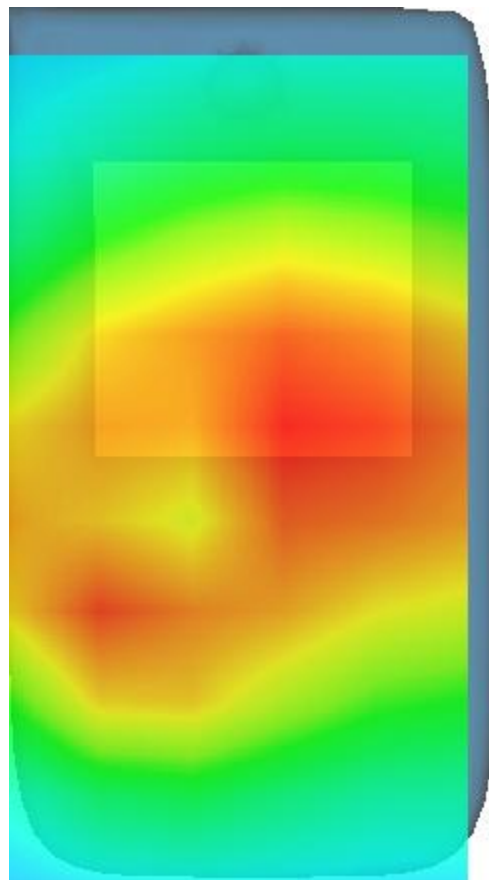
SAR 10g (W/Kg)	0.394746
SAR 1g (W/Kg)	0.500060



3D screen shot



Hot spot position



MEASUREMENT 13

Date of measurement: 27/10/2022

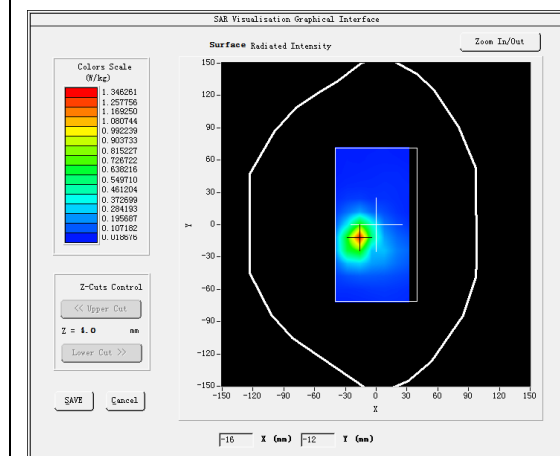
A. Experimental conditions.

<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>LTE band 7</u>
<u>Channels</u>	<u>High</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>1.87</u>

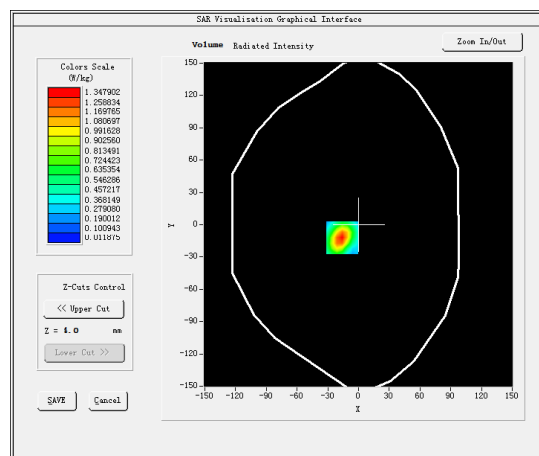
B. SAR Measurement Results

Frequency (MHz)	2560.000000
Relative permittivity (real part)	37.732529
Relative permittivity (imaginary part)	13.128069
Conductivity (S/m)	1.867103
Variation (%)	-0.430000

SURFACE SAR



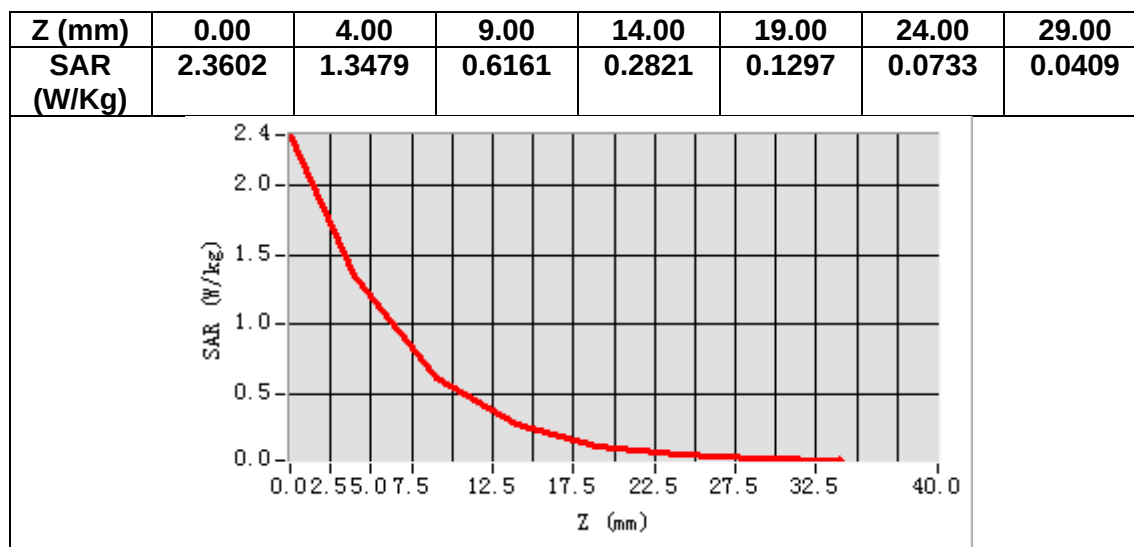
VOLUME SAR



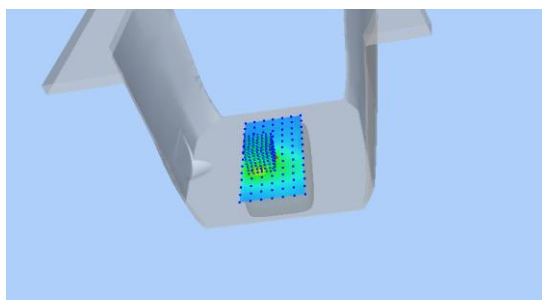
Maximum location: X=-16.00, Y=-12.00

SAR Peak: 2.33 W/kg

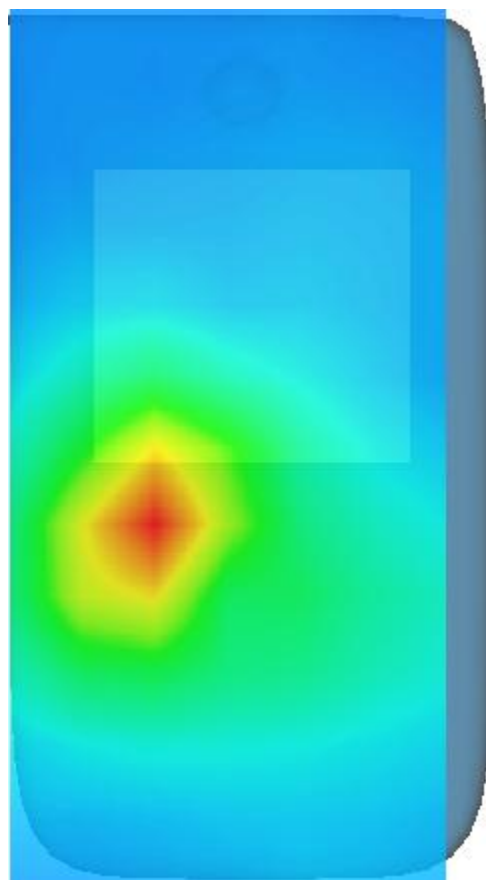
SAR 10g (W/Kg)	0.528005
SAR 1g (W/Kg)	1.109452



3D screen shot



Hot spot position



MEASUREMENT 14

Date of measurement: 29/10/2022

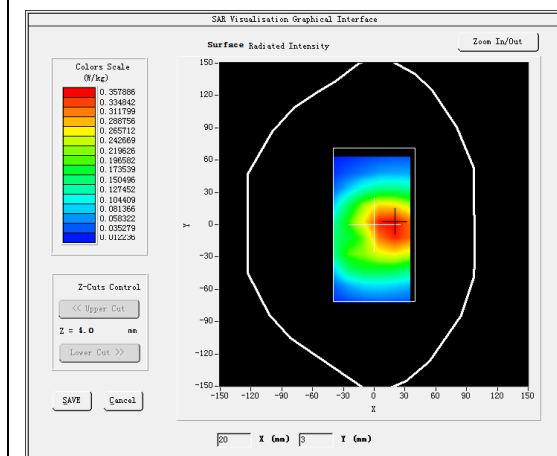
A. Experimental conditions.

<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 17</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>1.49</u>

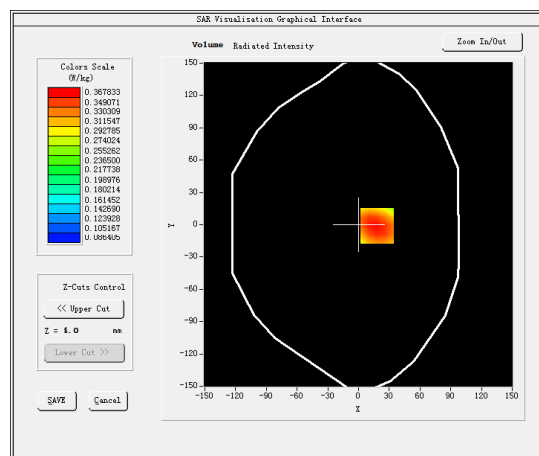
B. SAR Measurement Results

Frequency (MHz)	710.000000
Relative permittivity (real part)	40.805016
Relative permittivity (imaginary part)	21.615591
Conductivity (S/m)	0.852615
Variation (%)	-1.070000

SURFACE SAR



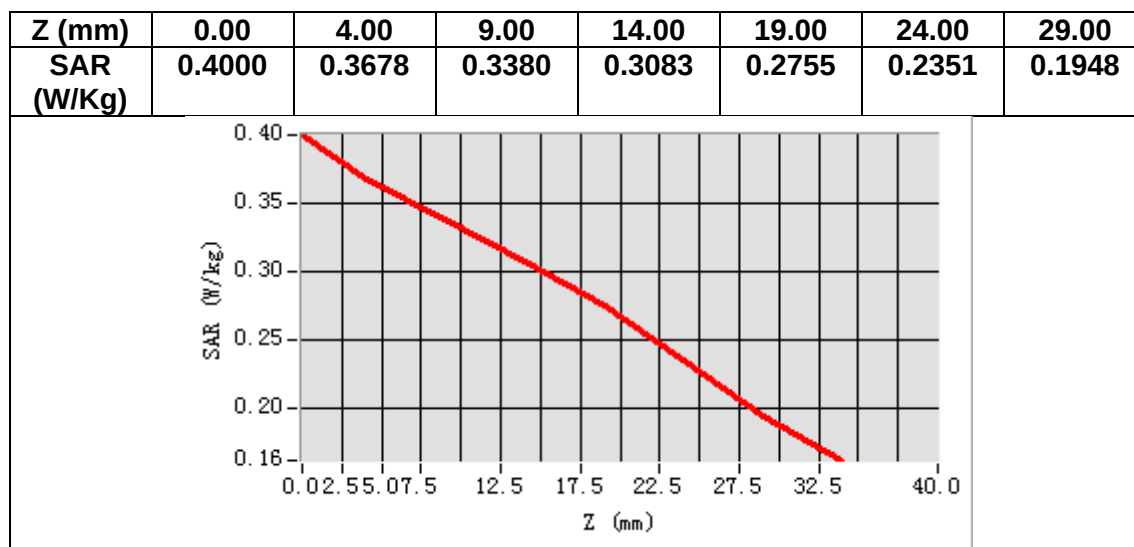
VOLUME SAR



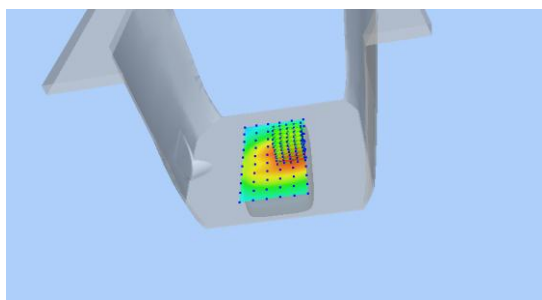
Maximum location: X=18.00, Y=-1.00

SAR Peak: 0.40 W/kg

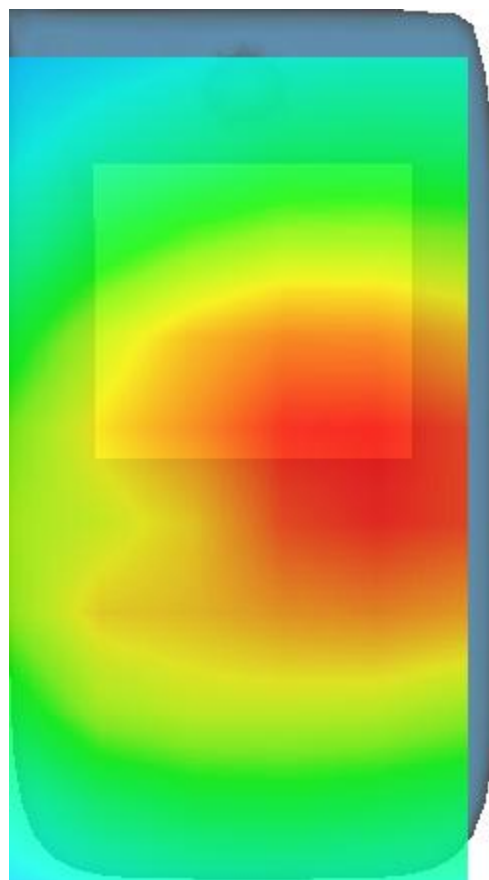
SAR 10g (W/Kg)	0.314252
SAR 1g (W/Kg)	0.364953



3D screen shot



Hot spot position



MEASUREMENT 15

Date of measurement: 20/10/2022

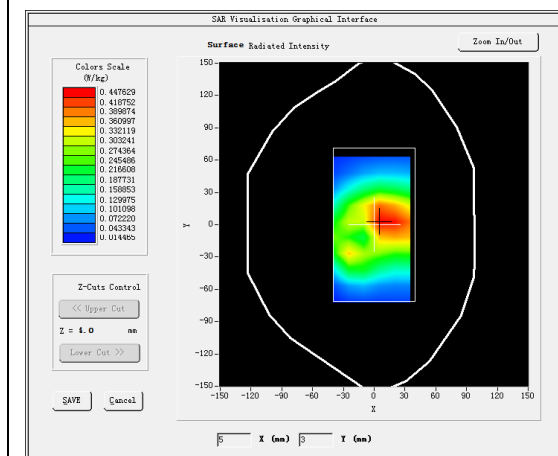
A. Experimental conditions.

<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 26a</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>1.50</u>

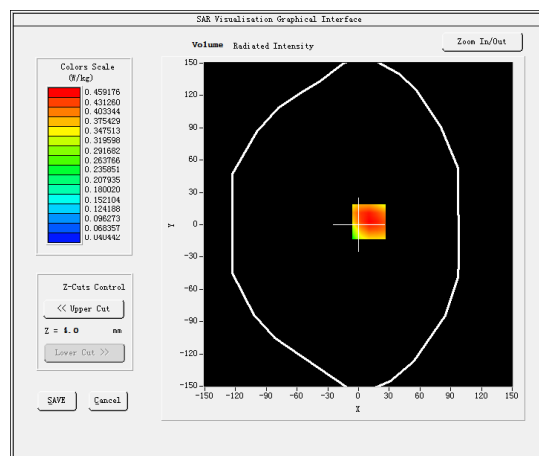
B. SAR Measurement Results

Frequency (MHz)	819.000000
Relative permittivity (real part)	41.434945
Relative permittivity (imaginary part)	19.808631
Conductivity (S/m)	0.901293
Variation (%)	0.940000

SURFACE SAR



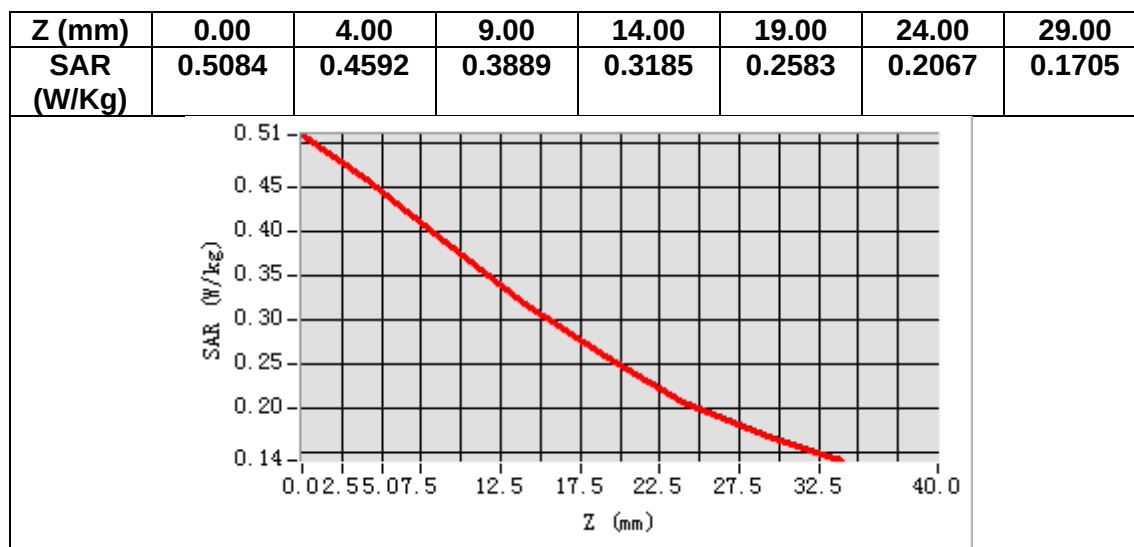
VOLUME SAR



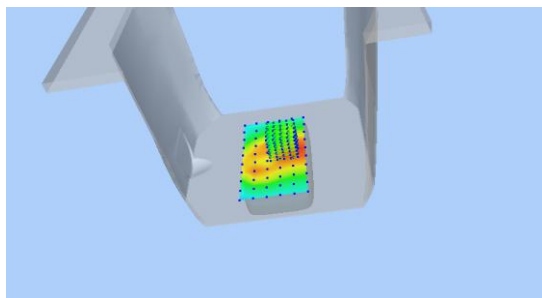
Maximum location: X=10.00, Y=3.00

SAR Peak: 0.52 W/kg

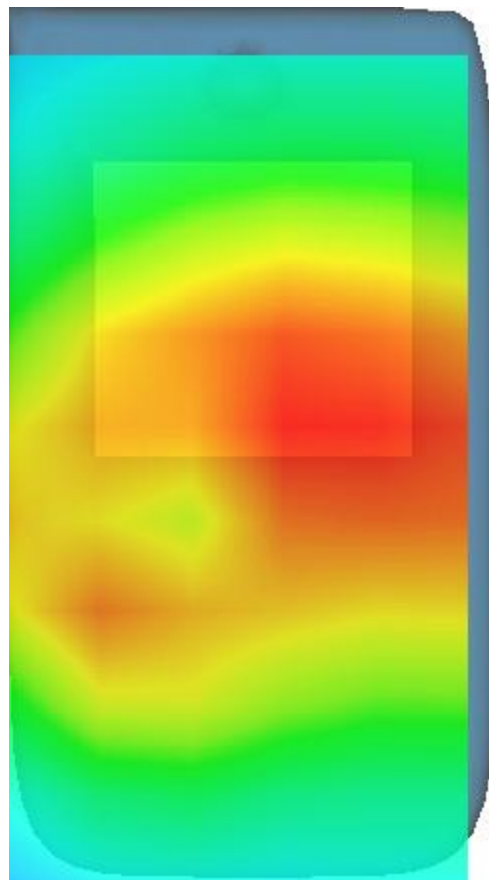
SAR 10g (W/Kg)	0.364123
SAR 1g (W/Kg)	0.452498



3D screen shot



Hot spot position



MEASUREMENT 16

Date of measurement: 20/10/2022

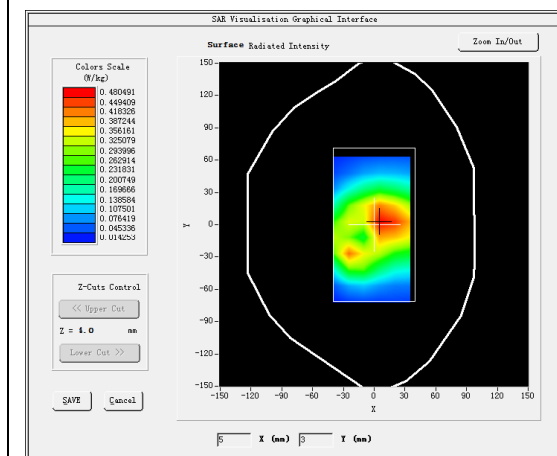
A. Experimental conditions.

<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 26b</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>1.50</u>

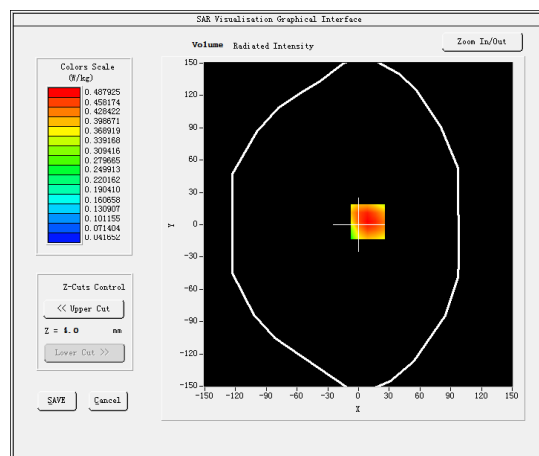
B. SAR Measurement Results

Frequency (MHz)	831.500000
Relative permittivity (real part)	41.218994
Relative permittivity (imaginary part)	19.814581
Conductivity (S/m)	0.915324
Variation (%)	-1.030000

SURFACE SAR



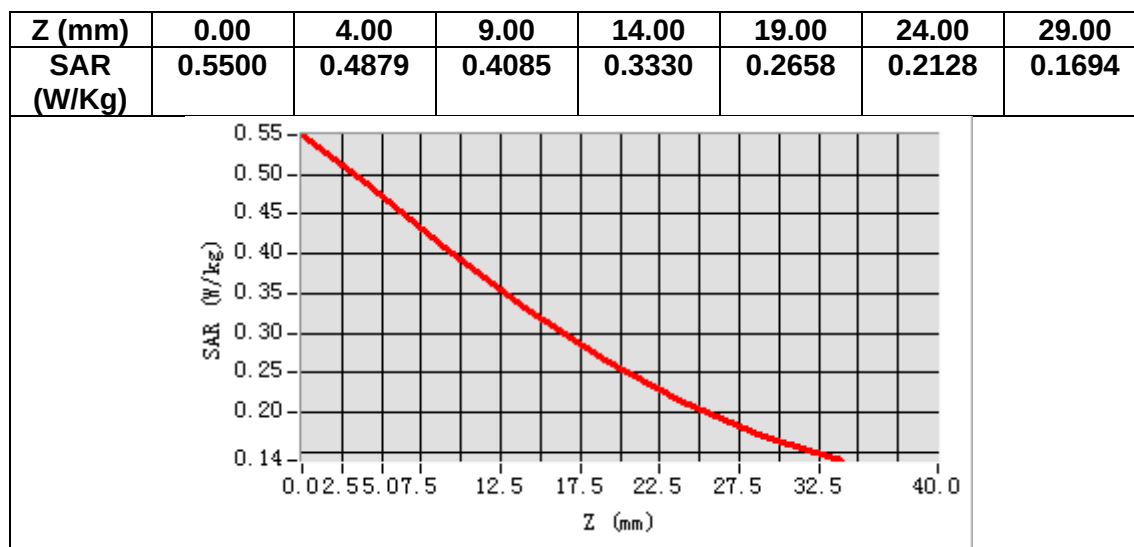
VOLUME SAR



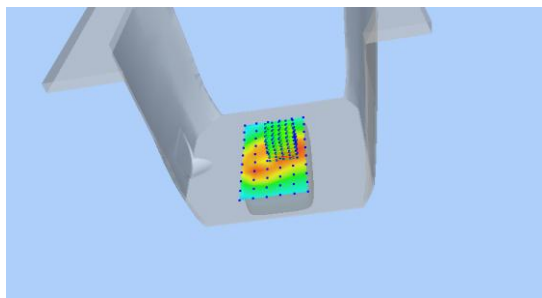
Maximum location: X=9.00, Y=3.00

SAR Peak: 0.57 W/kg

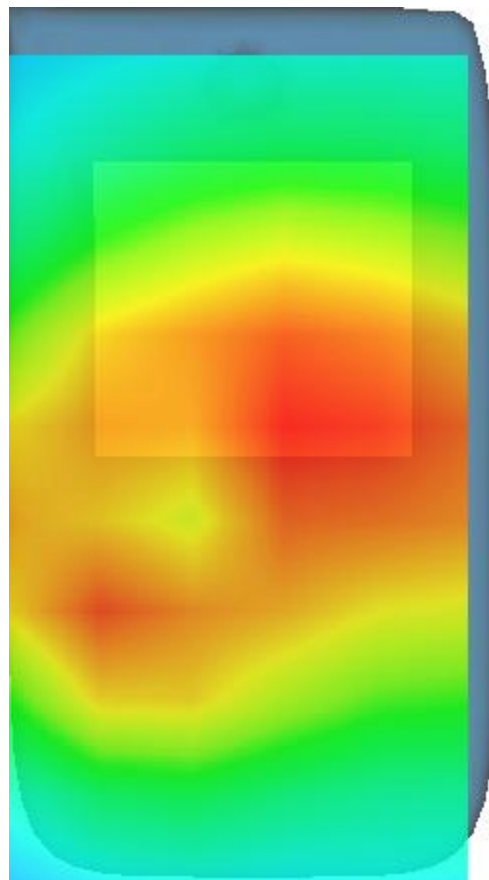
SAR 10g (W/Kg)	0.381168
SAR 1g (W/Kg)	0.481761



3D screen shot



Hot spot position



MEASUREMENT 17

Date of measurement: 27/10/2022

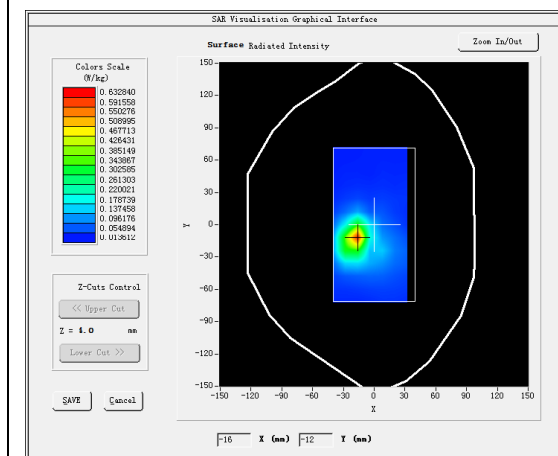
A. Experimental conditions.

<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>LTE band 41</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.6)</u>
<u>ConvF</u>	<u>1.87</u>

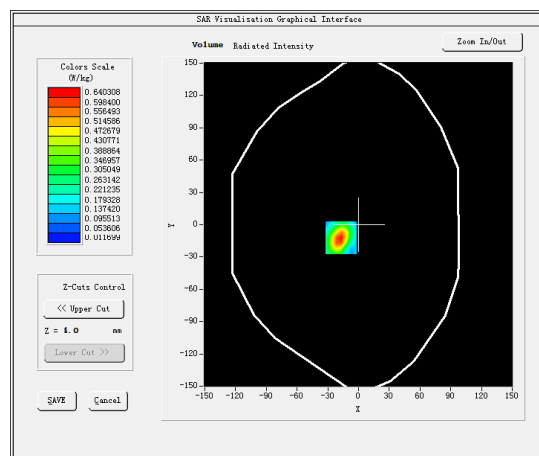
B. SAR Measurement Results

Frequency (MHz)	2593.000000
Relative permittivity (real part)	37.603531
Relative permittivity (imaginary part)	13.223969
Conductivity (S/m)	1.904986
Variation (%)	-1.000000

SURFACE SAR



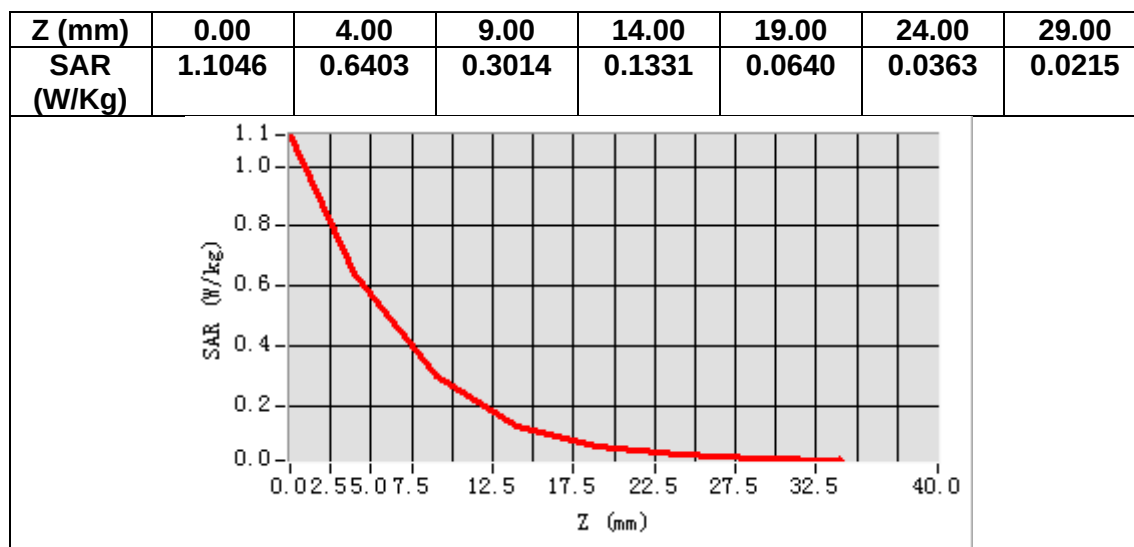
VOLUME SAR



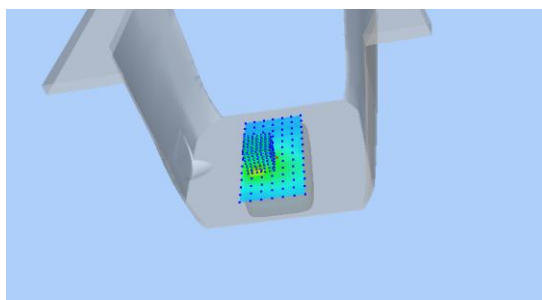
Maximum location: X=-17.00, Y=-12.00

SAR Peak: 1.11 W/kg

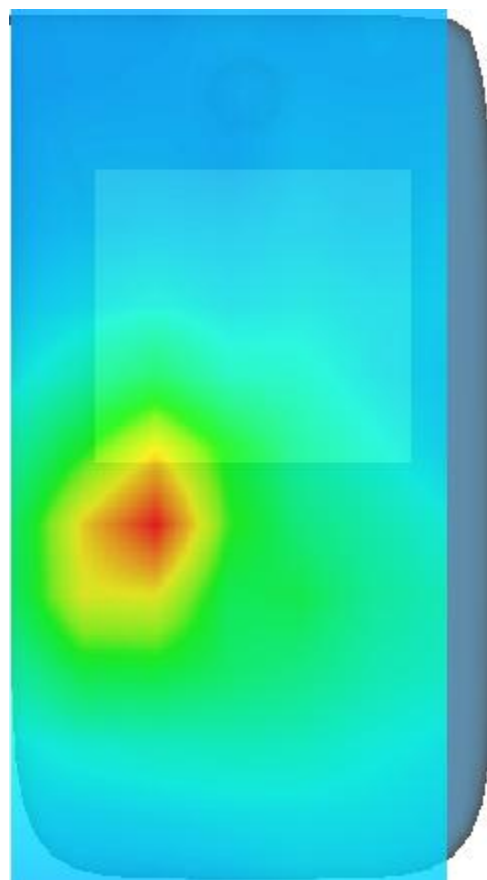
SAR 10g (W/Kg)	0.249766
SAR 1g (W/Kg)	0.577341



3D screen shot



Hot spot position



14. Appendix D. Calibration Certificate

Table of contents
E Field Probe - SN 08/16 EPGO287
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
Extended Calibration Certificate



COMOSAR E-Field Probe Calibration Report

Ref : ACR.60.1.21.MVGB.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.: SN 08/16 EPG0287**

Calibrated at MVG

Z.I. de la pointe du diable

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

Calibration date: 02/01/2022



Accreditations #2-6789 and #2-6814
Scope available on www.cofrac.fr

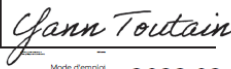
Summary:

This document presents the method and results from an accredited COMOSAR 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.60.1.21.MVGB.A

	<i>Name</i>	<i>Function</i>	<i>Date</i>	<i>Signature</i>
<i>Prepared by :</i>	Jérôme Luc	Technical Manager	2/1/2022	
<i>Checked by :</i>	Jérôme Luc	Technical Manager	2/1/2022	
<i>Approved by :</i>	Yann Toutain	Laboratory Director	2/1/2022	

2022.02.0
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	<i>Customer Name</i>
<i>Distribution :</i>	SHENZHEN NTEK TESTING TECHNOLOGY CO., LTD.

<i>Issue</i>	<i>Name</i>	<i>Date</i>	<i>Modifications</i>
A	Jérôme Luc	2/1/2022	Initial release



COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.60.1.21.MVGB.A

TABLE OF CONTENTS

1	Device Under Test	4
2	Product Description	4
2.1	General Information	4
3	Measurement Method	4
3.1	Linearity	4
3.2	Sensitivity	5
3.3	Lower Detection Limit	5
3.4	Isotropy	5
3.1	Boundary Effect	5
4	Measurement Uncertainty	6
5	Calibration Measurement Results	6
5.1	Sensitivity in air	6
5.2	Linearity	7
5.3	Sensitivity in liquid	8
5.4	Isotropy	9
6	List of Equipment	10



COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.60.1.21.MVGB.A

1 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR DOSIMETRIC E FIELD PROBE
Manufacturer	MVG
Model	SSE2
Serial Number	SN 08/16 EPGO287
Product Condition (new / used)	Used
Frequency Range of Probe	0.15 GHz-6GHz
Resistance of Three Dipoles at Connector	Dipole 1: R1=0.211 MΩ Dipole 2: R2=0.199 MΩ Dipole 3: R3=0.199 MΩ

2 PRODUCT DESCRIPTION

2.1 GENERAL INFORMATION

MVG's COMOSAR E field Probes are built in accordance to the IEEE 1528, FCC KDB865664 D01, CENELEC EN62209 and CEI/IEC 62209 standards.



Figure 1 – MVG COMOSAR Dosimetric E field Dipole

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 IEEE 1528, FCC KDB865664 D01, CENELEC EN62209 and CEI/IEC 62209 standards provide recommended practices for the probe calibrations, including the performance characteristics of interest and methods by which to assess their affect. All calibrations / measurements performed meet the fore mentioned standards.

3.1 LINEARITY

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



COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.60.1.21.MVGB.A

3.2 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.

3.3 LOWER DETECTION LIMIT

The lower detection limit was assessed using the same measurement set up as used for the linearity measurement. The required lower detection limit is 10 mW/kg.

3.4 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°).

3.1 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:

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

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.



COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.60.1.21.MVGB.A

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

4 MEASUREMENT UNCERTAINTY

The guidelines outlined in the IEEE 1528, OET 65 Bulletin C, CENELEC EN50361 and CEI/IEC 62209 standards were followed to generate the measurement uncertainty associated with an E-field probe calibration using the waveguide technique. All uncertainties listed below represent an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2, traceable to the Internationally Accepted Guides to Measurement Uncertainty.

Uncertainty analysis of the probe calibration in waveguide					
ERROR SOURCES	Uncertainty value (%)	Probability Distribution	Divisor	ci	Standard Uncertainty (%)
Expanded uncertainty 95 % confidence level k = 2					14 %

5 CALIBRATION MEASUREMENT RESULTS

Calibration Parameters	
Liquid Temperature	20 +/- 1 °C
Lab Temperature	20 +/- 1 °C
Lab Humidity	30-70 %

5.1 SENSITIVITY IN AIR

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 ($\mu\text{V}/(\text{V}/\text{m})^2$)
0.72	0.66	0.77

DCP dipole 1 (mV)	DCP dipole 2 (mV)	DCP dipole 3 (mV)
107	110	110

Calibration curves $e_i=f(V)$ ($i=1,2,3$) allow to obtain E-field value using the formula:

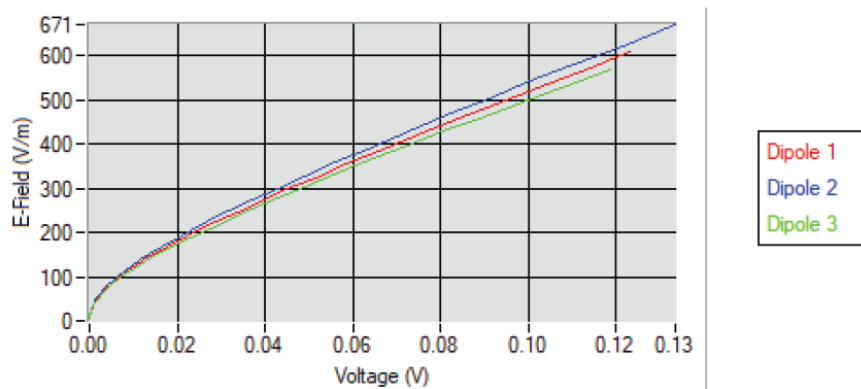
$$E = \sqrt{E_1^2 + E_2^2 + E_3^2}$$



COMOSAR E-FIELD PROBE CALIBRATION REPORT

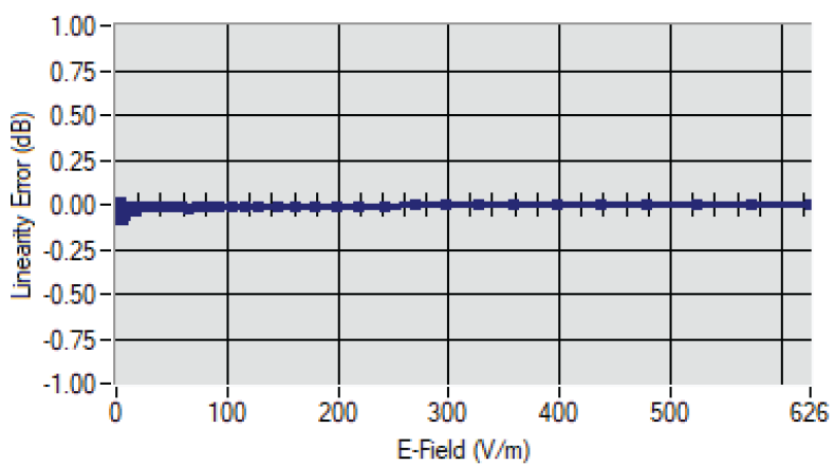
Ref: ACR.60.1.21.MVGB.A

Calibration curves



5.2 LINEARITY

Linearity



Linearity: $\pm 1.90\%$ ($\pm 0.08\text{dB}$)



COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.60.1.21.MVGB.A

5.3 SENSITIVITY IN LIQUID

<u>Liquid</u>	<u>Frequency</u> <u>(MHz +/-</u> <u>100MHz)</u>	<u>ConvF</u>
HL750	750	1.49
HL850	835	1.50
HL900	900	1.61
HL1800	1800	1.73
HL1900	1900	1.91
HL2000	2000	1.97
HL2300	2300	1.92
HL2450	2450	1.98
HL2600	2600	1.87
HL3300	3300	1.79
HL3500	3500	1.85
HL3700	3700	1.79
HL3900	3900	2.07
HL4200	4200	2.21
HL4600	4600	2.25
HL4900	4900	2.05
HL5200	5200	1.80
HL5400	5400	2.05
HL5600	5600	2.16
HL5800	5800	2.07

LOWER DETECTION LIMIT: 8mW/kg

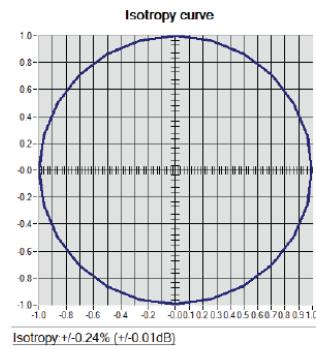


COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.60.1.21.MVGB.A

5.4 ISOTROPY

HL1800 MHz





COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.60.1.21.MVGB.A

6 LIST OF EQUIPMENT

Equipment Summary Sheet				
Equipment Description	Manufacturer / Model	Identification No.	Current Calibration Date	Next Calibration Date
Flat Phantom	MVG	SN-20/09-SAM71	Validated. No cal required.	Validated. No cal required.
COMOSAR Test Bench	Version 3	NA	Validated. No cal required.	Validated. No cal required.
Network Analyzer	Rohde & Schwarz ZVM	100203	05/2019	05/2022
Network Analyzer – Calibration kit	Rohde & Schwarz ZV-Z235	101223	05/2019	05/2022
Multimeter	Keithley 2000	1160271	02/2020	02/2023
Signal Generator	Rohde & Schwarz SMB	106589	04/2019	04/2022
Amplifier	Aethercomm	SN 046	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Power Meter	NI-USB 5680	170100013	05/2019	05/2022
Directional Coupler	Narda 4216-20	01386	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Waveguide	Mega Industries	069Y7-158-13-712	Validated. No cal required.	Validated. No cal required.
Waveguide Transition	Mega Industries	069Y7-158-13-701	Validated. No cal required.	Validated. No cal required.
Waveguide Termination	Mega Industries	069Y7-158-13-701	Validated. No cal required.	Validated. No cal required.
Temperature / Humidity Sensor	Testo 184 H1	44220687	05/2020	05/2023



SAR Reference Dipole Calibration Report

Ref : ACR.60.2.21.MVGB.A

SHENZHEN NTEK TESTING TECHNOLOGY CO., LTD.

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COMMUNITY, XIXIANG STREET,
BAO'AN DISTRICT, SHENZHEN GUANGDONG, CHINA
MVG COMOSAR REFERENCE DIPOLE

FREQUENCY: 750 MHZ

SERIAL NO.: SN 03/15 DIP0G750-355

Calibrated at MVG

Z.I. de la pointe du diable

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

Calibration date: 03/01/2021



Accreditations #2-6789 and #2-6814
Scope available on www.cofrac.fr

Summary:

This document presents the method and results from an accredited SAR reference dipole calibration performed at MVG, using the COMOSAR test bench. The test results covered by accreditation are traceable to the International System of Units (SI).