FCC SAR EVALUATION REPORT

In accordance with the requirements of
FCC 47 CFR Part 2(2.1093) and
IEEE Std 1528-2013

Product Name:	Smart Phone
Model No.:	GQ5016
Serial Model:	Armor 33 Pro, Armor 33 Ultra, Armor 33T Ultra, Armor 33T Pro, Armor 33 Lite, Armor 33s, Armor 33s Pro
Brand Name:	ulefone
Report No.:	AiTSZ-250121017FW1
FCC ID:	2AOWK-5016

Prepared for

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TEST RESULT CERTIFICATION

Applicant's name	:	Shenzhen Gotron Electronic CO.,LTD.
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Manufacturer's Name	:	Shenzhen Gotron Electronic CO.,LTD.
Address	:	7B01, Building A, Block 1, Anhongji Tianyao Plaza, Longhua District, Shenzhen City, Guangdong Province China

Product description

Product name	:	Smart Phone
Trademark	:	ulefone
Model and/or type reference	:	GQ5016
Serial Model	:	Armor 33 Pro, Armor 33 Ultra, Armor 33T Ultra, Armor 33T Pro, Armor 33 Lite, Armor 33s, Armor 33s Pro
		FCC 47 CFR Part 2(2.1093)
Standards	:	IEEE Std 1528-2013
		Published RF exposure KDB procedures

This device described above has been tested by Guangdong Asia Hongke Test Technology Limited. 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). 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.

Date of Test

Date (s) of performance of tests	:	Feb. 07, 2025~ Feb. 17, 2025
Date of Issue	:	Apr. 03, 2025
Test Result	:	**Pass**

Reviewed by: Simba Huang Simba Huang **Approved by:** Seal.chen Seal.chen

※ ※ Revision History ※ ※

REV.	DESCRIPTION	ISSUED DATE	REMARK
Rev.1.0	Initial Test Report Release	Apr. 03, 2025	Seal.chen

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1. General Information

1.1. RF exposure limits

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

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

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

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

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

Occupational/Controlled Environments:

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

General Population/Uncontrolled Environments:

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

NOTE

HEAD AND 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 as follows.

Band	Max SAR Value Reported(W/kg)		
	1-g Head (Separation distance of 0mm)	1-g Body&Hotspot (Separation distance of 10mm)	Max SAR Summation
GSM850	0.328	0.288	Head: 1.343 Body: 1.184 Hotspot: 1.184
GSM1900	0.288	0.241	
WCDMA Band II	0.077	0.357	
WCDMA Band IV	0.138	0.433	
WCDMA Band V	0.309	0.316	
LTE band 2	0.488	0.434	
LTE band 4	0.477	0.481	
LTE band 5	0.303	0.272	
LTE band 12	0.322	0.263	
LTE band 17	0.329	0.292	
LTE band 41	0.293	0.489	
LTE band 66	0.070	0.425	
LTE band 71	0.135	0.365	
NR n71	0.141	0.168	
2.4GHz WLAN ANT1	0.268	0.256	
2.4GHz WLAN ANT2	0.265	0.208	
5.2GHz WLAN ANT1	0.516	0.515	
5.2GHz WLAN ANT2	0.339	0.095	
5.8GHz WLAN ANT1	0.588	0.588	
5.8GHz WLAN ANT2	0.254	0.107	

NOTE: The Max SAR Summation 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 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	Smart Phone		
Model Name	GQ5016		
Family Model	Armor 33 Pro, Armor 33 Ultra, Armor 33T Ultra, Armor 33T Pro, Armor 33 Lite, Armor 33s, Armor 33s Pro		
Device Phase	Identical Prototype		
Exposure Category	General population / Uncontrolled environment		
Antenna Type	Internal Antenna		
Power rating:	DC 3.87V, 25500mAh, 98.685Wh		
Hardware version	N/A		
Software version	N/A		
Device Operating Configurations			
Supporting Mode(s)	GSM850/1900,WCDMABand2/4/5,LTEBand2/4/5/12/17/41/66/71, NR SA n71, WLAN 2.4G/5.2G/5.8G, Bluetooth, NFC		
Test Modulation	GSM(GMSK/8PSK), WCDMA(QPSK), LTE(QPSK/16QAM), NR(DFT-s-OFDM:PI/2 BPSK/QPSK/16-QAM/64QAM/256QAM CP-OFDM: QPSK/16-QAM/64QAM/256QAM), WLAN(DSSS/OFDM), Bluetooth(GFSK, π/4-DQPSK, 8DPSK) , NFC(ASK)		
Device Class	B		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	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 12	699-716	729-746
	LTE Band 17	704-716	734-746
	LTE Band 41	2496-2690	
	LTE Band 66	1710-1780	2110-2200
	LTE Band 71	663-698	617-652
	NR n71	663-698	617-652
	WLAN 2.4G	2412-2462	
	WLAN 5.2G	5180-5240	
	WLAN 5.8G	5745-5825	
	NFC	13.56	

	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 12)	
	3, tested with power control all Max.(LTE Band 17)	
	3, tested with power control all Max.(LTE Band 41)	
	3, tested with power control all Max.(LTE Band 66)	
	3, tested with power control all Max.(LTE Band 71)	
	3, tested with power control all Max.(NR n71)	

1.4. Test specification(s)

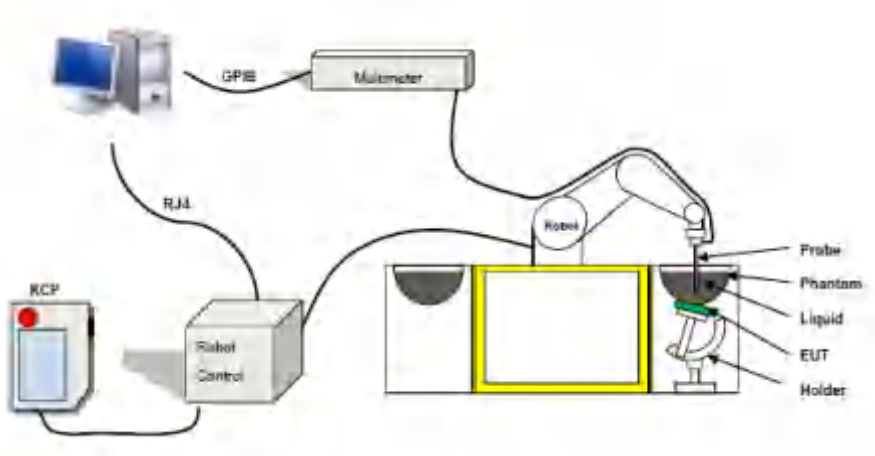
FCC 47 CFR Part 2(2.1093)
IEEE Std 1528-2013
KDB 865664 D01 SAR measurement 100 MHz to 6 GHz
KDB 865664 D02 RF Exposure Reporting
KDB 447498 D01 General RF Exposure Guidance
KDB 248227 D01 802.11 Wi-Fi SAR
KDB 941225 D01 3G SAR Procedures
KDB 941225 D05 SAR for LTE Devices
KDB 941225 D06 Hotspot SAR
KDB 648474 D04 Handset 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. 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 EPGO 0523-403 with following specifications is used.

- Probe Length: 330 mm
- Length of Individual Dipoles: 2 mm
- Maximum external diameter: 8 mm
- Probe Tip External Diameter: 2.5 mm
- Distance between dipole/probe extremity: 1 mm
- Dynamic range: 0.01-100 W/kg
- Probe linearity: 3%
- Axial Isotropy: < 0.10 dB
- Spherical Isotropy: < 0.10 dB
- Calibration range: 150 MHz to 6 GHz for head & body simulating liquid.
- Angle between probe axis (evaluation axis) and surface normal line: less than 30°

2.3.1. E-Field Probe Calibration

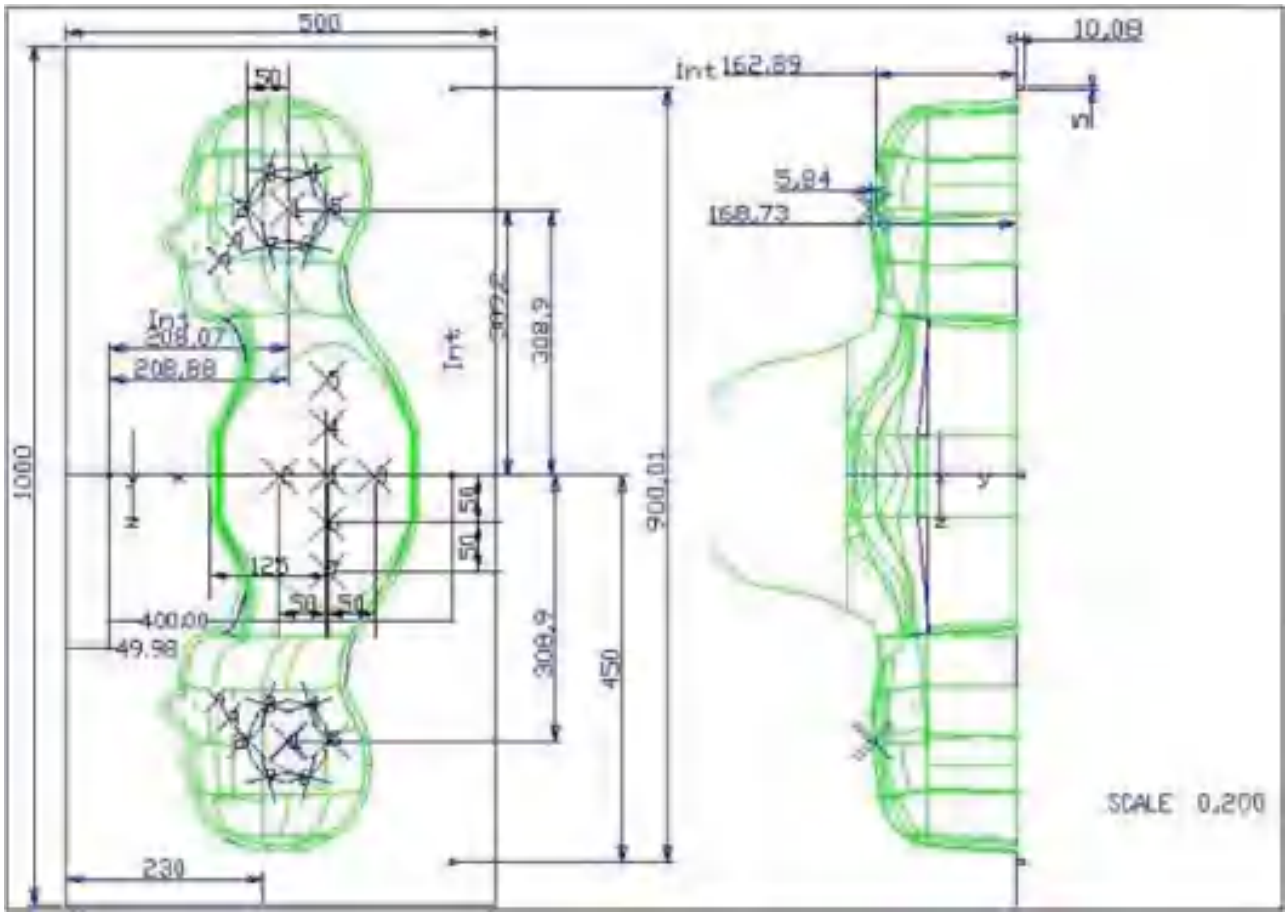
Each probe needs to be calibrated according to a dosimetric assessment procedure with accuracy better than ±10%. The spherical isotropy shall be evaluated and within ±0.25dB. The sensitivity parameters (Norm X, Norm Y, and Norm Z), the diode compression parameter (DCP) and the conversion factor (Conv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

2.4. Phantoms

For the measurements the Specific Anthropomorphic Mannequin (SAM) defined by the IEEE SCC-34/SC2 group is used. The phantom is a polyurethane shell integrated in a wooden table. The thickness of the phantom amounts to 2mm +/- 0.2mm. It enables the dosimetric evaluation of left and right phone usage and includes an additional flat phantom part for the simplified performance check. The phantom set-up includes a cover, which prevents the evaporation of the liquid.

SAM

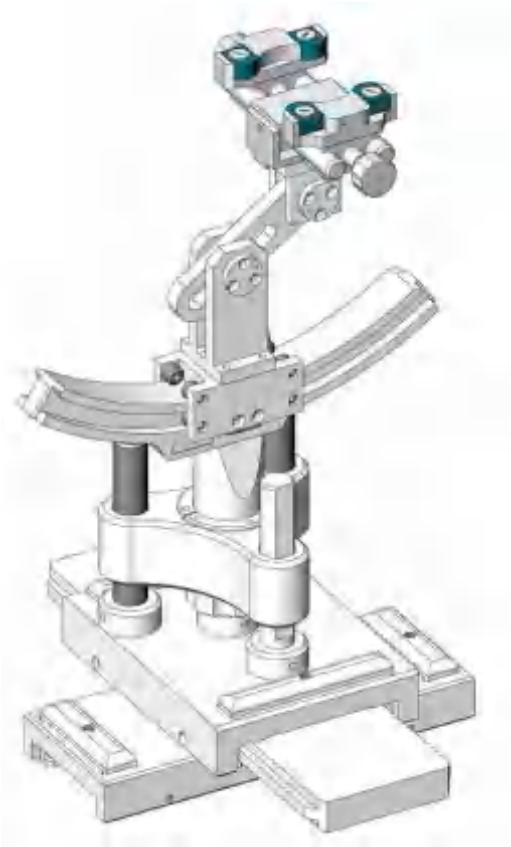
2.5. Technical Data



Left Head(mm)		Right Head(mm)		Flat Part(mm)	
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.

2.6. Device Holder



The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of ± 0.5 mm would produce a SAR uncertainty of ± 20 %. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

2.7. 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	EPGO 0523-403	Sep. 11, 2024	Sep. 10, 2025
☒	MVG	750 MHz Dipole	SID750	SN 03/15 DIP 0G750-355	Feb. 21, 2024	Feb. 20, 2027
☒	MVG	835 MHz Dipole	SID835	SN 03/15 DIP 0G835-347	Feb. 21, 2024	Feb. 20, 2027
☐	MVG	900 MHz Dipole	SID900	SN 03/15 DI P 0G900-348	Feb. 21, 2024	Feb. 20, 2027
☒	MVG	1800 MHz Dipole	SID1800	SN 03/15 DIP 1G800-349	Feb. 21, 2024	Feb. 20, 2027
☒	MVG	1900 MHz Dipole	SID1900	SN 03/15 DIP 1G900-350	Feb. 21, 2024	Feb. 20, 2027
☐	MVG	2000 MHz Dipole	SID2000	SN 03/15 DIP 2G000-351	Feb. 21, 2024	Feb. 20, 2027
☐	MVG	2300 MHz Dipole	SID2300	SN 03/16 DIP 2G300-358	Feb. 21, 2024	Feb. 20, 2027
☒	MVG	2450 MHz Dipole	SID2450	SN 03/15 DIP 2G450-352	Feb. 21, 2024	Feb. 20, 2027
☒	MVG	2600 MHz Dipole	SID2600	SN 03/15 DIP 2G600-356	Feb. 21, 2024	Feb. 20, 2027
☒	MVG	5000 MHz Dipole	SWG5500	SN 13/14 WGA 33	Feb. 21, 2024	Feb. 20, 2027
☒	MVG	Liquid measurement Kit	SCLMP	SN 21/15 OCPG 72	Jul. 01, 2024	Jun. 30, 2025
☒	MVG	Power Amplifier	N.A	AMPLISAR_28/14_003	NCR	NCR
☒	KEITHLEY	Millivoltmeter	2000	4072790	Jul. 01, 2024	Jun. 30, 2025
☒	R&S	Universal radio communication tester	CMU200	117858	Jul. 01, 2024	Jun. 30, 2025
☒	R&S	Wideband radio communication tester	CMW500	116581	Jul. 01, 2024	Jun. 30, 2025
☒	HP	Network Analyzer	8753D	3410J01136	Jul. 01, 2024	Jun. 30, 2025

☒	Agilent	PSG Analog Signal Generator	E8257D	MY51110112	Jul. 01, 2024	Jun. 30, 2025
☒	Agilent	Power meter	E4419B	MY45102538	Jul. 01, 2024	Jun. 30, 2025
☒	Agilent	Power meter	E4419B	MY45102140	Jul. 01, 2024	Jun. 30, 2025
☒	Agilent	Power meter	E4419B	MY45102215	Jul. 01, 2024	Jun. 30, 2025
☒	JFW	attenuator	50FPE-006	4360846-494-4	Jul. 01, 2024	Jun. 30, 2025
☒	JFW	attenuator	50FPE-006	4360846-492-1	Jul. 01, 2024	Jun. 30, 2025
☒	JFW	attenuator	50FPE-006	4360846-490-6	Jul. 01, 2024	Jun. 30, 2025
☒	Agilent	Power sensor	E9301A	MY41495644	Jul. 01, 2024	Jun. 30, 2025
☒	Agilent	Power sensor	E9301A	US39212148	Jul. 01, 2024	Jun. 30, 2025
☒	MCLI/USA	Directional Coupler	CB11-20	0D2L51502	Jul. 17, 2024	Jul. 16, 2027
☒	MVG	SAR Phantom	SSM2	SN 24/11 SAM87	NCR	NCR
☒	MVG	Device Holder	SMPPD	SN 24/11 MSH73	NCR	NCR

3. SAR Measurement Procedures

The measurement procedures are as follows:

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

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

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:
(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

3.1. Power Reference

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

3.2. Area scan & Zoom scan

The area scan is a 2D scan to find the hot spot location on the DUT. The zoom scan is a 3D scan

above the hot spot to calculate the 1g and 10g SAR value.

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

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

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

<table>
<tr><td colspan="3"></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td colspan="3">Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5 ± 1 mm</td><td>½·δ·ln(2) ± 0.5 mm</td></tr>
<tr><td colspan="3">Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30° ± 1°</td><td>20° ± 1°</td></tr>
<tr><td colspan="3" rowspan="2">Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}</td><td>≤ 2 GHz: ≤ 15 mm
2 – 3 GHz: ≤ 12 mm</td><td>3 – 4 GHz: ≤ 12 mm
4 – 6 GHz: ≤ 10 mm</td></tr>
<tr><td colspan="2">When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}</td><td>≤ 2 GHz: ≤ 8 mm
2 – 3 GHz: ≤ 5 mm*</td><td>3 – 4 GHz: ≤ 5 mm*
4 – 6 GHz: ≤ 4 mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">uniform grid: $\Delta z_{Zoom}(n)$</td><td>≤ 5 mm</td><td>3 – 4 GHz: ≤ 4 mm
4 – 5 GHz: ≤ 3 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface</td><td>≤ 4 mm</td><td>3 – 4 GHz: ≤ 3 mm
4 – 5 GHz: ≤ 2.5 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$: between subsequent points</td><td colspan="2">≤ 1.5·$\Delta z_{Zoom}(n-1)$</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥ 30 mm</td><td>3 – 4 GHz: ≥ 28 mm
4 – 5 GHz: ≥ 25 mm
5 – 6 GHz: ≥ 22 mm</td></tr>
<tr><td colspan="5">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.</td></tr>
</table>

3.3. Description of interpolation/extrapolation scheme

The local SAR inside the phantom is measured using small dipole sensing elements inside a probe body. The probe tip must not be in contact with the phantom surface in order to minimise measurements errors, but the highest local SAR will occur at the surface of the phantom.
An extrapolation is using to determinate this highest local SAR values. The extrapolation is based on a fourth-order least-square polynomial fit of measured data. The local SAR value is then extrapolated from the liquid surface with a 1 mm step.
The measurements have to be performed over a limited time (due to the duration of the battery) so the step of measurement is high. It could vary between 5 and 8 mm. To obtain an accurate assessment of the maximum SAR averaged over 10 grams and 1 gram requires a very fine resolution in the three dimensional scanned data array.

3.4. Volumetric Scan

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

3.5. Power Drift

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

4. System Verification Procedure

4.1. Tissue Verification

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

Ingredients (% of weight)	Head Tissue									
Frequency Band (MHz)	750	835	900	1800	1900	2000	2450	2600	5200	5800
Water	34.40	34.40	34.40	55.36	55.36	57.87	57.87	57.87	65.53	65.53
NaCl	0.79	0.79	0.79	0.35	0.35	0.16	0.16	0.16	0.00	0.00
1,2-Propanediol	64.81	64.81	64.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triton X-100	0.00	0.00	0.00	30.45	30.45	19.97	19.97	19.97	24.24	24.24
DGBE	0.00	0.00	0.00	13.84	13.84	22.00	22.00	22.00	10.23	10.23

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

4.1.1. Tissue Dielectric Parameter Check Results

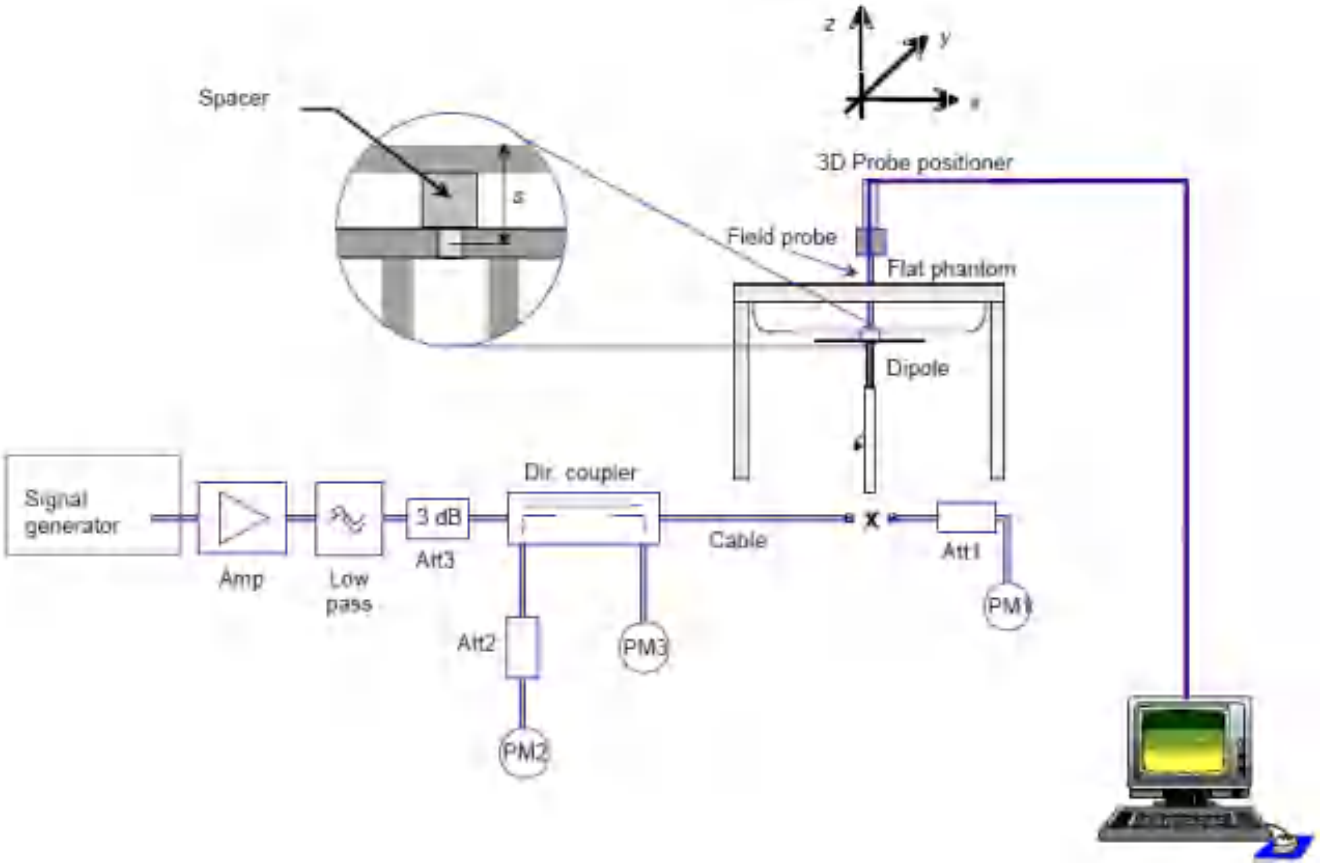
The simulating liquids should be checked at the beginning of a series of SAR measurements to determine of the dielectric parameter are within the tolerances of the specified target values. The measured conductivity and relative permittivity should be within ±5% of the target values.

Tissue Type	Measured Frequency (MHz)	Target Tissue		Measured Tissue		Liquid Temp.	Test Date
		εr (±5%)	σ (S/m) (±5%)	εr	σ (S/m)		
Head 750	750	41.96 (39.86~44.06)	0.89 (0.85~0.93)	42.56	0.91	21.2 °C	Feb. 07, 2025
Head 850	835	41.50 (39.43~43.58)	0.90 (0.86~0.95)	42.01	0.94	21.0 °C	Feb. 08, 2025
Head 1800	1800	40.00 (38.00~42.00)	1.40 (1.33~1.47)	39.61	1.41	21.4 °C	Feb. 09, 2025
Head 1900	1900	40.00 (38.00~42.00)	1.40 (1.33~1.47)	41.42	1.39	21.3 °C	Feb. 10, 2025
Head 2450	2450	39.20 (37.24~41.16)	1.80 (1.71~1.89)	40.41	1.82	21.5 °C	Feb. 11, 2025
Head 2600	2600	39.01 (37.06~40.96)	1.96 (1.86~2.06)	39.43	1.99	21.7 °C	Feb. 12, 2025
Head 5200	5200	36.00 (34.20~37.80)	4.66 (4.43~4.89)	37.40	4.51	21.4 °C	Feb. 13, 2025
Head 5800	5800	35.30 (33.54~37.07)	5.27 (5.01~5.53)	35.30	5.27	21.2 °C	Feb. 17, 2025

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 ±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	Power fed to reference dipole (mW)	Measured SAR Value		Measured SAR (Normalized to 1W)		Target SAR Value (1W)		Deviation (%)		Test Date
		1-g (W/Kg)	10-g (W/Kg)	1-g (W/Kg)	10-g (W/Kg)	1-g (W/Kg)	10-g (W/Kg)	1-g (W/Kg)	10-g (W/Kg)	
750MHz	100	0.930	0.621	9.30	6.21	8.60	5.78	8.14%	7.44%	Feb. 07, 2025
835MHz	100	1.011	0.612	10.11	6.12	9.40	6.28	7.55%	-2.55%	Feb. 08, 2025
1800MHz	100	3.832	2.025	38.32	20.25	37.06	20.01	3.40%	1.20%	Feb. 09, 2025
1900MHz	100	4.154	2.153	41.54	21.53	39.69	20.92	4.66%	2.92%	Feb. 10, 2025
2450MHz	100	5.184	2.359	51.84	23.59	50.05	23.80	3.58%	-0.88%	Feb. 11, 2025
2600MHz	100	5.433	2.523	54.33	25.23	54.16	24.85	0.31%	1.53%	Feb. 12, 2025
5200MHz	100	14.712	5.212	147.12	52.12	162.59	56.21	-9.51%	-7.28%	Feb. 13, 2025
5800MHz	100	16.421	5.623	164.21	56.23	182.2	61.32	-9.87%	-8.30%	Feb. 17, 2025

5. SAR measurement variabilit

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 (~ 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.

6. 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.

7. RF Exposure Positions

7.1. Ear and handset reference point

Figure 7.1.1 shows the front, back, and side views of the SAM phantom. The center-of-mouth reference point is labeled "M", the left ear reference point (ERP) is marked "LE", and the right ERP is marked "RE".

Fig 7.1.1 Front, back, and side views of SAM phantom

7.2. Definition of the cheek position

1. Define two imaginary lines on the handset, the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset: the midpoint of the width wt of the handset at the level of the acoustic output (point A in Figure 7.2.1 and Figure 7.2.2), and the midpoint of the width wb of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 7.2.1). The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset (see Figure 7.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
2. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 7.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
3. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP
4. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
5. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
6. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line

passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 7.2.3. The actual rotation angles should be documented in the test report.

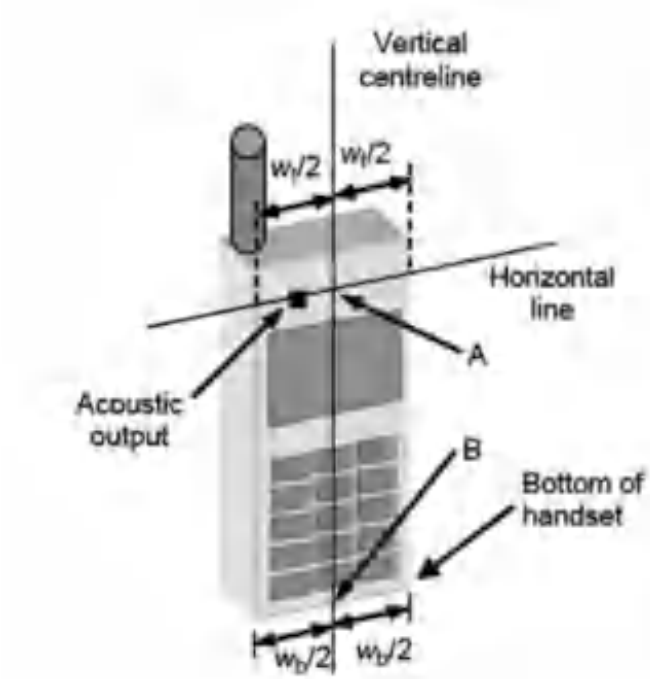


Fig 7.2.1 Handset vertical and horizontal reference lines——fixed case

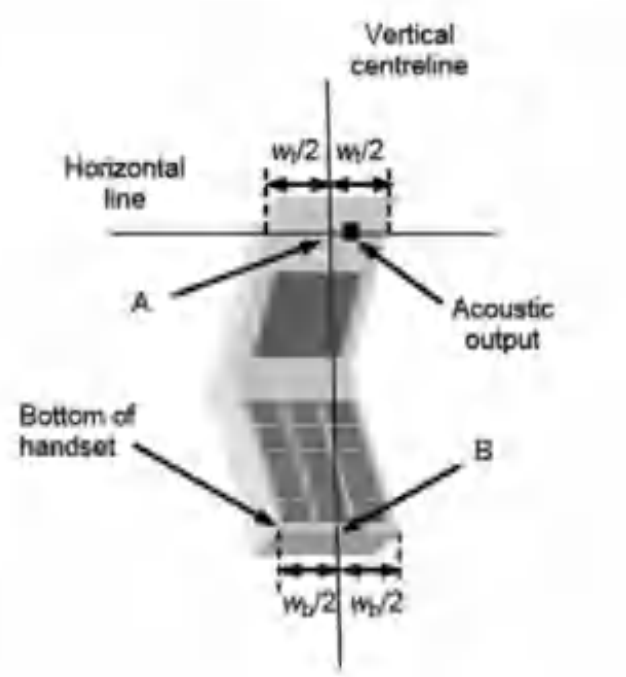


Fig 7.2.2 Handset vertical and horizontal reference lines—“clam-shell case”

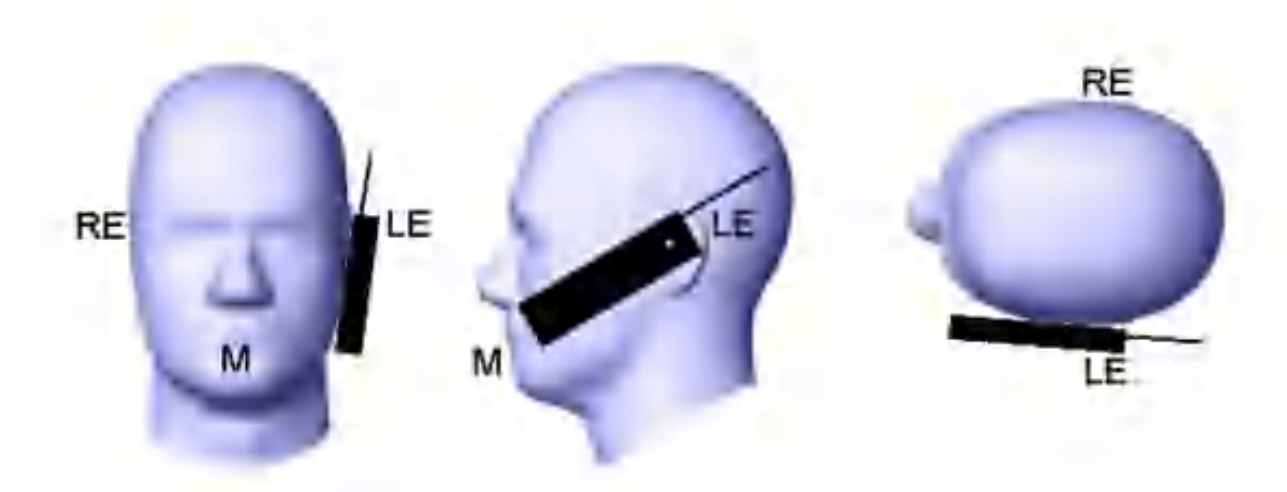


Fig 7.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

7.3. Definition of the tilt position

1. While maintaining the orientation of the handset, retract the handset parallel to the reference plane far enough away from the phantom to enable a rotation of the device by 15 degree.
2. Rotate the Handset around the horizontal line by 15 degree (see Figure 7.3.1).
3. While maintaining the orientation of the handset, move the handset towards the phantom on a line passing through RE and LE until any part of the handset touches the ear. The tilt position is obtained when the contact is on the pinna. If the contact is at any location other than the pinna, e.g., the antenna with the back of the phantom head, the angle of the handset shall be reduced. In this case, the tilt position is obtained if any part of the handset is in contact with the pinna as well as a second part of the handset is in contact with the phantom, e.g., the antenna with the back of the head.

Figure 7.3.1 – Tilt position of the wireless device on the left side of SAM

7.4. 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 7.4.1). 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 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a handset 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 7.4.1 – Test positions for body-worn devices

7.5. 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 x W ≥ 9 cm x 5 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 form 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.

8. RF Output Power

8.1. GSM Conducted Power

Band GSM850	Burst-Averaged output Power (dBm)				Factor	Frame-Averaged output Power (dBm)			
Tx Channel	Tune-up (dBm)	128	189	251		Tune-up	128	189	251
Frequency (MHz)		824.2	836.4	848.8			824.2	836.4	848.8
GSM (GMSK)	33.00	32.79	32.77	32.66	/	/	/	/	/
GPRS(GMSK,1 Tx slot)	33.00	32.66	32.65	32.54	-9.03	23.97	23.63	23.62	23.51
GPRS(GMSK,2 Tx slot)	32.00	31.91	31.88	31.77	-6.02	25.98	25.89	25.86	25.75
GPRS(GMSK,3 Tx slot)	30.50	30.08	30.09	30.02	-4.26	26.24	25.82	25.83	25.76
GPRS(GMSK,4 Tx slot)	29.00	28.90	28.96	28.88	-3.01	25.99	25.89	25.95	25.87
GPRS(EDGE,1 Tx slot)	27.00	26.10	26.73	26.25	-9.03	17.97	17.07	17.70	17.22
GPRS(EDGE,2 Tx slot)	26.00	25.54	25.68	25.28	-6.02	19.98	19.52	19.66	19.26
GPRS(EDGE,3 Tx slot)	24.00	23.49	23.73	23.46	-4.26	19.74	19.23	19.47	19.20
GPRS(EDGE,4 Tx slot)	22.50	22.06	22.40	22.24	-3.01	19.49	19.05	19.39	19.23

Band GSM1900	Burst-Averaged output Power (dBm)				Factor	Frame-Averaged output Power (dBm)			
Tx Channel	Tune-up (dBm)	512	661	810		Tune-up	512	661	810
Frequency (MHz)		1850.2	1880	1909.8			1850.2	1880	1909.8
GSM (GMSK)	29.00	28.59	28.44	28.24	/	/	/	/	/
GPRS(GMSK,1 Tx slot)	29.00	28.57	28.38	28.19	-9.03	19.97	19.54	19.35	19.16
GPRS(GMSK,2 Tx slot)	28.00	27.83	27.68	27.51	-6.02	21.98	21.81	21.66	21.49
GPRS(GMSK,3 Tx slot)	26.50	26.05	25.94	25.77	-4.26	22.24	21.79	21.68	21.51
GPRS(GMSK,4 Tx slot)	25.00	24.98	24.90	24.79	-3.01	21.99	21.97	21.89	21.78
GPRS(EDGE,1 Tx slot)	26.00	25.60	24.76	25.48	-9.03	16.97	16.57	15.73	16.45
GPRS(EDGE,2 Tx slot)	24.50	24.25	23.93	24.07	-6.02	18.48	18.23	17.91	18.05
GPRS(EDGE,3 Tx slot)	22.50	22.24	22.05	21.98	-4.26	18.24	17.98	17.79	17.72
GPRS(EDGE,4 Tx slot)	21.00	20.77	20.73	20.64	-3.01	17.99	17.76	17.72	17.63

Note:

Remark: GPRS, CS4 coding scheme. EGPRS, MCS5 coding scheme.
Multi-Slot Class 8, Support Max 4 downlink, 1 uplink, 5 working link
Multi-Slot Class 10, Support Max 4 downlink, 2 uplink, 5 working link
Multi-Slot Class 12, Support Max 4 downlink, 4 uplink, 5 working link

SAR testing was performed on the maximum frame-averaged power mode.

The frame-averaged power is linearly proportion to the slot number configured and it is linearly scaled the maximum

Burst-averaged power based on time slots. The calculated method is shown as below:

Frame-averaged power = Burst averaged power (1 TX Slot) – 9.03 dB

Frame-averaged power = Burst averaged power (2 TX Slots) – 6.02 dB

Frame-averaged power = Burst averaged power (3 TX Slots) - 4.26 dB

Frame-averaged power = Burst averaged power (4 TX Slots) – 3.01 dB

8.2. WCDMA Conducted Power

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification. A summary of these settings are illustrated below:

1. Release99 Setup Configuration

Mode	Subtest	Rel99
WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm1
	βc/βd	8/15

2. HSDPA Setup Configuration

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subtest	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm 2			
	βc	2/15	12/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	βc/βd	2/15	12/15	15/8	15/4
	βhs	4/15	24/15	30/15	30/15
HSDPA Specific Settings	D_{ACK}	8			
	D_{NAK}	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback (Table 5.2B.4)	4ms			
	CQI Repetition Factor (Table 5.2B.4)	2			
	Ahs =βhs/βc	30/15			

3. HSUPA Setup Configuration

	Mode	HSUPA	HSUPA	HSUPA	HSUPA	HSUPA
	Subtest	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm1				
	βc	11/15	6/15	15/15	2/15	15/15
	βd	15/15	15/15	9/15	15/15	15/15
	βec	209/225	12/15	30/15	2/15	24/15
	βc/βd	11/15	6/15	15/9	2/15	15/15
	βhs	22/15	12/15	30/15	4/15	30/15
	βed	1309/225	94/75	47/15 47/15	56/75	134/15
	CM (dB)	1.0	3.0	2.0	3.0	1.0
HSDPA Specific Settings	D_{ACK}	8				
	D_{NAK}	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback (Table 5.2B.4)	4ms				

	CQI Repetition Factor (Table 5.2B.4)	2				
	Ahs = βhs/βc	30/15				
HSUPA Specific Settings	D E-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9

4. WCDMA Conducted Power Results

Choose the highest output power mode RMC 12.2Kbps for Band VIII/I at middle channel to test SAR and determine the worst configuration for further high/low channel test.

WCDMA Band II	Burst-Averaged output Power (dBm)			
Tx Channel	Tune-up (dBm)	9262	9400	9538
Frequency (MHz)		1852.4	1880	1907.6
RMC12.2K	22.00	21.98	21.92	21.14
HSDPA Sub 1	21.50	21.06	21.00	20.96
HSDPA Sub 2	21.00	20.48	20.55	20.37
HSDPA Sub 3	20.00	19.63	19.31	19.29
HSDPA Sub 4	20.00	19.43	19.64	19.53
HSUPA Sub 1	21.00	19.58	20.74	20.85
HSUPA Sub 2	21.00	20.97	20.77	20.88
HSUPA Sub 3	20.00	18.98	19.97	19.86
HSUPA Sub 4	21.00	20.98	20.94	20.98
HSUPA Sub 5	20.50	19.42	20.42	20.32

WCDMA Band IV	Burst-Averaged output Power (dBm)			
Tx Channel	Tune-up (dBm)	1312	1413	1513
Frequency (MHz)		1712.4	1732.6	1752.6
RMC12.2K	23.00	21.68	22.50	21.75
HSDPA Sub 1	22.00	21.71	21.89	21.55
HSDPA Sub 2	22.00	21.21	21.57	21.07
HSDPA Sub 3	21.00	20.45	20.52	20.35
HSDPA Sub 4	20.50	19.95	20.38	20.28
HSUPA Sub 1	22.00	21.05	21.71	21.48
HSUPA Sub 2	22.00	21.51	21.84	21.61
HSUPA Sub 3	21.00	20.13	20.64	20.50
HSUPA Sub 4	22.00	21.61	21.88	21.58
HSUPA Sub 5	21.50	20.39	21.30	21.03

WCDMA Band V	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	22.26	22.13	22.08
HSDPA Sub 1	21.50	21.35	21.23	21.18
HSDPA Sub 2	21.00	20.98	20.72	20.78
HSDPA Sub 3	20.00	19.94	19.88	19.34
HSDPA Sub 4	20.00	19.88	19.45	19.66
HSUPA Sub 1	21.50	20.01	21.08	21.01
HSUPA Sub 2	21.50	21.28	21.16	21.09
HSUPA Sub 3	20.50	19.69	20.01	19.80
HSUPA Sub 4	21.50	21.34	21.23	21.20
HSUPA Sub 5	21.00	19.72	20.53	20.44

8.3. LTE Conducted Power

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 36.521-1 specification. A summary of these configurations are illustrated below:

Test Parameters for Channel Bandwidths				
	Downlink Configuration	Uplink Configuration		
Ch BW	N/A for Max UE output power testing	Mod'n	RB allocation	
			FDD	TDD
1.4MHz		QPSK	1	1
1.4MHz		QPSK	5	5
3MHz		QPSK	1	1
3MHz		QPSK	4	4
5MHz		QPSK	1	1
5MHz		QPSK	8	8
10MHz		QPSK	1	1
10MHz		QPSK	12	12
15MHz		QPSK	1	1
15MHz		QPSK	16	16
20MHz		QPSK	1	1
20MHz		QPSK	18	18

Note 1: Test Channel Bandwidths are checked separately for each E-UTRA band, the applicable channel bandwidths are specified in Table 5.4.2.1-1.

Note 2: For E-UTRA bands not applied with Note 2 in Table 6.2.2.3-1:

- The 1 RB allocation shall be tested at RB#0 for low and mid range, RB #max for high range test frequency.
- The RBstart of non-1RB allocation shall be RB #0 for low and mid range, RB# (max +1 - RB allocation) for high range test frequency.

Note 3: For E-UTRA bands applied with Note 2 in Table 6.2.2.3-1:

- If the test channel bandwidth is larger than 4MHz, then the 1 RB allocation shall be tested at both RB #0 and RB #max.
- If the test channel bandwidth is smaller or equal to 4MHz, then the 1 RB allocation shall be tested at RB #0.
- If the test channel bandwidth = (FUL_high - FUL_low) specified by the operating band, then only one frequency range shall be tested and the 1 RB allocation shall be tested at RB #0, RB #$\lceil N_{RB}^{UL}/2 \rceil$ and RB #max.
- For non-1RB allocation, test frequency is middle range, and the RBstart shall be RB #0.

2. LTE Conducted Power Results

LTE output list

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18607/1850.7	18900/1880	19193/1909.3
LTE Band 2	1.4MHz	QPSK	1	0	23.50	23.15	23.14	23.08
			1	2	23.50	23.14	23.11	23.09
			1	5	23.50	23.12	23.15	23.18
			3	0	23.50	23.17	23.07	23.10
			3	1	23.50	23.14	23.05	23.06
			3	2	23.50	23.20	23.09	23.12
			6	0	22.50	22.21	22.13	22.10
		16QAM	1	0	22.50	22.32	22.32	22.30
			1	2	22.50	22.36	22.30	22.39
			1	5	22.50	22.37	22.39	22.29
			3	0	22.50	22.28	22.12	22.10
			3	1	22.50	22.27	22.16	22.16
			3	2	22.50	22.23	22.08	22.14
			6	0	21.50	21.24	21.18	21.22
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18615/1851.5	18900/1880	19185/1908.5
LTE Band 2	3MHz	QPSK	1	0	23.50	23.11	23.15	23.04
			1	7	23.50	23.12	23.17	23.02
			1	14	23.50	23.12	23.07	23.14
			8	0	22.50	22.15	22.17	22.10
			8	4	22.50	22.15	22.14	22.10
			8	7	22.50	22.18	22.14	22.14
			15	0	22.50	22.15	22.11	22.16
		16QAM	1	0	22.50	22.37	22.41	22.35
			1	7	22.50	22.31	22.31	22.32
			1	14	22.50	22.20	22.25	22.33
			8	0	21.50	21.24	21.22	21.16
			8	4	21.50	21.25	21.21	21.18
			8	7	21.50	21.20	21.19	21.20
			15	0	21.50	21.16	21.11	21.16
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18625/1852.5	18900/1880	19175/1907.5
LTE Band 2	5MHz	QPSK	1	0	23.50	23.20	23.28	23.02
			1	12	23.50	23.15	23.24	22.99
			1	24	23.50	23.08	23.09	23.04
			12	0	22.50	22.25	22.26	22.14
			12	6	22.50	22.19	22.18	22.16
			12	11	22.50	22.19	22.18	22.22
			25	0	22.50	22.23	22.22	22.17
		16QAM	1	0	22.50	22.41	22.44	22.19
			1	12	22.50	22.45	22.48	22.28
			1	24	22.50	22.29	22.42	22.38
			12	0	21.50	21.27	21.24	21.13

			12	6	21.50	21.17	21.18	21.17
			12	11	21.50	21.19	21.13	21.19
			25	0	21.50	21.25	21.21	21.14
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18650/1855	18900/1880	19150/1905
LTE Band 2	10MHz	QPSK	1	0	23.50	23.24	23.30	23.02
			1	24	23.50	23.13	23.25	22.61
			1	49	23.50	23.09	23.09	22.68
			25	0	22.50	22.26	22.30	22.13
			25	12	22.50	22.20	22.25	22.16
			25	24	22.50	22.16	22.19	22.22
			50	0	22.50	22.24	22.25	22.16
		16QAM	1	0	23.00	22.61	22.68	22.18
			1	24	23.00	22.46	22.53	22.32
			1	49	23.00	22.39	22.34	22.47
			25	0	21.50	21.27	21.28	21.12
			25	12	21.50	21.19	21.23	21.14
			25	24	21.50	21.16	21.19	21.25
			50	0	21.50	21.20	21.22	21.15
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		18675/1857.5	18900/1880	19125/1902.5
LTE Band 2	15MHz	QPSK	1	0	23.50	23.26	23.24	22.98
			1	37	23.50	23.09	23.26	23.00
			1	74	23.50	23.16	23.02	22.84
			36	0	22.50	22.19	22.29	22.05
			36	18	22.50	22.11	22.17	22.02
			36	37	22.50	22.12	22.13	22.18
			75	0	22.50	22.16	22.21	22.09
		16QAM	1	0	23.00	22.59	22.44	22.29
			1	37	23.00	22.37	22.52	22.38
			1	74	23.00	22.38	22.30	22.53
			36	0	21.50	21.19	21.28	21.01
			36	18	21.50	21.11	21.19	21.01
			36	37	21.50	21.10	21.13	21.15
			75	0	21.50	21.18	21.20	21.11
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	21.50	21.31	21.23	21.14
			1	49	21.50	21.10	21.32	21.06
			1	99	21.50	21.27	21.07	21.36
			50	0	21.50	21.24	21.31	21.09
			50	24	21.50	21.17	21.26	21.09
			50	49	21.50	21.21	21.16	21.14
			100	0	21.50	21.21	21.20	21.14
		16QAM	1	0	22.00	21.61	21.57	21.42
			1	49	22.00	21.38	21.69	21.35
			1	99	22.00	21.46	21.28	21.54
			50	0	21.50	21.23	21.29	21.10

			50	24	21.50	21.15	21.24	21.11
			50	49	21.50	21.18	21.16	21.15
			100	0	21.50	21.21	21.19	20.20

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	23.50	23.23	23.44	23.30
			1	2	23.50	23.35	23.41	23.29
			1	5	23.50	23.23	23.43	22.32
			3	0	24/24/23	23.18	23.35	22.27
			3	1	24/24/22	23.18	23.42	21.25
			3	2	24/24/22	23.14	23.38	21.27
			6	0	23/23/21	22.54	22.49	20.42
		16QAM	1	0	23/23/21	22.42	22.61	20.62
			1	2	23/23/21	22.53	22.53	20.67
			1	5	23/23/21	22.43	22.48	20.80
			3	0	23/23/21	22.52	22.52	20.46
			3	1	23/23/21	22.76	22.63	20.47
			3	2	23/23/21	22.64	22.75	20.35
			6	0	22.00	21.55	21.47	20.50
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	21.00	20.73	20.60	20.42
			1	7	21.00	20.71	20.61	20.41
			1	14	21.00	20.76	20.63	20.39
			8	0	21.00	20.75	20.62	20.47
			8	4	21.00	20.71	20.63	20.44
			8	7	21.00	20.73	20.62	20.45
			15	0	21.00	20.73	20.62	20.44
		16QAM	1	0	21.00	20.83	20.80	20.85
			1	7	21.00	20.92	20.88	20.80
			1	14	21.00	20.88	20.94	20.64
			8	0	21.00	20.81	20.70	20.51
			8	4	21.00	20.85	20.68	20.53
			8	7	21.00	20.82	20.67	20.52
			15	0	21.00	20.80	20.64	20.47
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	21.00	20.77	20.63	20.52
			1	12	21.00	20.74	20.67	20.47
			1	24	21.00	20.70	20.66	20.44
			12	0	21.00	20.79	20.65	20.51
			12	6	21.00	20.79	20.68	20.51
			12	11	21.00	20.72	20.68	20.52
			25	0	21.00	20.79	20.69	20.54
		16QAM	1	0	21.50	20.87	20.79	20.87
			1	12	21.50	21.00	20.87	20.82
			1	24	21.50	21.01	20.91	20.65

			12	0	21.00	20.80	20.69	20.56
			12	6	21.00	20.78	20.70	20.50
			12	11	21.00	20.76	20.67	20.53
			25	0	21.00	20.80	20.69	20.55
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	21.00	20.79	20.60	20.62
			1	24	21.00	20.70	20.68	20.55
			1	49	21.00	20.67	20.69	20.50
			25	0	21.00	20.79	20.68	20.61
			25	12	21.00	20.74	20.71	20.59
			25	24	21.00	20.70	20.69	20.57
			50	0	21.00	20.76	20.68	20.60
		16QAM	1	0	21.00	20.89	20.83	20.79
			1	24	21.00	20.97	20.88	20.89
			1	49	21.00	20.89	20.89	20.77
			25	0	21.00	20.82	20.66	20.59
			25	12	21.00	20.74	20.70	20.58
			25	24	21.00	20.71	20.70	20.57
			50	0	21.00	20.77	20.72	20.60
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	21.00	20.77	20.63	20.69
			1	37	21.00	20.69	20.70	20.62
			1	74	21.00	20.69	20.73	20.52
			36	0	21.00	20.74	20.61	20.63
			36	18	21.00	20.67	20.66	20.59
			36	37	21.00	20.73	20.66	20.57
			75	0	21.00	20.75	20.67	20.64
		16QAM	1	0	21.50	21.08	20.92	20.93
			1	37	21.50	21.05	20.81	20.80
			1	74	21.50	20.98	21.05	20.74
			36	0	21.00	20.76	20.62	20.63
			36	18	21.00	20.69	20.68	20.58
			36	37	21.00	20.70	20.69	20.56
			75	0	21.00	20.74	20.69	20.64
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	21.00	20.79	20.70	20.68
			1	49	21.00	20.66	20.71	20.68
			1	99	21.00	20.74	20.78	20.54
			50	0	21.00	20.76	20.62	20.74
			50	24	21.00	20.74	20.72	20.67
			50	49	21.00	20.78	20.70	20.65
			100	0	21.00	20.77	20.66	20.71
		16QAM	1	0	21.00	20.96	20.87	20.94
			1	49	21.00	20.99	20.97	20.85
			1	99	21.00	20.97	21.00	20.82

			50	0	21.00	20.77	20.60	20.74
			50	24	21.00	20.72	20.70	20.71
			50	49	21.00	20.75	20.71	20.63
			100	0	21.00	20.73	20.67	20.67

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	24.00	23.02	23.58	23.44
			1	2	24.00	23.54	23.59	23.43
			1	5	24.00	23.65	23.63	23.44
			3	0	24.00	23.56	23.58	23.47
			3	1	24.00	23.55	23.57	23.43
			3	2	24.00	23.57	23.54	23.45
			6	0	23.00	22.49	22.60	22.47
		16QAM	1	0	23.00	22.72	22.94	22.57
			1	2	23.00	22.80	22.90	22.57
			1	5	23.00	22.68	22.84	22.60
			3	0	23.00	22.59	22.63	22.60
			3	1	23.00	22.56	22.76	22.61
			3	2	23.00	22.55	22.69	22.50
			6	0	22.00	21.57	21.69	21.56
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	24.00	23.49	23.64	23.52
			1	7	24.00	23.53	23.67	23.43
			1	14	24.00	23.59	23.66	23.42
			8	0	23.00	22.57	22.67	22.58
			8	4	23.00	22.54	22.61	22.52
			8	7	23.00	22.56	22.61	22.52
			15	0	23.00	22.57	22.61	22.51
		16QAM	1	0	23.00	22.56	22.89	22.61
			1	7	23.00	22.75	22.78	22.67
			1	14	23.00	22.75	22.75	22.51
			8	0	22.00	21.61	21.70	21.62
			8	4	22.00	21.61	21.67	21.54
			8	7	22.00	21.62	21.66	21.56
			15	0	22.00	21.58	21.66	21.55
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	24.00	23.48	23.74	23.53
			1	12	24.00	23.59	23.68	23.58
			1	24	24.00	23.58	23.61	23.48
			12	0	23.00	22.60	22.71	22.55
			12	6	23.00	22.63	22.67	22.56
			12	11	23.00	22.65	22.63	22.56
			25	0	23.00	22.66	22.69	22.56
		16QAM	1	0	23.00	22.67	22.91	22.81
			1	12	23.00	22.80	22.76	22.72
			1	24	23.00	22.80	22.86	22.66

			12	0	22.00	21.60	21.72	21.57
			12	6	22.00	21.61	21.64	21.56
			12	11	22.00	21.68	21.63	21.56
			25	0	22.00	21.66	21.70	21.59
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		20450/829	20525/836.5	20600/844
LTE Band 5	10MHz	QPSK	1	0	24.00	23.54	23.73	23.66
			1	24	24.00	23.64	23.65	23.47
			1	49	24.00	23.71	23.56	23.50
			25	0	23.00	22.66	22.71	22.64
			25	12	23.00	22.64	22.68	22.56
			25	24	23.00	22.69	22.64	22.51
			50	0	23.00	22.64	22.67	22.57
		16QAM	1	0	23.00	22.84	22.96	22.92
			1	24	23.00	22.82	22.90	22.57
			1	49	23.00	22.96	22.74	22.68
			25	0	22.00	21.66	21.72	21.63
			25	12	22.00	21.65	21.67	21.54
			25	24	22.00	21.69	21.65	21.53
			50	0	22.00	21.65	21.67	21.56

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		23017/699.7	23095/707.5	23173/715.3
LTE Band 12	1.4MHz	QPSK	1	0	23.50	23.30	23.19	23.18
			1	2	23.50	23.26	23.13	23.15
			1	5	23.50	23.25	23.15	23.15
			3	0	23.50	23.32	23.14	23.18
			3	1	23.50	23.33	23.11	23.12
			3	2	23.50	23.30	23.10	23.14
			6	0	22.50	22.32	22.17	22.17
		16QAM	1	0	23.00	22.49	22.51	22.33
			1	2	23.00	22.55	22.43	22.41
			1	5	23.00	22.59	22.43	22.38
			3	0	22.50	22.32	22.18	22.28
			3	1	22.50	22.36	22.17	22.20
			3	2	22.50	22.33	22.13	22.18
			6	0	21.50	21.34	21.23	21.25
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		23025/700.5	23095/707.5	23165/714.5
LTE Band 12	3MHz	QPSK	1	0	23.50	23.28	23.21	23.16
			1	7	23.50	23.20	23.15	23.19
			1	14	23.50	23.24	23.17	23.17
			8	0	22.50	22.28	22.20	22.25
			8	4	22.50	22.28	22.16	22.22
			8	7	22.50	22.27	22.14	22.19
			15	0	22.50	22.29	22.14	22.15
		16QAM	1	0	23.00	22.63	22.51	22.37
			1	7	23.00	22.49	22.47	22.46

			1	14	23.00	22.36	22.45	22.39
			8	0	21.50	21.39	21.25	21.27
			8	4	21.50	21.40	21.20	21.30
			8	7	21.50	21.34	21.19	21.21
			15	0	21.50	21.29	21.16	21.17
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		23035/701.5	23095/707.5	23155/713.5
LTE Band 12	5MHz	QPSK	1	0	23.50	23.32	23.20	23.18
			1	12	23.50	23.23	23.22	23.19
			1	24	23.50	23.31	23.20	23.20
			12	0	22.50	22.34	22.26	22.26
			12	6	22.50	22.30	22.21	22.23
			12	11	22.50	22.29	22.20	22.19
			25	0	22.50	22.32	22.26	22.23
		16QAM	1	0	23.00	22.54	22.42	22.46
			1	12	23.00	22.44	22.46	22.43
			1	24	23.00	22.54	22.39	22.43
			12	0	21.50	21.36	21.25	21.27
			12	6	21.50	21.31	21.18	21.22
			12	11	21.50	21.31	21.18	21.20
			25	0	21.50	21.33	21.25	21.25
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		23060/704	23095/707.5	23130/711
LTE Band 12	10MHz	QPSK	1	0	23.50	23.34	23.31	23.29
			1	24	23.50	23.21	23.20	23.13
			1	49	23.50	23.21	23.22	23.20
			25	0	22.50	22.31	22.28	22.21
			25	12	22.50	22.26	22.22	22.19
			25	24	22.50	22.22	22.20	22.16
			50	0	22.50	22.26	22.26	22.20
		16QAM	1	0	23.00	22.53	22.67	22.52
			1	24	23.00	22.50	22.39	22.43
			1	49	23.00	22.40	22.42	22.49
			25	0	21.50	21.29	21.26	21.20
			25	12	21.50	21.24	21.20	21.20
			25	24	21.50	21.22	21.21	21.16
			50	0	21.50	21.24	21.25	21.20

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	20.50	20.26	20.23	20.24
			1	12	20.50	20.14	20.18	20.24
			1	24	20.50	20.22	20.16	20.21
			12	0	20.50	20.23	20.25	20.22
			12	6	20.50	20.19	20.21	20.23
			12	11	20.50	20.19	20.21	20.19
			25	0	20.50	20.26	20.26	20.24
		16QAM	1	0	21.00	20.46	20.51	20.49

			1	12	21.00	20.41	20.46	20.43
			1	24	21.00	20.57	20.47	20.43
			12	0	20.50	20.24	20.25	20.25
			12	6	20.50	20.21	20.24	20.23
			12	11	20.50	20.22	20.27	20.18
			25	0	20.50	20.23	20.25	20.26
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	20.50	20.26	20.26	20.26
			1	24	20.50	20.28	20.23	20.16
			1	49	20.50	20.27	20.23	20.22
			25	0	20.50	20.24	20.26	20.21
			25	12	20.50	20.22	20.26	20.21
			25	24	20.50	20.20	20.20	20.18
			50	0	20.50	20.24	20.25	20.22
		16QAM	1	0	21.00	20.57	20.60	20.52
			1	24	21.00	20.60	20.60	20.50
			1	49	21.00	20.63	20.56	20.44
			25	0	20.50	20.26	20.25	20.24
			25	12	20.50	20.26	20.25	20.23
			25	24	20.50	20.20	20.19	20.19
			50	0	20.50	20.24	20.25	20.24

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	24.00	23.23	23.65	23.11
			1	12	24.00	23.25	23.62	22.56
			1	24	24.00	23.29	23.63	22.41
			12	0	23.00	22.17	22.67	22.65
			12	6	23.00	22.20	22.65	22.53
			12	11	23.00	22.22	22.65	22.41
			25	0	23.00	22.21	22.70	22.61
		16QAM	1	0	23.00	22.25	22.86	22.76
			1	12	23.00	22.26	22.82	22.60
			1	24	23.00	22.31	22.82	22.45
			12	0	22.00	21.19	21.73	21.73
			12	6	22.00	21.21	21.69	21.71
			12	11	22.00	21.23	21.70	21.73
			25	0	22.00	21.25	21.73	21.74
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	24.00	23.12	23.72	23.10
			1	24	24.00	23.09	23.62	22.64
			1	49	24.00	23.15	23.65	22.16
			25	0	23.00	22.20	22.70	22.66
			25	12	23.00	22.15	22.67	22.61
			25	24	23.00	22.19	22.67	22.38
			50	0	23.00	22.22	22.70	22.63
		16QAM	1	0	23.00	22.33	22.93	22.80

			1	24	23.00	22.30	22.84	22.70
			1	49	23.00	22.35	22.86	22.24
			25	0	22.00	21.28	21.76	21.72
			25	12	22.00	21.21	21.71	21.65
			25	24	22.00	21.24	21.72	21.72
			50	0	22.00	21.25	21.75	21.76
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	24.00	23.13	23.73	23.36
			1	37	24.00	23.16	23.71	22.82
			1	74	24.00	23.17	23.66	22.07
			36	0	23.00	22.25	22.77	22.59
			36	18	23.00	22.23	22.72	22.53
			36	37	23.00	22.22	22.71	22.37
			75	0	23.00	22.26	22.75	22.60
		16QAM	1	0	23.00	22.37	22.95	22.76
			1	37	23.00	22.36	22.93	22.70
			1	74	23.00	22.37	22.86	22.11
			36	0	22.00	21.25	21.76	21.62
			36	18	22.00	21.22	21.73	21.56
			36	37	22.00	21.22	21.72	21.58
			75	0	22.00	21.28	21.79	21.67
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	24.00	23.15	23.71	23.30
			1	49	24.00	23.15	23.75	22.83
			1	99	24.00	23.14	23.64	22.93
			50	0	23.00	22.28	22.82	22.68
			50	24	23.00	22.28	22.79	22.60
			50	49	23.00	22.22	22.75	22.40
			100	0	23.00	22.25	22.78	22.62
		16QAM	1	0	23.00	22.38	22.93	22.84
			1	49	23.00	22.36	22.95	22.69
			1	99	23.00	22.36	22.85	21.99
			50	0	22.00	21.34	21.86	21.73
			50	24	22.00	21.31	21.83	21.66
			50	49	22.00	21.28	21.79	21.66
			100	0	22.00	21.29	21.78	21.66

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		131979/1710.7	132322/1745	132665/1779.3
LTE Band 66	1.4MHz	QPSK	1	0	23.00	21.87	21.22	22.97
			1	2	23.00	21.46	22.67	22.93
			1	5	23.00	21.02	22.81	22.93
			3	0	23.00	21.03	22.85	22.96
			3	1	23.00	21.42	22.82	22.97
			3	2	23.00	21.50	22.79	22.95
			6	0	22.00	21.08	21.86	21.97
		16QAM	1	0	22.50	21.05	22.00	22.14

			1	2	22.50	21.49	22.03	22.17
			1	5	22.50	21.56	22.08	22.16
			3	0	22.50	21.02	22.00	22.07
			3	1	22.50	21.00	21.90	22.08
			3	2	22.50	21.58	21.89	22.07
			6	0	21.50	21.42	21.02	21.13
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		131987/1711.5	132322/1745	132657/1778.5
LTE Band 66	3MHz	QPSK	1	0	23.00	22.87	22.85	22.95
			1	7	23.00	22.78	22.84	22.87
			1	14	23.00	22.96	22.82	22.94
			8	0	22.50	21.94	21.90	22.03
			8	4	22.50	21.94	21.86	22.01
			8	7	22.50	21.94	21.84	22.02
			15	0	22.50	21.93	21.88	22.02
		16QAM	1	0	22.50	21.97	22.05	22.05
			1	7	22.50	21.94	21.95	22.12
			1	14	22.50	22.01	22.00	22.18
			8	0	21.50	21.16	21.06	21.17
			8	4	21.50	21.14	21.04	21.12
			8	7	21.50	21.16	21.01	21.13
			15	0	21.50	21.15	21.02	21.11
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		131997/1712.5	132322/1745	132647/1777.5
LTE Band 66	5MHz	QPSK	1	0	23.50	22.97	22.96	23.09
			1	12	23.50	22.88	22.85	23.06
			1	24	23.50	22.91	22.95	23.07
			12	0	22.50	22.08	21.98	22.12
			12	6	22.50	22.03	21.96	22.14
			12	11	22.50	21.99	21.94	22.11
			25	0	22.50	22.04	21.96	22.13
		16QAM	1	0	22.50	22.22	22.10	22.18
			1	12	22.50	22.07	22.00	22.17
			1	24	22.50	22.16	22.09	22.22
			12	0	21.50	21.18	21.06	21.13
			12	6	21.50	21.11	21.03	21.09
			12	11	21.50	21.13	20.96	21.13
			25	0	21.50	21.15	21.06	21.15
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		132022/1715	132322/1745	132622/1775
LTE Band 66	10MHz	QPSK	1	0	23.50	22.98	22.96	22.90
			1	24	23.50	22.97	22.96	23.04
			1	49	23.50	23.00	22.92	23.09
			25	0	22.50	22.09	22.06	22.09
			25	12	22.50	22.03	21.99	22.13
			25	24	22.50	22.00	21.93	22.16
			50	0	22.50	22.02	22.02	22.13
		16QAM	1	0	22.50	22.17	22.13	21.99

			1	24	22.50	22.14	22.06	22.26
			1	49	22.50	22.35	22.15	22.24
			25	0	21.50	21.16	21.09	21.13
			25	12	21.50	21.08	21.04	21.14
			25	24	21.50	21.10	20.97	21.13
			50	0	21.50	21.15	21.05	21.14
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		132047/1717.5	132322/1745	132597/1772.5
LTE Band 66	15MHz	QPSK	1	0	22.00	21.02	20.99	20.85
			1	37	22.00	21.98	21.05	20.96
			1	74	22.00	21.91	20.93	21.03
			36	0	22.50	22.02	21.08	20.92
			36	18	22.50	21.05	21.02	20.98
			36	37	22.50	21.09	20.94	20.99
			75	0	21.50	21.09	21.06	20.98
		16QAM	1	0	21.50	21.25	21.21	21.14
			1	37	21.50	21.46	21.27	21.25
			1	74	21.50	21.40	21.17	21.28
			36	0	21.50	21.09	21.07	20.97
			36	18	21.50	21.05	21.03	20.97
			36	37	21.50	21.06	20.93	21.01
			75	0	21.50	21.10	21.03	21.00
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		132072/1720	132322/1745	132572/1770
LTE Band 66	20MHz	QPSK	1	0	21.50	21.07	20.99	20.84
			1	49	21.50	21.04	21.03	20.90
			1	99	21.50	21.09	20.96	21.04
			50	0	21.50	21.11	21.16	20.94
			50	24	21.50	21.07	21.07	21.01
			50	49	21.50	21.15	21.01	21.00
			100	0	21.50	21.12	21.10	20.97
		16QAM	1	0	21.50	21.27	21.18	20.95
			1	49	21.50	21.27	21.25	21.11
			1	99	21.50	21.34	21.17	21.31
			50	0	21.50	21.09	21.16	20.94
			50	24	21.50	21.05	21.06	21.00
			50	49	21.50	21.12	20.99	21.01
			100	0	21.50	21.09	21.08	20.96

Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		133147/665.5	133297/680.5	133447/695.5
LTE Band 71	5MHz	QPSK	1	0	23.50	23.33	22.96	23.22
			1	12	23.50	23.27	22.99	23.15
			1	24	23.50	23.21	22.98	23.07
			12	0	22.50	22.25	21.98	22.21
			12	6	22.50	22.23	21.97	22.18
			12	11	22.50	22.22	21.95	22.13
			25	0	22.50	22.27	22.02	22.21

		16QAM	1	0	23.00	22.48	22.28	22.37
			1	12	23.00	22.50	22.23	22.32
			1	24	23.00	22.39	22.19	22.32
			12	0	21.50	21.25	20.97	21.23
			12	6	21.50	21.26	20.98	21.18
			12	11	21.50	21.21	20.97	21.16
			25	0	21.50	21.22	21.01	21.17
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		133172/668	133297/680.5	133422/693
LTE Band 71	10MHz	QPSK	1	0	23.50	23.29	22.99	23.23
			1	24	23.50	23.10	22.98	23.19
			1	49	23.50	22.95	23.06	23.12
			25	0	22.50	22.23	22.03	22.25
			25	12	22.50	22.13	21.96	22.18
			25	24	22.50	22.05	21.99	22.16
			50	0	22.50	22.16	22.00	22.20
		16QAM	1	0	23.00	22.54	22.36	22.57
			1	24	23.00	22.38	22.29	22.45
			1	49	23.00	22.30	22.41	22.46
			25	0	21.50	21.21	20.98	21.25
			25	12	21.50	21.11	20.95	21.17
			25	24	21.50	21.04	21.00	21.15
			50	0	21.50	21.15	20.98	21.21
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		133197/670.5	133297/680.5	133397/690.5
LTE Band 71	15MHz	QPSK	1	0	23.50	23.31	23.04	23.08
			1	37	23.50	23.04	23.06	23.20
			1	74	23.50	22.93	23.13	23.15
			36	0	22.50	22.21	22.02	22.19
			36	18	22.50	22.11	22.02	22.20
			36	37	22.50	22.00	22.02	22.16
			75	0	22.50	22.15	22.04	22.21
		16QAM	1	0	23.00	22.53	22.12	22.42
			1	37	23.00	22.31	22.38	22.48
			1	74	23.00	22.14	22.45	22.42
			36	0	21.50	21.23	21.01	21.17
			36	18	21.50	21.06	20.98	21.20
			36	37	21.50	20.97	21.02	21.14
			75	0	21.50	21.13	21.04	21.22
Band	Band Width	Modulation	RB Configuration		Tune-up (dBm)	Channel/Frequency(MHz)		
			RB Size	RB Offset		133222/673	133322/683	133372/688
LTE Band 71	20MHz	QPSK	1	0	23.50	23.28	23.04	23.04
			1	49	23.50	23.01	23.07	23.19
			1	99	23.50	22.96	23.11	23.14
			50	0	22.50	22.23	22.10	22.11
			50	24	22.50	22.11	22.05	22.24
			50	49	22.50	21.98	22.10	22.17
			100	0	22.50	22.12	22.12	22.15

			1	0	23.00	22.51	21.30	22.41
			1	49	23.00	22.27	21.88	21.62
			1	99	23.00	22.27	22.37	22.46
		16QAM	50	0	21.50	21.23	21.08	21.09
			50	24	21.50	21.10	21.03	21.26
			50	49	21.50	20.98	21.11	21.18
			100	0	21.50	21.10	21.09	21.12

8.4. NR SA Power

Band	SCS (kHz)	Bandwidth (MHz)	UL Channel	RB Allocation	Modulation	Power (dBm)	Tune-up
n71	30	10	133600	1@1	DFT_BPSK	23.41	24.00
n71	30	10	133600	24@0	DFT_QPSK	22.29	23.00
n71	30	10	133600	12@6	DFT_QPSK	23.48	24.00
n71	30	10	133600	1@1	DFT_QPSK	23.34	24.00
n71	30	10	133600	1@22	DFT_QPSK	23.29	24.00
n71	30	10	133600	1@1	DFT_QAM16	22.52	23.00
n71	30	10	133600	1@1	DFT_QAM64	21.15	22.00
n71	30	10	133600	1@1	DFT_QAM256	19.05	20.00
n71	30	10	133600	1@1	CP_QPSK	20.58	21.00
n71	30	10	136100	1@1	DFT_BPSK	23.44	24.00
n71	30	10	136100	24@0	DFT_QPSK	22.45	23.00
n71	30	10	136100	12@6	DFT_QPSK	23.48	24.00
n71	30	10	136100	1@1	DFT_QPSK	23.43	24.00
n71	30	10	136100	1@22	DFT_QPSK	23.58	24.00
n71	30	10	136100	1@1	DFT_QAM16	22.64	23.00
n71	30	10	136100	1@1	DFT_QAM64	21.08	22.00
n71	30	10	136100	1@1	DFT_QAM256	19.07	20.00
n71	30	10	136100	1@1	CP_QPSK	21.94	22.00
n71	30	10	138600	1@1	DFT_BPSK	23.43	24.00
n71	30	10	138600	24@0	DFT_QPSK	22.35	23.00
n71	30	10	138600	12@6	DFT_QPSK	23.30	24.00
n71	30	10	138600	1@1	DFT_QPSK	23.49	24.00
n71	30	10	138600	1@22	DFT_QPSK	23.23	24.00
n71	30	10	138600	1@1	DFT_QAM16	22.69	23.00
n71	30	10	138600	1@1	DFT_QAM64	21.14	22.00
n71	30	10	138600	1@1	DFT_QAM256	19.16	20.00
n71	30	10	138600	1@1	CP_QPSK	22.01	23.00
n71	30	15	134100	1@1	DFT_BPSK	23.40	24.00
n71	30	15	134100	36@0	DFT_QPSK	22.33	23.00
n71	30	15	134100	18@9	DFT_QPSK	23.37	24.00
n71	30	15	134100	1@1	DFT_QPSK	23.41	24.00
n71	30	15	134100	1@36	DFT_QPSK	23.46	24.00
n71	30	15	134100	1@1	DFT_QAM16	22.69	23.00
n71	30	15	134100	1@1	DFT_QAM64	21.08	22.00
n71	30	15	134100	1@1	DFT_QAM256	21.60	22.00
n71	30	15	134100	1@1	CP_QPSK	21.86	22.00
n71	30	15	136100	1@1	DFT_BPSK	23.36	24.00
n71	30	15	136100	36@0	DFT_QPSK	22.49	23.00
n71	30	15	136100	18@9	DFT_QPSK	23.56	24.00
n71	30	15	136100	1@1	DFT_QPSK	23.39	24.00
n71	30	15	136100	1@36	DFT_QPSK	23.49	24.00
n71	30	15	136100	1@1	DFT_QAM16	22.61	23.00
n71	30	15	136100	1@1	DFT_QAM64	20.99	21.00
n71	30	15	136100	1@1	DFT_QAM256	19.00	20.00
n71	30	15	136100	1@1	CP_QPSK	21.89	22.00
n71	30	15	138100	1@1	DFT_BPSK	23.59	24.00
n71	30	15	138100	36@0	DFT_QPSK	22.49	23.00
n71	30	15	138100	18@9	DFT_QPSK	23.53	24.00
n71	30	15	138100	1@1	DFT_QPSK	23.59	24.00

n71	30	15	138100	1@36	DFT_QPSK	23.36	24.00
n71	30	15	138100	1@1	DFT_QAM16	22.83	23.00
n71	30	15	138100	1@1	DFT_QAM64	21.23	22.00
n71	30	15	138100	1@1	DFT_QAM256	19.13	20.00
n71	30	15	138100	1@1	CP_QPSK	22.03	23.00
n71	30	20	134600	1@1	DFT_BPSK	23.43	24.00
n71	30	20	134600	50@0	DFT_QPSK	22.44	23.00
n71	30	20	134600	25@12	DFT_QPSK	23.39	24.00
n71	30	20	134600	1@1	DFT_QPSK	23.43	24.00
n71	30	20	134600	1@49	DFT_QPSK	23.60	24.00
n71	30	20	134600	1@1	DFT_QAM16	22.71	23.00
n71	30	20	134600	1@1	DFT_QAM64	21.09	22.00
n71	30	20	134600	1@1	DFT_QAM256	22.11	23.00
n71	30	20	134600	1@1	CP_QPSK	21.89	22.00
n71	30	20	136100	1@1	DFT_BPSK	23.35	24.00
n71	30	20	136100	50@0	DFT_QPSK	22.51	23.00
n71	30	20	136100	25@12	DFT_QPSK	23.52	24.00
n71	30	20	136100	1@1	DFT_QPSK	23.37	24.00
n71	30	20	136100	1@49	DFT_QPSK	23.48	24.00
n71	30	20	136100	1@1	DFT_QAM16	22.62	23.00
n71	30	20	136100	1@1	DFT_QAM64	21.09	22.00
n71	30	20	136100	1@1	DFT_QAM256	18.88	19.00
n71	30	20	136100	1@1	CP_QPSK	21.82	22.00
n71	30	20	137600	1@1	DFT_BPSK	23.48	24.00
n71	30	20	137600	50@0	DFT_QPSK	22.51	23.00
n71	30	20	137600	25@12	DFT_QPSK	23.56	24.00
n71	30	20	137600	1@1	DFT_QPSK	23.54	24.00
n71	30	20	137600	1@49	DFT_QPSK	23.41	24.00
n71	30	20	137600	1@1	DFT_QAM16	22.78	23.00
n71	30	20	137600	1@1	DFT_QAM64	21.13	22.00
n71	30	20	137600	1@1	DFT_QAM256	19.05	20.00
n71	30	20	137600	1@1	CP_QPSK	22.00	23.00

8.5. Wi-Fi & BT Output Power

Mode	Channel	Frequency (MHz)	Output Power (dBm)ANT1	Tune-Up	Output Power (dBm)ANT2	Tune-Up	Output Power (dBm)MIMO	Tune-Up
802.11b	1	2412	15.64	15±1	16.16	16±1	/	/
	6	2437	15.39	15±1	16.18	16±1	/	/
	11	2462	15.59	15±1	15.21	15±1	/	/
802.11g	1	2412	13.94	13±1	13.33	13±1	/	/
	6	2437	14.09	14±1	13.76	13±1	/	/
	11	2462	13.95	13±1	13.25	13±1	/	/
802.11n (HT20)	1	2412	12.98	12±1	12.64	12±1	15.97	15±1
	6	2437	13.02	13±1	12.95	12±1	14.47	14±1
	11	2462	13.08	13±1	12.43	12±1	15.56	15±1
802.11n (H40)	3	2422	11.71	11±1	11.52	11±1	15.68	15±1
	6	2437	12.29	12±1	12.11	12±1	15.04	15±1
	9	2452	12.06	12±1	11.82	11±1	15.09	15±1
ax20	1	2412	12.38	12±1	12.09	12±1	16.70	16±1
	6	2437	12.38	12±1	12.39	12±1	14.87	14±1
	11	2462	12.37	12±1	11.85	11±1	15.92	15±1
ax40	3	2422	11.64	11±1	11.70	11±1	15.77	15±1
	6	2437	12.24	12±1	12.30	12±1	15.34	15±1
	9	2452	12.52	12±1	12.00	12±1	15.13	15±1

Mode	Frequency (MHz)	Output Power (dBm)ANT1	Tune-Up	Output Power (dBm)ANT2	Tune-Up	Output Power (dBm)MIMO	Tune-Up
802.11A	5180	12.10	12±1	10.94	10±1	/	/
	5200	11.50	11±1	11.28	11±1	/	/
	5240	11.98	11±1	10.59	10±1	/	/
802.11N20SISO	5180	11.31	11±1	10.96	10±1	14.30	14±1
	5200	11.59	11±1	11.21	11±1	14.74	14±1
	5240	12.27	12±1	10.58	10±1	13.94	13±1
802.11N40SISO	5190	11.92	11±1	11.29	11±1	15.09	15±1
	5230	12.45	12±1	10.88	10±1	13.90	13±1
802.11AC20SISO	5180	11.39	11±1	10.86	10±1	14.93	14±1
	5200	11.59	11±1	11.21	11±1	14.87	14±1
	5240	12.30	12±1	10.22	10±1	13.73	13±1
802.11AC40SISO	5190	11.77	11±1	11.36	11±1	14.90	14±1
	5230	12.14	12±1	10.95	10±1	14.00	14±1
802.11AC80SISO	5210	11.88	11±1	10.58	10±1	13.57	13±1
802.11ax (20)	5180	11.24	11±1	10.58	10±1	15.10	15±1
	5200	11.36	11±1	11.38	11±1	14.67	14±1
	5240	12.36	12±1	10.75	10±1	13.55	13±1
802.11ax (40)	5190	11.95	11±1	11.44	11±1	15.23	15±1
	5230	10.26	10±1	10.90	10±1	14.04	14±1
802.11ax (80)	5210	11.63	11±1	10.85	10±1	14.24	14±1

Mode	Frequency (MHz)	Output Power (dBm)ANT1	Tune-Up	Output Power (dBm)ANT2	Tune-Up	Output Power (dBm)MIMO	Tune-Up
802.11A	5745	12.65	12±1	12.29	12±1	/	/
	5785	12.41	12±1	10.77	10±1	/	/
	5825	11.67	11±1	11.39	11±1	/	/
802.11N20SISO	5745	12.96	12±1	11.29	11±1	15.14	15±1
	5785	12.61	12±1	10.63	10±1	14.84	14±1
	5825	11.94	11±1	11.28	11±1	15.42	15±1

802.11N40SISO	5755	12.82	12±1	11.19	11±1	14.49	14±1
	5795	12.48	12±1	10.91	10±1	15.84	15±1
802.11AC20SISO	5745	12.94	12±1	11.28	11±1	14.57	14±1
	5785	12.52	12±1	10.66	10±1	15.12	15±1
	5825	12.27	12±1	11.26	11±1	15.39	15±1
802.11AC40SISO	5755	12.89	12±1	11.23	11±1	13.98	13±1
	5795	12.47	12±1	10.98	10±1	15.76	15±1
802.11AC80SISO	5775	12.78	12±1	10.48	10±1	14.63	14±1
802.11ax (20)	5745	16.37	16±1	11.34	11±1	14.74	14±1
	5785	16.06	16±1	10.77	10±1	14.95	14±1
	5825	9.94	9±1	11.47	11±1	15.61	15±1
802.11ax (40)	5755	16.73	16±1	11.22	11±1	14.37	14±1
	5795	16.50	16±1	10.82	10±1	15.74	15±1
802.11ax (80)	5775	12.50	12±1	10.67	10±1	14.45	14±1

	Output Power (dBm)				
	Channel	Tune-up (dBm)	Data Rates		
			1M	2M	3M
BR+EDR	0CH	4.00	3.97	3.06	3.51
	39CH	5.00	4.68	3.92	4.29
	78CH	6.00	5.68	4.97	5.45

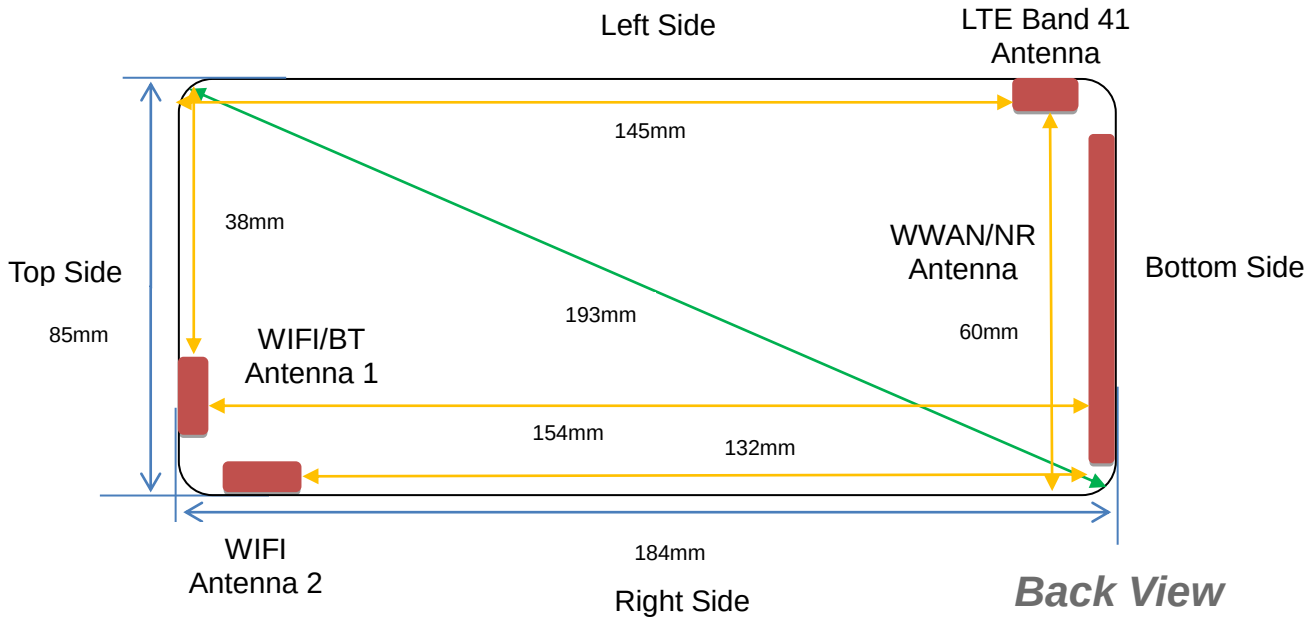
Mode	Channel	Tune-up (dBm)	Output Power (dBm)
BLE1M	CH00	4.00	3.90
	CH19	5.00	4.76
	CH39	6.00	5.72

Mode	Channel	Tune-up (dBm)	Output Power (dBm)
BLE2M	CH00	4.00	3.96
	CH19	5.00	4.74
	CH39	6.00	5.45

8.6. NFC

The power is too low, so SAR testing is not necessary.

9. Antenna Location



Antenna information:

Distance of The Antenna to the EUT surface and edge (mm)						
Antennas	Front Side	Back Side	Left Side	Right Side	Top Side	Bottom Side
BT/WLAN 1/2	≤25mm	≤25mm	>25mm	≤25mm	≤25mm	>25mm
WWAN/NR	≤25mm	≤25mm	≤25mm	≤25mm	>25mm	≤25mm
LTE Band 41	≤25mm	≤25mm	≤25mm	>25mm	>25mm	≤25mm

Positions for SAR tests						
Antennas	Front Side	Back Side	Left Side	Right Side	Top Side	Bottom Side
BT/WLAN 1/2	Yes	Yes	NO	Yes	Yes	NO
WWAN/NR	Yes	Yes	Yes	Yes	NO	Yes
LTE Band 41	Yes	Yes	Yes	NO	NO	Yes

10. 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:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[√f(GHZ)] ≤ 3.0 for 1-g SAR and ≤ 7.5 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	Pmax (dBm)	Pmax (mW)	Distance (mm)	f (GHz)	Calculation Result	SAR Exclusion threshold	SAR test exclusion
Bluetooth	6.00	3.98	5	2.480	1.2	3	Yes

NOTE: Standalone SAR test exclusion for Bluetooth.

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

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] * [√f(GHZ)/x] W/kg for test separation distances ≤ 50mm, 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	Pmax (dBm)	Pmax (mW)	Distance (mm)	f (GHz)	x	Estimated SAR (W/kg)
Bluetooth	Head	6.00	3.98	5	2.48	7.5	0.167
Bluetooth	Body	6.00	3.98	10	2.48	7.5	0.083
Bluetooth	Hotspot	6.00	3.98	10	2.48	7.5	0.083

NOTE: Estimated SAR calculation for Bluetooth

11. SAR Measurement Results

< GSM 850>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Left Cheek	189/836.4	GPRS(GMSK 4TS)	0.325	0.240	0.21	28.96	29.00	0.328	2025/2/8	1#
Left Tilt 15 Degree	189/836.4	GPRS(GMSK 4TS)	0.177	0.124	-3.37	28.96	29.00	0.179	2025/2/8	
Right Cheek	189/836.4	GPRS(GMSK 4TS)	0.278	0.197	-3.45	28.96	29.00	0.281	2025/2/8	
Right Tilt 15 Degree	189/836.4	GPRS(GMSK 4TS)	0.132	0.097	-1.68	28.96	29.00	0.133	2025/2/8	

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Front Side	189/836.4	GPRS(GMSK 4TS)	0.198	0.108	-2.42	28.96	29.00	0.200	2025/2/8	
Back Side	189/836.4	GPRS(GMSK 4TS)	0.285	0.163	0.55	28.96	29.00	0.288	2025/2/8	2#
Left Side	189/836.4	GPRS(GMSK 4TS)	0.097	0.054	-1.10	28.96	29.00	0.098	2025/2/8	
Right Side	189/836.4	GPRS(GMSK 4TS)	0.099	0.055	-2.43	28.96	29.00	0.100	2025/2/8	
Bottom Side	189/836.4	GPRS(GMSK 4TS)	0.160	0.089	-2.53	28.96	29.00	0.161	2025/2/8	

< GSM 1900>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g	Date	Plot
			1g	10g						

								(W/Kg)		
Left Cheek	661/1880	GPRS(GMSK 4TS)	0.281	0.119	1.54	24.90	25.00	0.288	2025/2/10	3#
Left Tilt 15 Degree	661/1880	GPRS(GMSK 4TS)	0.168	0.071	2.64	24.90	25.00	0.172	2025/2/10	
Right Cheek	661/1880	GPRS(GMSK 4TS)	0.248	0.102	2.71	24.90	25.00	0.254	2025/2/10	
Right Tilt 15 Degree	661/1880	GPRS(GMSK 4TS)	0.131	0.055	1.31	24.90	25.00	0.134	2025/2/10	

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Front Side	661/1880	GPRS(GMSK 4TS)	0.162	0.095	2.97	24.90	25.00	0.166	2025/2/10	
Back Side	661/1880	GPRS(GMSK 4TS)	0.236	0.145	-1.02	24.90	25.00	0.241	2025/2/10	4#
Left Side	661/1880	GPRS(GMSK 4TS)	0.072	0.044	1.94	24.90	25.00	0.074	2025/2/10	
Right Side	661/1880	GPRS(GMSK 4TS)	0.074	0.042	0.07	24.90	25.00	0.076	2025/2/10	
Bottom Side	661/1880	GPRS(GMSK 4TS)	0.130	0.079	-2.04	24.90	25.00	0.133	2025/2/10	

< WCDMA Band 2>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Left Cheek	9400/1880	RMC12.2K	0.076	0.047	1.23	21.92	22.00	0.077	2025/2/10	5#
Left Tilt 15 Degree	9400/1880	RMC12.2K	0.041	0.024	3.83	21.92	22.00	0.042	2025/2/10	
Right	9400/1880	RMC12.2K	0.066	0.040	-0.74	21.92	22.00	0.067	2025/2/10	

Cheek										
Right Tilt 15 Degree	9400/1880	RMC12.2K	0.035	0.021	-1.85	21.92	22.00	0.036	2025/2/10	

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Front Side	9400/1880	RMC12.2K	0.222	0.125	-3.30	21.92	22.00	0.226	2025/2/10	
Back Side	9400/1880	RMC12.2K	0.350	0.199	1.45	21.92	22.00	0.357	2025/2/10	6#
Left Side	9400/1880	RMC12.2K	0.108	0.058	-0.99	21.92	22.00	0.110	2025/2/10	
Right Side	9400/1880	RMC12.2K	0.114	0.062	-3.04	21.92	22.00	0.116	2025/2/10	
Bottom Side	9400/1880	RMC12.2K	0.175	0.100	-2.63	21.92	22.00	0.178	2025/2/10	

< WCDMA Band 4>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Left Cheek	1413/1732.6	RMC12.2K	0.123	0.078	-3.54	22.50	23.00	0.138	2025/2/9	7#
Left Tilt 15 Degree	1413/1732.6	RMC12.2K	0.070	0.043	-0.84	22.50	23.00	0.079	2025/2/9	
Right Cheek	1413/1732.6	RMC12.2K	0.105	0.067	0.05	22.50	23.00	0.118	2025/2/9	
Right Tilt 15 Degree	1413/1732.6	RMC12.2K	0.051	0.032	-3.03	22.50	23.00	0.057	2025/2/9	

Test Position	Test channel	Test Mode	SAR Value (W/kg)	Power Drift	Conducted power	Tune-up power	Scaled SAR	Date	Plot

of Hotspot with 10mm	/Freq.		1g	10g	(±5%)	(dBm)	(dBm)	1g (W/Kg)		
Front Side	1413/1732.6	RMC12.2K	0.246	0.157	2.60	22.50	23.00	0.276	2025/2/9	
Back Side	1413/1732.6	RMC12.2K	0.386	0.260	-1.25	22.50	23.00	0.433	2025/2/9	8#
Left Side	1413/1732.6	RMC12.2K	0.123	0.083	3.65	22.50	23.00	0.138	2025/2/9	
Right Side	1413/1732.6	RMC12.2K	0.126	0.085	-0.72	22.50	23.00	0.141	2025/2/9	
Bottom Side	1413/1732.6	RMC12.2K	0.205	0.133	2.46	22.50	23.00	0.230	2025/2/9	

< WCDMA Band 5>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Left Cheek	4182/836.4	RMC12.2K	0.284	0.185	1.52	22.13	22.50	0.309	2025/2/8	9#
Left Tilt 15 Degree	4182/836.4	RMC12.2K	0.151	0.094	0.11	22.13	22.50	0.164	2025/2/8	
Right Cheek	4182/836.4	RMC12.2K	0.261	0.170	1.91	22.13	22.50	0.284	2025/2/8	
Right Tilt 15 Degree	4182/836.4	RMC12.2K	0.123	0.079	-3.42	22.13	22.50	0.134	2025/2/8	

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Front Side	4182/836.4	RMC12.2K	0.192	0.111	0.99	22.13	22.50	0.209	2025/2/8	
Back	4182/836.4	RMC12.2K	0.290	0.170	1.36	22.13	22.50	0.316	2025/2/8	10#

Side										
Left Side	4182/836.4	RMC12.2K	0.096	0.055	-0.68	22.13	22.50	0.105	2025/2/8	
Right Side	4182/836.4	RMC12.2K	0.090	0.052	1.37	22.13	22.50	0.098	2025/2/8	
Bottom Side	4182/836.4	RMC12.2K	0.155	0.086	-3.30	22.13	22.50	0.169	2025/2/8	

< LTE Band 2>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Left Cheek	18900/1880	20M QPSK(1,99)	0.442	0.320	2.14	21.07	21.50	0.488	2025/2/10	17#
Left Tilt 15 Degree	18900/1880	20M QPSK(1,99)	0.235	0.168	-1.35	21.07	21.50	0.259	2025/2/10	
Right Cheek	18900/1880	20M QPSK(1,99)	0.377	0.259	1.57	21.07	21.50	0.416	2025/2/10	
Right Tilt 15 Degree	18900/1880	20M QPSK(1,99)	0.170	0.123	0.79	21.07	21.50	0.188	2025/2/10	
50%RB										
Left Cheek	18900/1880	20M QPSK(50,0)	0.232	0.170	4.83	21.31	21.50	0.242	2025/2/10	
Left Tilt 15 Degree	18900/1880	20M QPSK(50,0)	0.140	0.094	-0.79	21.31	21.50	0.146	2025/2/10	
Right Cheek	18900/1880	20M QPSK(50,0)	0.195	0.155	3.06	21.31	21.50	0.204	2025/2/10	
Right Tilt 15 Degree	18900/1880	20M QPSK(50,0)	0.098	0.066	-1.22	21.31	21.50	0.102	2025/2/10	

Test Position of Hotspot	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						

with 10mm										
1RB										
Front Side	18900/1880	20M QPSK(1,99)	0.252	0.154	-2.51	21.07	21.50	0.278	2025/2/10	
Back Side	18900/1880	20M QPSK(1,99)	0.393	0.243	2.65	21.07	21.50	0.434	2025/2/10	18#
Left Side	18900/1880	20M QPSK(1,99)	0.125	0.074	3.27	21.07	21.50	0.138	2025/2/10	
Right Side	18900/1880	20M QPSK(1,99)	0.123	0.075	-1.52	21.07	21.50	0.136	2025/2/10	
Bottom Side	18900/1880	20M QPSK(1,99)	0.220	0.133	3.49	21.07	21.50	0.243	2025/2/10	
50%RB										
Front Side	18900/1880	20M QPSK(50,0)	0.129	0.077	3.63	21.31	21.50	0.135	2025/2/10	
Back Side	18900/1880	20M QPSK(50,0)	0.202	0.130	-4.17	21.31	21.50	0.211	2025/2/10	
Left Side	18900/1880	20M QPSK(50,0)	0.074	0.043	0.01	21.31	21.50	0.077	2025/2/10	
Right Side	18900/1880	20M QPSK(50,0)	0.069	0.040	-1.13	21.31	21.50	0.072	2025/2/10	
Bottom Side	18900/1880	20M QPSK(50,0)	0.118	0.075	-0.94	21.31	21.50	0.123	2025/2/10	

< LTE Band 4>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Left Cheek	20175/1732.5	20M QPSK(1,0)	0.445	0.292	2.01	20.70	21.00	0.477	2025/2/9	19#
Left Tilt 15 Degree	20175/1732.5	20M QPSK(1,0)	0.236	0.153	0.68	20.70	21.00	0.253	2025/2/9	
Right Cheek	20175/1732.5	20M QPSK(1,0)	0.408	0.254	-0.72	20.70	21.00	0.437	2025/2/9	
Right Tilt 15 Degree	20175/1732.5	20M QPSK(1,0)	0.222	0.144	2.66	20.70	21.00	0.238	2025/2/9	

50%RB										
Left Cheek	20175/1732.5	20M QPSK(50,49)	0.264	0.169	-2.69	20.70	21.00	0.283	2025/2/9	
Left Tilt 15 Degree	20175/1732.5	20M QPSK(50,49)	0.126	0.085	4.22	20.70	21.00	0.135	2025/2/9	
Right Cheek	20175/1732.5	20M QPSK(50,49)	0.218	0.136	-3.99	20.70	21.00	0.234	2025/2/9	
Right Tilt 15 Degree	20175/1732.5	20M QPSK(50,49)	0.115	0.085	0.48	20.70	21.00	0.123	2025/2/9	

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Front Side	20175/1732.5	20M QPSK(1,0)	0.288	0.177	-0.13	20.70	21.00	0.309	2025/2/9	
Back Side	20175/1732.5	20M QPSK(1,0)	0.449	0.281	-3.57	20.70	21.00	0.481	2025/2/9	20#
Left Side	20175/1732.5	20M QPSK(1,0)	0.138	0.084	1.77	20.70	21.00	0.148	2025/2/9	
Right Side	20175/1732.5	20M QPSK(1,0)	0.140	0.086	2.29	20.70	21.00	0.150	2025/2/9	
Bottom Side	20175/1732.5	20M QPSK(1,0)	0.230	0.143	2.03	20.70	21.00	0.246	2025/2/9	
50%RB										
Front Side	20175/1732.5	20M QPSK(50,49)	0.145	0.090	4.69	20.70	21.00	0.155	2025/2/9	
Back Side	20175/1732.5	20M QPSK(50,49)	0.248	0.153	-4.44	20.70	21.00	0.266	2025/2/9	
Left Side	20175/1732.5	20M QPSK(50,49)	0.082	0.044	3.28	20.70	21.00	0.088	2025/2/9	
Right Side	20175/1732.5	20M QPSK(50,49)	0.084	0.051	0.01	20.70	21.00	0.090	2025/2/9	
Bottom Side	20175/1732.5	20M QPSK(50,49)	0.136	0.085	1.97	20.70	21.00	0.146	2025/2/9	

< LTE Band 5>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Left Cheek	20525/836.5	10M QPSK(1,0)	0.285	0.190	-3.91	23.73	24.00	0.303	2025/2/8	21#
Left Tilt 15 Degree	20525/836.5	10M QPSK(1,0)	0.146	0.095	2.89	23.73	24.00	0.155	2025/2/8	
Right Cheek	20525/836.5	10M QPSK(1,0)	0.257	0.164	-1.15	23.73	24.00	0.273	2025/2/8	
Right Tilt 15 Degree	20525/836.5	10M QPSK(1,0)	0.125	0.083	1.98	23.73	24.00	0.133	2025/2/8	
50%RB										
Left Cheek	20525/836.5	10M QPSK(25,0)	0.155	0.106	4.87	22.71	23.00	0.166	2025/2/8	
Left Tilt 15 Degree	20525/836.5	10M QPSK(25,0)	0.074	0.057	4.91	22.71	23.00	0.079	2025/2/8	
Right Cheek	20525/836.5	10M QPSK(25,0)	0.146	0.082	-2.22	22.71	23.00	0.156	2025/2/8	
Right Tilt 15 Degree	20525/836.5	10M QPSK(25,0)	0.064	0.044	4.86	22.71	23.00	0.068	2025/2/8	

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Front Side	20525/836.5	10M QPSK(1,0)	0.162	0.100	3.43	23.73	24.00	0.172	2025/2/8	
Back Side	20525/836.5	10M QPSK(1,0)	0.256	0.163	-1.08	23.73	24.00	0.272	2025/2/8	22#
Left	20525/836.5	10M QPSK(1,0)	0.081	0.049	-0.23	23.73	24.00	0.086	2025/2/8	

Side										
Right Side	20525/836.5	10M QPSK(1,0)	0.078	0.048	1.88	23.73	24.00	0.083	2025/2/8	
Bottom Side	20525/836.5	10M QPSK(1,0)	0.130	0.079	-0.43	23.73	24.00	0.138	2025/2/8	
50%RB										
Front Side	20525/836.5	10M QPSK(25,0)	0.085	0.055	-2.23	22.71	23.00	0.091	2025/2/8	
Back Side	20525/836.5	10M QPSK(25,0)	0.143	0.089	0.82	22.71	23.00	0.153	2025/2/8	
Left Side	20525/836.5	10M QPSK(25,0)	0.043	0.028	-4.30	22.71	23.00	0.046	2025/2/8	
Right Side	20525/836.5	10M QPSK(25,0)	0.046	0.028	-0.76	22.71	23.00	0.049	2025/2/8	
Bottom Side	20525/836.5	10M QPSK(25,0)	0.071	0.047	4.94	22.71	23.00	0.076	2025/2/8	

< LTE Band 12>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Left Cheek	23095/707.5	10M QPSK(1,0)	0.308	0.194	-0.04	23.31	23.50	0.322	2025/2/7	33#
Left Tilt 15 Degree	23095/707.5	10M QPSK(1,0)	0.184	0.114	-3.00	23.31	23.50	0.192	2025/2/7	
Right Cheek	23095/707.5	10M QPSK(1,0)	0.281	0.168	-2.64	23.31	23.50	0.294	2025/2/7	
Right Tilt 15 Degree	23095/707.5	10M QPSK(1,0)	0.146	0.090	-0.71	23.31	23.50	0.153	2025/2/7	
50%RB										
Left Cheek	23095/707.5	10M QPSK(25,0)	0.183	0.105	2.12	22.28	22.50	0.193	2025/2/7	
Left Tilt 15 Degree	23095/707.5	10M QPSK(25,0)	0.094	0.064	-4.33	22.28	22.50	0.099	2025/2/7	
Right	23095/707.5	10M QPSK(25,0)	0.143	0.094	-4.75	22.28	22.50	0.150	2025/2/7	

Cheek										
Right Tilt 15 Degree	23095/707.5	10M QPSK(25,0)	0.074	0.053	-4.60	22.28	22.50	0.078	2025/2/7	

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Front Side	23095/707.5	10M QPSK(1,0)	0.162	0.097	-1.90	23.31	23.50	0.169	2025/2/7	
Back Side	23095/707.5	10M QPSK(1,0)	0.252	0.155	-3.34	23.31	23.50	0.263	2025/2/7	34#
Left Side	23095/707.5	10M QPSK(1,0)	0.084	0.051	1.96	23.31	23.50	0.088	2025/2/7	
Right Side	23095/707.5	10M QPSK(1,0)	0.081	0.048	1.78	23.31	23.50	0.085	2025/2/7	
Bottom Side	23095/707.5	10M QPSK(1,0)	0.140	0.082	3.56	23.31	23.50	0.146	2025/2/7	
50%RB										
Front Side	23095/707.5	10M QPSK(25,0)	0.096	0.058	-0.84	22.28	22.50	0.101	2025/2/7	
Back Side	23095/707.5	10M QPSK(25,0)	0.129	0.078	1.85	22.28	22.50	0.136	2025/2/7	
Left Side	23095/707.5	10M QPSK(25,0)	0.042	0.030	-2.53	22.28	22.50	0.044	2025/2/7	
Right Side	23095/707.5	10M QPSK(25,0)	0.048	0.029	-0.16	22.28	22.50	0.050	2025/2/7	
Bottom Side	23095/707.5	10M QPSK(25,0)	0.078	0.042	-3.27	22.28	22.50	0.082	2025/2/7	

< LTE Band 17>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										

Left Cheek	23790/710	10M QPSK(1,24)	0.309	0.187	-0.79	20.23	20.50	0.329	2025/2/7	35#
Left Tilt 15 Degree	23790/710	10M QPSK(1,24)	0.163	0.095	1.46	20.23	20.50	0.173	2025/2/7	
Right Cheek	23790/710	10M QPSK(1,24)	0.263	0.154	-2.19	20.23	20.50	0.280	2025/2/7	
Right Tilt 15 Degree	23790/710	10M QPSK(1,24)	0.122	0.073	0.92	20.23	20.50	0.130	2025/2/7	
50%RB										
Left Cheek	23790/710	10M QPSK(25,0)	0.167	0.111	-2.62	20.26	20.50	0.176	2025/2/7	
Left Tilt 15 Degree	23790/710	10M QPSK(25,0)	0.083	0.052	3.17	20.26	20.50	0.088	2025/2/7	
Right Cheek	23790/710	10M QPSK(25,0)	0.148	0.087	-2.90	20.26	20.50	0.156	2025/2/7	
Right Tilt 15 Degree	23790/710	10M QPSK(25,0)	0.063	0.038	1.85	20.26	20.50	0.067	2025/2/7	

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Front Side	23790/710	10M QPSK(1,24)	0.192	0.109	2.65	20.23	20.50	0.204	2025/2/7	
Back Side	23790/710	10M QPSK(1,24)	0.274	0.158	-3.40	20.23	20.50	0.292	2025/2/7	36#
Left Side	23790/710	10M QPSK(1,24)	0.096	0.054	-3.41	20.23	20.50	0.102	2025/2/7	
Right Side	23790/710	10M QPSK(1,24)	0.087	0.049	-1.25	20.23	20.50	0.093	2025/2/7	
Bottom Side	23790/710	10M QPSK(1,24)	0.155	0.089	-3.57	20.23	20.50	0.165	2025/2/7	
50%RB										
Front	23790/710	10M	0.099	0.059	2.60	20.26	20.50	0.105	2025/2/7	

Side		QPSK(25,0)								
Back Side	23790/710	10M QPSK(25,0)	0.155	0.079	-2.83	20.26	20.50	0.164	2025/2/7	
Left Side	23790/710	10M QPSK(25,0)	0.051	0.031	3.51	20.26	20.50	0.054	2025/2/7	
Right Side	23790/710	10M QPSK(25,0)	0.048	0.026	-0.19	20.26	20.50	0.051	2025/2/7	
Bottom Side	23790/710	10M QPSK(25,0)	0.083	0.045	1.76	20.26	20.50	0.088	2025/2/7	

< LTE Band 41>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Left Cheek	40620/2593	20M QPSK(1,49)	0.277	0.204	0.65	23.75	24.00	0.293	2025/2/12	23#
Left Tilt 15 Degree	40620/2593	20M QPSK(1,49)	0.166	0.120	-4.00	23.75	24.00	0.176	2025/2/12	
Right Cheek	40620/2593	20M QPSK(1,49)	0.247	0.180	-2.79	23.75	24.00	0.262	2025/2/12	
Right Tilt 15 Degree	40620/2593	20M QPSK(1,49)	0.124	0.090	0.60	23.75	24.00	0.131	2025/2/12	
50%RB										
Left Cheek	40620/2593	20M QPSK(50,0)	0.139	0.114	-3.15	22.82	23.00	0.145	2025/2/12	
Left Tilt 15 Degree	40620/2593	20M QPSK(50,0)	0.095	0.065	-2.74	22.82	23.00	0.099	2025/2/12	
Right Cheek	40620/2593	20M QPSK(50,0)	0.132	0.091	0.44	22.82	23.00	0.138	2025/2/12	
Right Tilt 15 Degree	40620/2593	20M QPSK(50,0)	0.074	0.049	2.82	22.82	23.00	0.077	2025/2/12	

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)	Power Drift	Conducted power	Tune-up power	Scaled SAR 1g (W/Kg)	Date	Plot

of Hotspot with 10mm			1g	10g	(±5%)	(dBm)	(dBm)			
1RB										
Front Side	40620/2593	20M QPSK(1,49)	0.282	0.174	-1.72	23.75	24.00	0.299	2025/2/12	
Back Side	40620/2593	20M QPSK(1,49)	0.462	0.291	-4.63	23.75	24.00	0.489	2025/2/12	24#
Left Side	40620/2593	20M QPSK(1,49)	0.150	0.094	-2.94	23.75	24.00	0.159	2025/2/12	
Bottom Side	40620/2593	20M QPSK(1,49)	0.245	0.147	-2.39	23.75	24.00	0.260	2025/2/12	
50%RB										
Front Side	40620/2593	20M QPSK(50,0)	0.149	0.097	-0.80	22.82	23.00	0.155	2025/2/12	
Back Side	40620/2593	20M QPSK(50,0)	0.242	0.174	4.73	22.82	23.00	0.252	2025/2/12	
Left Side	40620/2593	20M QPSK(50,0)	0.087	0.052	2.43	22.82	23.00	0.091	2025/2/12	
Bottom Side	40620/2593	20M QPSK(50,0)	0.125	0.084	1.48	22.82	23.00	0.130	2025/2/12	

< LTE Band 66>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Left Cheek	132322/1745	20M QPSK(1,99)	0.062	0.043	0.21	20.96	21.50	0.070	2025/2/9	25#
Left Tilt 15 Degree	132322/1745	20M QPSK(1,99)	0.032	0.022	0.72	20.96	21.50	0.036	2025/2/9	
Right Cheek	132322/1745	20M QPSK(1,99)	0.054	0.036	1.79	20.96	21.50	0.061	2025/2/9	
Right Tilt 15 Degree	132322/1745	20M QPSK(1,99)	0.029	0.020	-2.20	20.96	21.50	0.033	2025/2/9	
50%RB										

Left Cheek	132322/1745	20M QPSK(50,0)	0.035	0.026	2.54	21.16	21.50	0.038	2025/2/9	
Left Tilt 15 Degree	132322/1745	20M QPSK(50,0)	0.019	0.011	2.36	21.16	21.50	0.021	2025/2/9	
Right Cheek	132322/1745	20M QPSK(50,0)	0.032	0.018	-4.17	21.16	21.50	0.035	2025/2/9	
Right Tilt 15 Degree	132322/1745	20M QPSK(50,0)	0.017	0.010	-2.69	21.16	21.50	0.018	2025/2/9	

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Front Side	132322/1745	20M QPSK(1,99)	0.246	0.141	-2.73	20.96	21.50	0.279	2025/2/9	
Back Side	132322/1745	20M QPSK(1,99)	0.375	0.222	1.27	20.96	21.50	0.425	2025/2/9	26#
Left Side	132322/1745	20M QPSK(1,99)	0.120	0.070	-2.56	20.96	21.50	0.136	2025/2/9	
Right Side	132322/1745	20M QPSK(1,99)	0.126	0.072	1.22	20.96	21.50	0.143	2025/2/9	
Bottom Side	132322/1745	20M QPSK(1,99)	0.210	0.124	-0.17	20.96	21.50	0.238	2025/2/9	
50%RB										
Front Side	132322/1745	20M QPSK(50,0)	0.130	0.077	-3.77	21.16	21.50	0.141	2025/2/9	
Back Side	132322/1745	20M QPSK(50,0)	0.195	0.125	4.87	21.16	21.50	0.211	2025/2/9	
Left Side	132322/1745	20M QPSK(50,0)	0.072	0.036	-3.14	21.16	21.50	0.078	2025/2/9	
Right Side	132322/1745	20M QPSK(50,0)	0.075	0.040	0.21	21.16	21.50	0.081	2025/2/9	
Bottom Side	132322/1745	20M QPSK(50,0)	0.110	0.065	1.62	21.16	21.50	0.119	2025/2/9	

< LTE Band 71>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Left Cheek	133322/683	20M QPSK(1,0)	0.121	0.097	0.93	23.04	23.50	0.135	2025/2/7	37#
Left Tilt 15 Degree	133322/683	20M QPSK(1,0)	0.067	0.052	3.37	23.04	23.50	0.074	2025/2/7	
Right Cheek	133322/683	20M QPSK(1,0)	0.113	0.090	1.74	23.04	23.50	0.126	2025/2/7	
Right Tilt 15 Degree	133322/683	20M QPSK(1,0)	0.052	0.041	0.42	23.04	23.50	0.058	2025/2/7	
50%RB										
Left Cheek	133322/683	20M QPSK(50,24)	0.069	0.052	4.06	22.05	22.50	0.077	2025/2/7	
Left Tilt 15 Degree	133322/683	20M QPSK(50,24)	0.036	0.030	1.82	22.05	22.50	0.040	2025/2/7	
Right Cheek	133322/683	20M QPSK(50,24)	0.059	0.053	4.34	22.05	22.50	0.065	2025/2/7	
Right Tilt 15 Degree	133322/683	20M QPSK(50,24)	0.030	0.024	-3.42	22.05	22.50	0.033	2025/2/7	

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Front Side	133322/683	20M QPSK(1,0)	0.204	0.097	-0.90	23.04	23.50	0.227	2025/2/7	
Back Side	133322/683	20M QPSK(1,0)	0.328	0.165	-3.67	23.04	23.50	0.365	2025/2/7	38#

Left Side	133322/683	20M QPSK(1,0)	0.108	0.053	-1.99	23.04	23.50	0.120	2025/2/7	
Right Side	133322/683	20M QPSK(1,0)	0.099	0.048	0.44	23.04	23.50	0.110	2025/2/7	
Bottom Side	133322/683	20M QPSK(1,0)	0.185	0.090	-0.77	23.04	23.50	0.206	2025/2/7	
50%RB										
Front Side	133322/683	20M QPSK(50,24)	0.117	0.058	-2.11	22.05	22.50	0.130	2025/2/7	
Back Side	133322/683	20M QPSK(50,24)	0.190	0.085	-2.20	22.05	22.50	0.211	2025/2/7	
Left Side	133322/683	20M QPSK(50,24)	0.058	0.028	-1.13	22.05	22.50	0.064	2025/2/7	
Right Side	133322/683	20M QPSK(50,24)	0.054	0.026	-4.23	22.05	22.50	0.060	2025/2/7	
Bottom Side	133322/683	20M QPSK(50,24)	0.109	0.052	-3.50	22.05	22.50	0.121	2025/2/7	

< NR n71>

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Left Cheek	136100/680.5	30M QPSK(1,1)	0.122	0.098	0.67	23.37	24.00	0.141	2025/2/7	39#
Left Tilt 15 Degree	136100/680.5	30M QPSK(1,1)	0.070	0.056	1.02	23.37	24.00	0.081	2025/2/7	
Right Cheek	136100/680.5	30M QPSK(1,1)	0.112	0.090	0.23	23.37	24.00	0.129	2025/2/7	
Right Tilt 15 Degree	136100/680.5	30M QPSK(1,1)	0.061	0.047	1.47	23.37	24.00	0.071	2025/2/7	
50%RB										
Left Cheek	136100/680.5	30M QPSK(25,12)	0.064	0.058	1.20	23.52	24.00	0.071	2025/2/7	
Left Tilt 15 Degree	136100/680.5	30M QPSK(25,12)	0.042	0.032	0.98	23.52	24.00	0.047	2025/2/7	

Right Cheek	136100/680.5	30M QPSK(25,12)	0.063	0.052	1.45	23.52	24.00	0.070	2025/2/7	
Right Tilt 15 Degree	136100/680.5	30M QPSK(25,12)	0.036	0.024	3.25	23.52	24.00	0.040	2025/2/7	

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
1RB										
Front Side	136100/680.5	30M QPSK(1,1)	0.102	0.078	2.01	23.37	24.00	0.118	2025/2/7	
Back Side	136100/680.5	30M QPSK(1,1)	0.145	0.117	1.93	23.37	24.00	0.168	2025/2/7	40#
Left Side	136100/680.5	30M QPSK(1,1)	0.048	0.039	3.65	23.37	24.00	0.055	2025/2/7	
Right Side	136100/680.5	30M QPSK(1,1)	0.050	0.042	1.87	23.37	24.00	0.058	2025/2/7	
Bottom Side	136100/680.5	30M QPSK(1,1)	0.090	0.072	0.63	23.37	24.00	0.104	2025/2/7	
50%RB										
Front Side	136100/680.5	30M QPSK(25,12)	0.056	0.044	4.02	23.52	24.00	0.063	2025/2/7	
Back Side	136100/680.5	30M QPSK(25,12)	0.082	0.069	2.08	23.52	24.00	0.092	2025/2/7	
Left Side	136100/680.5	30M QPSK(25,12)	0.026	0.020	3.02	23.52	24.00	0.029	2025/2/7	
Right Side	136100/680.5	30M QPSK(25,12)	0.029	0.023	1.17	23.52	24.00	0.032	2025/2/7	
Bottom Side	136100/680.5	30M QPSK(25,12)	0.049	0.041	0.63	23.52	24.00	0.055	2025/2/7	

< WiFi 2.4G> ANT1

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g	Date	Plot
			1g	10g						

								(W/Kg)		
Left Cheek	1/2412	802.11b	0.247	0.171	1.06	15.64	16.00	0.268	2025/2/11	15#
Left Cheek	1/2412	802.11b	0.135	0.091	-2.60	15.64	16.00	0.147	2025/2/11	
Left Tilt 15 Degree	1/2412	802.11b	0.228	0.155	-2.14	15.64	16.00	0.248	2025/2/11	
Right Cheek	1/2412	802.11b	0.103	0.070	-2.91	15.64	16.00	0.112	2025/2/11	

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Front Side	1/2412	802.11b	0.162	0.106	-2.35	15.64	16.00	0.176	2025/2/11	
Back Side	1/2412	802.11b	0.236	0.156	3.26	15.64	16.00	0.256	2025/2/11	16#
Right Side	1/2412	802.11b	0.075	0.048	3.53	15.64	16.00	0.081	2025/2/11	
Top Side	1/2412	802.11b	0.081	0.051	-1.19	15.64	16.00	0.088	2025/2/11	

< WiFi 5.2G> ANT1

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Left Cheek	46/5230	802.11N40	0.510	0.415	2.31	12.45	12.50	0.516	2025/2/13	11#
Left Tilt 15 Degree	46/5230	802.11N40	0.292	0.233	-2.48	12.45	12.50	0.295	2025/2/13	
Right Cheek	46/5230	802.11N40	0.460	0.363	-1.97	12.45	12.50	0.465	2025/2/13	
Right Tilt 15	46/5230	802.11N40	0.232	0.179	0.34	12.45	12.50	0.235	2025/2/13	

Degree										

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Front Side	46/5230	802.11N40	0.318	0.230	-1.83	12.45	12.50	0.322	2025/2/13	
Back Side	46/5230	802.11N40	0.509	0.380	1.11	12.45	12.50	0.515	2025/2/13	13#
Right Side	46/5230	802.11N40	0.159	0.119	-3.15	12.45	12.50	0.161	2025/2/13	
Top Side	46/5230	802.11N40	0.153	0.114	1.83	12.45	12.50	0.155	2025/2/13	

< WiFi 5.8G> ANT1

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Left Cheek	151/5755	802.11ax (40)	0.553	0.458	3.02	16.73	17.00	0.588	2025/2/17	12#
Left Tilt 15 Degree	151/5755	802.11ax (40)	0.317	0.263	-2.78	16.73	17.00	0.337	2025/2/17	
Right Cheek	151/5755	802.11ax (40)	0.499	0.401	-1.20	16.73	17.00	0.531	2025/2/17	
Right Tilt 15 Degree	151/5755	802.11ax (40)	0.227	0.186	0.11	16.73	17.00	0.242	2025/2/17	

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Front	151/5755	802.11ax (40)	0.354	0.270	0.80	16.73	17.00	0.377	2025/2/17	

Side										
Back Side	151/5755	802.11ax (40)	0.553	0.430	2.01	16.73	17.00	0.588	2025/2/17	14#
Right Side	151/5755	802.11ax (40)	0.171	0.133	-3.10	16.73	17.00	0.182	2025/2/17	
Top Side	151/5755	802.11ax (40)	0.180	0.136	-2.92	16.73	17.00	0.192	2025/2/17	

< WiFi 2.4G> ANT2

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Left Cheek	6/2437	802.11b	0.246	0.170	2.54	16.18	16.50	0.265	2025/2/11	31#
Left Cheek	6/2437	802.11b	0.133	0.089	0.59	16.18	16.50	0.143	2025/2/11	
Left Tilt 15 Degree	6/2437	802.11b	0.233	0.161	-1.42	16.18	16.50	0.251	2025/2/11	
Right Cheek	6/2437	802.11b	0.123	0.083	-0.92	16.18	16.50	0.132	2025/2/11	

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Front Side	6/2437	802.11b	0.132	0.063	2.57	16.18	16.50	0.142	2025/2/11	
Back Side	6/2437	802.11b	0.193	0.093	0.12	16.18	16.50	0.208	2025/2/11	32#
Right Side	6/2437	802.11b	0.060	0.028	2.82	16.18	16.50	0.065	2025/2/11	
Top Side	6/2437	802.11b	0.069	0.033	-1.34	16.18	16.50	0.074	2025/2/11	

< WiFi 5.2G> ANT2

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Left Cheek	38/5190	802.11ax (40)	0.334	0.157	2.36	11.44	11.50	0.339	2025/2/13	27#
Left Tilt 15 Degree	38/5190	802.11ax (40)	0.277	0.219	2.63	11.44	11.50	0.281	2025/2/13	
Right Cheek	38/5190	802.11ax (40)	0.312	0.130	3.36	11.44	11.50	0.316	2025/2/13	
Right Tilt 15 Degree	38/5190	802.11ax (40)	0.209	0.168	-2.84	11.44	11.50	0.212	2025/2/13	

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Front Side	38/5190	802.11ax (40)	0.078	0.046	-3.64	11.44	11.50	0.079	2025/2/13	
Back Side	38/5190	802.11ax (40)	0.094	0.055	0.57	11.44	11.50	0.095	2025/2/13	29#
Right Side	38/5190	802.11ax (40)	0.042	0.024	0.79	11.44	11.50	0.043	2025/2/13	
Top Side	38/5190	802.11ax (40)	0.033	0.019	0.60	11.44	11.50	0.033	2025/2/13	

< WiFi 5.8G> ANT2

Test Position	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Left Cheek	149/5745	802.11a	0.242	0.084	1.45	12.29	12.50	0.254	2025/2/17	28#
Left Tilt 15 Degree	149/5745	802.11a	0.156	0.050	0.97	12.29	12.50	0.164	2025/2/17	
Right	149/5745	802.11a	0.201	0.065	2.34	12.29	12.50	0.211	2025/2/17	

Cheek										
Right Tilt 15 Degree	149/5745	802.11a	0.132	0.041	3.69	12.29	12.50	0.139	2025/2/17	

Test Position of Hotspot with 10mm	Test channel /Freq.	Test Mode	SAR Value (W/kg)		Power Drift (±5%)	Conducted power (dBm)	Tune-up power (dBm)	Scaled SAR 1g (W/Kg)	Date	Plot
			1g	10g						
Front Side	149/5745	802.11a	0.084	0.046	-1.58	12.29	12.50	0.088	2025/2/17	
Back Side	149/5745	802.11a	0.102	0.058	3.02	12.29	12.50	0.107	2025/2/17	30#
Right Side	149/5745	802.11a	0.042	0.024	2.60	12.29	12.50	0.044	2025/2/17	
Top Side	149/5745	802.11a	0.033	0.018	3.05	12.29	12.50	0.035	2025/2/17	

12. Simultaneous Transmission Analysis

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

1) Scalar SAR summation < 1.6W/kg.

2) SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (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 ≤ 0.04, simultaneously transmission SAR measurement is not necessary.

No.	Simultaneous Tx	Head	Body-worn	Hotspot
1	WWAN+WLAN	Yes	Yes	Yes
2	WWAN+Bluetooth	Yes	Yes	Yes

Note：WiFi and Bluetooth use the same antenna and cannot be transmitted at the same time.

Exposure Position		NII/DTS/DSS ANT1+ANT2	WWAN Band	Simultaneous Tx SAR(W/Kg)
		SAR(W/Kg)	SAR(W/Kg)	
Head	Left Cheek	0.855	0.488	1.343
	Left Tilt 15 Degree	0.576	0.259	0.835
	Right Cheek	0.781	0.437	1.218
	Right Tilt 15 Degree	0.447	0.238	0.685
Body&Hotspot	Front Side	0.465	0.309	0.774
	Back Side	0.695	0.481	1.176
	Left Side	/	0.148	0.148
	Right Side	0.226	0.150	0.376
	Top Side	0.227	/	0.227
	Bottom Side	/	0.246	0.246

Exposure Position	NII/DTS/DSS ANT1+ANT2	NR n71	Simultaneous Tx SAR(W/Kg)
	SAR(W/Kg)	SAR(W/Kg)	

Head	Left Cheek	0.855	0.141	0.996
	Left Tilt 15 Degree	0.576	0.081	0.657
	Right Cheek	0.781	0.129	0.910
	Right Tilt 15 Degree	0.447	0.071	0.518
Body&Hotspot	Front Side	0.465	0.118	0.583
	Back Side	0.695	0.168	0.863
	Left Side	/	0.055	0.055
	Right Side	0.226	0.058	0.284
	Top Side	0.227	/	0.227
	Bottom Side	/	0.104	0.104

Exposure Position		NII/DTS/DSS ANT1+ANT2	LTE Band 41	Simultaneous Tx SAR(W/Kg)
		SAR(W/Kg)	SAR(W/Kg)	
Head	Left Cheek	0.855	0.293	1.148
	Left Tilt 15 Degree	0.576	0.176	0.752
	Right Cheek	0.781	0.262	1.043
	Right Tilt 15 Degree	0.447	0.131	0.578
Body&Hotspot	Front Side	0.465	0.299	0.764
	Back Side	0.695	0.489	1.184
	Left Side	/	0.159	0.159
	Right Side	0.226	/	0.226
	Top Side	0.227	/	0.227
	Bottom Side	/	0.260	0.260

Note：The Simultaneous Tx is calculated based on the same configuration and test position.

Appendix A. Photo documentation

Refer to appendix Test Setup photo---SAR

Appendix B. System Check Plots

Table of contents
MEASUREMENT 1 System Performance Check - 750MHz
MEASUREMENT 2 System Performance Check - 850MHz
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 - 5800MHz

MEASUREMENT 1

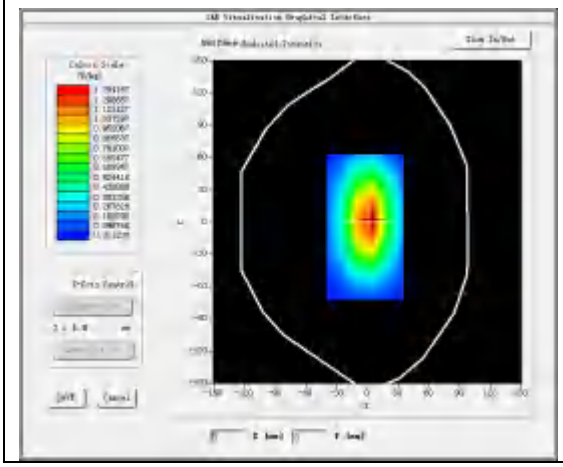
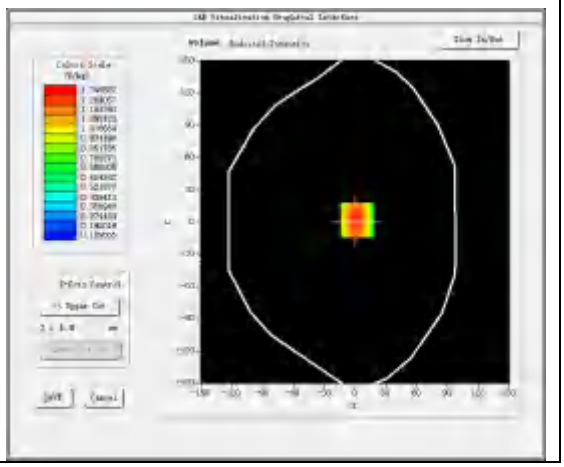
Date of measurement: 7/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	CW750
Channels	Middle
Signal	CW (Crest factor: 1.0)
ConvF	1.65

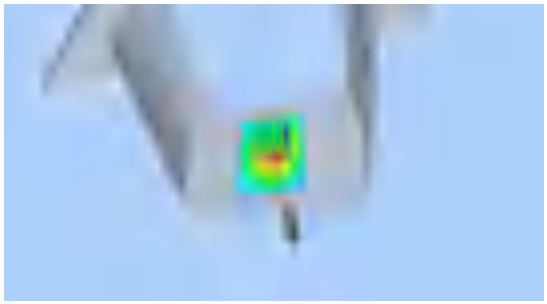
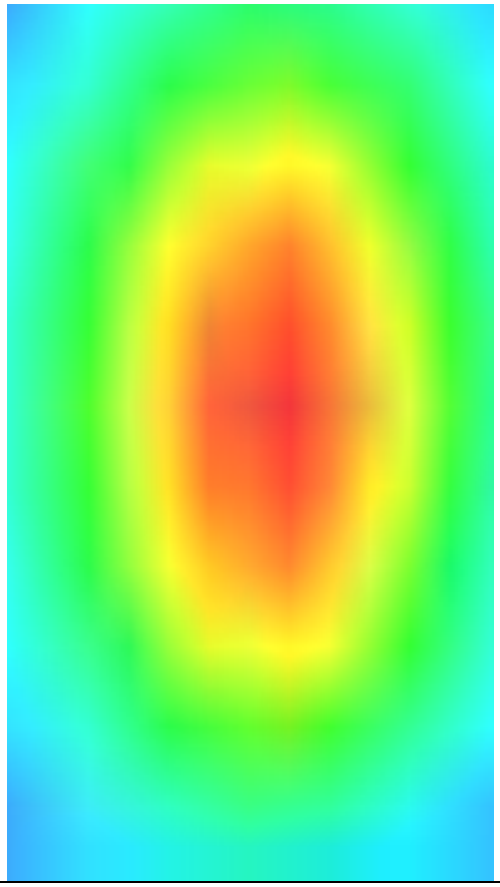
B. SAR Measurement Results

Frequency (MHz)	750.000000
Relative permittivity (real part)	42.562010
Relative permittivity (imaginary part)	19.132740
Conductivity (S/m)	0.912054
Variation (%)	0.210000

SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=2.00, Y=2.00
SAR Peak: 1.87 W/kg

SAR 10g (W/Kg)	0.621031
SAR 1g (W/Kg)	0.930125

3D screen shot	Hot spot position
	

MEASUREMENT 2

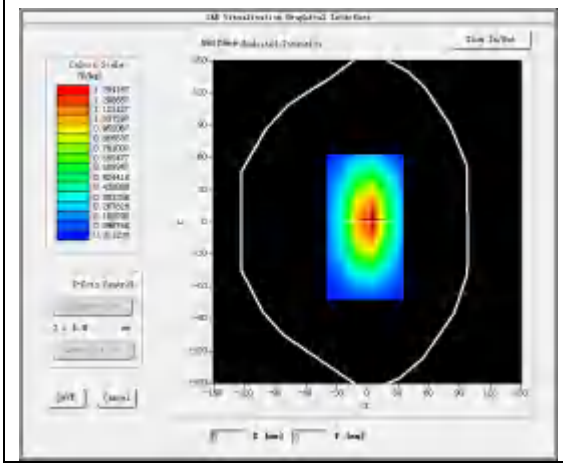
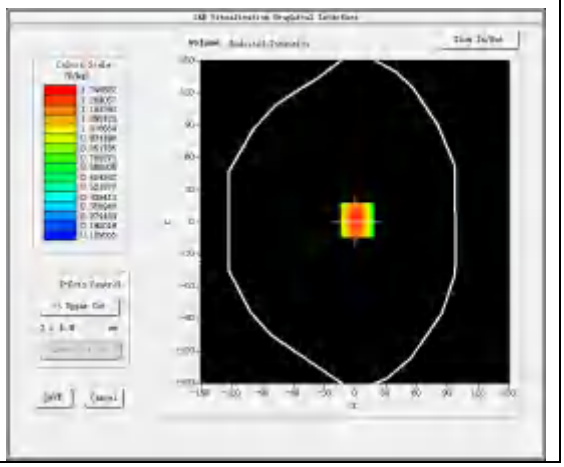
Date of measurement: 8/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	CW835
Channels	Middle
Signal	CW (Crest factor: 1.0)
ConvF	1.66

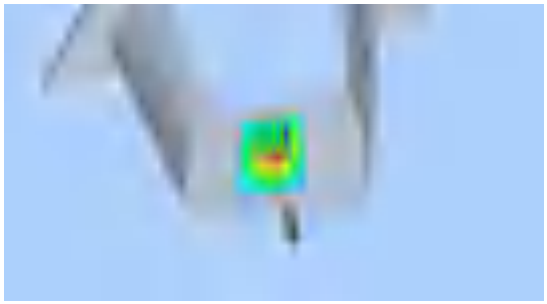
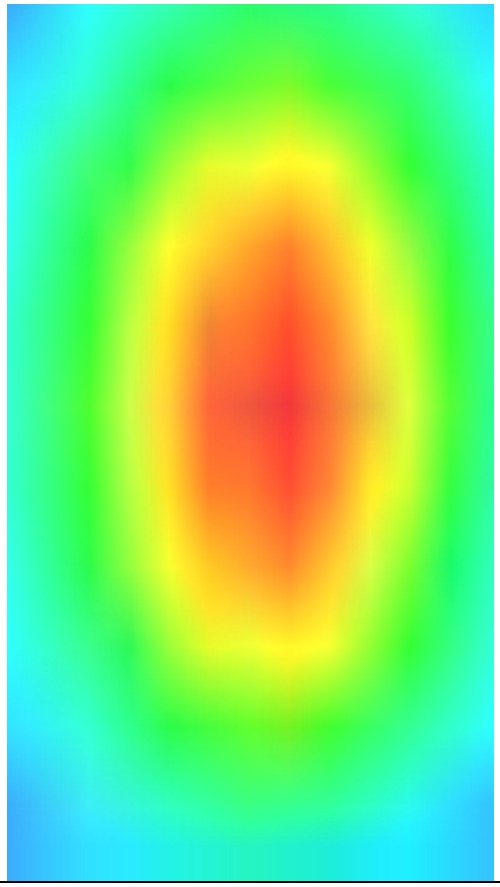
B. SAR Measurement Results

Frequency (MHz)	835.000000
Relative permittivity (real part)	42.012031
Relative permittivity (imaginary part)	19.131021
Conductivity (S/m)	0.941030
Variation (%)	0.310000

SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=2.00, Y=2.00
SAR Peak: 1.87 W/kg

SAR 10g (W/Kg)	0.612031
SAR 1g (W/Kg)	1.011231

3D screen shot	Hot spot position
	

MEASUREMENT 3

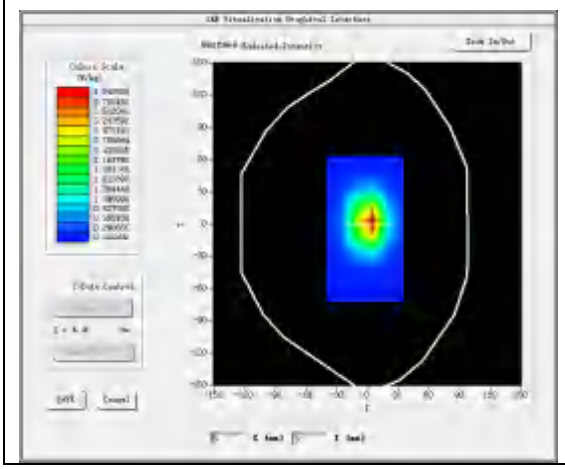
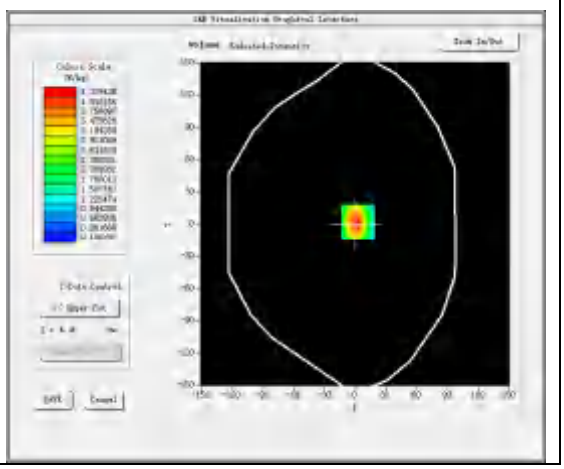
Date of measurement: 9/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	CW1800
Channels	Middle
Signal	CW (Crest factor: 1.0)
ConvF	2.05

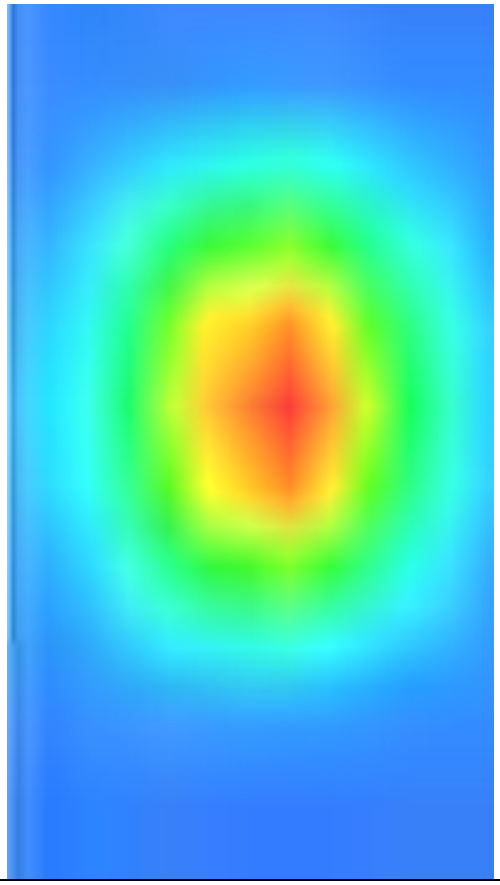
B. SAR Measurement Results

Frequency (MHz)	1800.000000
Relative permittivity (real part)	39.606403
Relative permittivity (imaginary part)	14.067180
Conductivity (S/m)	1.406718
Variation (%)	-0.140000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=3.00, Y=2.00
SAR Peak: 6.82 W/kg

SAR 10g (W/Kg)	2.024557
SAR 1g (W/Kg)	3.832112

3D screen shot	Hot spot position
	

MEASUREMENT 4

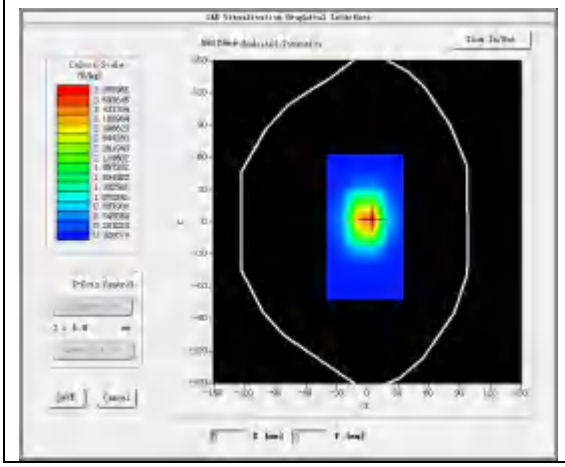
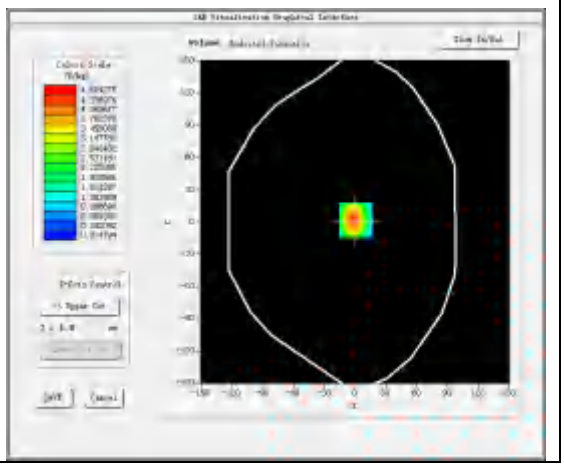
Date of measurement: 10/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	CW1900
Channels	Middle
Signal	CW (Crest factor: 1.0)
ConvF	2.05

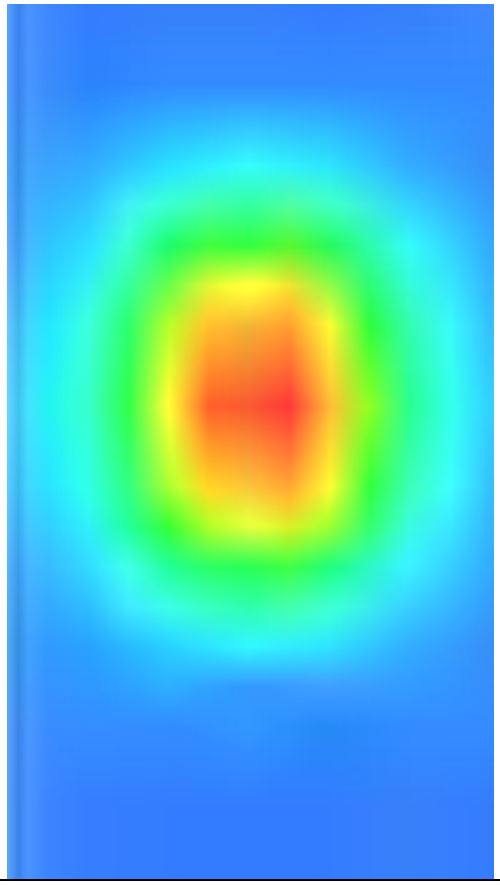
B. SAR Measurement Results

Frequency (MHz)	1900.000000
Relative permittivity (real part)	41.420140
Relative permittivity (imaginary part)	12.570123
Conductivity (S/m)	1.390503
Variation (%)	-0.440000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=1.00, Y=2.00
SAR Peak: 7.65 W/kg

SAR 10g (W/Kg)	2.153165
SAR 1g (W/Kg)	4.153568

3D screen shot	Hot spot position
	

MEASUREMENT 5

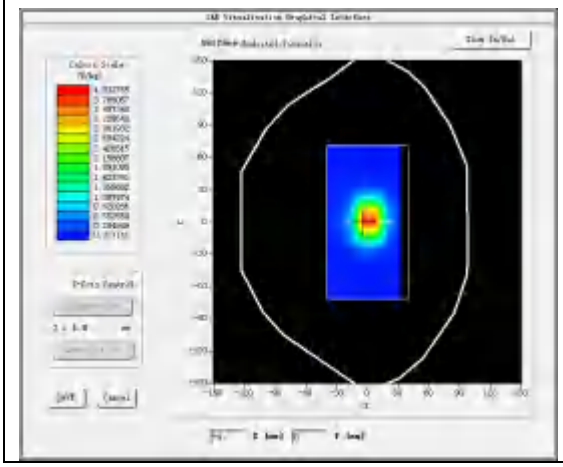
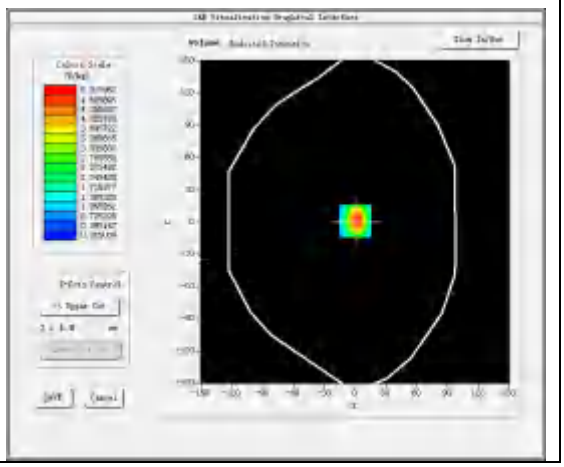
Date of measurement: 11/2/2025

A. Experimental conditions.

Area Scan	dx=12mm dy=12mm, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	CW2450
Channels	Middle
Signal	CW (Crest factor: 1.0)
ConvF	2.38

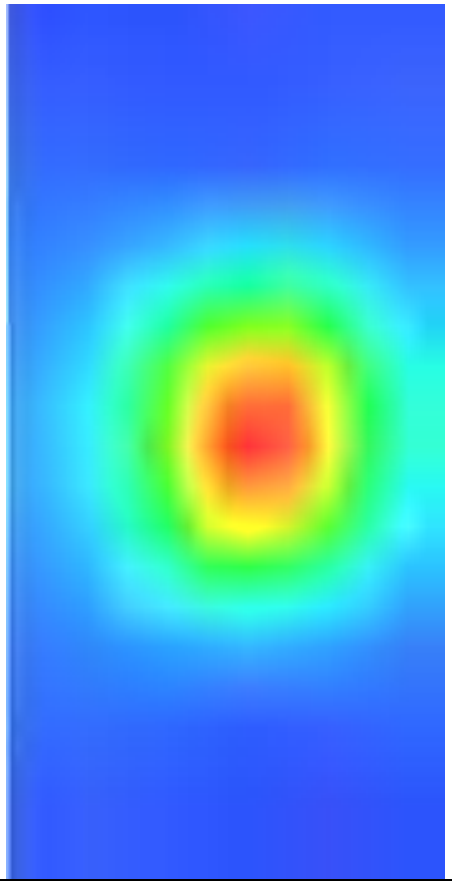
B. SAR Measurement Results

Frequency (MHz)	2450.000000
Relative permittivity (real part)	40.408511
Relative permittivity (imaginary part)	13.399264
Conductivity (S/m)	1.823789
Variation (%)	-1.250000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=1.00
SAR Peak: 8.14 W/kg

SAR 10g (W/Kg)	2.359425
SAR 1g (W/Kg)	5.183642

3D screen shot	Hot spot position
	

MEASUREMENT 6

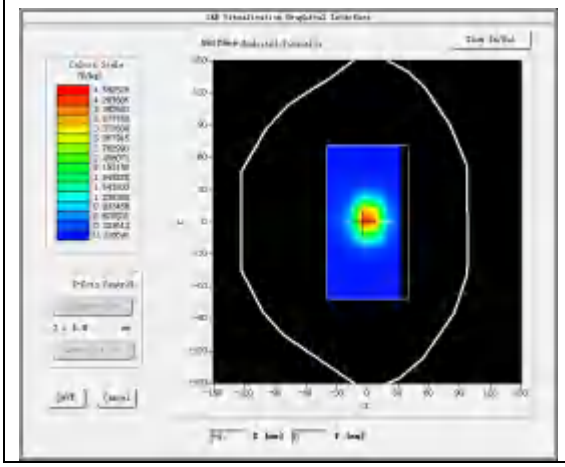
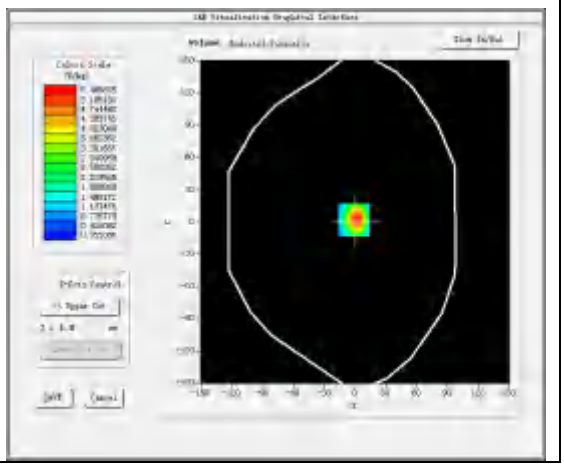
Date of measurement: 12/2/2025

A. Experimental conditions.

Area Scan	dx=12mm dy=12mm, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	CW2600
Channels	Middle
Signal	CW (Crest factor: 1.0)
ConvF	2.35

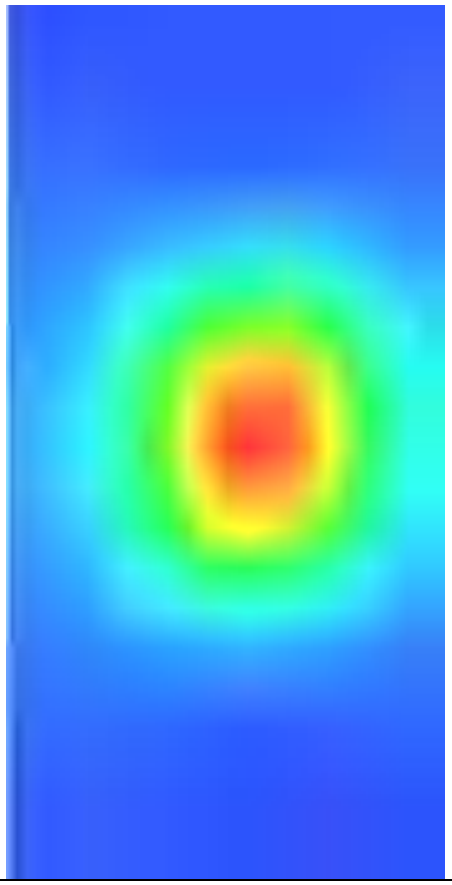
B. SAR Measurement Results

Frequency (MHz)	2600.000000
Relative permittivity (real part)	39.432362
Relative permittivity (imaginary part)	13.768602
Conductivity (S/m)	1.988798
Variation (%)	-3.980000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-1.00, Y=2.00
SAR Peak: 9.07 W/kg

SAR 10g (W/Kg)	2.523157
SAR 1g (W/Kg)	5.432595

3D screen shot	Hot spot position
	

MEASUREMENT 7

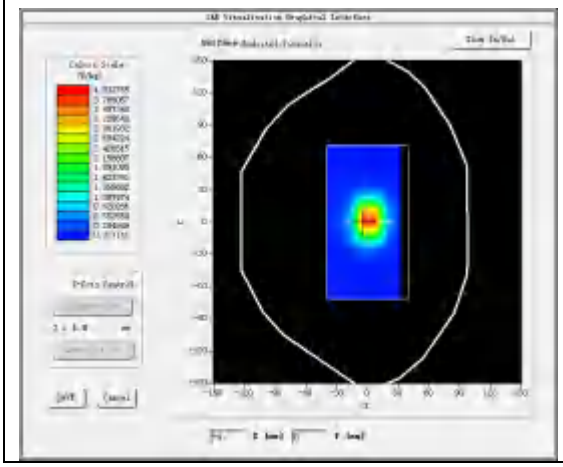
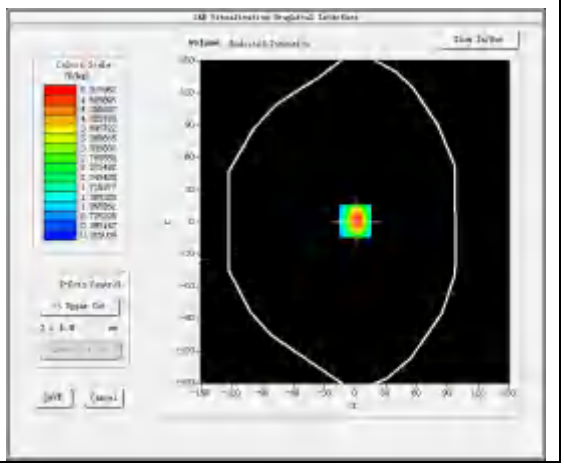
Date of measurement: 13/2/2025

A. Experimental conditions.

Area Scan	dx=10mm dy=10mm, h= 2.00 mm
ZoomScan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Dipole
Band	CW5200
Channels	Middle
Signal	CW (Crest factor: 1.0)
ConvF	2.30

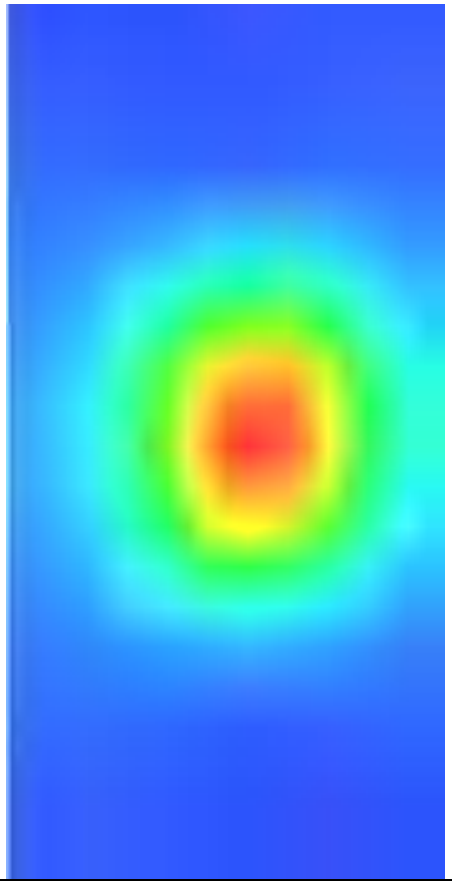
B. SAR Measurement Results

Frequency (MHz)	5200.000000
Relative permittivity (real part)	37.400000
Relative permittivity (imaginary part)	16.129999
Conductivity (S/m)	4.510778
Variation (%)	-4.570000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=0.00, Y=1.00
SAR Peak: 15.14 W/kg

SAR 10g (W/Kg)	5.212361
SAR 1g (W/Kg)	14.712032

3D screen shot	Hot spot position
	

MEASUREMENT 8

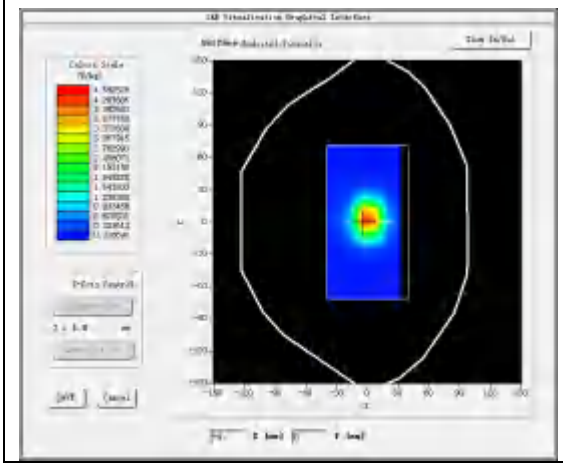
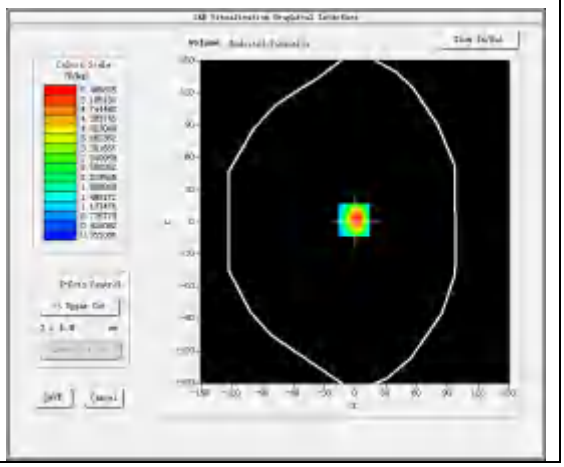
Date of measurement: 17/2/2025

A. Experimental conditions.

Area Scan	dx=10mm dy=10mm, h= 2.00 mm
ZoomScan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Dipole
Band	CW5800
Channels	Middle
Signal	CW (Crest factor: 1.0)
ConvF	2.27

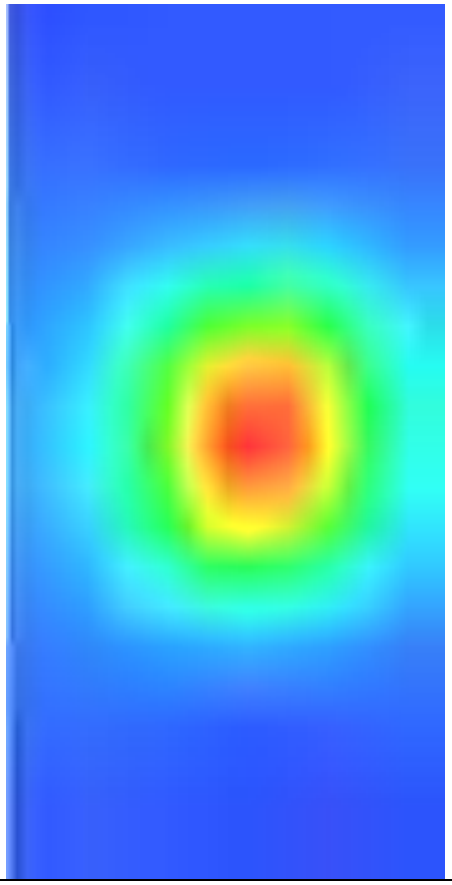
B. SAR Measurement Results

Frequency (MHz)	5800.000000
Relative permittivity (real part)	35.299999
Relative permittivity (imaginary part)	16.360001
Conductivity (S/m)	5.271556
Variation (%)	-2.480000

SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-1.00, Y=2.00
SAR Peak: 17.07 W/kg

SAR 10g (W/Kg)	5.623106
SAR 1g (W/Kg)	16.421035

3D screen shot	Hot spot position
	

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MEASUREMENT 1

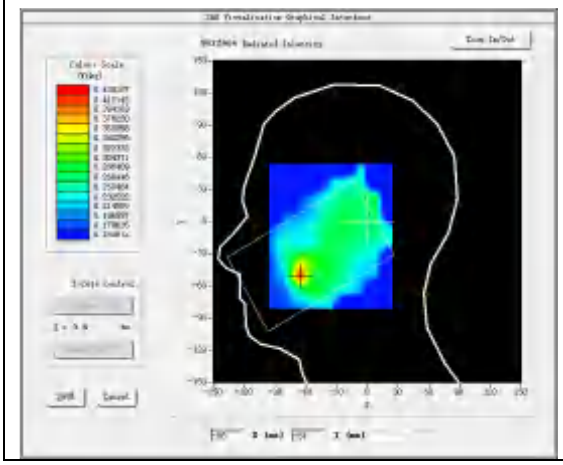
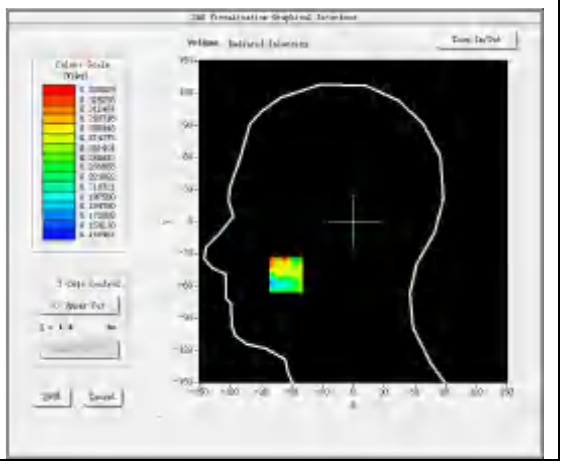
Date of measurement: 8/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	GSM850
Channels	Middle
Signal	TDMA (Crest factor: 2.0)
ConvF	1.66

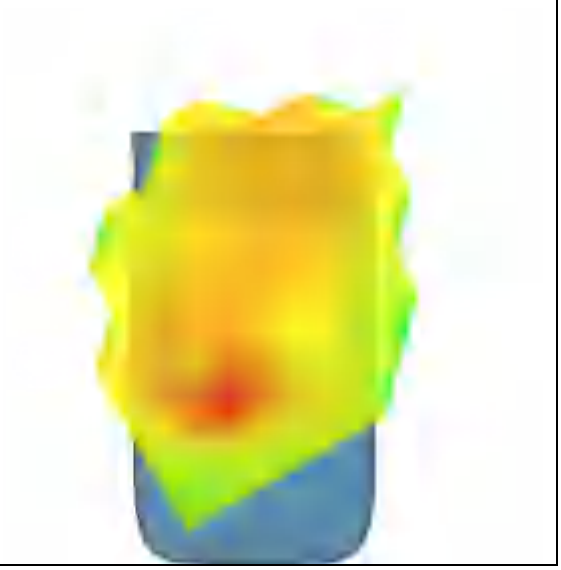
B. SAR Measurement Results

Frequency (MHz)	836.400024
Relative permittivity (real part)	41.500000
Relative permittivity (imaginary part)	19.400000
Conductivity (S/m)	0.901453
Variation (%)	0.210000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-66.00, Y=-50.00
SAR Peak: 0.57 W/kg

SAR 10g (W/Kg)	0.239675
SAR 1g (W/Kg)	0.324748

3D screen shot	Hot spot position
	

MEASUREMENT 2

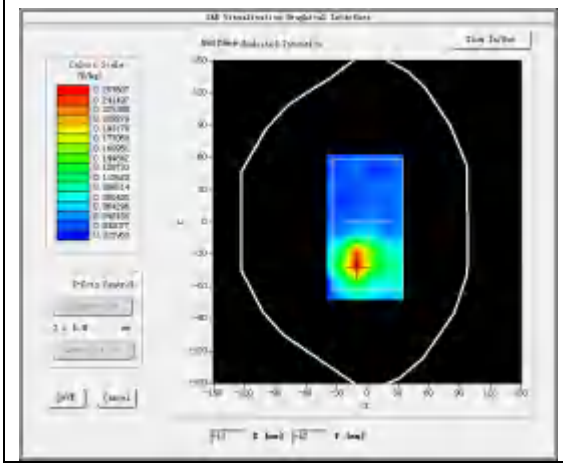
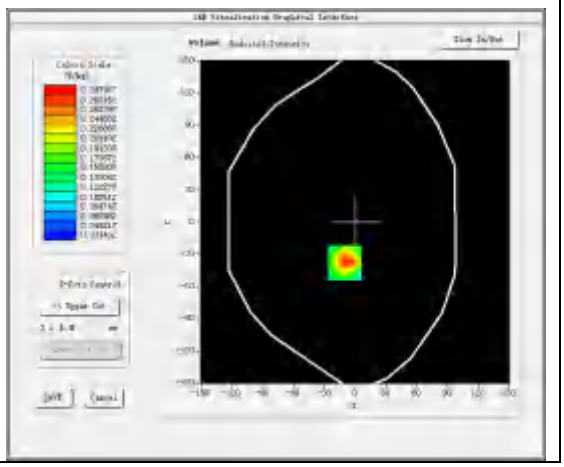
Date of measurement: 8/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	GSM850
Channels	Middle
Signal	TDMA (Crest factor: 2.0)
ConvF	1.66

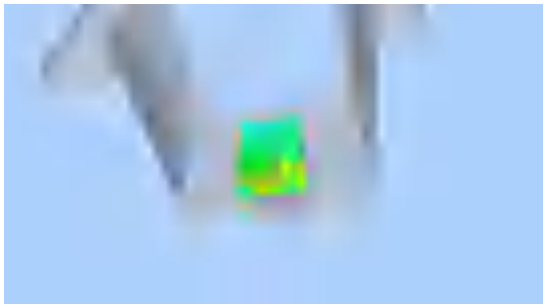
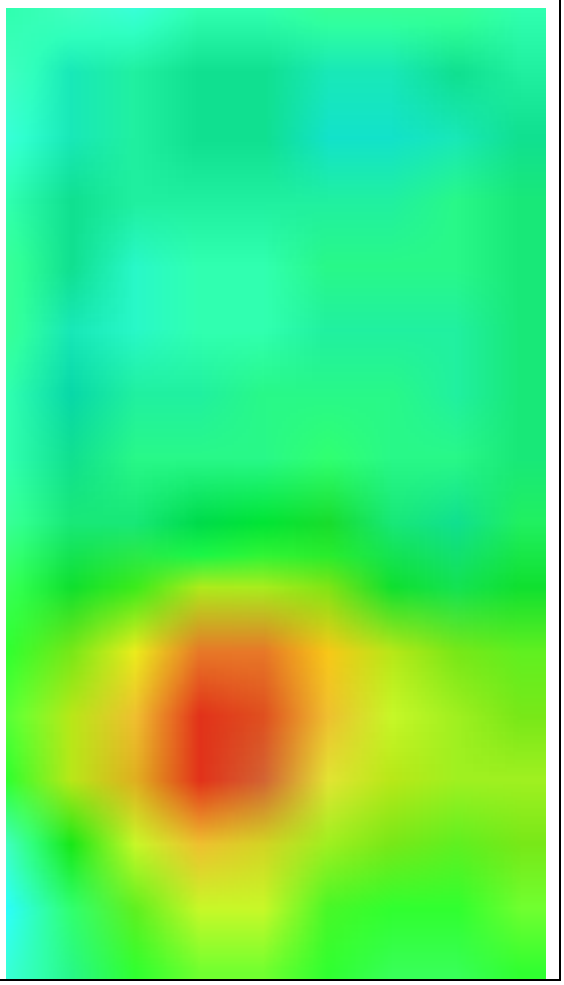
B. SAR Measurement Results

Frequency (MHz)	836.400024
Relative permittivity (real part)	41.500000
Relative permittivity (imaginary part)	19.400000
Conductivity (S/m)	0.901453
Variation (%)	0.549999

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-10.00, Y=-38.00
SAR Peak: 0.50 W/kg

SAR 10g (W/Kg)	0.163201
SAR 1g (W/Kg)	0.285410

3D screen shot	Hot spot position
	

MEASUREMENT 3

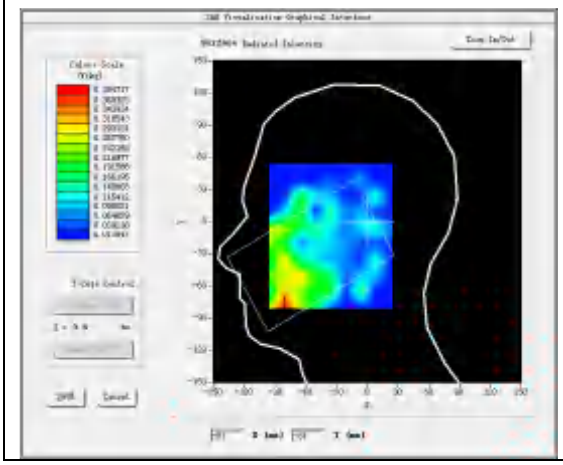
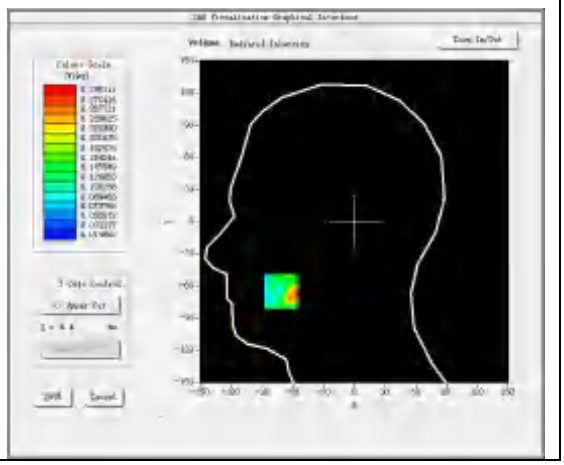
Date of measurement: 10/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	GSM1900
Channels	Middle
Signal	TDMA (Crest factor: 2.0)
ConvF	2.05

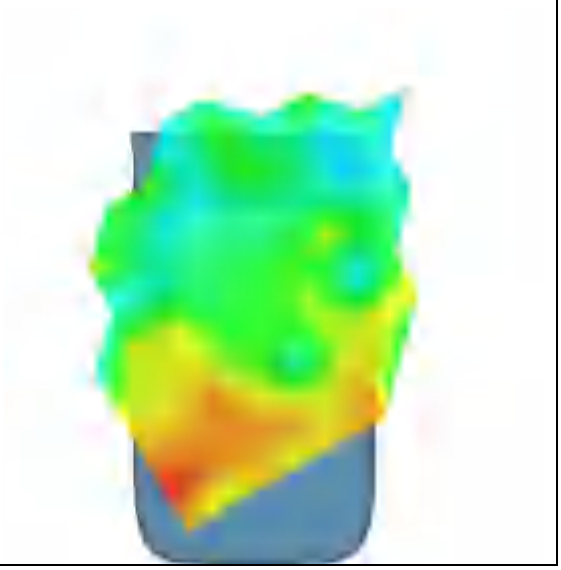
B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	40.000000
Relative permittivity (imaginary part)	13.408000
Conductivity (S/m)	1.400391
Variation (%)	1.540000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-72.00, Y=-65.00
SAR Peak: 0.60 W/kg

SAR 10g (W/Kg)	0.118777
SAR 1g (W/Kg)	0.281267

3D screen shot	Hot spot position
	

MEASUREMENT 4

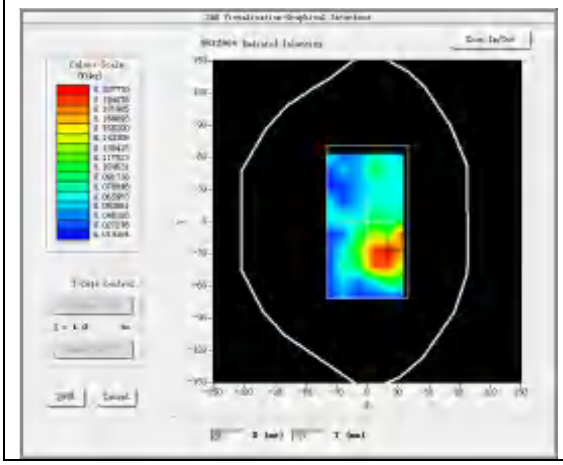
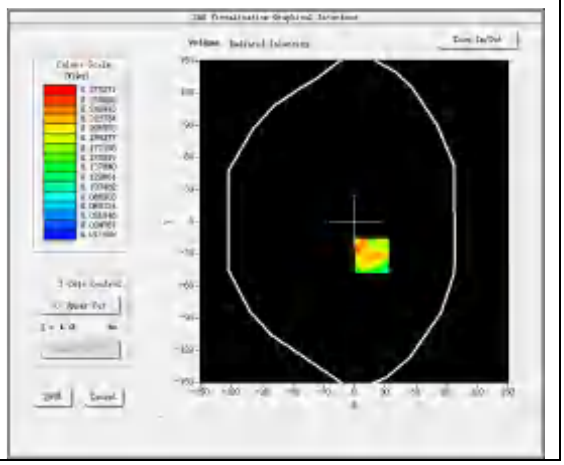
Date of measurement: 10/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	GSM1900
Channels	Middle
Signal	TDMA (Crest factor: 2.0)
ConvF	2.05

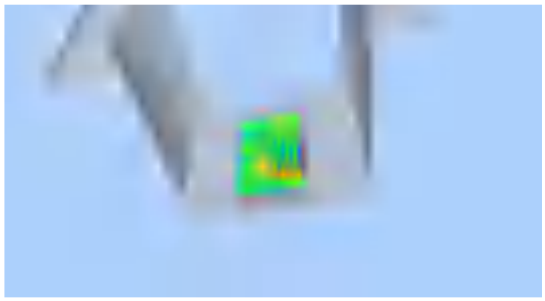
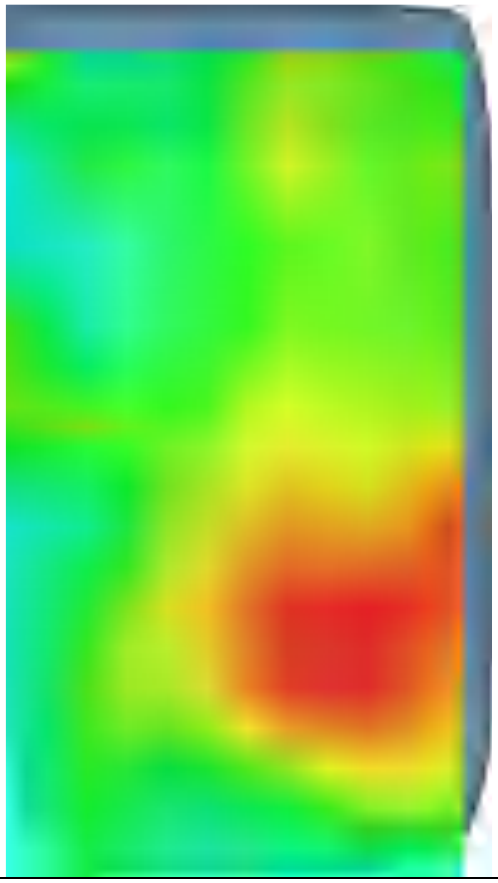
B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	40.000000
Relative permittivity (imaginary part)	13.408000
Conductivity (S/m)	1.400391
Variation (%)	-1.020002

SURFACE SAR	VOLUME SAR
	

Maximum location: X=17.00, Y=-32.00
SAR Peak: 0.55 W/kg

SAR 10g (W/Kg)	0.144543
SAR 1g (W/Kg)	0.236040

3D screen shot	Hot spot position
	

MEASUREMENT 5

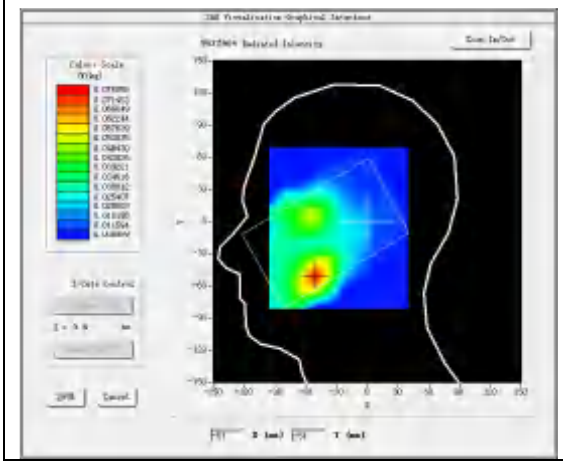
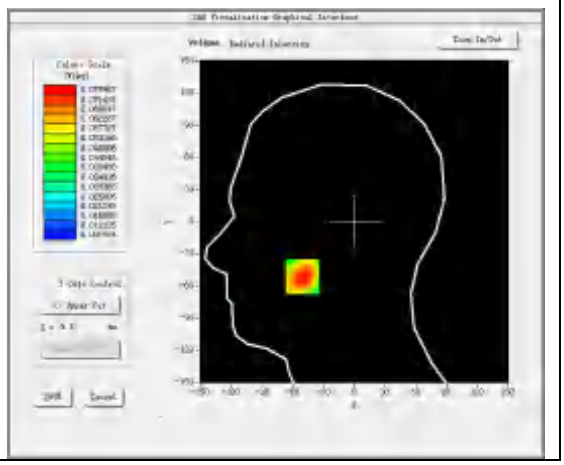
Date of measurement: 10/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	Band2_WCDMA1900
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)
ConvF	2.05

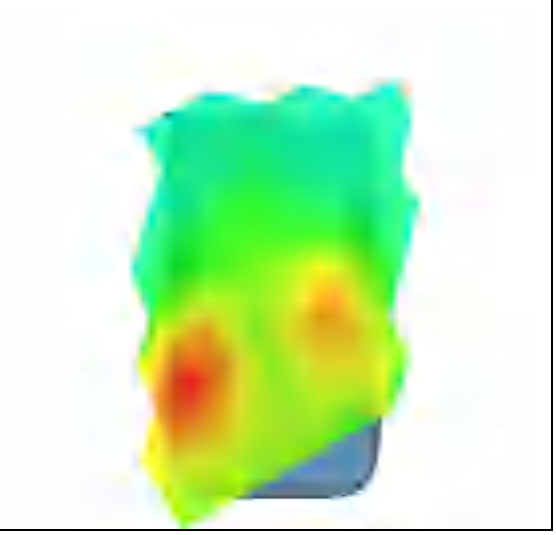
B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	40.000000
Relative permittivity (imaginary part)	13.408000
Conductivity (S/m)	1.400391
Variation (%)	1.230000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-51.00, Y=-51.00
SAR Peak: 0.11 W/kg

SAR 10g (W/Kg)	0.047270
SAR 1g (W/Kg)	0.076228

3D screen shot	Hot spot position
	

MEASUREMENT 6

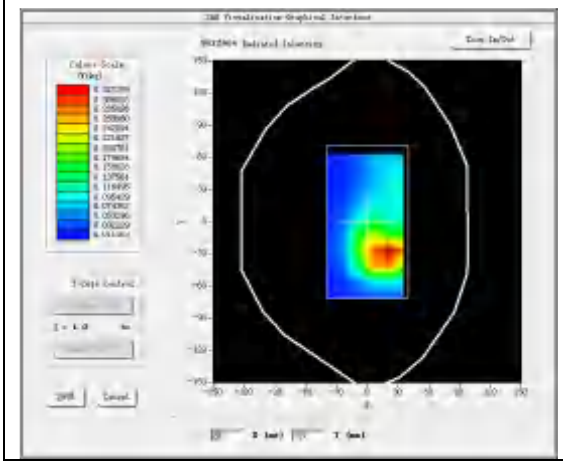
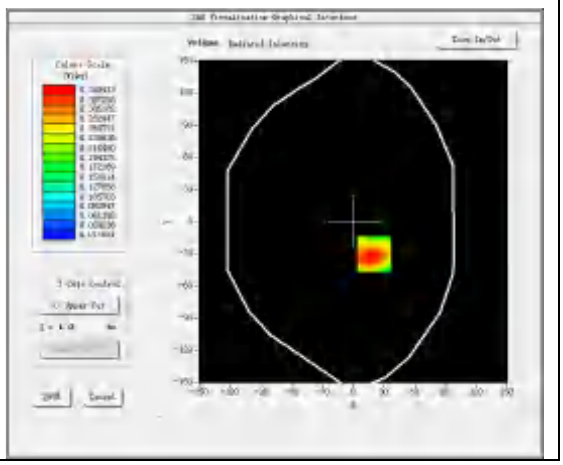
Date of measurement: 10/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	Band2_WCDMA1900
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)
ConvF	2.05

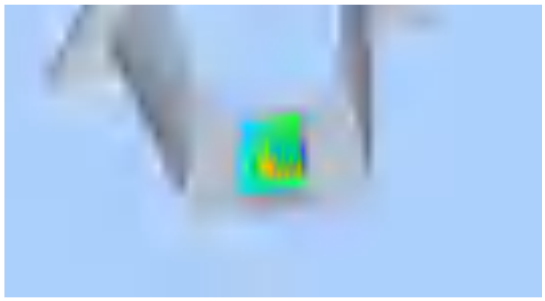
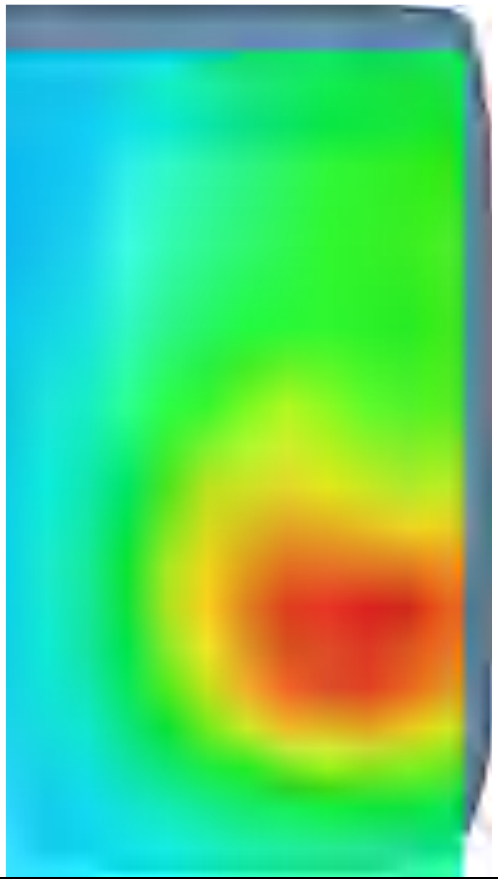
B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	40.000000
Relative permittivity (imaginary part)	13.408000
Conductivity (S/m)	1.400391
Variation (%)	1.450000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=20.00, Y=-30.00
SAR Peak: 0.54 W/kg

SAR 10g (W/Kg)	0.199237
SAR 1g (W/Kg)	0.350144

3D screen shot	Hot spot position
	

MEASUREMENT 7

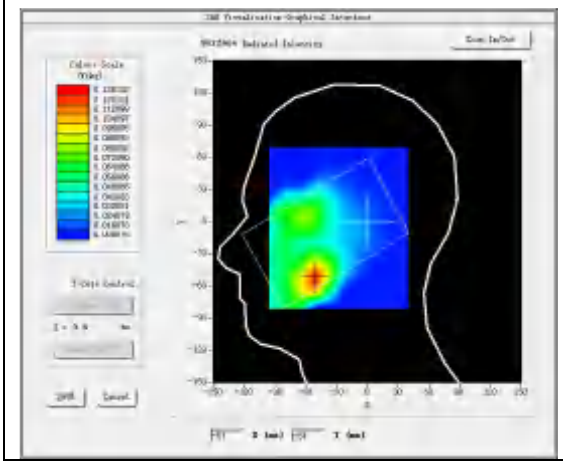
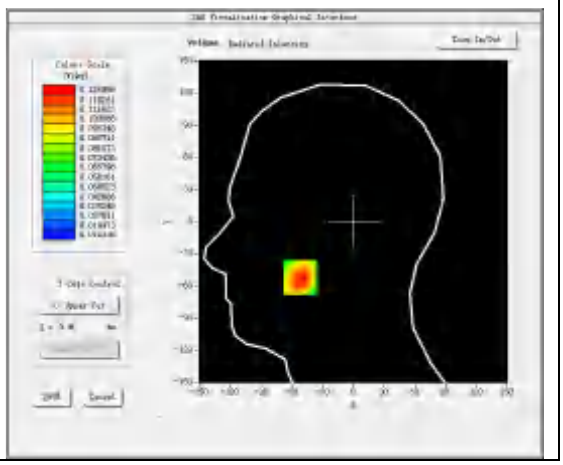
Date of measurement: 9/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	Band4_WCDMA1700
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)
ConvF	2.05

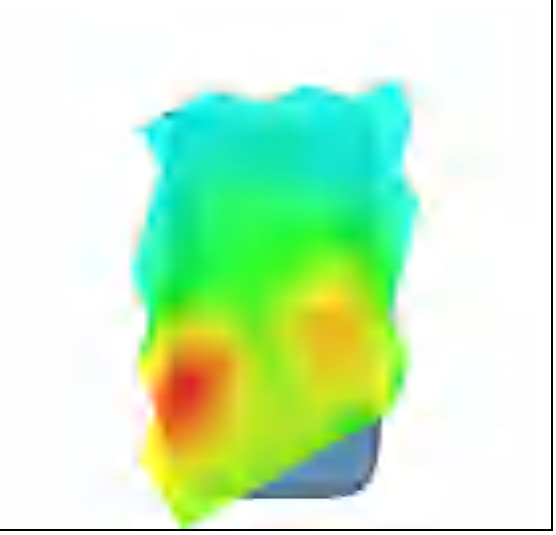
B. SAR Measurement Results

Frequency (MHz)	1732.600000
Relative permittivity (real part)	40.116364
Relative permittivity (imaginary part)	14.137455
Conductivity (S/m)	1.360337
Variation (%)	-3.540000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-52.00, Y=-52.00
SAR Peak: 0.18 W/kg

SAR 10g (W/Kg)	0.078245
SAR 1g (W/Kg)	0.122665

3D screen shot	Hot spot position
	

MEASUREMENT 8

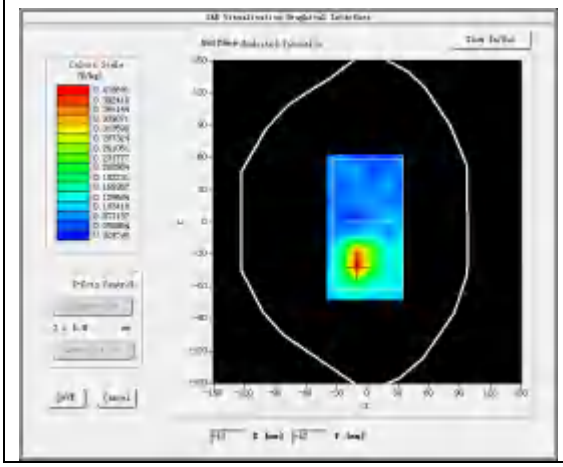
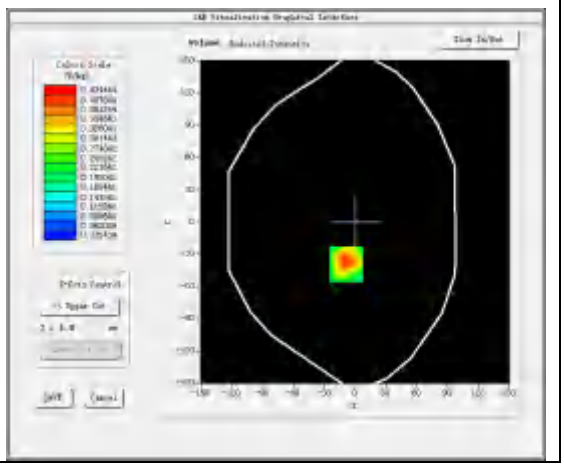
Date of measurement: 9/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	Band4_WCDMA1700
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)
ConvF	2.05

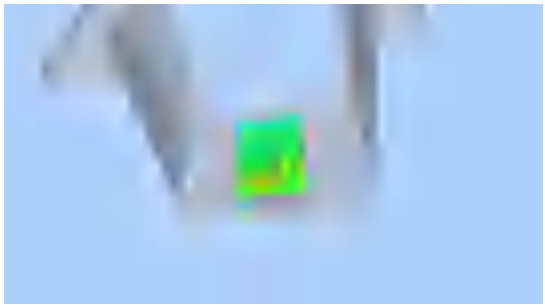
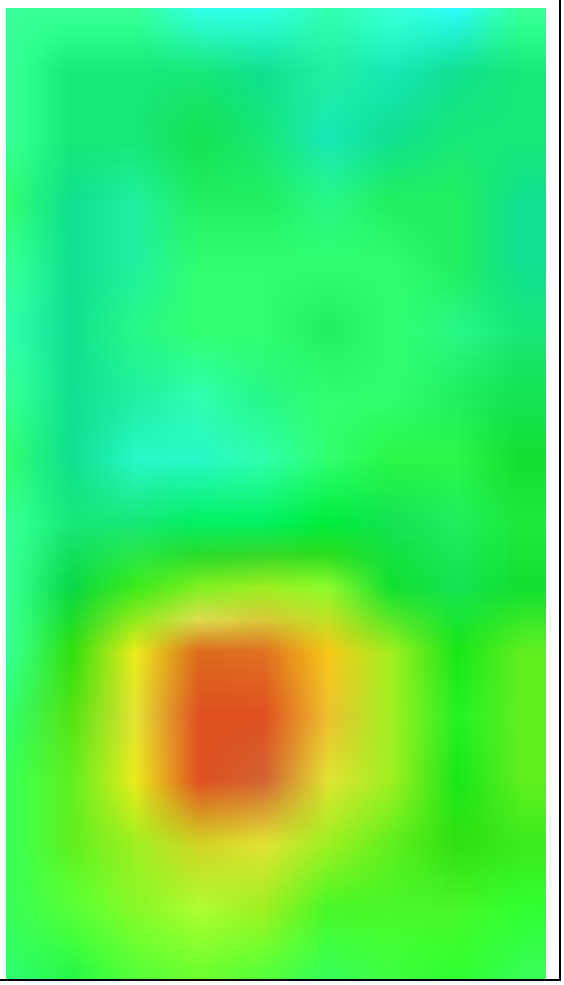
B. SAR Measurement Results

Frequency (MHz)	1732.600000
Relative permittivity (real part)	40.116364
Relative permittivity (imaginary part)	14.137455
Conductivity (S/m)	1.360337
Variation (%)	-1.250000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-9.00, Y=-39.00
SAR Peak: 0.68 W/kg

SAR 10g (W/Kg)	0.260321
SAR 1g (W/Kg)	0.386450

3D screen shot	Hot spot position
	

MEASUREMENT 9

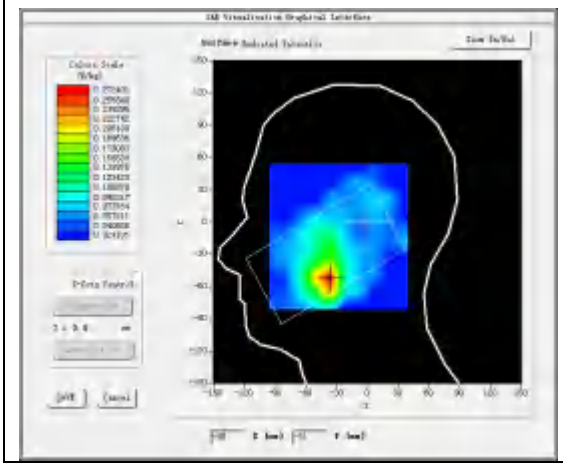
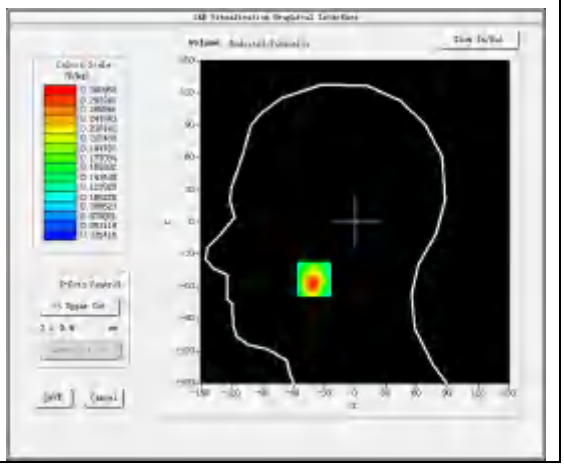
Date of measurement: 8/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	Band5_WCDMA850
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)
ConvF	1.66

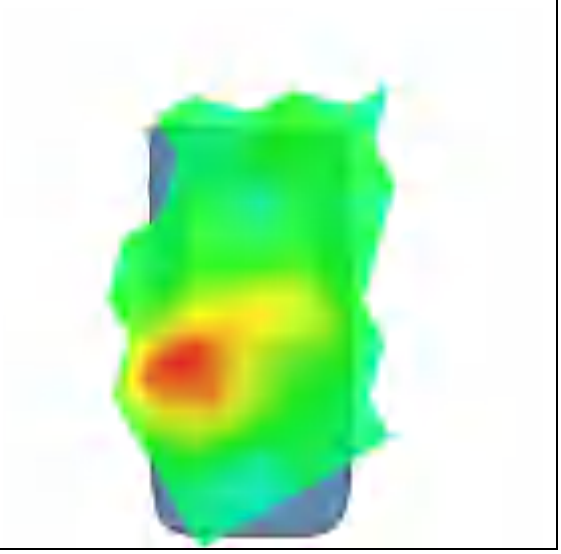
B. SAR Measurement Results

Frequency (MHz)	836.400024
Relative permittivity (real part)	41.500000
Relative permittivity (imaginary part)	19.400000
Conductivity (S/m)	0.901453
Variation (%)	1.520000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-39.00, Y=-53.00
SAR Peak: 0.40 W/kg

SAR 10g (W/Kg)	0.185210
SAR 1g (W/Kg)	0.284026

3D screen shot	Hot spot position
	

MEASUREMENT 10

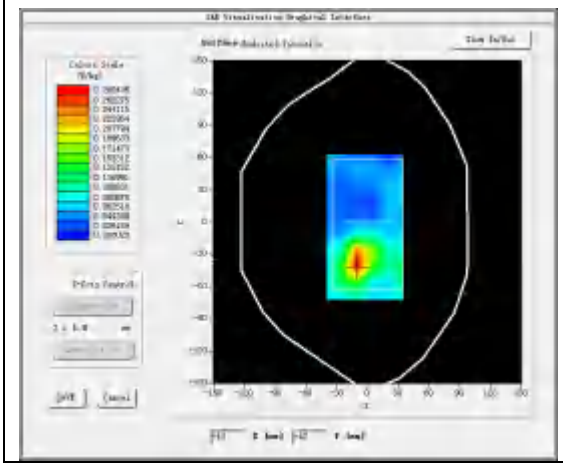
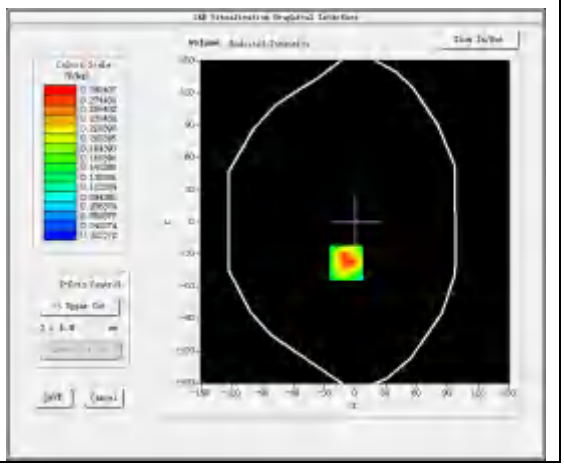
Date of measurement: 8/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	Band5_WCDMA850
Channels	Middle
Signal	WCDMA (Crest factor: 1.0)
ConvF	1.66

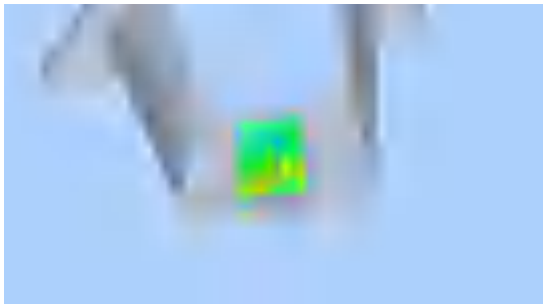
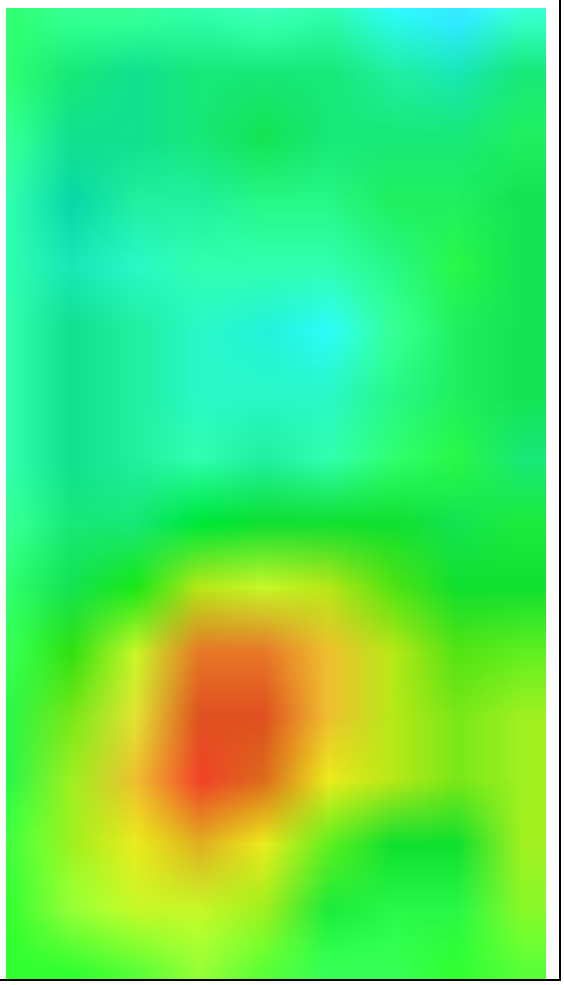
B. SAR Measurement Results

Frequency (MHz)	836.400024
Relative permittivity (real part)	41.500000
Relative permittivity (imaginary part)	19.400000
Conductivity (S/m)	0.901453
Variation (%)	1.360000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-9.00, Y=-38.00
SAR Peak: 0.50 W/kg

SAR 10g (W/Kg)	0.170274
SAR 1g (W/Kg)	0.290139

3D screen shot	Hot spot position
	

MEASUREMENT 11

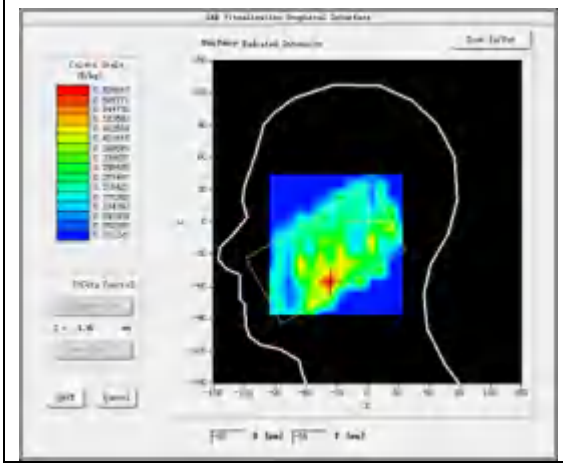
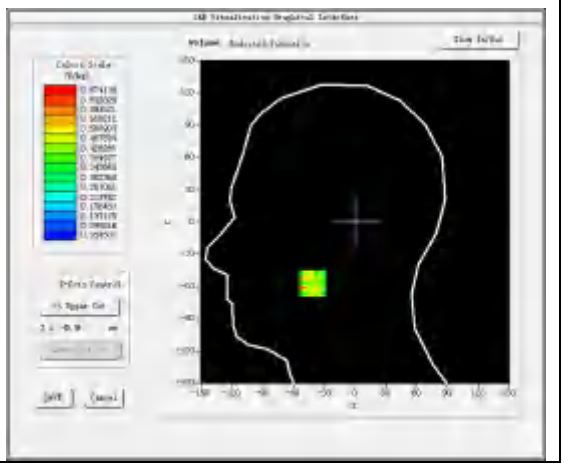
Date of measurement: 13/2/2025

A. Experimental conditions.

Area Scan	dx=10mm dy=10mm, h= 2.00 mm
ZoomScan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Left head
Device Position	Cheek
Band	IEEE 802.11n U-NII
Channels	High
Signal	IEEE802.n (Crest factor: 1.0)
ConvF	2.30

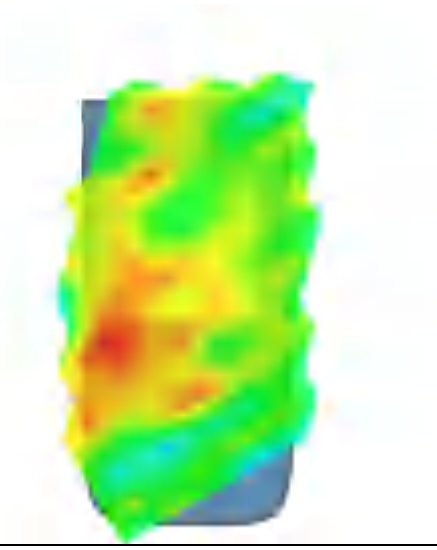
B. SAR Measurement Results

Frequency (MHz)	5230.000000
Relative permittivity (real part)	36.000000
Relative permittivity (imaginary part)	16.131000
Conductivity (S/m)	4.686952
Variation (%)	2.310000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-38.00, Y=-57.00
SAR Peak: 1.23 W/kg

SAR 10g (W/Kg)	0.415102
SAR 1g (W/Kg)	0.510120

3D screen shot	Hot spot position
	

MEASUREMENT 12

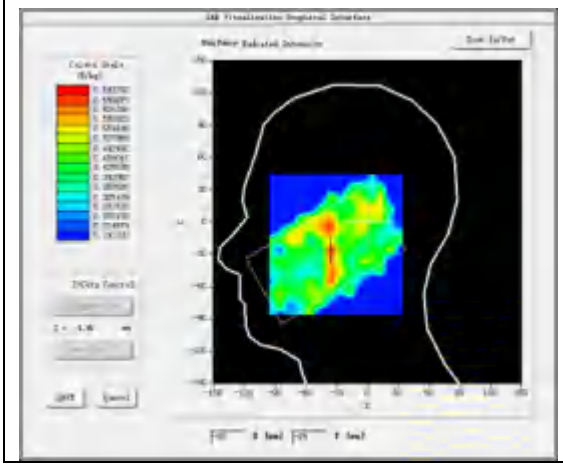
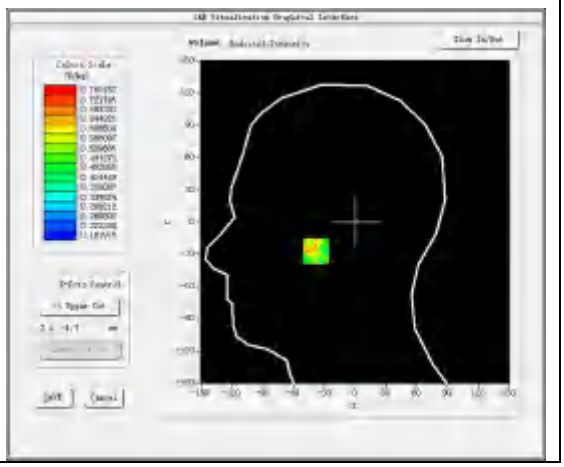
Date of measurement: 17/2/2025

A. Experimental conditions.

Area Scan	dx=10mm dy=10mm, h= 2.00 mm
ZoomScan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Left head
Device Position	Cheek
Band	IEEE 802.11ax U-NII
Channels	Low
Signal	IEEE802.ax (Crest factor: 1.0)
ConvF	2.27

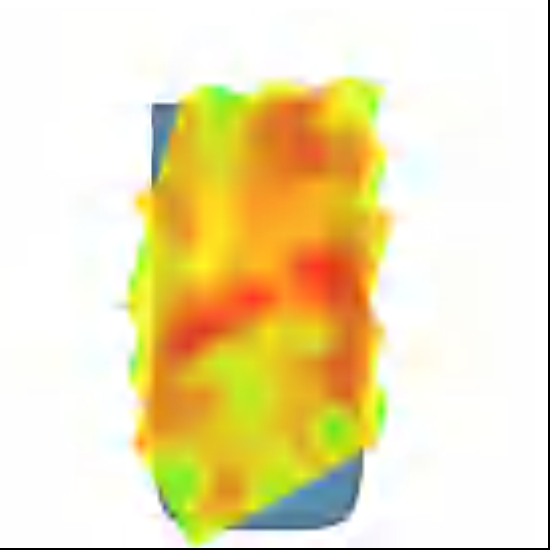
B. SAR Measurement Results

Frequency (MHz)	5755.000000
Relative permittivity (real part)	35.301000
Relative permittivity (imaginary part)	16.354220
Conductivity (S/m)	5.228808
Variation (%)	3.020000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-35.00, Y=-27.00
SAR Peak: 1.65 W/kg

SAR 10g (W/Kg)	0.458402
SAR 1g (W/Kg)	0.553205

3D screen shot	Hot spot position
	

MEASUREMENT 13

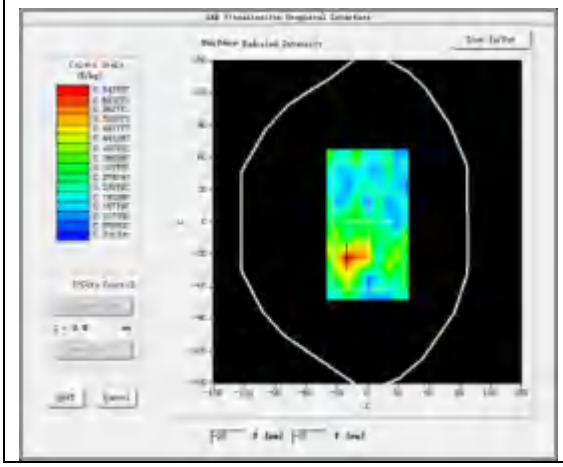
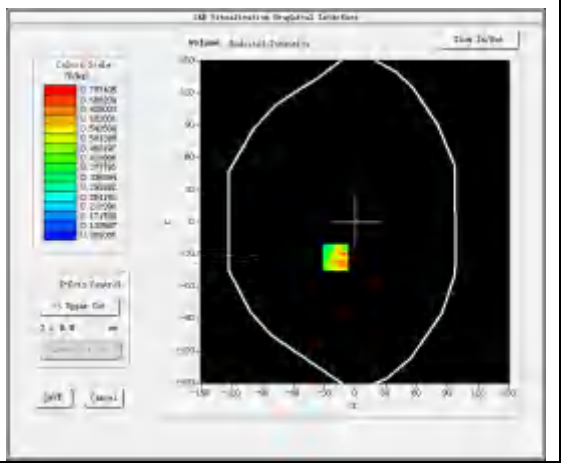
Date of measurement: 13/2/2025

A. Experimental conditions.

Area Scan	dx=10mm dy=10mm, h= 2.00 mm
ZoomScan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11n U-NII
Channels	High
Signal	IEEE802.n (Crest factor: 1.0)
ConvF	2.30

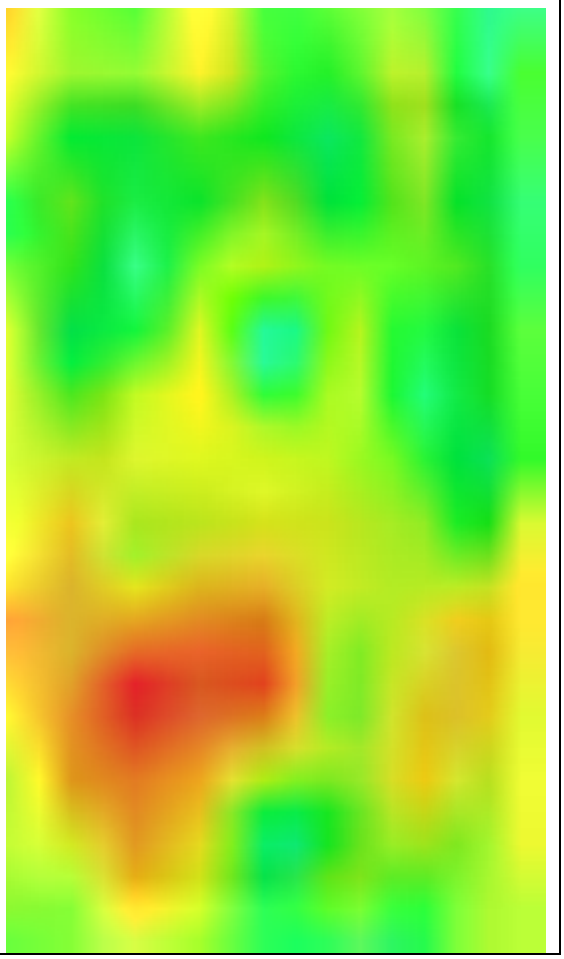
B. SAR Measurement Results

Frequency (MHz)	5230.000000
Relative permittivity (real part)	36.000000
Relative permittivity (imaginary part)	16.131000
Conductivity (S/m)	4.686952
Variation (%)	1.110000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-19.00, Y=-33.00
SAR Peak: 1.10 W/kg

SAR 10g (W/Kg)	0.380223
SAR 1g (W/Kg)	0.509412

3D screen shot	Hot spot position
	

MEASUREMENT 14

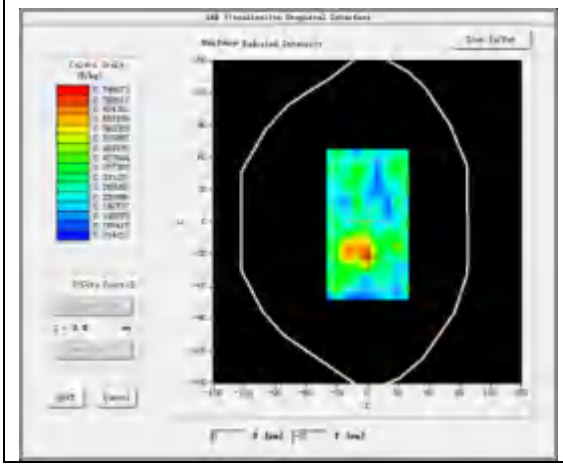
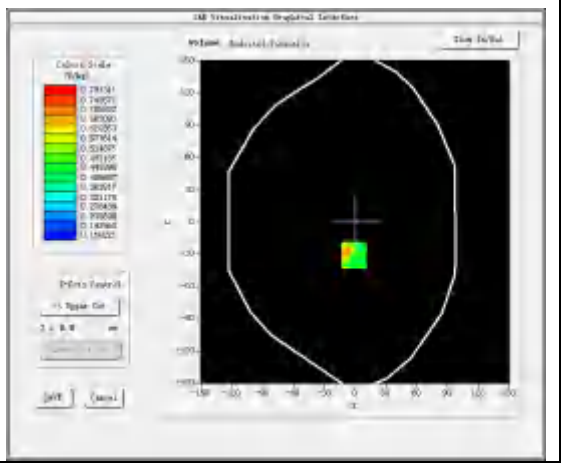
Date of measurement: 17/2/2025

A. Experimental conditions.

Area Scan	dx=10mm dy=10mm, h= 2.00 mm
ZoomScan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11ax U-NII
Channels	Low
Signal	IEEE802.ax (Crest factor: 1.0)
ConvF	2.27

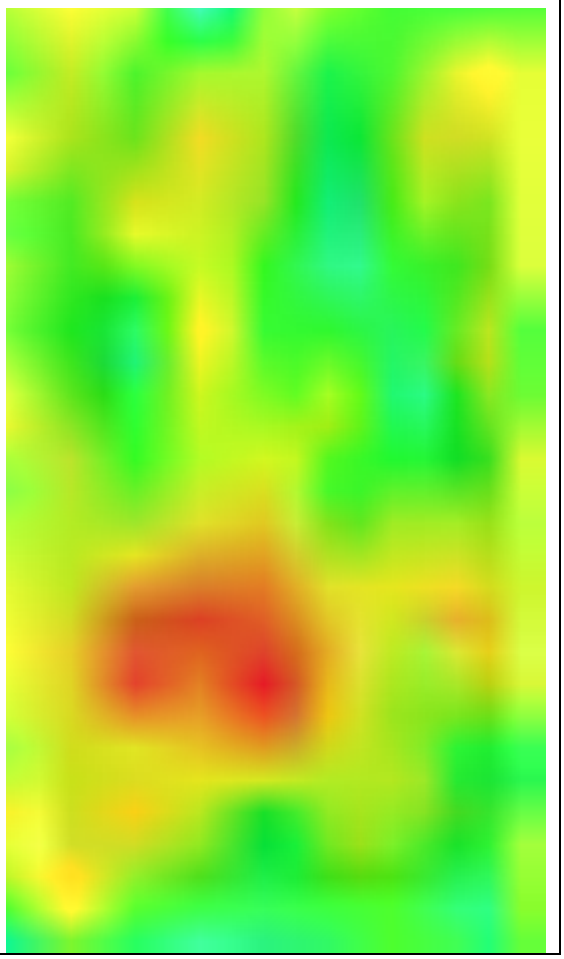
B. SAR Measurement Results

Frequency (MHz)	5755.000000
Relative permittivity (real part)	35.301000
Relative permittivity (imaginary part)	16.354220
Conductivity (S/m)	5.228808
Variation (%)	2.010000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-1.00, Y=-31.00
SAR Peak: 1.04 W/kg

SAR 10g (W/Kg)	0.430214
SAR 1g (W/Kg)	0.553254

3D screen shot	Hot spot position
	

MEASUREMENT 15

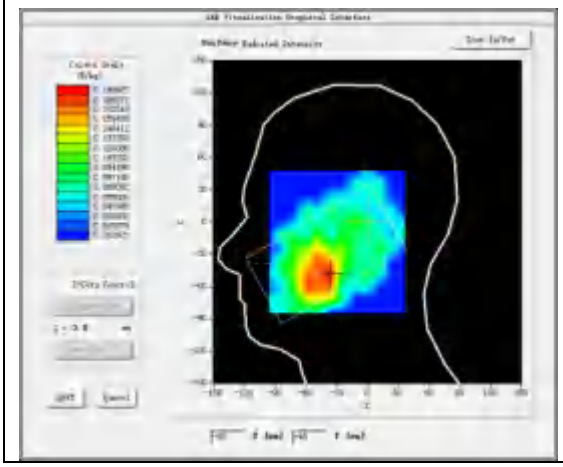
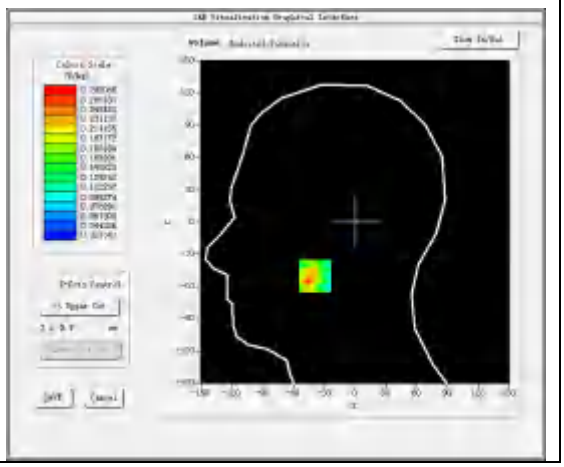
Date of measurement: 11/2/2025

A. Experimental conditions.

Area Scan	dx=12mm dy=12mm, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	IEEE 802.11b ISM
Channels	Low
Signal	IEEE802.b (Crest factor: 1.0)
ConvF	2.38

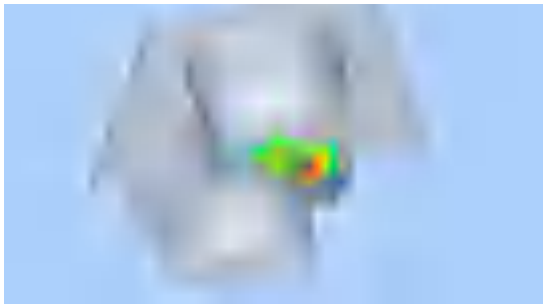
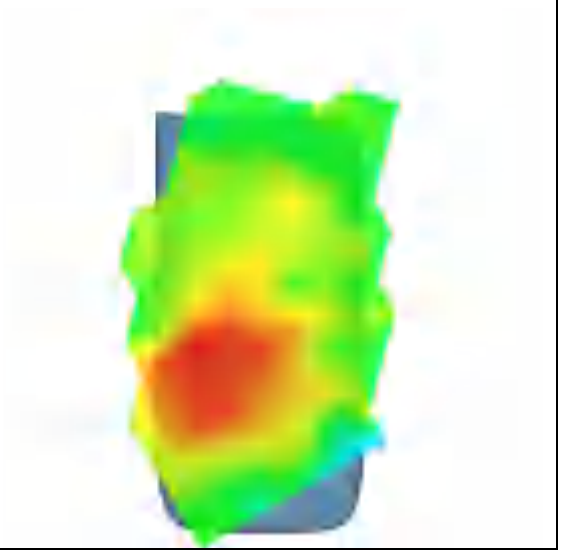
B. SAR Measurement Results

Frequency (MHz)	2412.000000
Relative permittivity (real part)	39.226002
Relative permittivity (imaginary part)	13.207000
Conductivity (S/m)	1.769738
Variation (%)	1.060000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-38.00, Y=-50.00
SAR Peak: 0.44 W/kg

SAR 10g (W/Kg)	0.170845
SAR 1g (W/Kg)	0.247412

3D screen shot	Hot spot position
	

MEASUREMENT 16

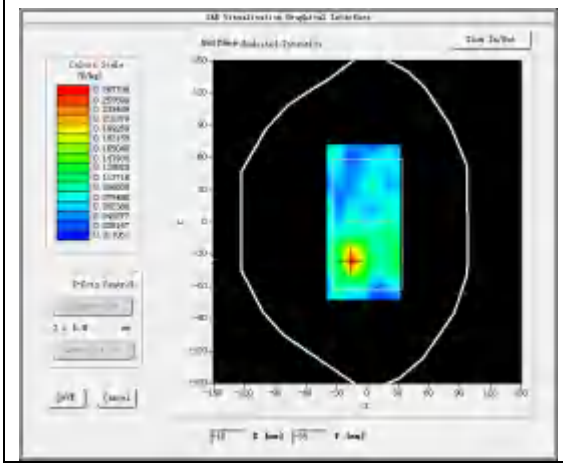
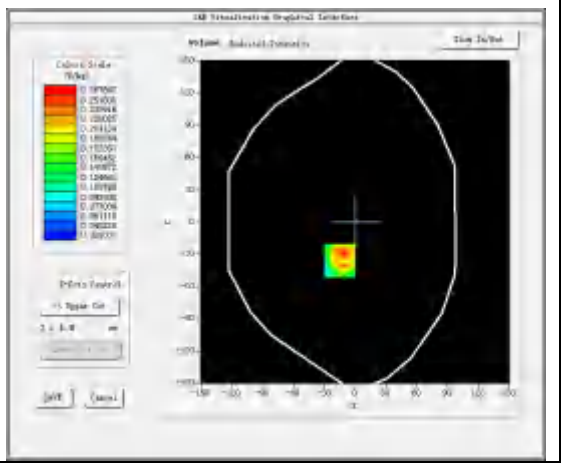
Date of measurement: 11/2/2025

A. Experimental conditions.

Area Scan	dx=12mm dy=12mm, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11b ISM
Channels	Low
Signal	IEEE802.b (Crest factor: 1.0)
ConvF	2.38

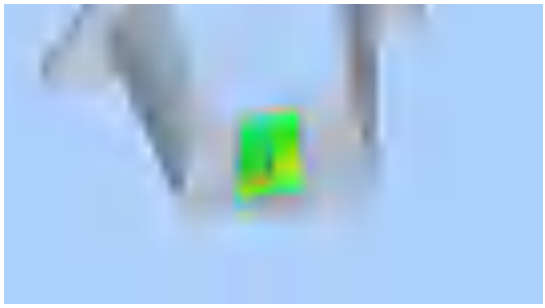
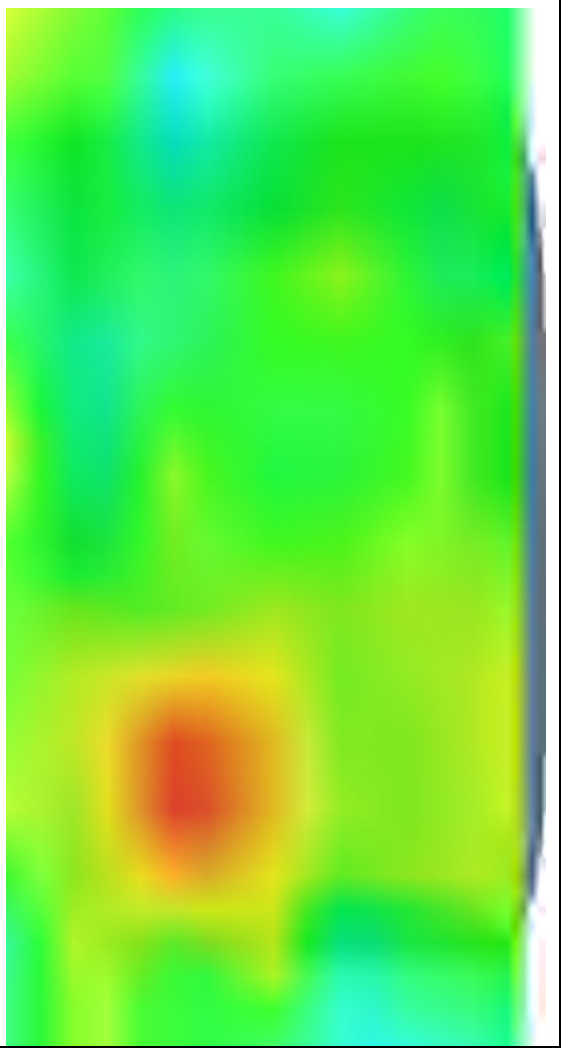
B. SAR Measurement Results

Frequency (MHz)	2412.000000
Relative permittivity (real part)	39.226002
Relative permittivity (imaginary part)	13.207000
Conductivity (S/m)	1.769738
Variation (%)	3.260000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-15.00, Y=-36.00
SAR Peak: 0.41 W/kg

SAR 10g (W/Kg)	0.156210
SAR 1g (W/Kg)	0.236324

3D screen shot	Hot spot position
	

MEASUREMENT 17

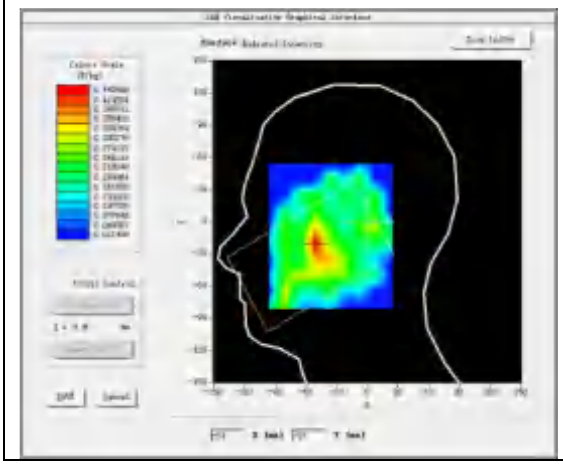
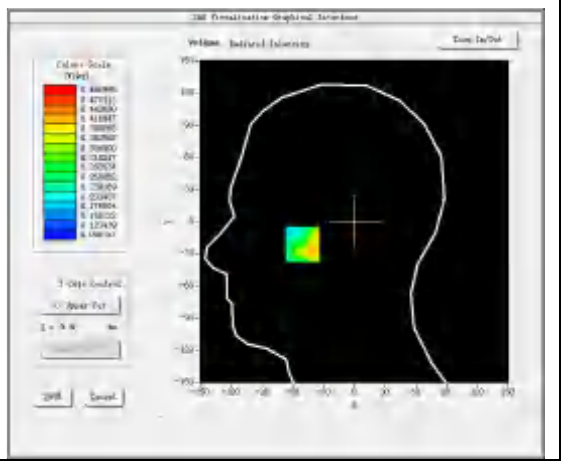
Date of measurement: 10/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	LTE band 2
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	2.05

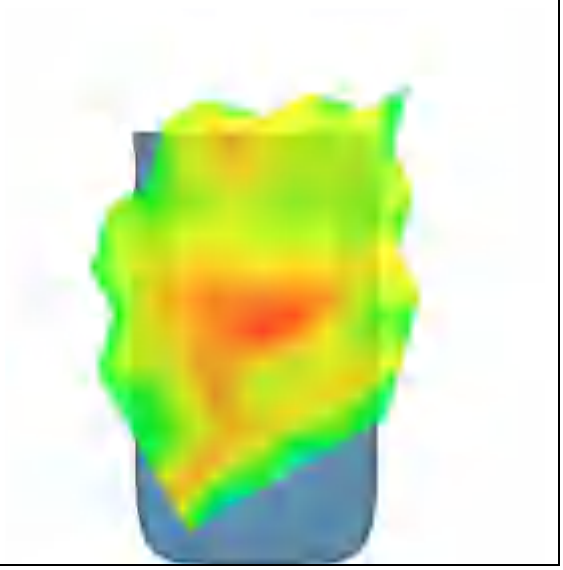
B. SAR Measurement Results

Frequency (MHz)	1879.500000
Relative permittivity (real part)	40.000000
Relative permittivity (imaginary part)	13.411700
Conductivity (S/m)	1.400405
Variation (%)	2.140000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-51.00, Y=-21.00
SAR Peak: 0.70 W/kg

SAR 10g (W/Kg)	0.320221
SAR 1g (W/Kg)	0.441962

3D screen shot	Hot spot position
	

MEASUREMENT 18

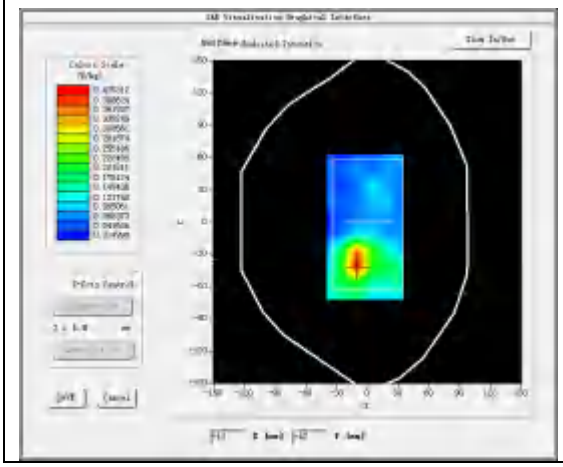
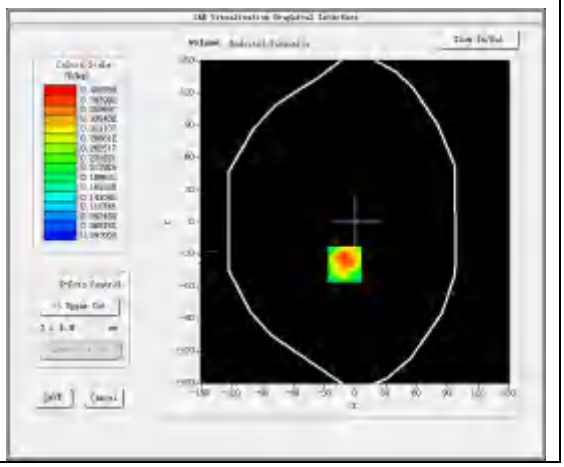
Date of measurement: 10/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 2
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	2.05

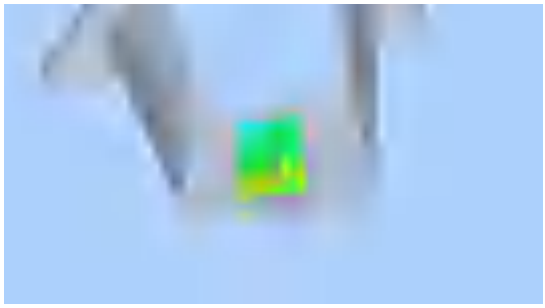
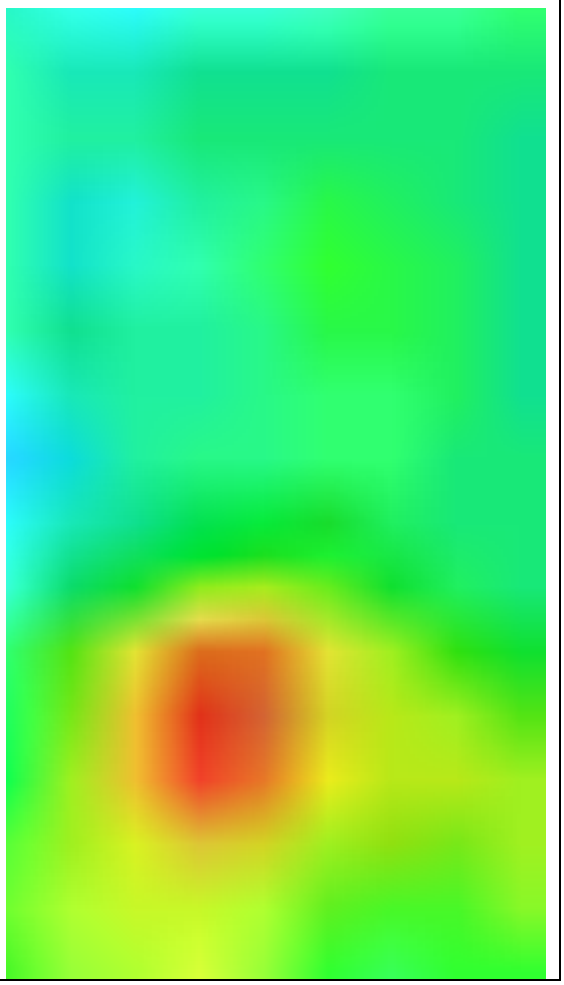
B. SAR Measurement Results

Frequency (MHz)	1879.500000
Relative permittivity (real part)	40.000000
Relative permittivity (imaginary part)	13.411700
Conductivity (S/m)	1.400405
Variation (%)	2.650001

SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-10.00, Y=-39.00
SAR Peak: 0.67 W/kg

SAR 10g (W/Kg)	0.243215
SAR 1g (W/Kg)	0.393058

3D screen shot	Hot spot position
	

MEASUREMENT 19

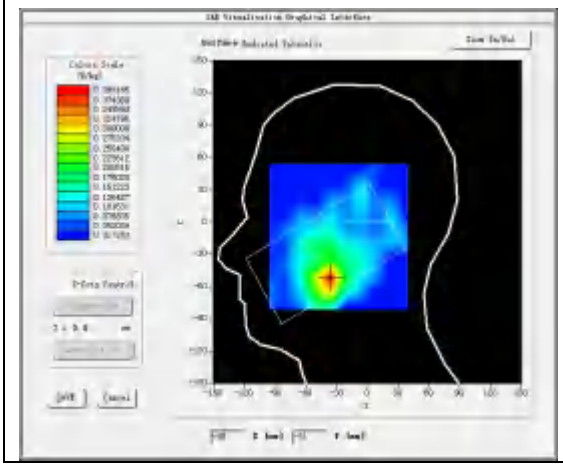
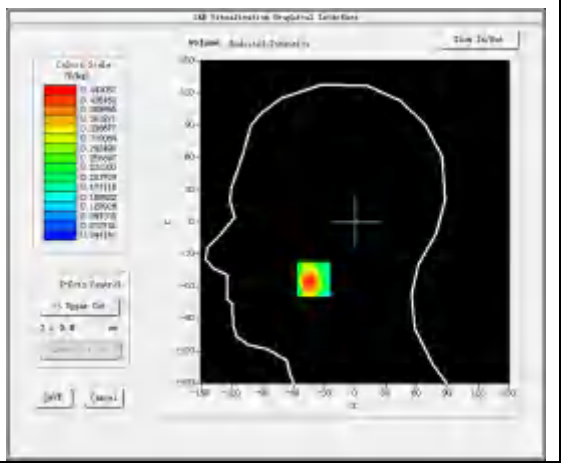
Date of measurement: 9/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	LTE band 4
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	2.05

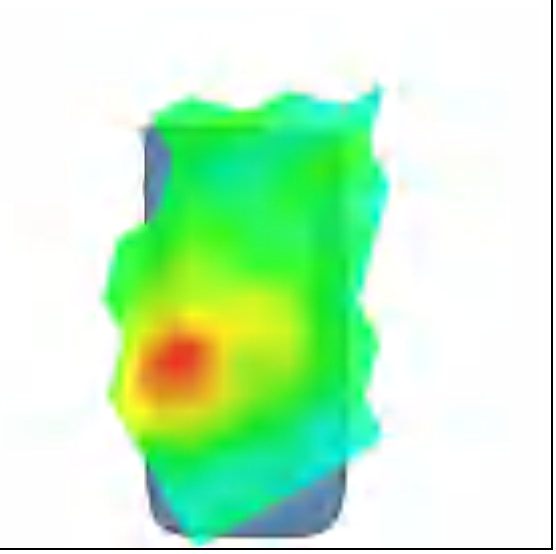
B. SAR Measurement Results

Frequency (MHz)	1732.500000
Relative permittivity (real part)	40.115910
Relative permittivity (imaginary part)	14.136136
Conductivity (S/m)	1.360603
Variation (%)	2.010000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-37.00, Y=-53.00
SAR Peak: 0.60 W/kg

SAR 10g (W/Kg)	0.292028
SAR 1g (W/Kg)	0.445102

3D screen shot	Hot spot position
	

MEASUREMENT 20

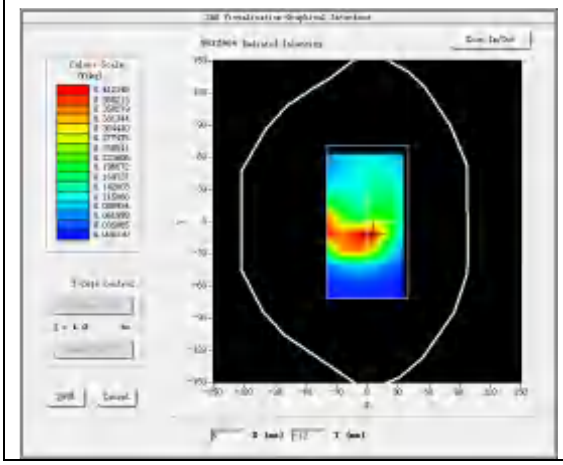
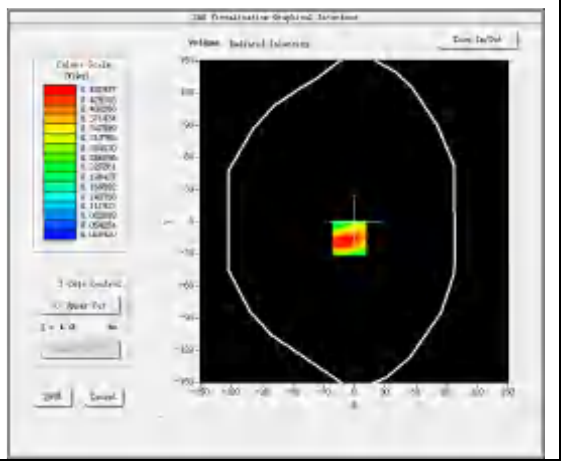
Date of measurement: 9/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 4
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	2.05

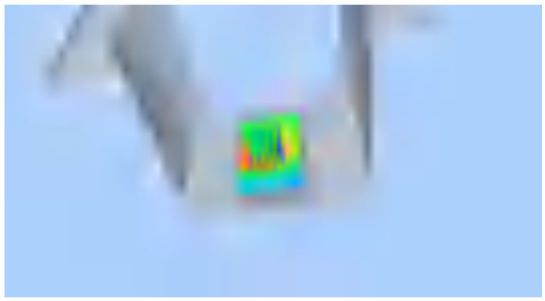
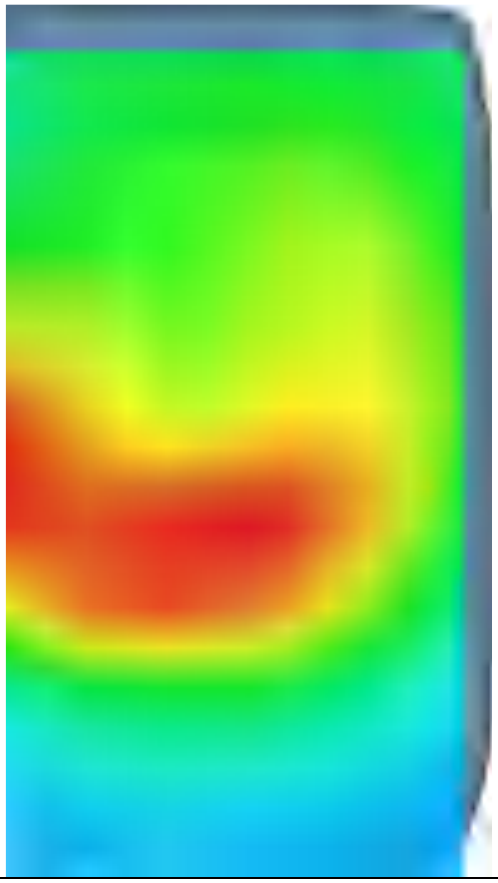
B. SAR Measurement Results

Frequency (MHz)	1732.500000
Relative permittivity (real part)	40.115910
Relative permittivity (imaginary part)	14.136136
Conductivity (S/m)	1.360603
Variation (%)	-3.570000

SURFACE SAR	**VOLUME SAR**
	

Maximum location: X=-5.00, Y=-15.00
SAR Peak: 0.64 W/kg

SAR 10g (W/Kg)	0.280727
SAR 1g (W/Kg)	0.449078

3D screen shot	Hot spot position
	

MEASUREMENT 21

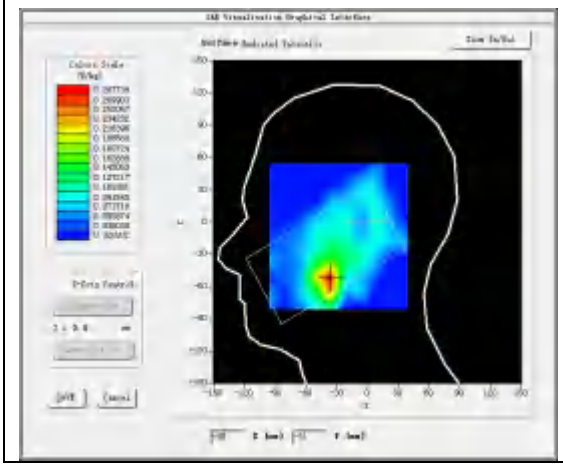
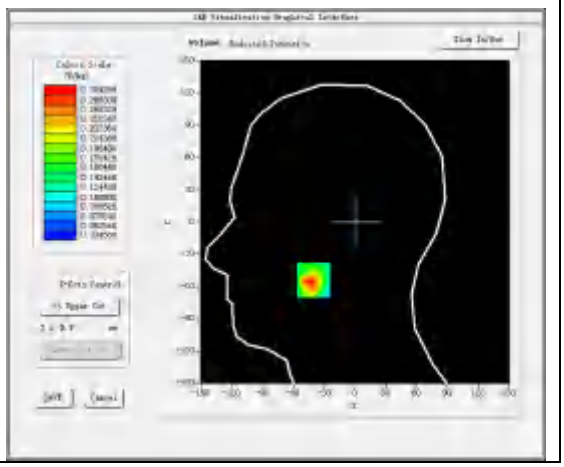
Date of measurement: 8/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	LTE band 5
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	1.66

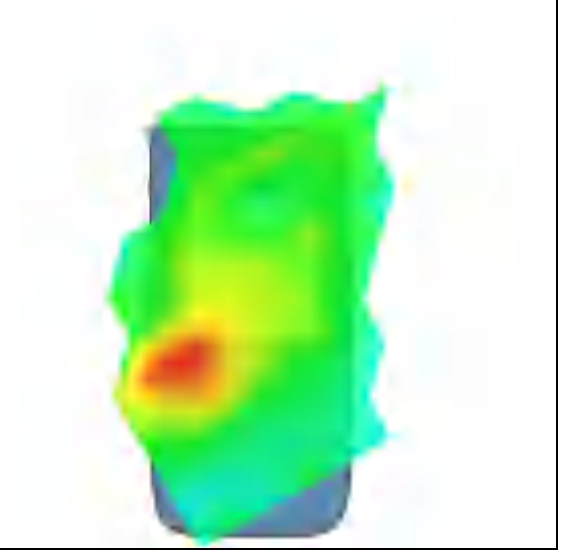
B. SAR Measurement Results

Frequency (MHz)	836.500000
Relative permittivity (real part)	41.500000
Relative permittivity (imaginary part)	19.400000
Conductivity (S/m)	0.901561
Variation (%)	-3.909999

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-38.00, Y=-54.00
SAR Peak: 0.39 W/kg

SAR 10g (W/Kg)	0.189542
SAR 1g (W/Kg)	0.285327

3D screen shot	Hot spot position
	

MEASUREMENT 22

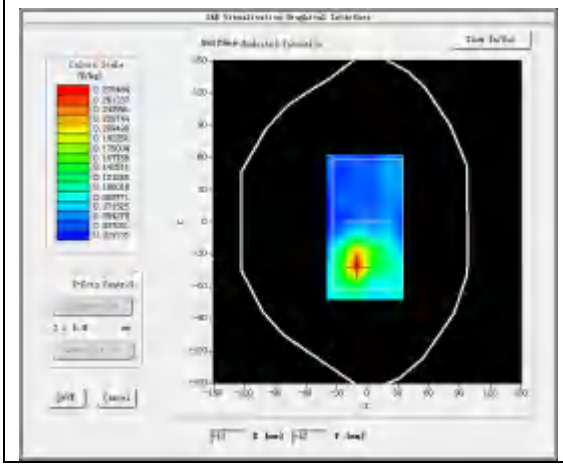
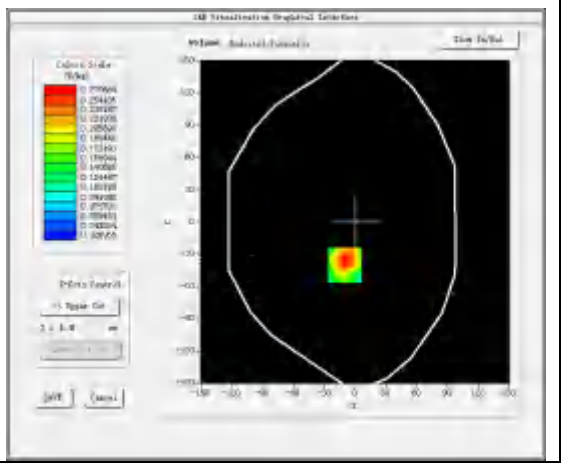
Date of measurement: 8/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 5
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	1.66

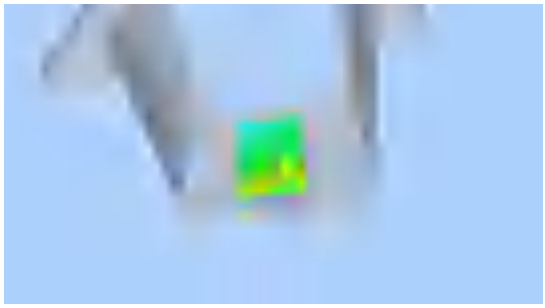
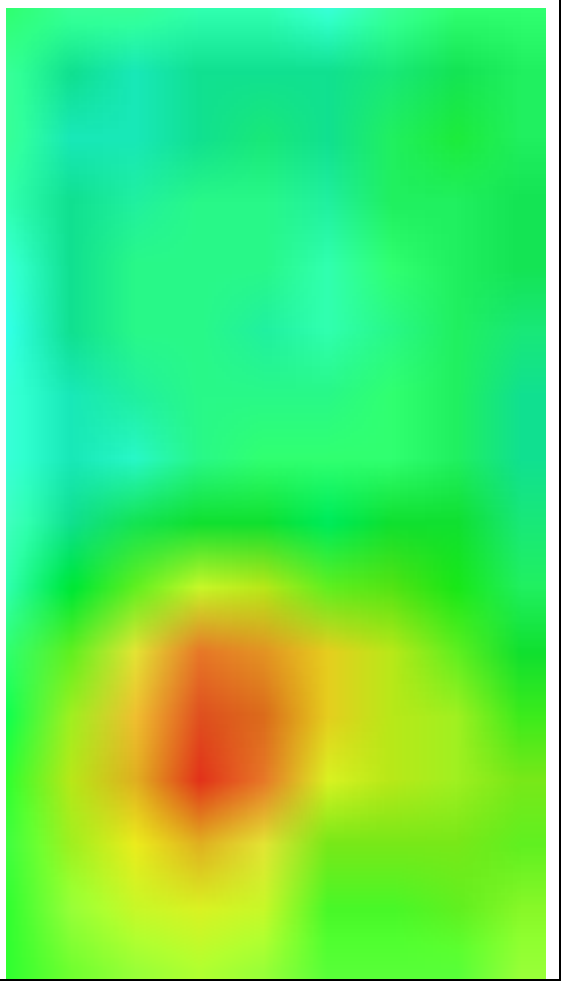
B. SAR Measurement Results

Frequency (MHz)	836.500000
Relative permittivity (real part)	41.500000
Relative permittivity (imaginary part)	19.400000
Conductivity (S/m)	0.901561
Variation (%)	-1.079999

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-10.00, Y=-40.00
SAR Peak: 0.41 W/kg

SAR 10g (W/Kg)	0.163002
SAR 1g (W/Kg)	0.256314

3D screen shot	Hot spot position
	

MEASUREMENT 23

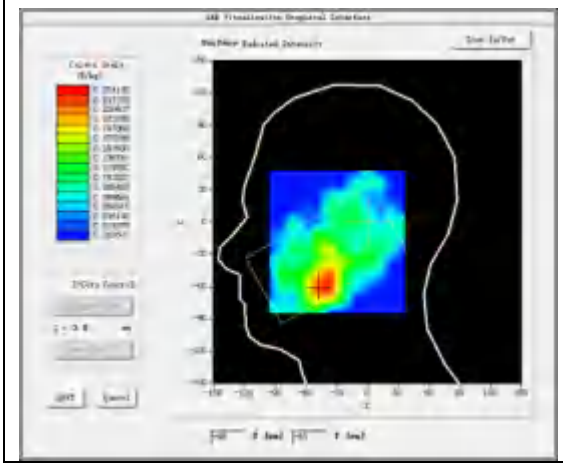
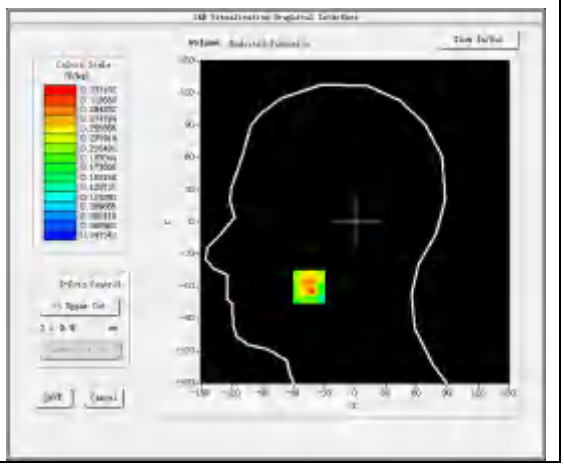
Date of measurement: 12/2/2025

A. Experimental conditions.

Area Scan	dx=12mm dy=12mm, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	LTE band 41
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	2.05

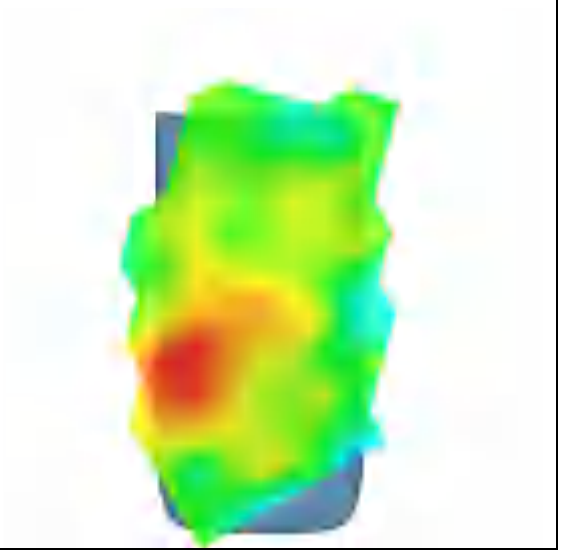
B. SAR Measurement Results

Frequency (MHz)	2593.000000
Relative permittivity (real part)	39.009335
Relative permittivity (imaginary part)	13.553667
Conductivity (S/m)	1.952481
Variation (%)	0.650000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-45.00, Y=-60.00
SAR Peak: 0.54 W/kg

SAR 10g (W/Kg)	0.203845
SAR 1g (W/Kg)	0.277203

3D screen shot	Hot spot position
	

MEASUREMENT 24

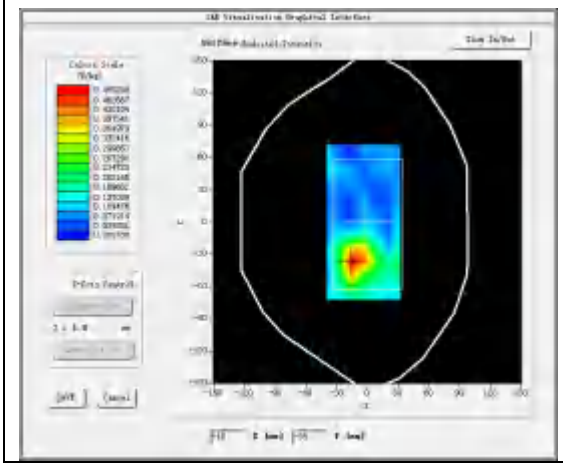
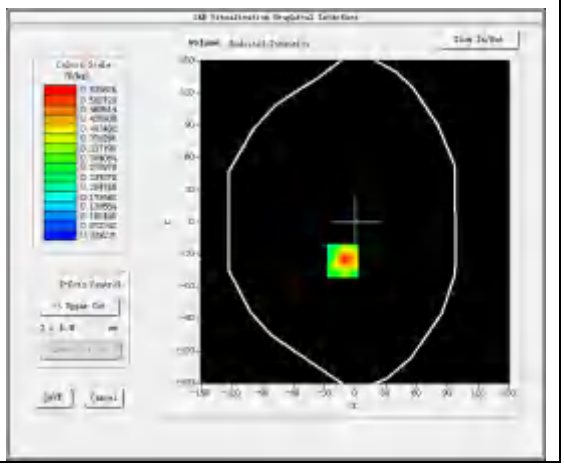
Date of measurement: 12/2/2025

A. Experimental conditions.

Area Scan	dx=12mm dy=12mm, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 41
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	2.05

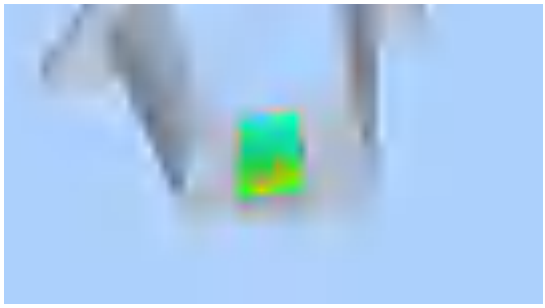
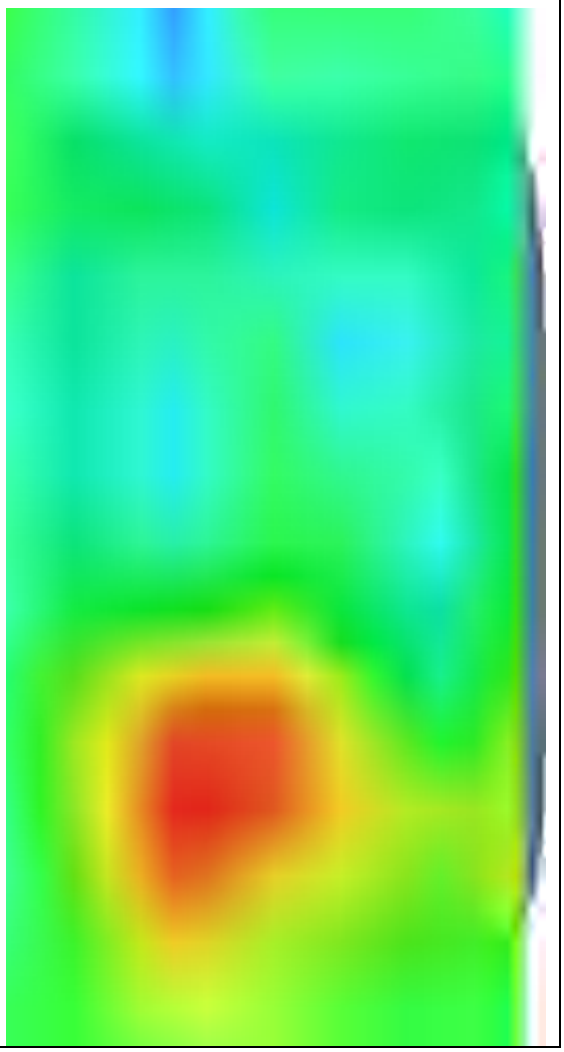
B. SAR Measurement Results

Frequency (MHz)	2593.000000
Relative permittivity (real part)	39.009335
Relative permittivity (imaginary part)	13.553667
Conductivity (S/m)	1.952481
Variation (%)	-4.630000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-12.00, Y=-36.00
SAR Peak: 0.92 W/kg

SAR 10g (W/Kg)	0.291254
SAR 1g (W/Kg)	0.462103

3D screen shot	Hot spot position
	

MEASUREMENT 25

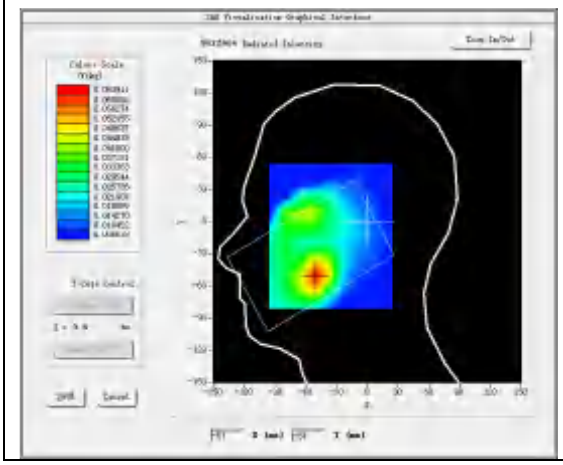
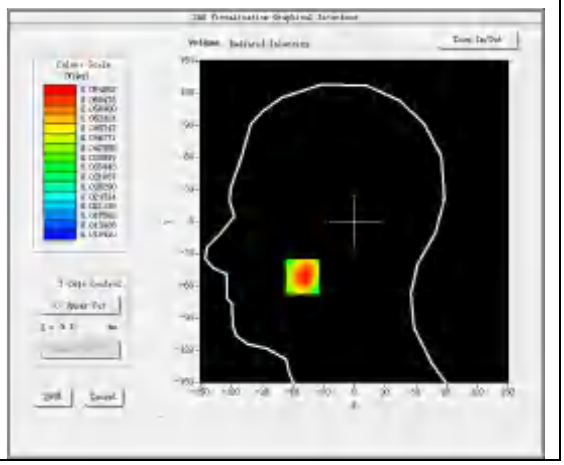
Date of measurement: 9/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	CUSTOM (LTEBand66)
Channels	Middle
Signal	(Crest factor: 1.0)
ConvF	2.05

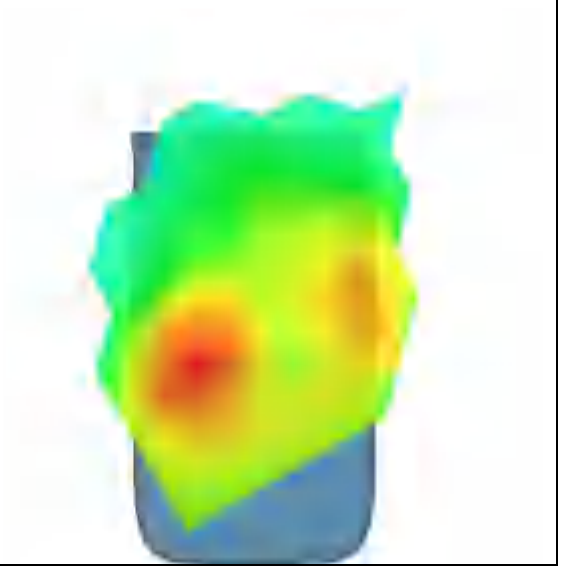
B. SAR Measurement Results

Frequency (MHz)	1745.000000
Relative permittivity (real part)	40.104546
Relative permittivity (imaginary part)	14.103182
Conductivity (S/m)	1.367225
Variation (%)	0.210000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-51.00, Y=-51.00
SAR Peak: 0.08 W/kg

SAR 10g (W/Kg)	0.043214
SAR 1g (W/Kg)	0.062060

3D screen shot	Hot spot position
	

MEASUREMENT 26

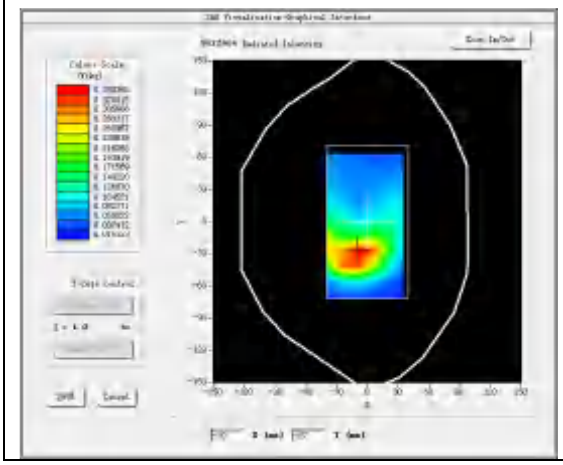
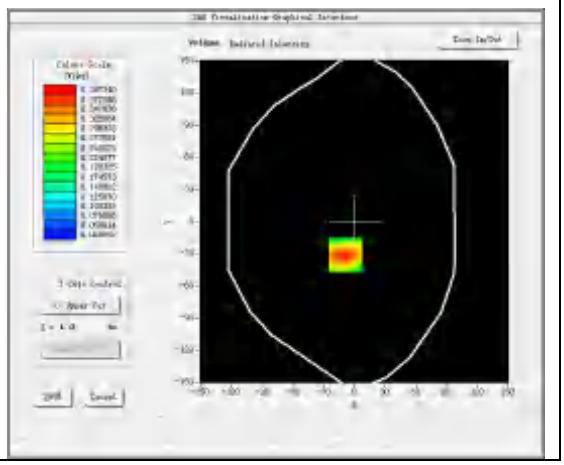
Date of measurement: 9/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	CUSTOM (LTEBand66)
Channels	Middle
Signal	(Crest factor: 1.0)
ConvF	2.05

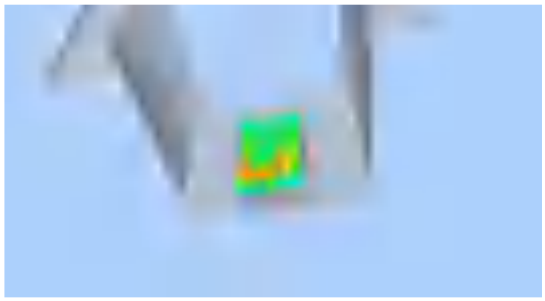
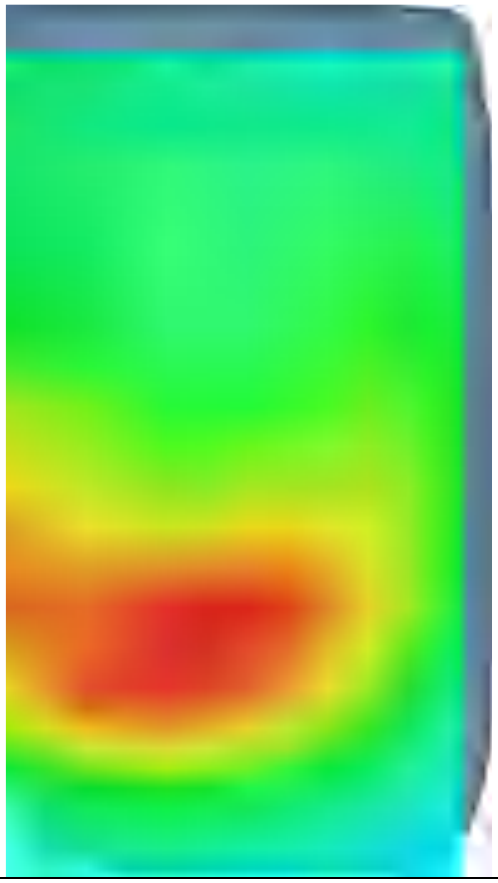
B. SAR Measurement Results

Frequency (MHz)	1745.000000
Relative permittivity (real part)	40.104546
Relative permittivity (imaginary part)	14.103182
Conductivity (S/m)	1.367225
Variation (%)	1.270000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-9.00, Y=-31.00
SAR Peak: 0.58 W/kg

SAR 10g (W/Kg)	0.222364
SAR 1g (W/Kg)	0.374754

3D screen shot	Hot spot position
	

MEASUREMENT 27

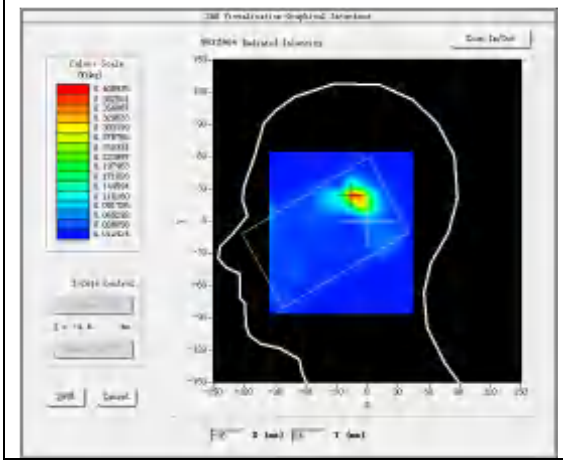
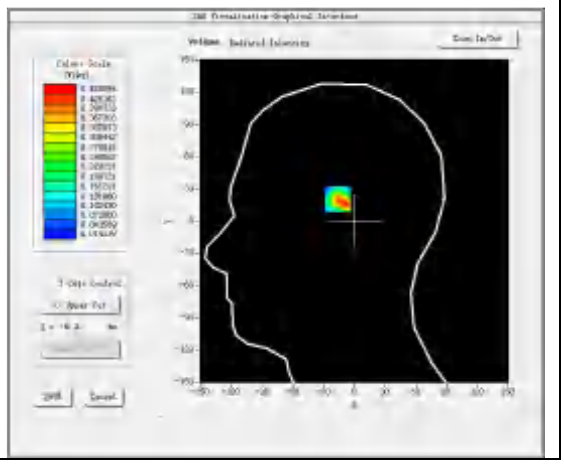
Date of measurement: 13/2/2025

A. Experimental conditions.

Area Scan	dx=10mm dy=10mm, h= 2.00 mm
ZoomScan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Left head
Device Position	Cheek
Band	IEEE 802.11ax U-NII
Channels	Low
Signal	IEEE802.ax (Crest factor: 1.0)
ConvF	2.30

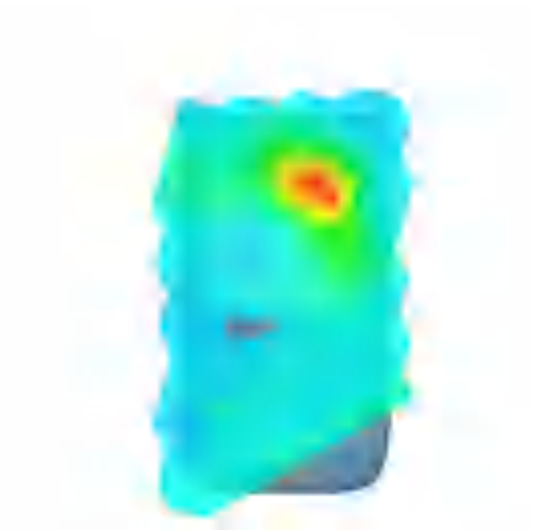
B. SAR Measurement Results

Frequency (MHz)	5190.000000
Relative permittivity (real part)	37.400000
Relative permittivity (imaginary part)	16.129877
Conductivity (S/m)	4.650781
Variation (%)	2.360000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-14.00, Y=24.00
SAR Peak: 1.27 W/kg

SAR 10g (W/Kg)	0.156553
SAR 1g (W/Kg)	0.334488

3D screen shot	Hot spot position
	

MEASUREMENT 28

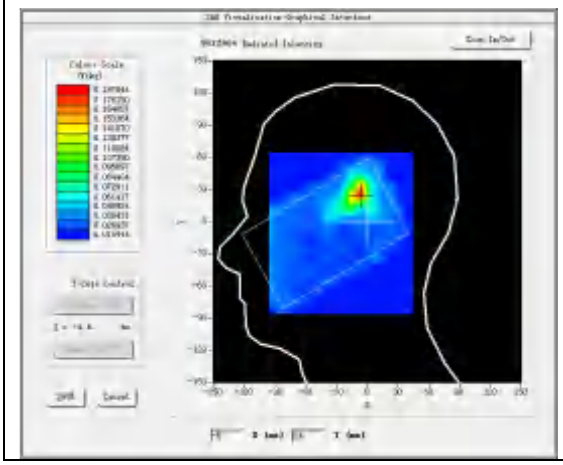
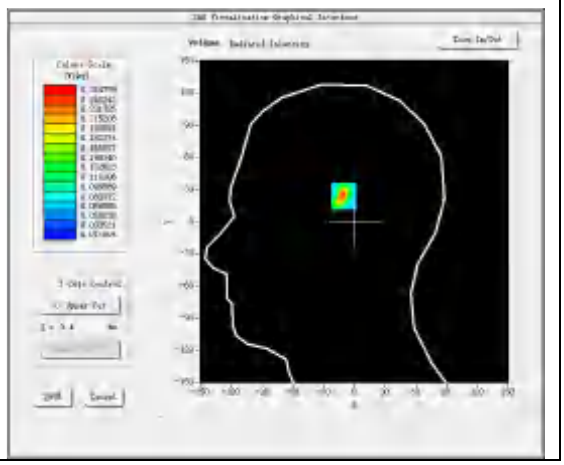
Date of measurement: 17/2/2025

A. Experimental conditions.

Area Scan	dx=10mm dy=10mm, h= 2.00 mm
ZoomScan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Left head
Device Position	Cheek
Band	IEEE 802.11a U-NII
Channels	Low
Signal	IEEE802.a (Crest factor: 1.0)
ConvF	2.27

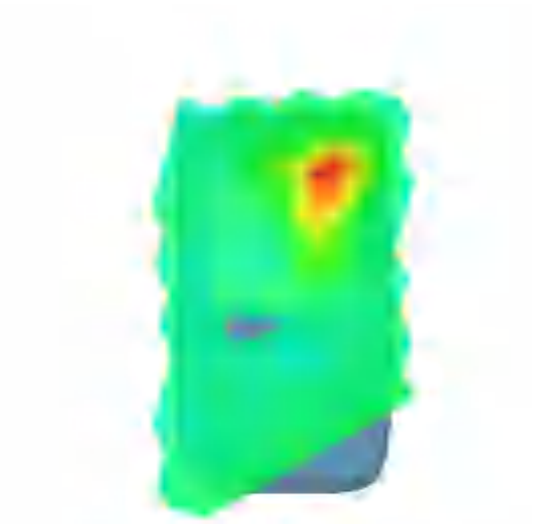
B. SAR Measurement Results

Frequency (MHz)	5745.000000
Relative permittivity (real part)	35.312000
Relative permittivity (imaginary part)	16.353120
Conductivity (S/m)	5.219371
Variation (%)	1.450000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-8.00, Y=-26.00
SAR Peak: 0.76 W/kg

SAR 10g (W/Kg)	0.084270
SAR 1g (W/Kg)	0.242494

3D screen shot	Hot spot position
	

MEASUREMENT 29

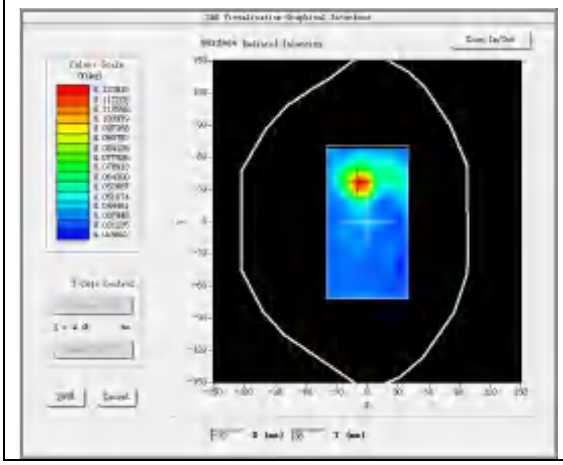
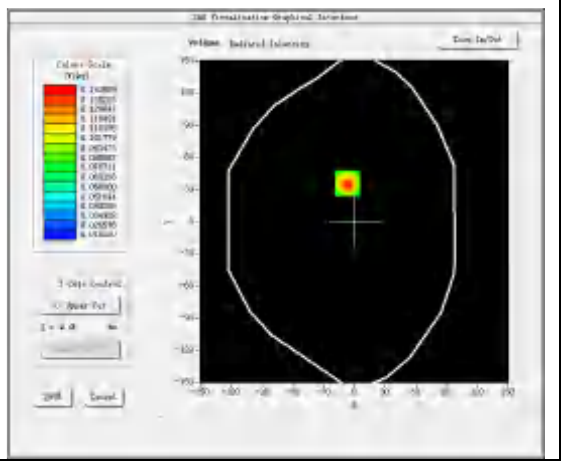
Date of measurement: 13/2/2025

A. Experimental conditions.

Area Scan	dx=10mm dy=10mm, h= 2.00 mm
ZoomScan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11ax U-NII
Channels	Low
Signal	IEEE802.ax (Crest factor: 1.0)
ConvF	2.30

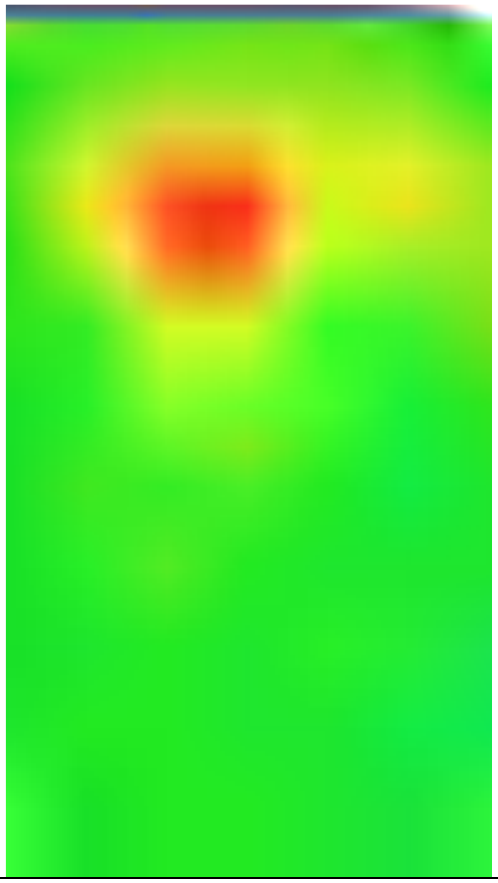
B. SAR Measurement Results

Frequency (MHz)	5190.000000
Relative permittivity (real part)	37.400000
Relative permittivity (imaginary part)	16.129877
Conductivity (S/m)	4.650781
Variation (%)	0.570000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-7.00, Y=36.00
SAR Peak: 0.24 W/kg

SAR 10g (W/Kg)	0.054547
SAR 1g (W/Kg)	0.094066

3D screen shot	Hot spot position
	

MEASUREMENT 30

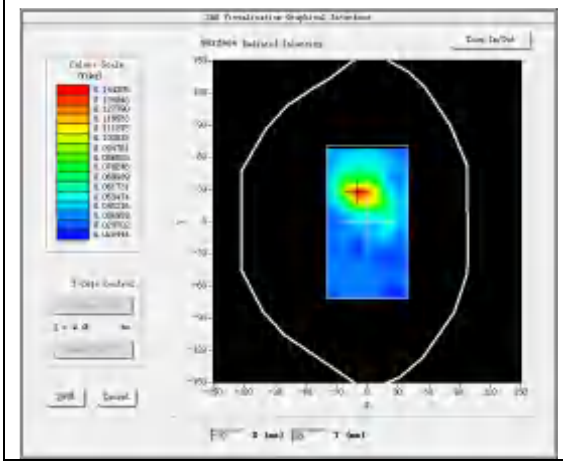
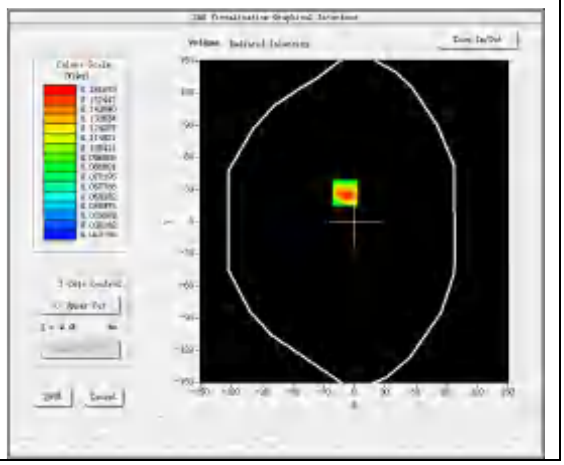
Date of measurement: 17/2/2025

A. Experimental conditions.

Area Scan	dx=10mm dy=10mm, h= 2.00 mm
ZoomScan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11a U-NII
Channels	Low
Signal	IEEE802.a (Crest factor: 1.0)
ConvF	2.27

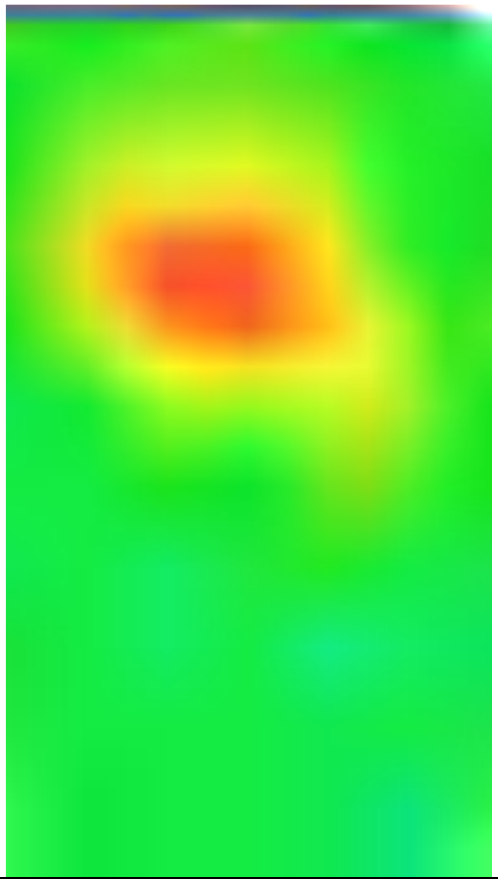
B. SAR Measurement Results

Frequency (MHz)	5745.000000
Relative permittivity (real part)	35.312000
Relative permittivity (imaginary part)	16.353120
Conductivity (S/m)	5.219371
Variation (%)	3.020000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-9.00, Y=27.00
SAR Peak: 0.27 W/kg

SAR 10g (W/Kg)	0.058473
SAR 1g (W/Kg)	0.102469

3D screen shot	Hot spot position
	

MEASUREMENT 31

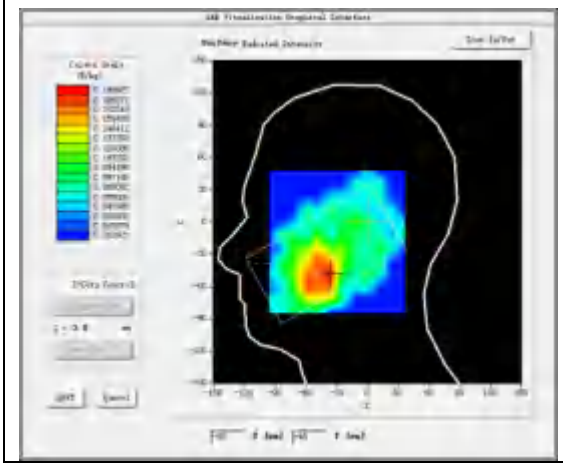
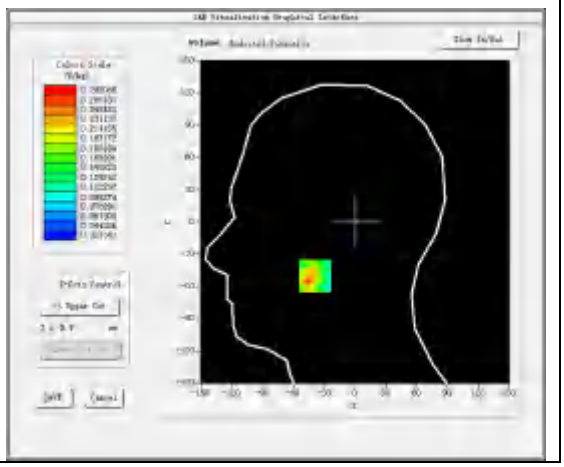
Date of measurement: 11/2/2025

A. Experimental conditions.

Area Scan	dx=12mm dy=12mm, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	IEEE 802.11b ISM
Channels	Middle
Signal	IEEE802.b (Crest factor: 1.0)
ConvF	2.38

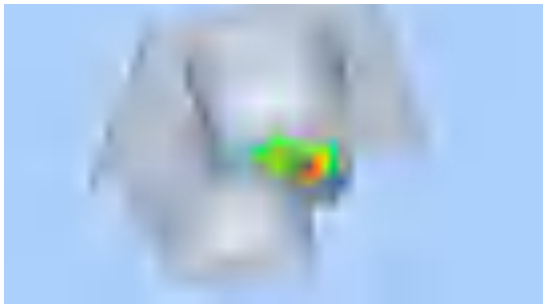
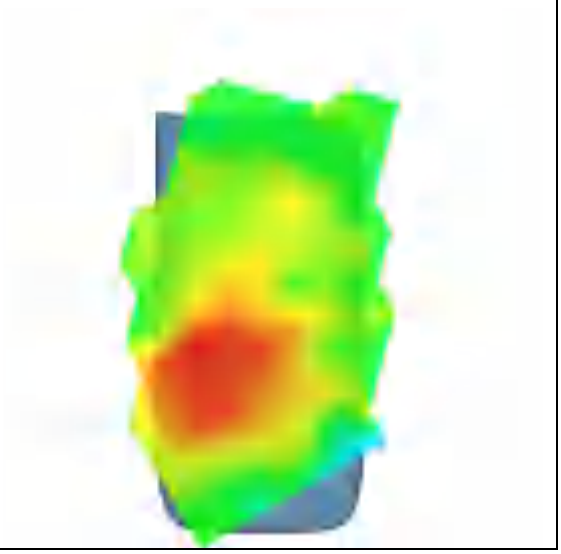
B. SAR Measurement Results

Frequency (MHz)	2437.000000
Relative permittivity (real part)	39.227002
Relative permittivity (imaginary part)	13.208000
Conductivity (S/m)	1.788216
Variation (%)	2.540000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-38.00, Y=-50.00
SAR Peak: 0.44 W/kg

SAR 10g (W/Kg)	0.170441
SAR 1g (W/Kg)	0.246021

3D screen shot	Hot spot position
	

MEASUREMENT 32

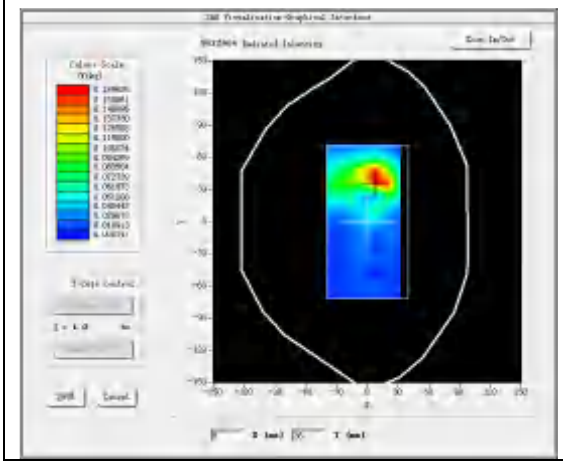
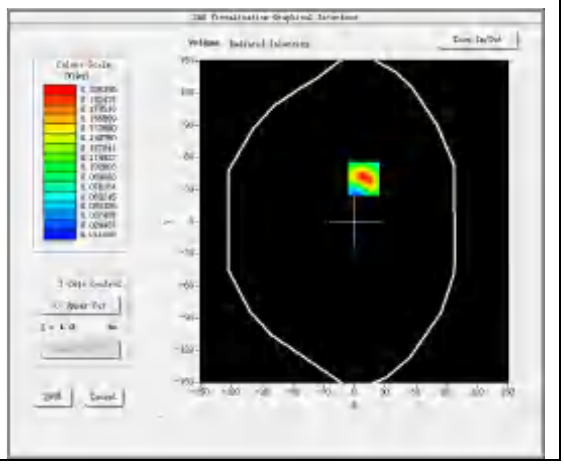
Date of measurement: 11/2/2025

A. Experimental conditions.

Area Scan	dx=12mm dy=12mm, h= 5.00 mm
ZoomScan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11b ISM
Channels	Middle
Signal	IEEE802.b (Crest factor: 1.0)
ConvF	2.38

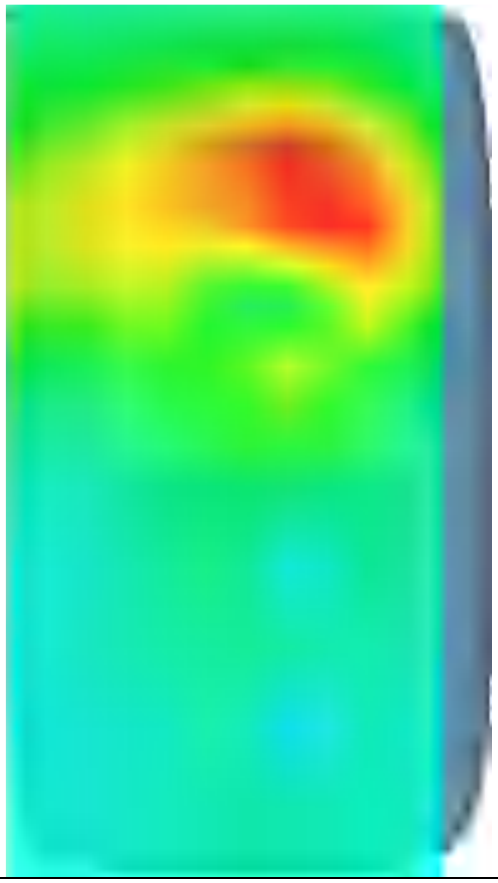
B. SAR Measurement Results

Frequency (MHz)	2437.000000
Relative permittivity (real part)	39.227002
Relative permittivity (imaginary part)	13.208000
Conductivity (S/m)	1.788216
Variation (%)	0.120000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=9.00, Y=40.00
SAR Peak: 0.36 W/kg

SAR 10g (W/Kg)	0.092896
SAR 1g (W/Kg)	0.192952

3D screen shot	Hot spot position
	

MEASUREMENT 33

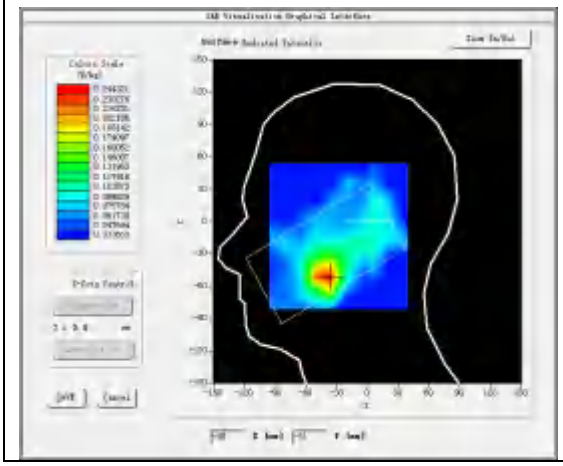
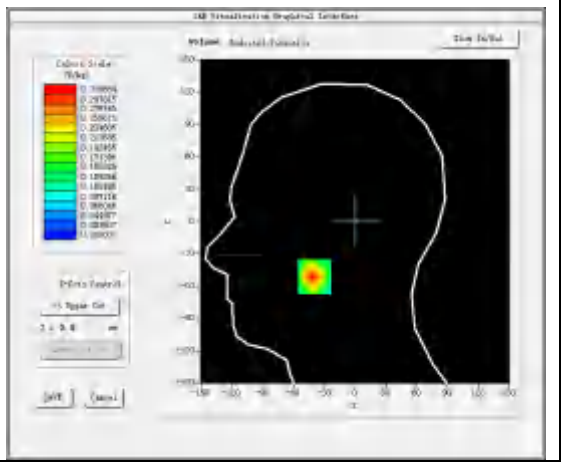
Date of measurement: 7/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	LTE band 12
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	1.65

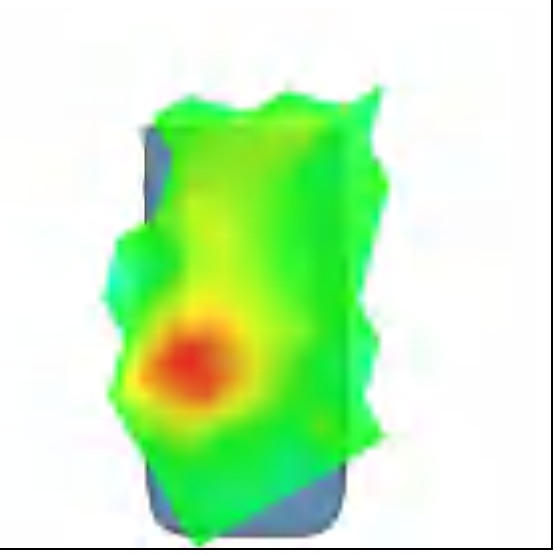
B. SAR Measurement Results

Frequency (MHz)	707.500000
Relative permittivity (real part)	42.126667
Relative permittivity (imaginary part)	23.264000
Conductivity (S/m)	0.914404
Variation (%)	-0.040001

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-40.00, Y=-51.00
SAR Peak: 0.44 W/kg

SAR 10g (W/Kg)	0.193677
SAR 1g (W/Kg)	0.307736

3D screen shot	Hot spot position
	

MEASUREMENT 34

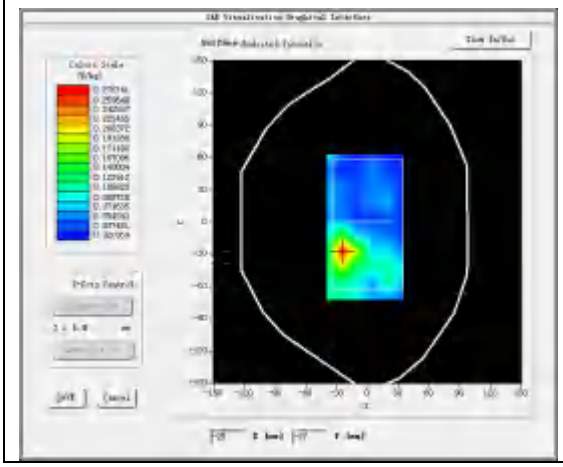
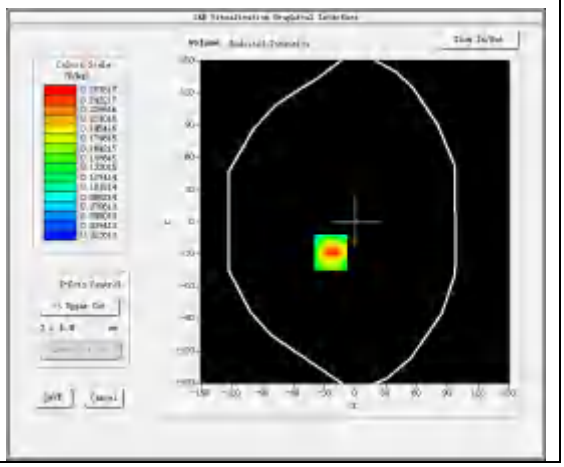
Date of measurement: 7/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 12
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	1.65

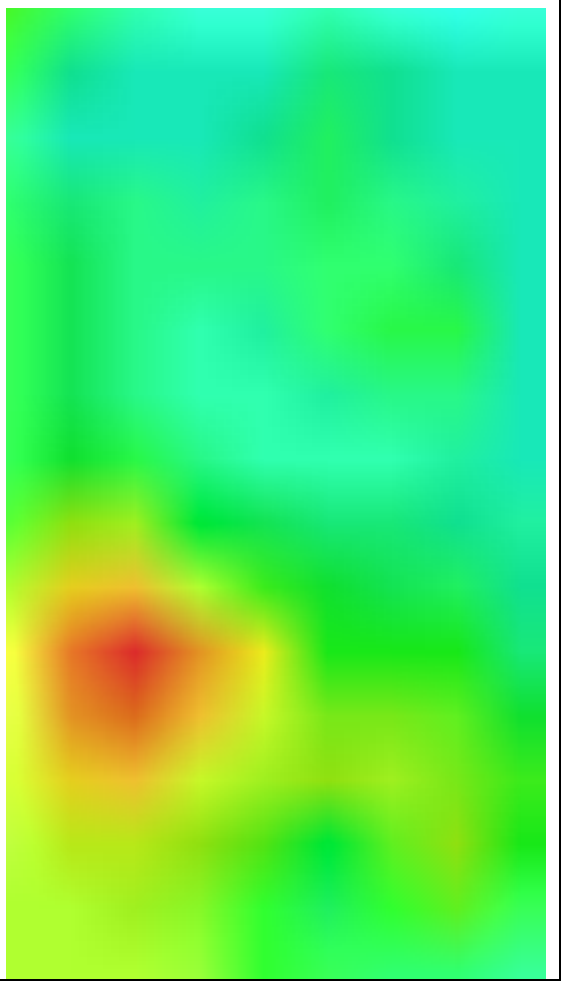
B. SAR Measurement Results

Frequency (MHz)	707.500000
Relative permittivity (real part)	42.126667
Relative permittivity (imaginary part)	23.264000
Conductivity (S/m)	0.914404
Variation (%)	-3.340000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-24.00, Y=-28.00
SAR Peak: 0.42 W/kg

SAR 10g (W/Kg)	0.154777
SAR 1g (W/Kg)	0.252199

3D screen shot	Hot spot position
	

MEASUREMENT 35

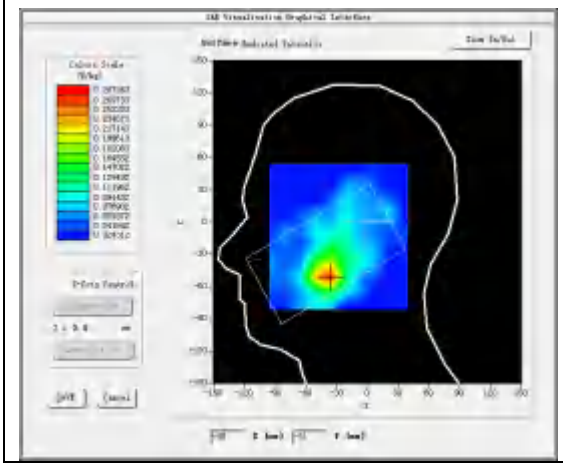
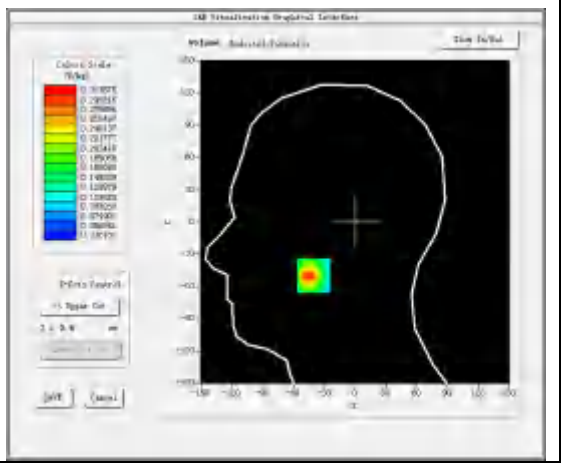
Date of measurement: 7/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	LTE band 17
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	1.65

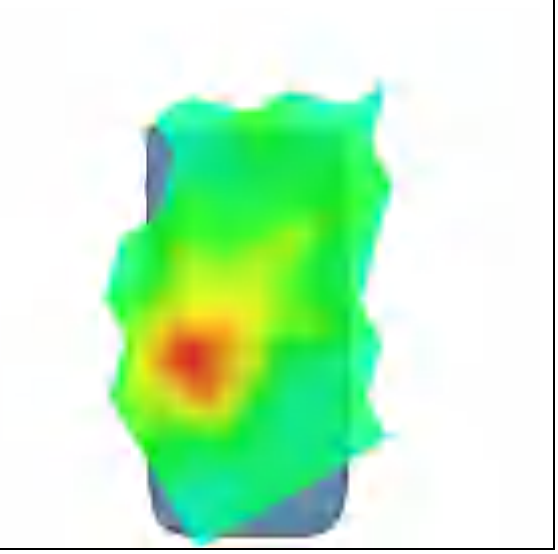
B. SAR Measurement Results

Frequency (MHz)	710.000000
Relative permittivity (real part)	42.113335
Relative permittivity (imaginary part)	23.152000
Conductivity (S/m)	0.913218
Variation (%)	-0.790000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-38.00, Y=-50.00
SAR Peak: 0.51 W/kg

SAR 10g (W/Kg)	0.186823
SAR 1g (W/Kg)	0.309054

3D screen shot	Hot spot position
	

MEASUREMENT 36

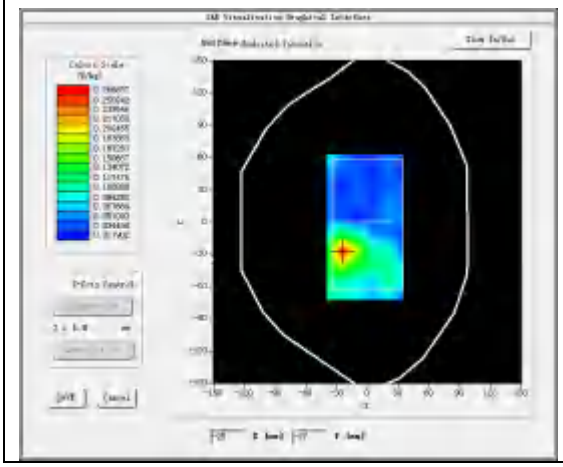
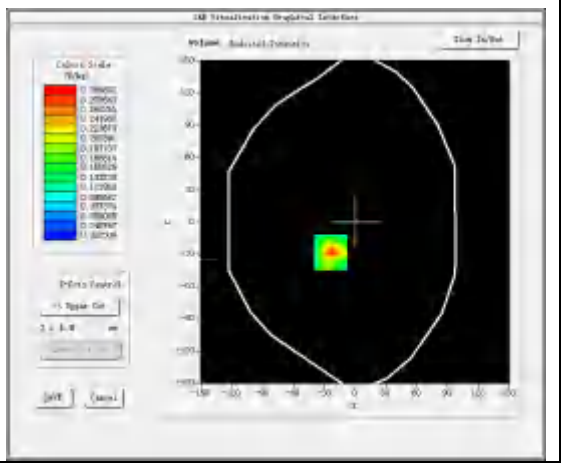
Date of measurement: 7/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 17
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	1.65

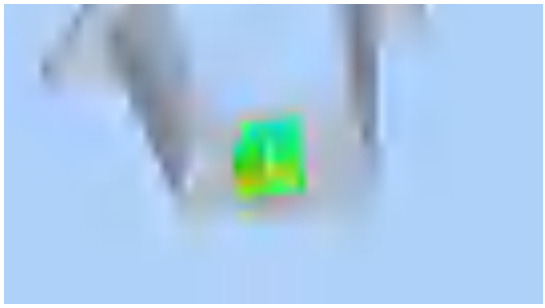
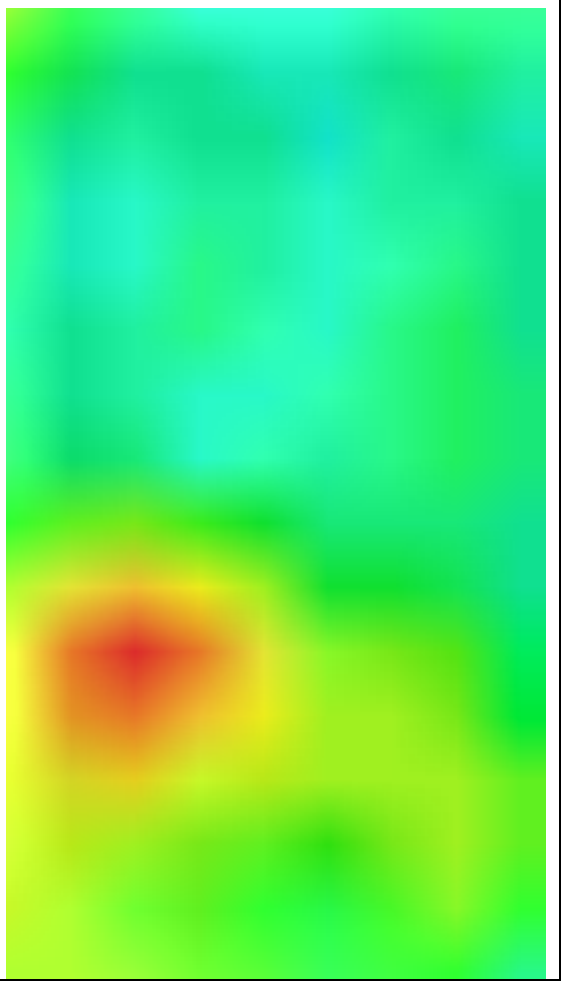
B. SAR Measurement Results

Frequency (MHz)	710.000000
Relative permittivity (real part)	42.113335
Relative permittivity (imaginary part)	23.152000
Conductivity (S/m)	0.913218
Variation (%)	-3.400000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-24.00, Y=-28.00
SAR Peak: 0.45 W/kg

SAR 10g (W/Kg)	0.158353
SAR 1g (W/Kg)	0.274411

3D screen shot	Hot spot position
	

MEASUREMENT 37

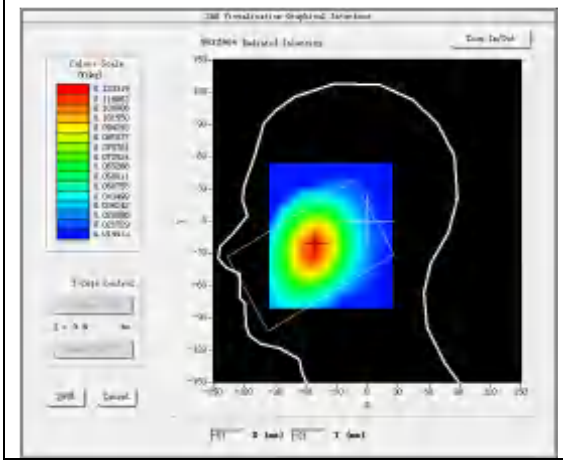
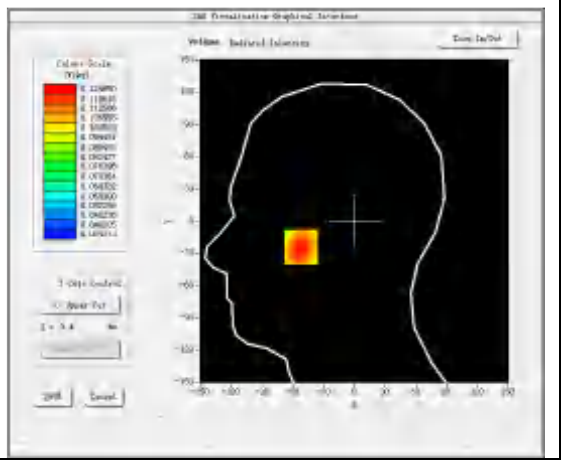
Date of measurement: 7/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	LTE band 71
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	1.65

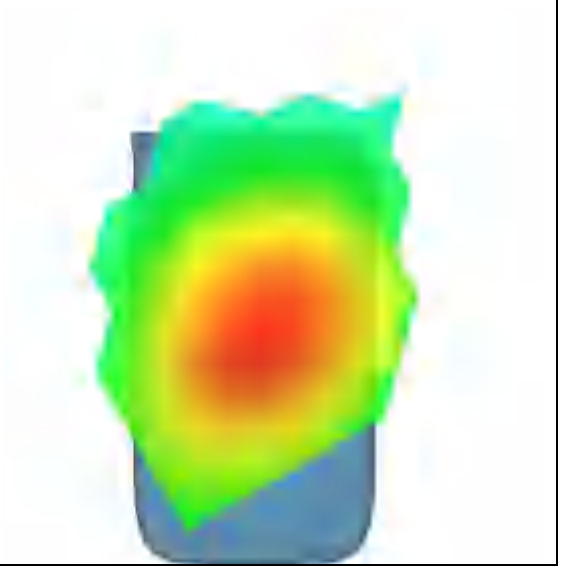
B. SAR Measurement Results

Frequency (MHz)	683.000000
Relative permittivity (real part)	41.426240
Relative permittivity (imaginary part)	21.802100
Conductivity (S/m)	0.827269
Variation (%)	0.930000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-52.00, Y=-24.00
SAR Peak: 0.14 W/kg

SAR 10g (W/Kg)	0.097210
SAR 1g (W/Kg)	0.121421

3D screen shot	Hot spot position
	

MEASUREMENT 38

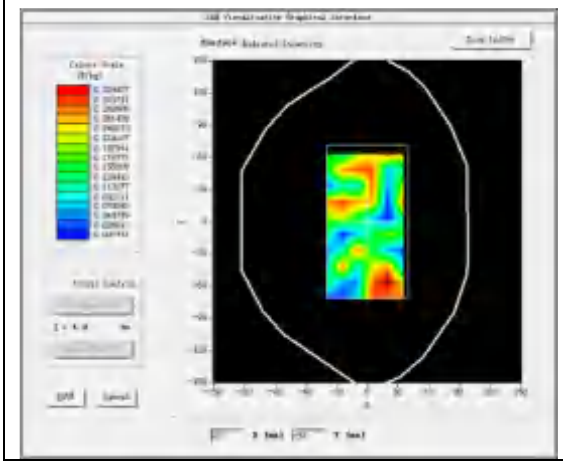
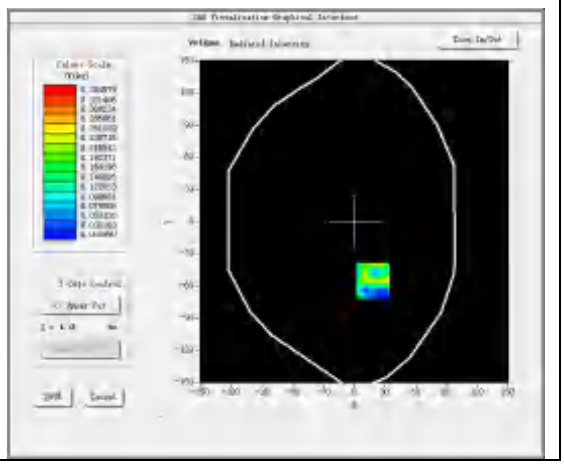
Date of measurement: 7/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 71
Channels	Middle
Signal	LTE (Crest factor: 1.0)
ConvF	1.65

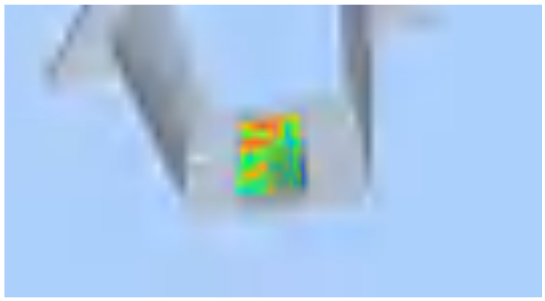
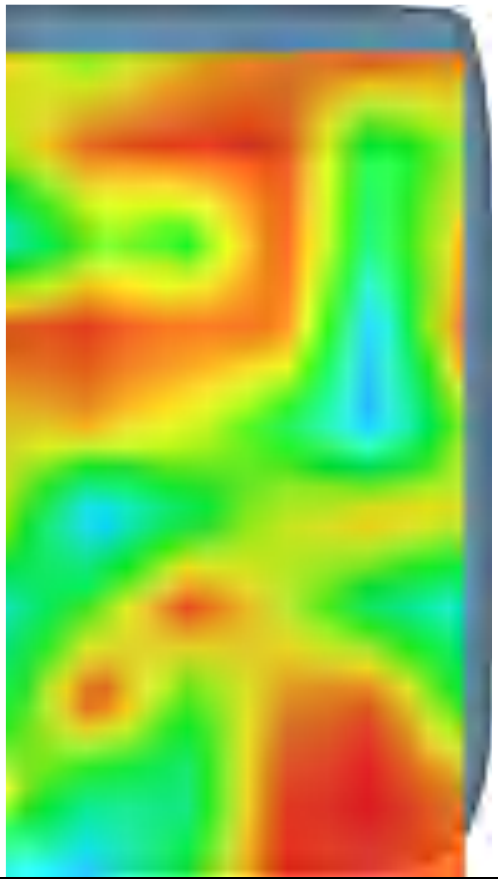
B. SAR Measurement Results

Frequency (MHz)	683.000000
Relative permittivity (real part)	41.426240
Relative permittivity (imaginary part)	21.802100
Conductivity (S/m)	0.827269
Variation (%)	-3.669998

SURFACE SAR	VOLUME SAR
	

Maximum location: X=18.00, Y=-55.00
SAR Peak: 0.75 W/kg

SAR 10g (W/Kg)	0.165149
SAR 1g (W/Kg)	0.327631

3D screen shot	Hot spot position
	

MEASUREMENT 39

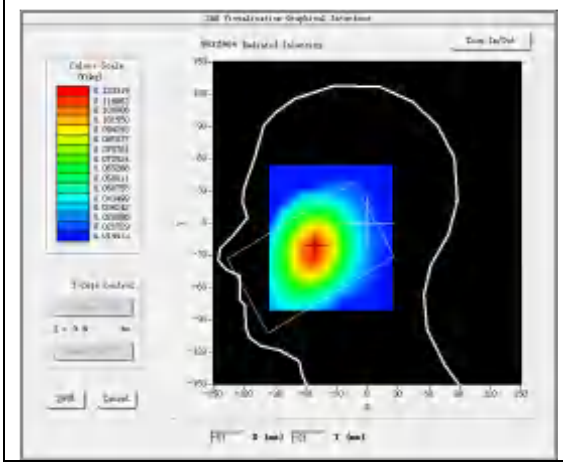
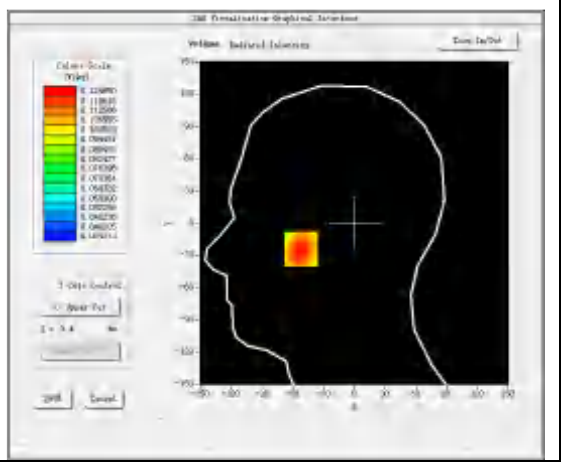
Date of measurement: 7/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	SA_n71
Channels	Middle
Signal	(Crest factor: 1.0)
ConvF	1.65

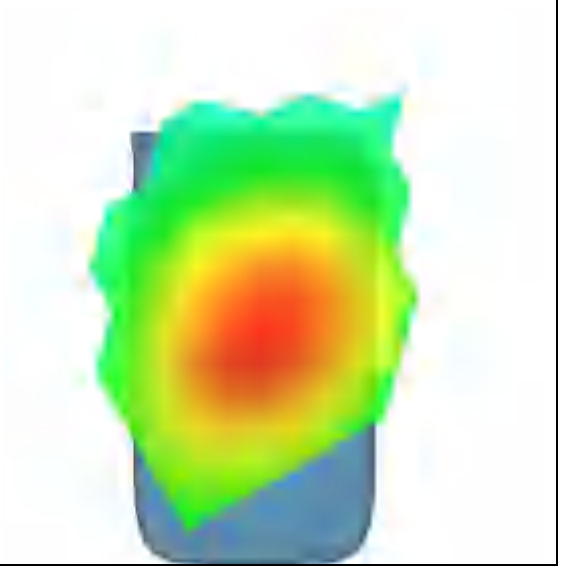
B. SAR Measurement Results

Frequency (MHz)	680.500000
Relative permittivity (real part)	41.427540
Relative permittivity (imaginary part)	22.802214
Conductivity (S/m)	0.862050
Variation (%)	0.670000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-52.00, Y=-24.00
SAR Peak: 0.14 W/kg

SAR 10g (W/Kg)	0.098008
SAR 1g (W/Kg)	0.121654

3D screen shot	Hot spot position
	

MEASUREMENT 40

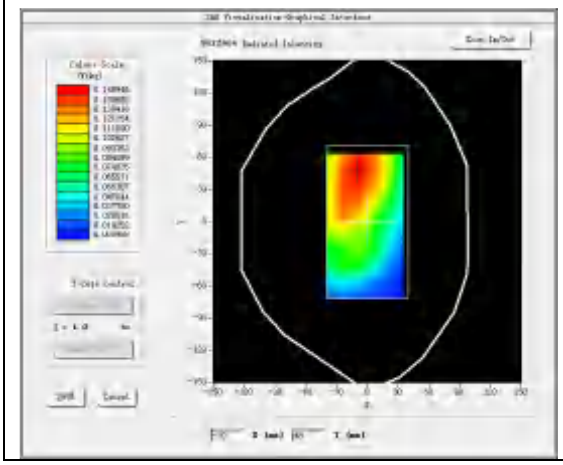
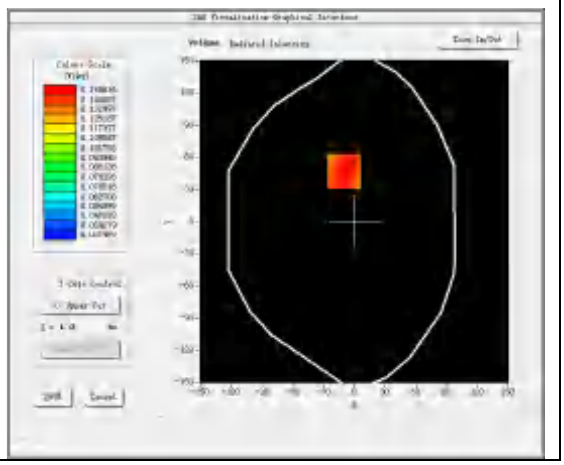
Date of measurement: 7/2/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	SA_n71
Channels	Middle
Signal	(Crest factor: 1.0)
ConvF	1.65

B. SAR Measurement Results

Frequency (MHz)	680.500000
Relative permittivity (real part)	41.427540
Relative permittivity (imaginary part)	22.802214
Conductivity (S/m)	0.862050
Variation (%)	1.930000

SURFACE SAR	VOLUME SAR
	

Maximum location: X=-10.00, Y=47.00
SAR Peak: 0.17 W/kg

SAR 10g (W/Kg)	0.117193
SAR 1g (W/Kg)	0.145007

3D screen shot	Hot spot position
	

Appendix D. Calibration Certificate

Table of contents
E Field Probe - EPGO0523-403
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 03/14 WGA33

COMOSAR E-Field Probe Calibration Report

Ref : ACR.307.3.24.BES.A

GUANGDONG ASIA HONGKE TEST TECHNOLOGY CO., LTD
NO.1/F,BUILDING B1, JUNFENG INDUSTRIAL PARK, CHONGQING ROAD, HEPING COMMUNITY, FUHAIHAI STREET, BAO'AN DISTRICT,SHENZHEN, GUANGDONG 518055, P.R.CHINA

MVG COMOSAR DOSIMETRIC E-FIELD PROBE
SERIAL NO.: SN 39/21 EPGO0523-403

Calibrated at MVG
Z.I. de la pointe du diable
Technopôle Brest Iroise – 295 avenue Alexis de Rochon
29280 PLOUZANE - FRANCE

Calibration date: 09/11/2024

Accreditations #2-6789
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

	Name	Function	Date	Signature
Prepared by :	Jérôme Le Gall	Measurement Responsible	09/10/2024	
Checked by :	Jérôme Luc	Technical Manager	09/10/2024	
Approved by :	Yann Toutain	Laboratory Director	09/11/2024	

	Customer Name
Distribution :	Shenzhen Asia Hongke

Issue	Name	Date	Modifications
A	Jérôme Luc	9/11/2024	Initial release

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1 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR DOSIMETRIC E FIELD PROBE
Manufacturer	MVG
Model	SSE2
Serial Number	SN 39/21 EPGO0523-403
Product Condition (new / used)	New
Frequency Range of Probe	0.15 GHz-6GHz
Resistance of Three Dipoles at Connector	Dipole 1: R1=0.199 MΩ Dipole 2: R2=0.218 MΩ Dipole 3: R3=0.210 MΩ

2 PRODUCT DESCRIPTION

2.1 GENERAL INFORMATION

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

Figure 1 – *MVG COMOSAR Dosimetric E field Probe*

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

3 MEASUREMENT METHOD

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

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:

$$\mathrm{SAR}_{\text{uncertainty}}[\%] = \delta\mathrm{SAR}_{be}\,\frac{\left(d_{be}+d_{step}\right)^2}{2d_{step}}\,\frac{\left(e^{-d_{be}/(\delta/2)}\right)}{\delta/2} \quad \text{for } \left(d_{be}+d_{step}\right) < 10\ \text{mm}$$

where

$\mathrm{SAR}_{\text{uncertainty}}$	is the uncertainty in percent of the probe boundary effect
d_{be}	is the distance between the surface and the closest *zoom-scan* 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;
$\Delta\mathrm{SAR}_{be}$	in percent of SAR is the deviation between the measured SAR value, at the distance d_{be} from the boundary, and the analytical SAR value.

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

4 MEASUREMENT UNCERTAINTY

The guidelines outlined in the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards were followed to generate the measurement uncertainty associated with 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

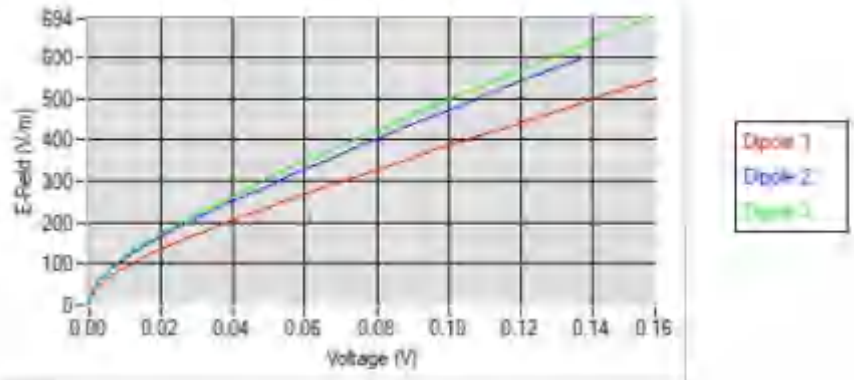
Normx dipole 1 ($\mu V/(V/m)^2$)	Normy dipole 2 ($\mu V/(V/m)^2$)	Normz dipole 3 ($\mu V/(V/m)^2$)
1.26	0.87	0.77

DCP dipole 1 (mV)	DCP dipole 2 (mV)	DCP dipole 3 (mV)
113	108	113

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

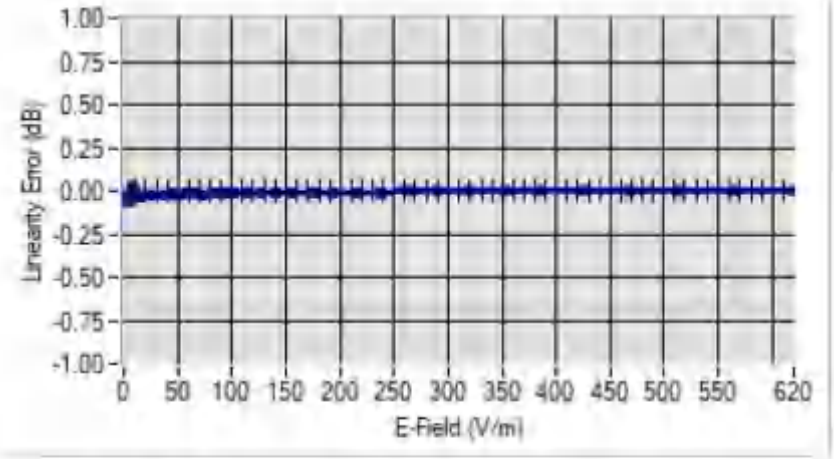
$$E = \sqrt{E_1^{\,2} + E_2^{\,2} + E_3^{\,2}}$$

Calibration curves



5.2 LINEARITY

Linearity



Linearity: +/-1.42% (+/-0.06dB)

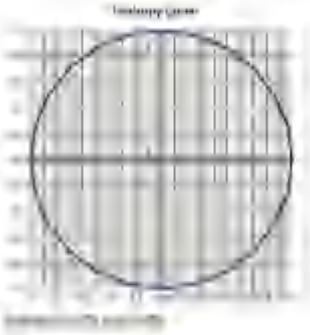
5.3 SENSITIVITY IN LIQUID

Liquid	Frequency (MHz +/- 100MHz)	ConvF
HL600	600	1.62
HL750	750	1.65
HL850	835	1.66
HL900	900	1.77
HL1500	1500	2.09
HL1750	1750	2.09
HL1800	1800	2.05
HL1900	1900	2.05
HL2000	2000	2.41
HL2100	2100	2.36
HL2300	2300	2.55
HL2450	2450	2.38
HL2600	2600	2.35
HL3300	3300	2.04
HL3500	3500	1.98
HL3700	3700	2.11
HL3900	3900	2.54
HL4200	4200	2.22
HL4600	4600	2.40
HL4900	4900	2.33
HL5200	5200	2.30
HL5400	5400	2.30
HL5600	5600	2.29
HL5800	5800	2.27

LOWER DETECTION LIMIT: 8mW/kg

5.4 ISOTROPY

H1 1800 MHz



6 LIST OF EQUIPMENT

Equipment Summary Sheet				
Equipment Description	**Manufacturer / Model**	**Identification No.**	**Current Calibration Date**	**Next Calibration Date**
CALIPROBE Test Bench	Version 2	NA	Validated. No cal required.	Validated. No cal required.
Network Analyzer	Rohde & Schwarz ZVM	100203	08/2024	08/2027
Network Analyzer	Agilent 8753ES	MY40003210	10/2021	10/2024
Network Analyzer – Calibration kit	Rohde & Schwarz ZV-Z235	101223	05/2024	05/2027
Network Analyzer – Calibration kit	HP 85033D	3423A08186	06/2021	06/2027
Multimeter	Keithley 2000	1160271	02/2024	02/2027
Signal Generator	Rohde & Schwarz SMB	106589	04/2024	04/2027
Amplifier	MVG	MODU-023-C-0002	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Power Meter	NI-USB 5680	170100013	06/2024	06/2027
Power Meter	Rohde & Schwarz NRVD	832839-056	11/2021	11/2024
Directional Coupler	Krytar 158020	131467	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Waveguide	MVG	SN 32/16 WG4_1	Validated. No cal required.	Validated. No cal required.
Liquid transition	MVG	SN 32/16 WGLIQ_0G900_1	Validated. No cal required.	Validated. No cal required.
Waveguide	MVG	SN 32/16 WG6_1	Validated. No cal required.	Validated. No cal required.
Liquid transition	MVG	SN 32/16 WGLIQ_1G500_1	Validated. No cal required.	Validated. No cal required.
Waveguide	MVG	SN 32/16 WG8_1	Validated. No cal required.	Validated. No cal required.
Liquid transition	MVG	SN 32/16 WGLIQ_1G800B_1	Validated. No cal required.	Validated. No cal required.
Liquid transition	MVG	SN 32/16 WGLIQ_1G800H_1	Validated. No cal required.	Validated. No cal required.
Waveguide	MVG	SN 32/16 WG10_1	Validated. No cal required.	Validated. No cal required.
Liquid transition	MVG	SN 32/16 WGLIQ_3G500_1	Validated. No cal required.	Validated. No cal required.

COMOSAR E-FIELD PROBE CALIBRATION REPORT

Waveguide	MVG	SN 32/16 WG12_1	Validated. No cal required.	Validated. No cal required.
Liquid transition	MVG	SN 32/16 WGLIQ_5G000_1	Validated. No cal required.	Validated. No cal required.
Temperature / Humidity Sensor	Testo 184 H1	44225320	06/2024	06/2027

SAR Reference Dipole Calibration Report

Ref : ACR.53.23.24.BES.A

GUANGDONG ASIA HONGKE TEST TECHNOLOGY CO., LTD

NO.1/F,BUILDING B1, JUNFENG INDUSTRIAL PARK, CHONGQING ROAD, HEPING COMMUNITY , FUHAIHAI STREET, BAO'AN DISTRICT,SHENZHEN, GUANGDONG 518055, P.R.CHINA

MVG COMOSAR REFERENCE DIPOLE

FREQUENCY: 750MHZ

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: 02/21/2024

[illegible]

[illegible]

Summary:

This document presents the method and results from an accredited SAR reference dipole calibration performed in MVG using the COMOSAR test bench. All calibration results are traceable to national metrology institutions.

	Name	Function	Date	Signature
Prepared by	Yann Toutain	Measurement Responsible	2/22/2024	
Checked & approved by	Leanne Luo	Technical Manager	2/22/2024	
Authorized by	Yann Toutain	Laboratory Director	2/27/2024	

Yann Toutain (D

	Customer Name
Distribution	Shenzhen Asia Hongke

Issue	Name	Date	Modification
A	Peihe Xiao	2/27/2024	Initial release

TABLE OF CONTENTS

1 INTRODUCTION

This document contains a summary of the requirements set forth by the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards for reference dipoles used for SAR measurement system validations and the measurements that were performed to verify that the product complies with the four mentioned standards.

2 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR 750 MHz REFERENCE DIPOLE
Manufacturer	MVG
Model	SID750
Serial Number	S/N 03/15DIPBG750-355
Product Condition (new / used)	Used

3 PRODUCT DESCRIPTION

3.1 GENERAL INFORMATION

MVG's COMOSAR Validation Dipoles are built in accordance to the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards. The product is designed for use with the COMOSAR test bench only.

Figure 1 – *MVG COMOSAR Validation Dipole*

4 MEASUREMENT METHOD

4.1 MECHANICAL REQUIREMENTS

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards specify the mechanical components and dimensions of the validation dipoles, with the dimension's frequency and phantom shell thickness dependent. The COMOSAR test bench employs a 2 mm phantom shell thickness therefore the dipoles sold for use with the COMOSAR test bench comply with the requirements set forth for a 2 mm phantom shell thickness. A direct method is used with a ISO17025 calibrated caliper.

4.2 S11 PARAMETER REQUIREMENTS

The dipole used for SAR system validation measurements and checks must have a S11 of -20 dB or better. The S11 measurement shall be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. A direct method is used with a network analyser and its calibration kit, both with a valid ISO17025 calibration.

4.3 SAR REQUIREMENTS

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards provide requirements for reference dipoles used for system validation measurements. The following measurements were performed to verify that the product complies with the fore-mentioned standards.

5 MEASUREMENT UNCERTAINTY

5.1 MECHANICAL DIMENSIONS

For the measurement in the range 0-300mm, the estimated expanded uncertainty (k=2) in calibration for the dimension measurement in mm is +/-0.20 mm with respect to measurement conditions.

For the measurement in the range 300-450mm, the estimated expanded uncertainty (k=2) in calibration for the dimension measurement in mm is +/-0.44 mm with respect to measurement conditions.

5.2 S11 PARAMETER

The estimated expanded uncertainty (k=2) in calibration for the S11 parameter in linear is +/-0.08 with respect to measurement conditions.

5.3 SAR

The guidelines outlined in the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards were followed to generate the measurement uncertainty for validation measurements.

The estimated expanded uncertainty (k=2) in calibration for the 1g and 10g SAR measurement in W/kg is +/-19% with respect to measurement conditions.

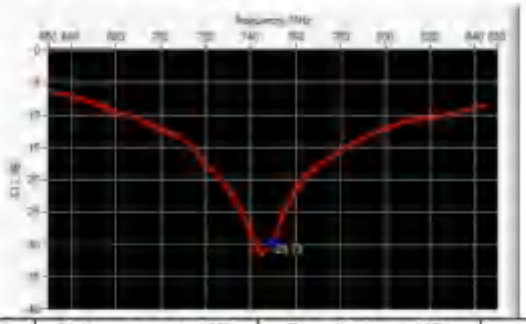
6 CALIBRATION RESULTS

6.1 MECHANICAL DIMENSIONS

L mm		h mm		d mm	
Measured	Required	Measured	Required	Measured	Required
-	176.00 +/- 2%	-	100.00 +/- 2%	-	6.35 +/- 2%

6.2 S11 PARAMETER

6.2.1 S11 parameter in Head Liquid



Frequency (MHz)	S11 parameter (dB)	Requirement (dB)	Impedance
750	-29.73	-20	52.5Ω + 2.2jΩ

6.3 SAR

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards state that the system validation measurements must be performed using a reference dipole meeting the fore mentioned return loss and mechanical dimension requirements. The validation measurement must be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. Per the standards, the dipole shall be positioned below the bottom of the phantom, with the dipole length centered and parallel to the longest dimension of the flat phantom, with the top surface of the dipole at the described distance from the bottom surface of the phantom.

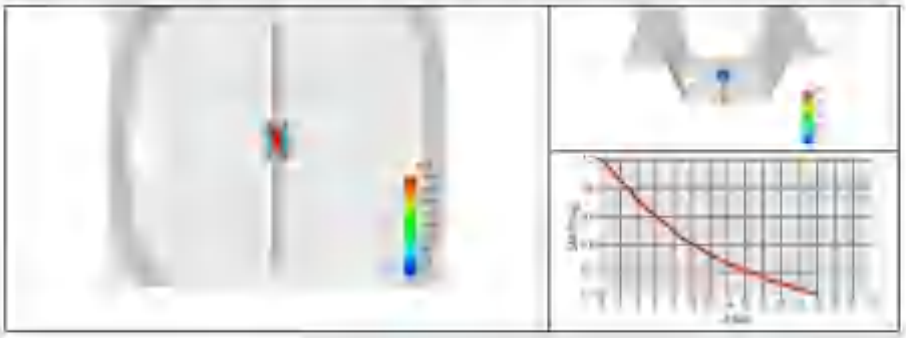
6.3.1 SAR with Head Liquid

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards state that the system validation measurements should produce the SAR values shown below (for phantom thickness of 2 mm), within the uncertainty for the system validation. All SAR values are normalized to 1 W forward power. In bracket, the measured SAR is given with the used input power.

SAR REFERENCE DIPOLE CALIBRATION REPORT

Software	OPENSAR V5
Phantom	SN 13/09 SAM68
Probe	SN23-EPG01-429
Liquid	Head Liquid Values: eps' =45.0 sigma =0.87
Distance between dipole center and liquid	15.6 mm
Area scan resolution	dx=8mm dy=8mm
Zoom Scan Resolution	dx=8mm dy=8mm dz=5mm
Frequency	750 MHz
Input power	20 dBm
Liquid Temperature	20 +/- 1°C
Lab Temperature	20 +/- 1 °C
Lab Humidity	30-70 %

Frequency	1g SAR (W/kg)			10g SAR (W/kg)		
	Measured	Measured normalized to 1W	Target normalized to 1W	Measured	Measured normalized to 1W	Target normalized to 1W
750 MHz	0.86	8.60	8.39	0.58	5.78	5.55



7 LIST OF EQUIPMENT

Equipment Summary Sheet

Equipment Description	Manufacturer / Model	Identification No.	Current Calibration Date	Next Calibration Date
SAM Phantom	MVG	SN 13/09 SAM68	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	08/2021	08/2024
Network Analyzer – Calibration kit	Rohde & Schwarz ZV-Z235	101223	07/2022	07/2025
Calipers	Mitutoyo	SN 0009732	11/2022	11/2025
Reference Probe	MVG	3523-EPGO-429	11/2023	11/2024
Multimeter	Keithley 2000	4013982	02/2023	02/2026
Signal Generator	Rohde & Schwarz SMB	106589	03/2022	03/2025
Amplifier	MVG	MODU-023-C-0002	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Power Meter	NI-USB 5680	170100013	08/2021	08/2024
Power Meter	Keysight U2000A	SN: MY62340002	10/2022	10/2025
Directional Coupler	Krytar 158020	131467	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Temperature / Humidity Sensor	Testo 184 H1	44225320	06/2021	06/2024

SAR Reference Dipole Calibration Report

Ref : ACR.53.24.24.BHS.A

GUANGDONG ASIA HONGKE TEST TECHNOLOGY CO., LTD
NO.1/F,BUILDING B1, JUNFENG INDUSTRIAL PARK,
CHONGQING ROAD, HEPING COMMUNITY ,
FUHAIHAI STREET, BAO'AN DISTRICT,SHENZHEN,
GUANGDONG 518055, P.R.CHINA

MVG COMOSAR REFERENCE DIPOLE
FREQUENCY: 835MHZ
SERIAL NO.: SN 03/15 DIP0G835-347

Calibrated at MVG
Z.I. de la pointe du diable
Technopôle Brest Iroise – 295 avenue Alexis de Rochon
29280 PLOUZANE - FRANCE

Calibration date: 02/21/2024

Summary:

This document presents the method and results from an accredited SAR reference dipole calibration performed at MVG using the COMOSAR test bench. All calibration results are traceable to national metrology institutions.

	Name	Function	Date	Signature
Prepared by:	[illegible]	Management Representative	[illegible]	
Checked & approved by:	Jerome Li	Technical Manager	2/22/2024	
Authorized by:	Yaru Toutain	Laboratory Director	2/23/2024	

Yaru Toutain ID

	Customer Name
Distribution:	Shenzhen Asia Hongke

Issue	Name	Date	Modification
a	Peilin Ren	2/22/2024	Initial release

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2 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR 835 MHz REFERENCE DIPOLE
Manufacturer	MVG
Model	SID835
Serial Number	SN 03/15DIP0G835-347
Product Condition (new / used)	Used

3 PRODUCT DESCRIPTION

3.1 GENERAL INFORMATION

MVG's COMOSAR Validation Dipoles are built in accordance to the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards. The product is designed for use with the COMOSAR test bench only.

Figure 1 – *MVG COMOSAR Validation Dipole*

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4.1 MECHANICAL REQUIREMENTS

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4.2 S11 PARAMETER REQUIREMENTS

The dipole used for SAR system validation measurements and checks must have a S11 of -20 dB or better. The S11 measurement shall be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. A direct method is used with a network analyser and its calibration kit, both with a valid ISO17025 calibration.

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For the measurement in the range 0-300mm, the estimated expanded uncertainty (k=2) in calibration for the dimension measurement in mm is +/-0.20 mm with respect to measurement conditions.

For the measurement in the range 300-450mm, the estimated expanded uncertainty (k=2) in calibration for the dimension measurement in mm is +/-0.44 mm with respect to measurement conditions.

5.2 S11 PARAMETER

The estimated expanded uncertainty (k=2) in calibration for the S11 parameter in linear is +/-0.08 with respect to measurement conditions.

5.3 SAR

The guidelines outlined in the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards were followed to generate the measurement uncertainty for validation measurements.

The estimated expanded uncertainty (k=2) in calibration for the 1g and 10g SAR measurement in W/kg is +/-19% with respect to measurement conditions.

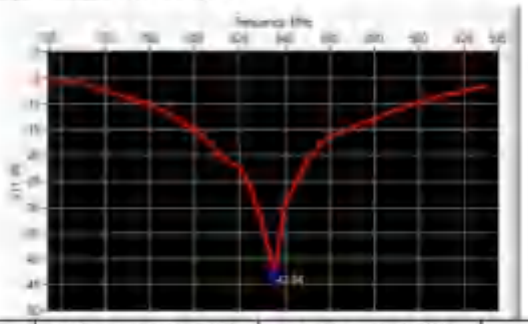
6 CALIBRATION RESULTS

6.1 MECHANICAL DIMENSIONS

L mm		h mm		d mm	
Measured	Required	Measured	Required	Measured	Required
-	161.00 +/- 2%	-	89.80 +/- 2%	-	3.60 +/- 2%

6.2 S11 PARAMETER

6.2.1 S11 parameter in Head Liquid



Frequency (MHz)	S11 parameter (dB)	Requirement (dB)	Impedance
835	-42.84	-20	50.5Ω + 0.5jΩ

6.3 SAR

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards state that the system validation measurements must be performed using a reference dipole meeting the fore mentioned return loss and mechanical dimension requirements. The validation measurement must be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. Per the standards, the dipole shall be positioned below the bottom of the phantom, with the dipole length centered and parallel to the longest dimension of the flat phantom, with the top surface of the dipole at the described distance from the bottom surface of the phantom.

6.3.1 SAR with Head Liquid

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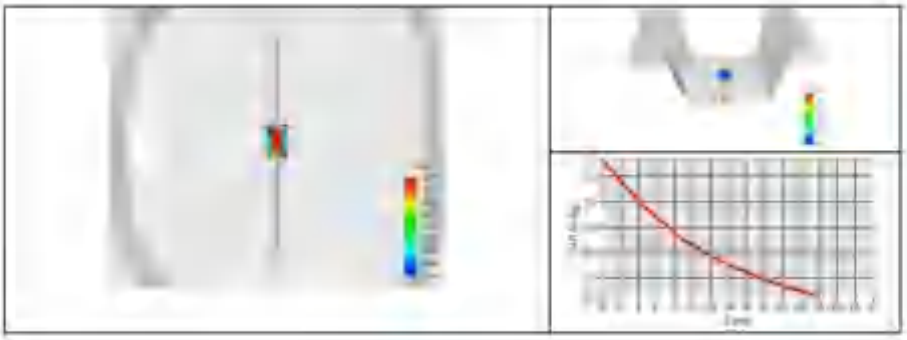
SAR REFERENCE DIPOLE CALIBRATION REPORT

Software	OPENSAR V5
Phantom	SN 13/09 SAM68
Probe	SN3-EPGO-420
Liquid	Head Liquid Values: epsr= 41.6 sigma= 0.90
Distance between dipole center and liquid	15.0 mm
Area scan resolution	dx=8mm dy=8mm
Zoom Scan Resolution	dx=8mm dy=8mm dz=5mm
Frequency	835 MHz
Input power	20 dBm
Liquid Temperature	20 +/- 1 °C
Lab Temperature	20 +/- 1 °C
Lab Humidity	30-70%

Frequency	1g SAR (W/kg)			10g SAR (W/kg)		
	Measured	Measured normalized to 1W	Target normalized to 1W	Measured	Measured normalized to 1W	Target normalized to 1W
835 MHz	0.94	9.40	9.56	0.63	6.28	6.27



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Network Analyzer	Rohde & Schwarz ZVM	100203	08/2021	08/2024
Network Analyzer – Calibration kit	Rohde & Schwarz ZV-Z235	101223	07/2022	07/2025
Calipers	Mitutoyo	SN 0009732	11/2022	11/2025
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Multimeter	Keithley 2000	4013982	02/2023	02/2026
Signal Generator	Rohde & Schwarz SMB	106589	03/2022	03/2025
Amplifier	MVG	MODU-023-C-0002	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Power Meter	NI-USB 5680	170100013	06/2021	06/2024
Power Meter	Keysight U2000A	SN: MY62340002	10/2022	10/2025
Directional Coupler	Krytar 158020	131467	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Temperature / Humidity Sensor	Testo 184 H1	44225320	06/2021	06/2024

SAR Reference Dipole Calibration Report

Ref : ACR.53.26.24.BHS.A

GUANGDONG ASIA HONGKE TEST TECHNOLOGY CO., LTD
NO.1/F,BUILDING B1, JUNFENG INDUSTRIAL PARK, CHONGQING ROAD, HEPING COMMUNITY , FUHAIHAI STREET, BAO'AN DISTRICT,SHENZHEN, GUANGDONG 518055, P.R.CHINA

MVG COMOSAR REFERENCE DIPOLE
FREQUENCY: 1800MHZ
SERIAL NO.: SN 03/15 DIP1G800-349

Calibrated at MVG
Z.I. de la pointe du diable
Technopôle Brest Iroise – 295 avenue Alexis de Rochon
29280 PLOUZANE - FRANCE

Calibration date: 02/21/2024

Summary:

This document presents the method and results from the accredited SAR reference dipole calibration performed at MVG using the COMOSAR test bench. All calibration results are traceable to national metrology institutions.

	Name	Function	Date	Signature
Prepared By:	Parker Peter	Measurement Responsible		
Checked & Approved By:	Jerome Luo	Technical Manager		
Authorized By:	Yann Tinnan	Laboratory Director		

Yann Tinnan ID

	Customer Name
Distribution	Shenzhen Asia Honcky

Date	Name	Trial	Description
1.0	Parker Peter	250121017	Initial release

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1 INTRODUCTION

This document contains a summary of the requirements set forth by the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards for reference dipoles used for SAR measurement system validations and the measurements that were performed to verify that the product complies with the first mentioned standards.

2 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR 1800 MHz REFERENCE DIPOLE
Manufacturer	MVG
Model	SID1800
Serial Number	SN 03/15DIPG800-349
Product Condition (new / used)	Used

3 PRODUCT DESCRIPTION

3.1 GENERAL INFORMATION

MVG's COMOSAR Validation Dipoles are built in accordance to the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards. The product is designed for use with the COMOSAR test bench only.

Figure 1 – *MVG COMOSAR Validation Dipole*

4 MEASUREMENT METHOD

4.1 MECHANICAL REQUIREMENTS

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards specify the mechanical components and dimensions of the validation dipoles, with the dimension's frequency and phantom shell thickness dependent. The COMOSAR test bench employs a 2 mm phantom shell thickness therefore the dipoles sold for use with the COMOSAR test bench comply with the requirements set forth for a 2 mm phantom shell thickness. A direct method is used with a ISO17025 calibrated caliper.

4.2 S11 PARAMETER REQUIREMENTS

The dipole used for SAR system validation measurements and checks must have a S11 of -20 dB or better. The S11 measurement shall be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. A direct method is used with a network analyser and its calibration kit, both with a valid ISO17025 calibration.

4.3 SAR REQUIREMENTS

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards provide requirements for reference dipoles used for system validation measurements. The following measurements were performed to verify that the product complies with the fore-mentioned standards.

5 MEASUREMENT UNCERTAINTY

5.1 MECHANICAL DIMENSIONS

For the measurement in the range 0-300mm, the estimated expanded uncertainty (k=2) in calibration for the dimension measurement in mm is +/-0.20 mm with respect to measurement conditions.

For the measurement in the range 300-450mm, the estimated expanded uncertainty (k=2) in calibration for the dimension measurement in mm is +/-0.44 mm with respect to measurement conditions.

5.2 S11 PARAMETER

The estimated expanded uncertainty (k=2) in calibration for the S11 parameter in linear is +/-0.08 with respect to measurement conditions.

5.3 SAR

The guidelines outlined in the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards were followed to generate the measurement uncertainty for validation measurements.

The estimated expanded uncertainty (k=2) in calibration for the 1g and 10g SAR measurement in W/kg is +/-19% with respect to measurement conditions.

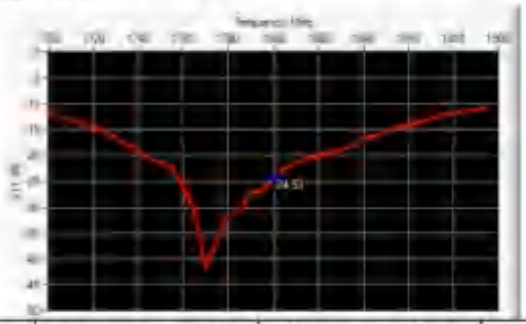
6 CALIBRATION RESULTS

6.1 MECHANICAL DIMENSIONS

L mm		h mm		d mm	
Measured	Required	Measured	Required	Measured	Required
-	72.00 +/- 2%	-	41.70 +/- 2%	-	3.60 +/- 2%

6.2 S11 PARAMETER

6.2.1 S11 parameter in Head Liquid



Frequency (MHz)	S11 parameter (dB)	Requirement (dB)	Impedance
1800	-24.53	-20	44.8Ω + 2.0jΩ

6.3 SAR

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards state that the system validation measurements must be performed using a reference dipole meeting the fore mentioned return loss and mechanical dimension requirements. The validation measurement must be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. Per the standards, the dipole shall be positioned below the bottom of the phantom, with the dipole length centered and parallel to the longest dimension of the flat phantom, with the top surface of the dipole at the described distance from the bottom surface of the phantom.

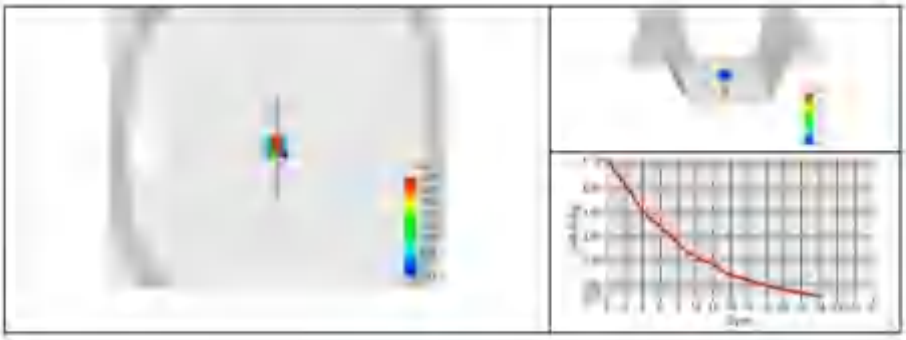
6.3.1 SAR with Head Liquid

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards state that the system validation measurements should produce the SAR values shown below (for phantom thickness of 2 mm), within the uncertainty for the system validation. All SAR values are normalized to 1 W forward power. In bracket, the measured SAR is given with the used input power.

SAR REFERENCE DIPOLE CALIBRATION REPORT

Software	OPENSAR V5
Phantom	SN 13/09 SAM68
Probe	SN23-EPGO-420
Liquid	Head Liquid Values: epsr - 42.7 sigma - 1.46
Distance between dipole center and liquid	10.0 mm
Area scan resolution	dx=8mm dy=8mm
Zoom Scan Resolution	dx=8mm dy=8mm dz=5mm
Frequency	1800 MHz
Input power	20 dBm
Liquid Temperature	20 +/- 1 °C
Lab Temperature	20 +/- 1 °C
Lab Humidity	30-70 %

Frequency	1g SAR (W/kg)			10g SAR (W/kg)		
	Measured	Measured normalized to 1W	Target normalized to 1W	Measured	Measured normalized to 1W	Target normalized to 1W
1800 MHz	3.71	37.06	38.40	2.00	20.01	20.10



7 LIST OF EQUIPMENT

Equipment Summary Sheet				
Equipment Description	**Manufacturer / Model**	**Identification No.**	**Current Calibration Date**	**Next Calibration Date**
SAM Phantom	MVG	SN 13/09 SAM68	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	08/2021	08/2024
Network Analyzer – Calibration kit	Rohde & Schwarz ZV-Z235	101223	07/2022	07/2025
Calipers	Mitutoyo	SN 0009732	11/2022	11/2025
Reference Probe	MVG	3523-EPGO-429	11/2023	11/2024
Multimeter	Keithley 2000	4013982	02/2023	02/2026
Signal Generator	Rohde & Schwarz SMB	106589	03/2022	03/2025
Amplifier	MVG	MODU-023-C-0002	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Power Meter	NI-USB 5680	170100013	08/2021	08/2024
Power Meter	Keysight U2000A	SN: MY62340002	10/2022	10/2025
Directional Coupler	Krytar 158020	131467	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Temperature / Humidity Sensor	Testo 184 H1	44225320	08/2021	08/2024

SAR Reference Dipole Calibration Report

Ref : ACR.53.37.24.BHS.A

GUANGDONG ASIA HONGKE TEST TECHNOLOGY CO., LTD
NO.1/F,BUILDING B1, JUNFENG INDUSTRIAL PARK, CHONGQING ROAD, HEPING COMMUNITY , FUHAIHAI STREET, BAO'AN DISTRICT,SHENZHEN, GUANGDONG 518055, P.R.CHINA

MVG COMOSAR REFERENCE DIPOLE

FREQUENCY: 1900MHZ
SERIAL NO.: SN 03/15 DIP1G900-350

Calibrated at MVG
Z.I. de la pointe du diable
Technopôle Brest Iroise – 295 avenue Alexis de Rochon
29280 PLOUZANE - FRANCE

Calibration date: 02/21/2024

Summary:

This document presents the method and results from an accredited SAR reference dipole calibration performed at MVG using the COMOSAR test bench. All calibration results are traceable to national metrology institutions.

	Name	Function	Date	Signature
Prepared by:	[illegible]	Measurement Responsible	2/22/2024	[illegible]
Checked & approved by:	Jérôme Luc	Technical Manager	2/22/2024	[illegible]
Authorized by:	Yann Toutain	Laboratory Director	2/27/2024	[illegible]

Yann Toutain ID

	Customer Name
Distribution :	Shenzhen Asia Honske

Issue	Name	Date	Modification
A	[illegible]	2/22/2024	Initial release

TABLE OF CONTENTS

1 INTRODUCTION

This document contains a summary of the requirements set forth by the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards for reference dipoles used for SAR measurement system validations and the measurements that were performed to verify that the product complies with the two mentioned standards.

2 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR 1900 MHz REFERENCE DIPOLE
Manufacturer	MVG
Model	SID1900
Serial Number	SN 03/15DIPG900-350
Product Condition (new / used)	Used

3 PRODUCT DESCRIPTION

3.1 GENERAL INFORMATION

MVG's COMOSAR Validation Dipoles are built in accordance to the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards. The product is designed for use with the COMOSAR test bench only.

Figure 1 – *MVG COMOSAR Validation Dipole*

4 MEASUREMENT METHOD

4.1 MECHANICAL REQUIREMENTS

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards specify the mechanical components and dimensions of the validation dipoles, with the dimension's frequency and phantom shell thickness dependent. The COMOSAR test bench employs a 2 mm phantom shell thickness therefore the dipoles sold for use with the COMOSAR test bench comply with the requirements set forth for a 2 mm phantom shell thickness. A direct method is used with a ISO17025 calibrated caliper.

4.2 S11 PARAMETER REQUIREMENTS

The dipole used for SAR system validation measurements and checks must have a S11 of -20 dB or better. The S11 measurement shall be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. A direct method is used with a network analyser and its calibration kit, both with a valid ISO17025 calibration.

4.3 SAR REQUIREMENTS

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards provide requirements for reference dipoles used for system validation measurements. The following measurements were performed to verify that the product complies with the fore-mentioned standards.

5 MEASUREMENT UNCERTAINTY

5.1 MECHANICAL DIMENSIONS

For the measurement in the range 0-300mm, the estimated expanded uncertainty (k=2) in calibration for the dimension measurement in mm is +/-0.20 mm with respect to measurement conditions.

For the measurement in the range 300-450mm, the estimated expanded uncertainty (k=2) in calibration for the dimension measurement in mm is +/-0.44 mm with respect to measurement conditions.

5.2 S11 PARAMETER

The estimated expanded uncertainty (k=2) in calibration for the S11 parameter in linear is +/-0.08 with respect to measurement conditions.

5.3 SAR

The guidelines outlined in the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards were followed to generate the measurement uncertainty for validation measurements.

The estimated expanded uncertainty (k=2) in calibration for the 1g and 10g SAR measurement in W/kg is +/-19% with respect to measurement conditions.

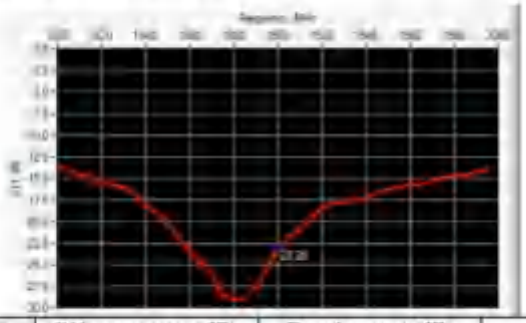
6 CALIBRATION RESULTS

6.1 MECHANICAL DIMENSIONS

L mm		h mm		d mm	
Measured	Required	Measured	Required	Measured	Required
-	68.00 +/- 2%	-	39.50 +/- 2%	-	3.60 +/- 2%

6.2 S11 PARAMETER

6.2.1 S11 parameter in Head Liquid



Frequency (MHz)	S11 parameter (dB)	Requirement (dB)	Impedance
1900	-23.28	-20	46.2Ω + 5.4jΩ

6.3 SAR

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards state that the system validation measurements must be performed using a reference dipole meeting the fore mentioned return loss and mechanical dimension requirements. The validation measurement must be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. Per the standards, the dipole shall be positioned below the bottom of the phantom, with the dipole length centered and parallel to the longest dimension of the flat phantom, with the top surface of the dipole at the described distance from the bottom surface of the phantom.

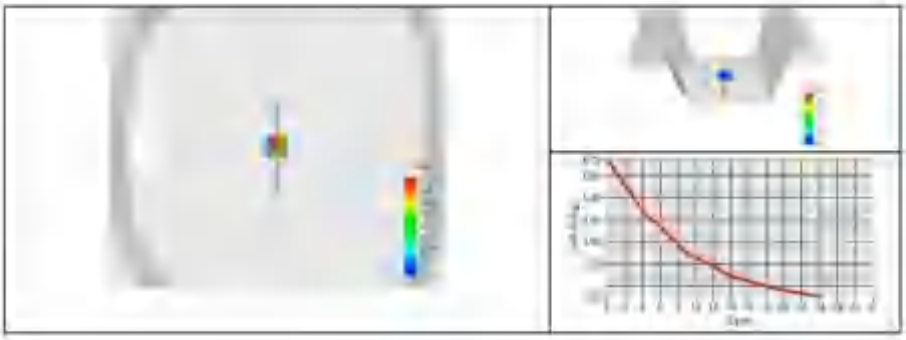
6.3.1 SAR with Head Liquid

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards state that the system validation measurements should produce the SAR values shown below (for phantom thickness of 2 mm), within the uncertainty for the system validation. All SAR values are normalized to 1 W forward power. In bracket, the measured SAR is given with the used input power

SAR REFERENCE DIPOLE CALIBRATION REPORT

Software	OPENSAR V5
Phantom	SN 13/09 SAM68
Probe	SN3523-EPGO-020
Liquid	Head Liquid Values: epsr - 42.5 sigma: 1.59
Distance between dipole center and liquid	10.0 mm
Area scan resolution	dx=8mm dy=8mm
Zoom Scan Resolution	dx=8mm dy=8mm dz=5mm
Frequency	1900 MHz
Input power	20 dBm
Liquid Temperature	20 +/- 1 °C
Lab Temperature	20 +/- 1 °C
Lab Humidity	30-70 %

Frequency	1g SAR (W/kg)			10g SAR (W/kg)		
	Measured	Measured normalized to 1W	Target normalized to 1W	Measured	Measured normalized to 1W	Target normalized to 1W
1900 MHz	3.97	39.69	39.70	2.09	20.92	20.50



7 LIST OF EQUIPMENT

Equipment Summary Sheet

Equipment Description	Manufacturer / Model	Identification No.	Current Calibration Date	Next Calibration Date
SAM Phantom	MVG	SN 13/09 SAM68	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	08/2021	08/2024
Network Analyzer – Calibration kit	Rohde & Schwarz ZV-Z235	101223	07/2022	07/2025
Calipers	Mitutoyo	SN 0009732	11/2022	11/2025
Reference Probe	MVG	SN 23/23-EPGO-429	11/2023	11/2024
Multimeter	Keithley 2000	4013982	02/2023	02/2026
Signal Generator	Rohde & Schwarz SMB	106589	03/2022	03/2025
Amplifier	MVG	MODU-023-C-0002	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Power Meter	NI-USB 5680	170100013	08/2021	08/2024
Power Meter	Keysight U2000A	SN: MY62040002	10/2022	10/2025
Directional Coupler	Krytar 158020	131467	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Temperature / Humidity Sensor	Testo 184 H1	44225320	06/2021	06/2024

SAR Reference Dipole Calibration Report

Ref : ACR.53.29.24.BHS.A

GUANGDONG ASIA HONGKE TEST TECHNOLOGY CO., LTD
NO.1/F,BUILDING B1, JUNFENG INDUSTRIAL PARK,
CHONGQING ROAD, HEPING COMMUNITY ,
FUHAIHAI STREET, BAO'AN DISTRICT,SHENZHEN,
GUANGDONG 518055, P.R.CHINA

MVG COMOSAR REFERENCE DIPOLE
FREQUENCY: 2450MHZ
SERIAL NO.: SN 03/15 DIP2G450-352

Calibrated at MVG
Z.I. de la pointe du diable
Technopôle Brest Iroise – 295 avenue Alexis de Rochon
29280 PLOUZANE - FRANCE

Calibration date: 02/21/2024

Summary:

This document presents the method and results from an accredited SAR reference dipole calibration performed at MVG using the COMOSAR test bench. All calibration results are traceable to national metrology institutions.

	Name	Function	Date	Signature
Prepared by:	[illegible]	Measurement Responsible	2/23/2024	
Checked & approved by:	[illegible]	Technical Manager	2/27/2024	
Authorized by:	Yann Toutain	Laboratory Director	2/27/2024	

Yann Toutain ID

	Customer Name
Distribution	Shenzhen Asia Hongke

Issue	Name	Date	Modification
A	[illegible]	2024-2-4	Initial release

TABLE OF CONTENTS

1 INTRODUCTION

This document contains a summary of the requirements set forth by the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards for reference dipoles used for SAR measurement system validations and the measurements that were performed to verify that the product complies with the first mentioned standards.

2 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR 2450 MHz REFERENCE DIPOLE
Manufacturer	MVG
Model	SID2450
Serial Number	SN 03/15DIP2G450-352
Product Condition (new / used)	Used

3 PRODUCT DESCRIPTION

3.1 GENERAL INFORMATION

MVG's COMOSAR Validation Dipoles are built in accordance to the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards. The product is designed for use with the COMOSAR test bench only.

Figure 1 – *MVG COMOSAR Validation Dipole*

4 MEASUREMENT METHOD

4.1 MECHANICAL REQUIREMENTS

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards specify the mechanical components and dimensions of the validation dipoles, with the dimension's frequency and phantom shell thickness dependent. The COMOSAR test bench employs a 2 mm phantom shell thickness therefore the dipoles sold for use with the COMOSAR test bench comply with the requirements set forth for a 2 mm phantom shell thickness. A direct method is used with a ISO17025 calibrated caliper.

4.2 S11 PARAMETER REQUIREMENTS

The dipole used for SAR system validation measurements and checks must have a S11 of -20 dB or better. The S11 measurement shall be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. A direct method is used with a network analyser and its calibration kit, both with a valid ISO17025 calibration.

4.3 SAR REQUIREMENTS

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards provide requirements for reference dipoles used for system validation measurements. The following measurements were performed to verify that the product complies with the fore-mentioned standards.

5 MEASUREMENT UNCERTAINTY

5.1 MECHANICAL DIMENSIONS

For the measurement in the range 0-300mm, the estimated expanded uncertainty (k=2) in calibration for the dimension measurement in mm is +/-0.20 mm with respect to measurement conditions.

For the measurement in the range 300-450mm, the estimated expanded uncertainty (k=2) in calibration for the dimension measurement in mm is +/-0.44 mm with respect to measurement conditions.

5.2 S11 PARAMETER

The estimated expanded uncertainty (k=2) in calibration for the S11 parameter in linear is +/-0.08 with respect to measurement conditions.

5.3 SAR

The guidelines outlined in the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards were followed to generate the measurement uncertainty for validation measurements.

The estimated expanded uncertainty (k=2) in calibration for the 1g and 10g SAR measurement in W/kg is +/-19% with respect to measurement conditions.

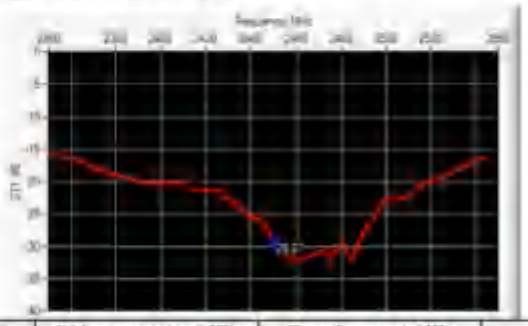
6 CALIBRATION RESULTS

6.1 MECHANICAL DIMENSIONS

L mm		h mm		d mm	
Measured	Required	Measured	Required	Measured	Required
-	51.50 +/- 2%	-	30.40 +/- 2%	-	3.60 +/- 2%

6.2 S11 PARAMETER

6.2.1 S11 parameter in Head Liquid



Frequency (MHz)	S11 parameter (dB)	Requirement (dB)	Impedance
2450	-29.27	-20	53.6Ω + 0.1jΩ

6.3 SAR

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards state that the system validation measurements must be performed using a reference dipole meeting the fore mentioned return loss and mechanical dimension requirements. The validation measurement must be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. Per the standards, the dipole shall be positioned below the bottom of the phantom, with the dipole length centered and parallel to the longest dimension of the flat phantom, with the top surface of the dipole at the described distance from the bottom surface of the phantom.

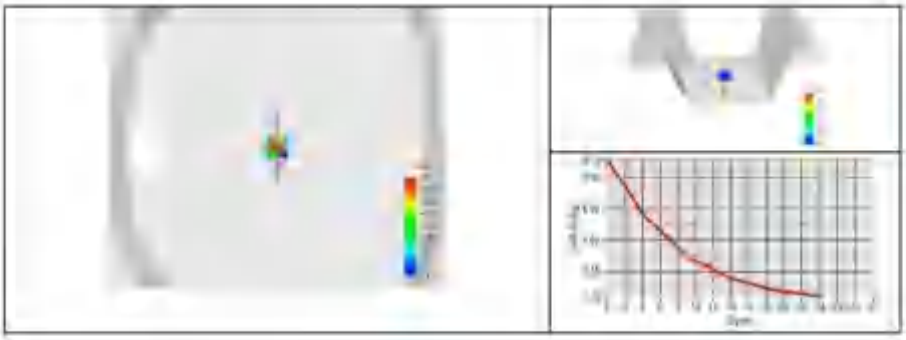
6.3.1 SAR with Head Liquid

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards state that the system validation measurements should produce the SAR values shown below (for phantom thickness of 2 mm), within the uncertainty for the system validation. All SAR values are normalized to 1 W forward power. In bracket, the measured SAR is given with the used input power

SAR REFERENCE DIPOLE CALIBRATION REPORT

Software	OPENSAR V5
Phantom	SN 13/09 SAM68
Probe	SN23-EPGO-420
Liquid	Head Liquid Values: epsr - 42.1 sigma - 1.83
Distance between dipole center and liquid	10.0 mm
Area scan resolution	dx=8mm dy=8mm
Zoom Scan Resolution	dx=5mm dy=5mm dz=5mm
Frequency	2450 MHz
Input power	20 dBm
Liquid Temperature	20 +/- 1 °C
Lab Temperature	20 +/- 1 °C
Lab Humidity	30-70 %

Frequency	1g SAR (W/kg)			10g SAR (W/kg)		
	Measured	Measured normalized to 1W	Target normalized to 1W	Measured	Measured normalized to 1W	Target normalized to 1W
2450 MHz	5.00	50.05	52.40	2.38	23.80	24.00



7 LIST OF EQUIPMENT

Equipment Summary Sheet

Equipment Description	Manufacturer / Model	Identification No.	Current Calibration Date	Next Calibration Date
SAM Phantom	MVG	SN 13/09 SAM68	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	08/2021	08/2024
Network Analyzer – Calibration kit	Rohde & Schwarz ZV-Z235	101223	07/2022	07/2025
Calipers	Mitutoyo	SN 0009732	11/2022	11/2025
Reference Probe	MVG	3523-EPGO-429	11/2023	11/2024
Multimeter	Keithley 2000	4013982	02/2023	02/2026
Signal Generator	Rohde & Schwarz SMB	106589	03/2022	03/2025
Amplifier	MVG	MODU-023-C-0002	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Power Meter	NI-USB 5680	170100013	08/2021	08/2024
Power Meter	Keysight U2000A	SN: MY62040002	10/2022	10/2025
Directional Coupler	Krytar 158020	131467	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Temperature / Humidity Sensor	Testo 184 H1	44225320	06/2021	06/2024

SAR Reference Dipole Calibration Report

Ref : ACR.53.30.24.BHS.A

GUANGDONG ASIA HONGKE TEST TECHNOLOGY CO., LTD
NO.1/F,BUILDING B1, JUNFENG INDUSTRIAL PARK, CHONGQING ROAD, HEPING COMMUNITY , FUHAIHA1 STREET, BAO'AN DISTRICT,SHENZHEN, GUANGDONG 518055, P.R.CHINA

MVG COMOSAR REFERENCE DIPOLE
FREQUENCY: 2600MHZ.
SERIAL NO.: SN 03/15 DIP2G600-356

Calibrated at MVG
Z.I. de la pointe du diable
Technopôle Brest Iroise – 295 avenue Alexis de Rochon
29280 PLOUZANE - FRANCE

Calibration date: 02/21/2024

Summary:

This document presents the method and results from an accredited SAR reference dipole calibration performed at MVG using the COMOSAR test bench. All calibration results are traceable to national metrology institutions.

	Name	Function	Date	Signature
Prepared by:	[illegible]	Measurement Responsible	2/22/2024	[illegible]
Checked & approved by:	Jérôme Luc	Technical Manager	2/22/2024	[illegible]
Authorized by:	Yann Toutain	Laboratory Director	2/27/2024	[illegible]

Yann Toutain ID [illegible]

	Customer Name
Distribution :	Shenzhen Axia Umpeke

Issue	Name	Date	Modifications
A	Pedro [illegible]	2/22/2024	Initial release

TABLE OF CONTENTS

1 INTRODUCTION

This document contains a summary of the requirements set forth by the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards for reference dipoles used for SAR measurement system validations and the measurements that were performed to verify that the product complies with the first mentioned standards.

2 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR 2600 MHz REFERENCE DIPOLE
Manufacturer	MVG
Model	SID2600
Serial Number	SN 03/15DIP2G600-356
Product Condition (new / used)	Used

3 PRODUCT DESCRIPTION

3.1 GENERAL INFORMATION

MVG's COMOSAR Validation Dipoles are built in accordance to the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards. The product is designed for use with the COMOSAR test bench only.

Figure 1 – *MVG COMOSAR Validation Dipole*

4 MEASUREMENT METHOD

4.1 MECHANICAL REQUIREMENTS

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards specify the mechanical components and dimensions of the validation dipoles, with the dimension's frequency and phantom shell thickness dependent. The COMOSAR test bench employs a 2 mm phantom shell thickness therefore the dipoles sold for use with the COMOSAR test bench comply with the requirements set forth for a 2 mm phantom shell thickness. A direct method is used with a ISO17025 calibrated caliper.

4.2 S11 PARAMETER REQUIREMENTS

The dipole used for SAR system validation measurements and checks must have a S11 of -20 dB or better. The S11 measurement shall be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. A direct method is used with a network analyser and its calibration kit, both with a valid ISO17025 calibration.

4.3 SAR REQUIREMENTS

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards provide requirements for reference dipoles used for system validation measurements. The following measurements were performed to verify that the product complies with the fore-mentioned standards.

5 MEASUREMENT UNCERTAINTY

5.1 MECHANICAL DIMENSIONS

For the measurement in the range 0-300mm, the estimated expanded uncertainty (k=2) in calibration for the dimension measurement in mm is +/-0.20 mm with respect to measurement conditions.

For the measurement in the range 300-450mm, the estimated expanded uncertainty (k=2) in calibration for the dimension measurement in mm is +/-0.44 mm with respect to measurement conditions.

5.2 S11 PARAMETER

The estimated expanded uncertainty (k=2) in calibration for the S11 parameter in linear is +/-0.08 with respect to measurement conditions.

5.3 SAR

The guidelines outlined in the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards were followed to generate the measurement uncertainty for validation measurements.

The estimated expanded uncertainty (k=2) in calibration for the 1g and 10g SAR measurement in W/kg is +/-19% with respect to measurement conditions.

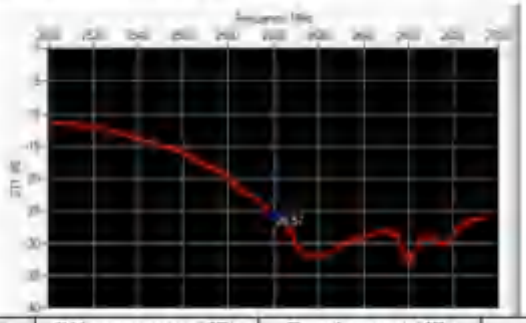
6 CALIBRATION RESULTS

6.1 MECHANICAL DIMENSIONS

L mm		h mm		d mm	
Measured	Required	Measured	Required	Measured	Required
-	48.50 +/- 2%	-	28.80 +/- 2%	-	3.60 +/- 2%

6.2 S11 PARAMETER

6.2.1 S11 parameter in Head Liquid



Frequency (MHz)	S11 parameter (dB)	Requirement (dB)	Impedance
2600	-25.57	-20	54.5Ω - 3.2jΩ

6.3 SAR

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards state that the system validation measurements must be performed using a reference dipole meeting the fore mentioned return loss and mechanical dimension requirements. The validation measurement must be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. Per the standards, the dipole shall be positioned below the bottom of the phantom, with the dipole length centered and parallel to the longest dimension of the flat phantom, with the top surface of the dipole at the described distance from the bottom surface of the phantom.

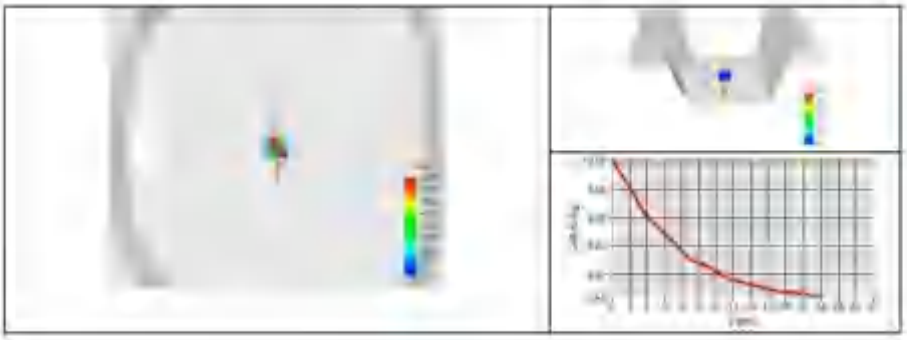
6.3.1 SAR with Head Liquid

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards state that the system validation measurements should produce the SAR values shown below (for phantom thickness of 2 mm), within the uncertainty for the system validation. All SAR values are normalized to 1 W forward power. In bracket, the measured SAR is given with the used input power.

SAR REFERENCE DIPOLE CALIBRATION REPORT

Software	OPENSAR V5
Phantom	SN 13/09 SAM68
Probe	SN3523-EPGO-420
Liquid	Head Liquid Values: epsr= 40.5 sigma= 1.95
Distance between dipole center and liquid	10.0 mm
Area scan resolution	dx=8mm dy=8mm
Zoom Scan Resolution	dx=5mm dy=5mm dz=5mm
Frequency	2600 MHz
Input power	20 dBm
Liquid Temperature	20 +/- 1 °C
Lab Temperature	20 +/- 1 °C
Lab Humidity	30-70 %

Frequency	1g SAR (W/kg)			10g SAR (W/kg)		
	Measured	Measured normalized to 1W	Target normalized to 1W	Measured	Measured normalized to 1W	Target normalized to 1W
2600 MHz	5.42	54.16	55.30	2.49	24.85	24.61



7 LIST OF EQUIPMENT

Equipment Summary Sheet				
Equipment Description	Manufacturer / Model	Identification No.	Current Calibration Date	Next Calibration Date
SAM Phantom	MVG	SN 13/09 SAM66	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	100885	08/2021	08/2024
Network Analyzer – Calibration kit	Rohde & Schwarz ZV-Z235	101221	07/2022	07/2025
Calipers	Mitutoyo	SN 0009732	11/2022	11/2025
Reference Probe	MVG	SSS-EPGO-428	11/2020	11/2024
Multimeter	Keithley 2000	4013982	02/2023	02/2026
Signal Generator	Rohde & Schwarz SMB	108586	03/2022	03/2025
Amplifier	MVG	MODU-023-C-0002	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Power Meter	NI-USB 5680	17010013	06/2021	06/2024
Power Meter	Keysight U2000A	SN: MY62340002	10/2022	10/2025
Directional Coupler	Krytar 158020	131467	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Temperature / Humidity Sensor	Testo 184 H1	44225320	06/2021	06/2024

SAR Reference Waveguide Calibration Report

Ref: ACR.33.31.24.BFS.A

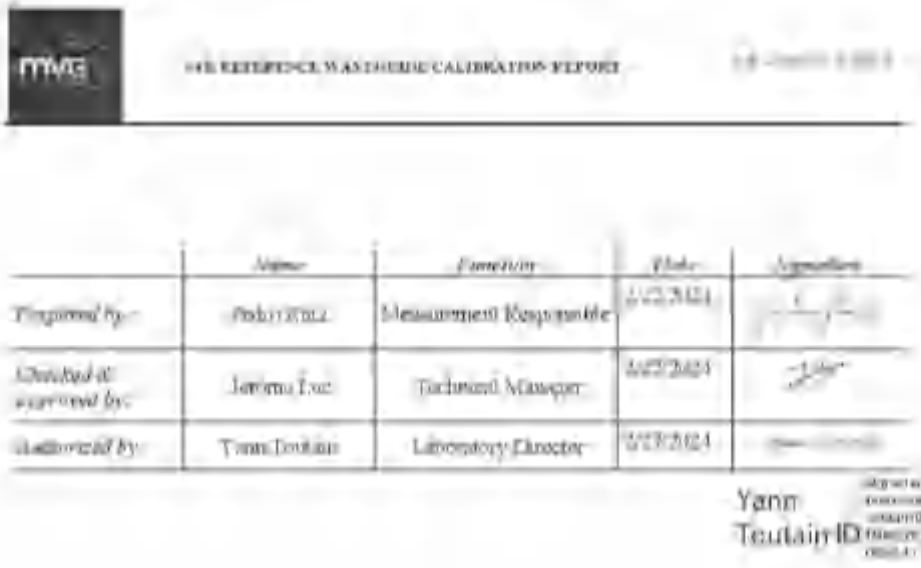
GUANGDONG ASIA HONGKE TEST TECHNOLOGY CO., LTD
NO.1/F,BUILDING B1, JUNFENG INDUSTRIAL PARK, CHONGQING ROAD, HEPING COMMUNITY , FUHAIHAI STREET, BAO'AN DISTRICT,SHENZHEN, GUANGDONG 518055, P.R.CHINA
MVG COMOSAR REFERENCE WAVEGUIDE
FREQUENCY: 5000-6000 MHZ
SERIAL NO.: SN 13/14 WGA33

Calibrated at MVG
Z.I. de la pointe du diable
Technopôle Brest Iroise—295 avenue Alexis de Rochon
29280 PLOUZANE - FRANCE

Calibration date: 02/21/2024

Summary:

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



	Name	Function	Date	Signature
Prepared by:	[illegible]	Measurement Responsible	[illegible]	[illegible]
Checked & approved by:	Jerome Luc	Technical Manager	[illegible]	[illegible]
Authorized by:	Yann Teutain ID	Laboratory Director	[illegible]	[illegible]

Yann Teutain ID

	Customer Name
Distribution :	Shenzhen Asiu Honeke

Issue	Name	Date	Modifications
A	Peiluo Sang	2024	Initial release

TABLE OF CONTENTS

1 INTRODUCTION

This document contains a summary of the requirements set forth by the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards for reference waveguides used for SAR measurement system validations and the measurements that were performed to verify that the product complies with the fore mentioned standards.

2 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR 5000-6000 MHz REFERENCE WAVEGUIDE
Manufacturer	MVG
Model	SWG5500
Serial Number	SN 13/14 WGA 33
Product Condition (new / used)	Used

3 PRODUCT DESCRIPTION

3.1 GENERAL INFORMATION

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

4 MEASUREMENT METHOD

4.1 MECHANICAL REQUIREMENTS

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards specify the mechanical components and dimensions of the validation dipoles, with the dimension's frequency and phantom shell thickness dependent. The COMOSAR test bench employs a 2 mm phantom shell thickness therefore the dipoles sold for use with the COMOSAR test bench comply with the requirements set forth for a 2 mm phantom shell thickness. A direct method is used with a ISO17025 calibrated caliper.

4.2 S11 PARAMETER REQUIREMENTS

The dipole used for SAR system validation measurements and checks must have a S11 of -8 dB or better. The S11 measurement shall be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. A direct method is used with a network analyser and its calibration kit, both with a valid ISO17025 calibration.

4.3 SAR REQUIREMENTS

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards provide requirements for reference dipoles used for system validation measurements. The following measurements were performed to verify that the product complies with the fore-mentioned standards.

5 MEASUREMENT UNCERTAINTY

5.1 MECHANICAL DIMENSIONS

The estimated expanded uncertainty (k=2) in calibration for the dimension measurement in mm is +/- 0.20 mm with respect to measurement conditions.

5.2 S11 PARAMETER

The estimated expanded uncertainty (k=2) in calibration for the S11 parameter in linear is +/-0.08 with respect to measurement conditions.

5.3 SAR

The guidelines outlined in the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards were followed to generate the measurement uncertainty for validation measurements.

The estimated expanded uncertainty (k=2) in calibration for the 1g and 10g SAR measurement in W/kg is +/-19% with respect to measurement conditions.

6 CALIBRATION RESULTS

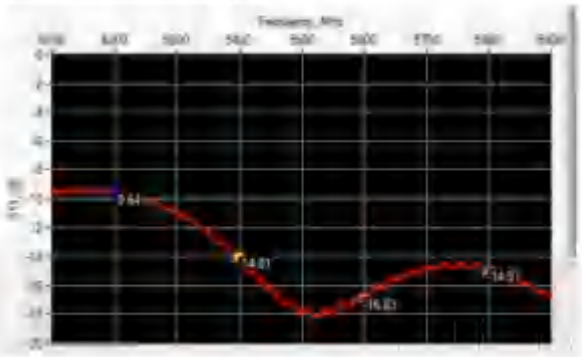
6.1 MECHANICAL DIMENSIONS

Frequency (MHz)	L (mm)		W (mm)		Lr (mm)		Wr (mm)	
	Required	Measured	Required	Measured	Required	Measured	Required	Measured
5800	40.39 ± 0.13	-	20.19 ± 0.13	-	81.03 ± 0.13	-	61.98 ± 0.13	-

Figure 1: Validation Waveguide Dimensions

6.2 S11 PARAMETER

6.2.1 S11 parameter In Head Liquid



Frequency (MHz)	S11 parameter (dB)	Requirement (dB)	Impedance
5200	-9.64	-8	25.80 Ω - 6.58 jΩ
5400	-14.01	-8	51.53 Ω + 20.60 jΩ
5600	-16.83	-8	44.12 Ω - 12.35 jΩ
5800	-14.91	-8	38.53 Ω + 11.21 jΩ

6.3 SAR

The IEC/IEEE 62209-1528 and FCC KDB865661 D01 standards state that the system validation measurements must be performed using a reference waveguide meeting the first mentioned return loss and mechanical dimension requirements. The validation measurement must be performed with the matching layer placed in the open end of the waveguide, with the waveguide and matching layer in direct contact with the phantom shell.

6.3.1 SAR With Head Liquid

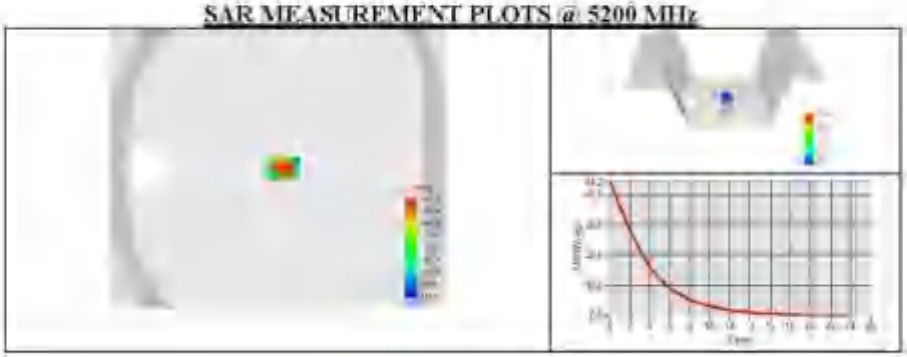
At those frequencies, the target SAR value can not be generic. Hereunder is the target SAR value defined by MVG, within the uncertainty for the system validation. All SAR values are normalized to 1 W net power. In bracket, the measured SAR is given with the used input power.

SAR REFERENCE WAVEGUIDE CALIBRATION REPORT

Software	OPENSAR V5
Phantom	SN 13/09 SAM68
Probe	3523-EPGO-420
Liquid	Head Liquid Values 5200 MHz: eps': 34.16 sigma : 4.42 Head Liquid Values 5400 MHz: eps': 35.63 sigma : 4.64 Head Liquid Values 5600 MHz: eps': 33.12 sigma : 4.87 Head Liquid Values 5800 MHz: eps': 32.57 sigma : 5.12
Distance between dipole waveguide and liquid	0 mm
Area scan resolution	dx=8mm dy=8mm
Zoom Scan Resolution	dx=4mm dy=4m dz=2mm
Frequency	5200 MHz 5400 MHz 5600 MHz 5800 MHz
Input power	20 dBm
Liquid Temperature	20 +/- 1 °C
Lab Temperature	20 +/- 1 °C
Lab Humidity	30-70 %

Frequency (MHz)	1 g SAR (W/kg)			10 g SAR (W/kg)		
	Measured	Measured normalized to 1W	Target normalized to 1W	Measured	Measured normalized to 1W	Target normalized to 1W
5200	16.26	162.59	159.00	5.62	56.21	56.90
5400	15.98	159.81	166.40	5.50	55.00	58.43
5600	17.91	179.15	173.80	6.10	61.01	59.97
5800	18.22	182.20	181.20	6.13	61.32	61.50

SAR MEASUREMENT PLOTS @ 5200 MHz



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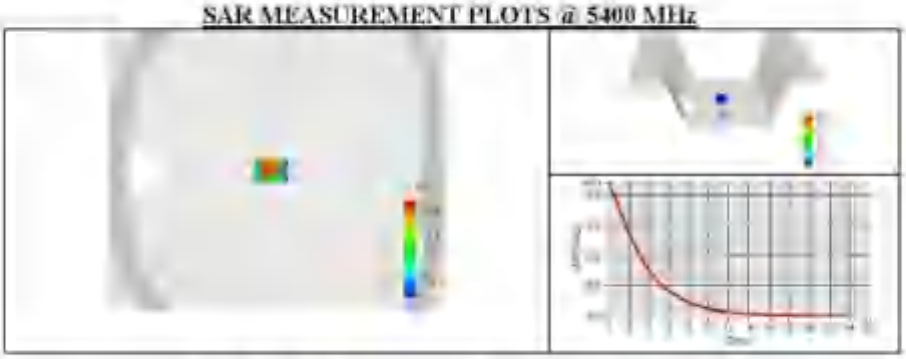
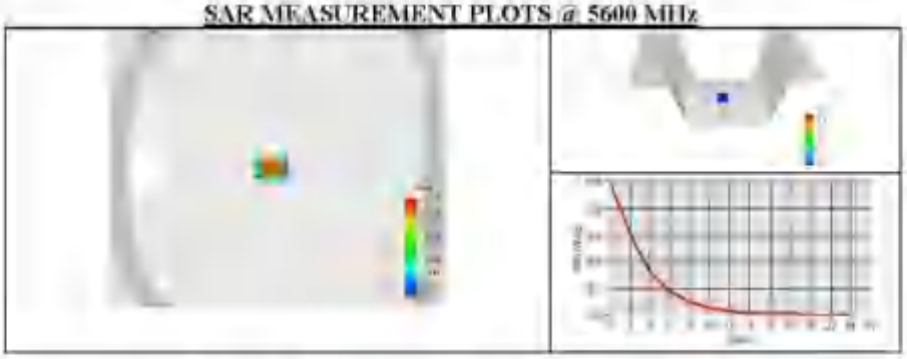
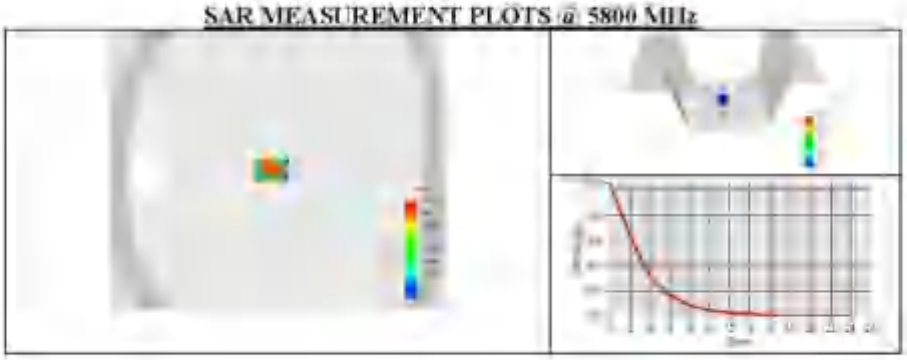
SAR MEASUREMENT PLOTS @ 5400 MHz



SAR MEASUREMENT PLOTS @ 5600 MHz



SAR MEASUREMENT PLOTS @ 5800 MHz



7 LIST OF EQUIPMENT

Equipment Summary Sheet

Equipment Description	Manufacturer / Model	Identification No.	Current Calibration Date	Next Calibration Date
SAM Phantom	MVG	SN 13/09 SAM68	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	08/2021	08/2024
Network Analyzer – Calibration kit	Rohde & Schwarz ZV-Z235	101223	07/2022	07/2025
Calipers	Mitutoyo	SN 0009732	11/2022	11/2025
Reference Probe	MVG	3623-EPGO-431	11/2023	11/2024
Multimeter	Keithley 2000	4013982	02/2023	02/2026
Signal Generator	Rohde & Schwarz SMB	106589	03/2022	03/2025
Amplifier	MVG	MODU-023-C-0002	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Power Meter	NI-USB 5680	170100013	06/2021	06/2024
Power Meter	Keysight U2000A	SN: MY62340002	10/2022	10/2025
Directional Coupler	Krytar 15i020	131467	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Temperature / Humidity Sensor	Testo 184 H1	44225320	06/2021	06/2024

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※※END OF THE REPORT※※