TEST REPORT

Applicant:	Ningbo Sunvot Technology Co., Ltd
Address:	Building 4, NO.79 Weisan Road, Beilun Xiaogang, Ningbo, Zhejiang
Equipment Type:	4G MiFi
Model Name:	LF300
Brand Name:	Inadria
FCC ID:	2AZGN-LF300-202302
Test Standard:	FCC 47 CFR Part 2.1093 (refer section 3.1)
Maximum SAR:	Hotspot (1 g@10mm): 1.05 W/kg
Sample Arrival Date:	Jan. 17, 2023
Test Date:	Mar. 06, 2023 – Mar. 07, 2023
Date of Issue:	Mar. 09, 2023

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Xiong Lining **Checked by:** Xu Rui **Approved by:** Tolan Tu

（Testing Director）

Revision History

Version	Issue Date	Revisions Content
Rev. 01	Mar. 07, 2023	Initial Issue
Rev. 02	Mar. 09, 2023	Update TEST EXCLUSION CONSIDERATION data in section 9.

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1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100

1.2 Test Location

Name	Shenzhen BALUN Technology Co., Ltd.
Location	☑ Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	☐ 1/F, Building B, Ganghongji High-tech Intelligent Industrial Park, No. 1008, Songbai Road, Yangguang Community, Xili Sub-district, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196.

1.3 Test Environment Condition

Ambient Temperature	18℃ to 25℃
Ambient Relative Humidity	30% to 70%

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Ningbo Sunvot Technology Co., Ltd
Address	Building 4, NO.79 Weisan Road, Beilun Xiaogang, Ningbo, Zhejiang

2.2 Manufacturer Information

Manufacturer	N/A
Address	N/A

2.3 Factory Information

Factory	N/A
Address	N/A

2.4 General Description for Equipment under Test (EUT)

EUT Name	4G MiFi
Model Name Under Test	LF300
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	N/A
Software Version	N/A
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.5 Ancillary Equipment

Ancillary Equipment 1	Battery	
	Brand Name	Beiruite
	Model No.	T2500
	Serial No.	N/A
	Capacity	2500 mAh
	Rated Voltage	3.7 V
	Limit Charge Voltage	4.2 V

2.6 Technical Information

Network and Wireless connectivity	3G Network WCDMA/HSDPA/HSUPA Band 5 4G Network FDD LTE Band 5/7 WIFI 802.11b, 802.11g, 802.11n

The requirement for the following technical information of the EUT was tested in this report:

Operating Mode	WCDMA, LTE, 2.4G WLAN		
Frequency Range	WCDMA Band 5	TX: 824 ~ 849 MHz	RX: 869 ~ 894 MHz
	LTE Band 5	TX: 824 ~ 849 MHz	RX: 869 ~ 894 MHz
	LTE Band 7	TX: 2500 ~ 2570 MHz	RX: 2620 ~ 2690 MHz
	802.11b/g /n(HT20/HT40)	2412 ~ 2462 MHz	
Antenna Type	WWAN: PIFA Antenna WLAN: PIFA Antenna		
DTM	N/A		
Hotspot Function	Support		
Power Reduction	Support		
Exposure Category	General Population/Uncontrolled exposure		
EUT Type	Portable Device		
Product Type	☒ Production unit	☐ Identical prototype	

3 SUMMARY OF TEST RESULT

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 2.1093	Radiofrequency radiation exposure evaluation: portable devices
2	ANSI C95.1-1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
3	KDB 447498 D04 v01	447498 D04 Interim General RF Exposure Guidance v01
4	KDB 941225 D01 v03r01	3G SAR MEAUREMENT PROCEDURES
5	KDB 941225 D05 v02r05	SAR Evaluation Considerations for LTE Devices
6	KDB 941225 D06 v02r01	SAR EVALUATION PROCEDURES FOR PORTABLE DEVICES WITH WIRELESS ROUTER CAPABILITIES
7	KDB 865664 D01 v01r04	SAR Measurement 100 MHz to 6 GHz
8	KDB 865664 D02 v01r02	RF Exposure Reporting
9	KDB 248227 D01 v02r02	SAR GUIDANCE FOR IEEE 802.11 (Wi-Fi) TRANSMITTERS

3.2 Device Category and SAR Limit

This device belongs to portable device category because its radiating structure is allowed to be used within 20 centimeters of the body of the user.

Limit for General Population/Uncontrolled exposure should be applied for this device, it is 1.6 W/kg as averaged over any 1 gram of tissue.

Table of Exposure Limits:

Body Position	SAR Value (W/Kg)	
	General Population/ Uncontrolled Exposure	Occupational/ ControlledExposure
Whole-Body SAR (averaged over the entire body)	0.08	0.4
Partial-Body SAR (averaged over any 1 gram of tissue)	1.60	8.0
SAR for hands, wrists, feet and ankles (averaged over any 10 grams of tissue)	4.0	20.0

NOTE:

General Population/Uncontrolled Exposure: Locations where there is the exposure of individuals who have no knowledge or control of their exposure. General population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

Occupational/Controlled Exposure: Locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

3.3 Test Result Summary

3.3.1 Highest SAR Values

Equipment Class	Band	Maximum Scaled SAR (W/kg)	Maximum Report SAR (W/kg)
		Hotspot (10mm)	Hotspot (10mm)
		1g SAR	1g SAR
PCE	WCDMA Band 5	0.93	1.05
	LTE Band 5	1.05	
	LTE Band 7	0.64	
DTS	2.4G WLAN	0.03	
Limit (W/kg)		1.6	1.6
Verdict		PASS	

3.3.2 Highest Simultaneous Transmission SAR Values

Equipment Class	Maximum Scaled SAR (W/kg)
	Hotspot (10mm)
PCE	1.08
DTS	1.08
Limit (W/Kg)	1.60
Verdict	Pass
Note: The highest simultaneous SAR please refer section 12.2	

3.4 Test Uncertainty

According to KDB 865664 D01, When the highest measured 1 g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis is not required in SAR reports submitted for equipment approval.

The maximum 1 g SAR for the EUT in this report is 1.05 W/kg, which is lower than 1.5 W/kg, so the extensive SAR measurement uncertainty analysis is not required in this report.

4 MEASUREMENT SYSTEM

4.1 Specific Absorption Rate (SAR) Definition

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

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

$$\mathbf{SAR} = \frac{d}{\mathrm{dt}}\left(\frac{d\mathrm{W}}{\mathrm{dm}}\right) = \frac{d}{\mathrm{dt}}\left(\frac{d\mathrm{W}}{\rho \mathrm{dv}}\right)$$

SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

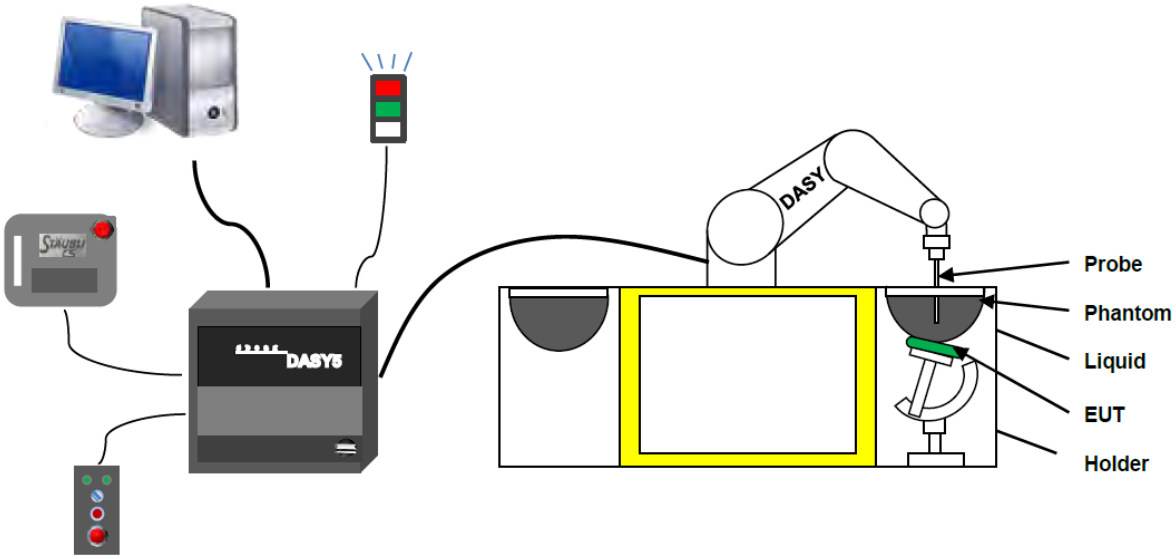
$$\mathbf{SAR} = \frac{\sigma \mathrm{E}^2}{\rho}$$

Where: σ is the conductivity of the tissue,

ρ is the mass density of the tissue and E is the RMS electrical field strength.

4.2 DASY SAR System

4.2.1 DASY SAR System Diagram



The DASY5 system for performing compliance tests consists of the following items:

1. A standard high precision 6-axis robot (Stäubli RX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).
2. A dosimetric probe, i.e. an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
3. A data acquisition electronic (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
4. A unit to operate the optical surface detector which is connected to the EOC.
5. The Electro-Optical Coupler (EOC) performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the DASY5 measurement server.
6. The DASY5 measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation.
7. DASY5 software and SEMCAD data evaluation software.
8. Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.
9. The generic twin phantom enabling the testing of left-hand and right-hand usage.
10. The device holder for handheld mobile phones.
11. Tissue simulating liquid mixed according to the given recipes.
12. System validation dipoles allowing to validate the proper functioning of the system.

4.2.2 Robot

The Dasy SAR system uses the high precision robots. Symmetrical design with triangular core Built-in optical fiber for surface detection system For the 6-axis controller system, Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents). The robot series have many features that are important for our application:

- High precision
  (repeatability ±0.02 mm)
- High reliability
  (industrial design)
- Low maintenance costs
  (virtually maintenance free due to direct drive gears; no belt drives)
- Jerk-free straight movements
  (brush less synchron motors; no stepper motors)
- Low ELF interference
  (motor control _elds shielded via the closed metallic construction shields)

4.2.3 E-Field Probe

The probe is specially designed and calibrated for use in liquids with high permittivities for the measurements the Specific Dosimetric E-Field Probe EX3DV4-SN: 7607 with following specifications is used.

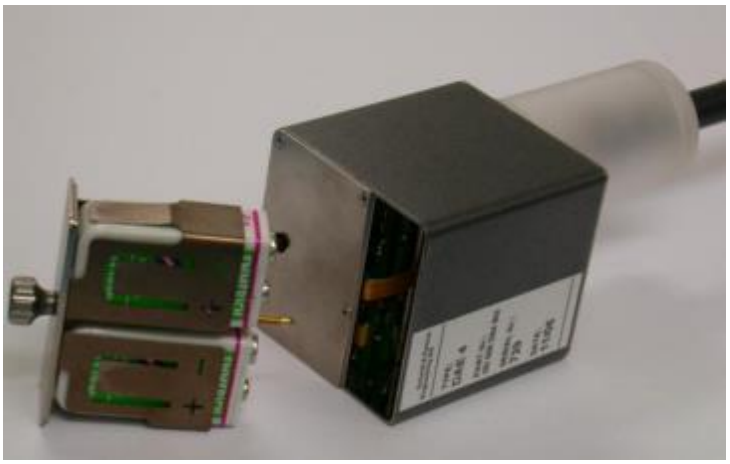
Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection systemBuilt-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., glycolether)
Calibration	ISO/IEC 17025 calibration service available
Frequency	10 MHz to 6 GHz; Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.2 dB in HSL (rotation around probe axis) ; ± 0.4 dB in HSL (rotation normal to probe axis)
Dynamic range	5 μW/g to > 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 337 mm (Tip: 9 mm) Tip diameter: 2.5 mm (Body: 10 mm) Distance from probe tip to dipole centers: 1.0 mm
Application	General dosimetry up to 3 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms (EX3DV4)

E-Field Probe Calibration Process

Probe calibration is realized, in compliance with CENELEC EN 62209-1/-2 and IEEE 1528 std, with CALISAR, Antennessa proprietary calibration system. The calibration is performed with the EN 62209-1/2 annexe technique using reference guide at the five frequencies.

4.2.4 Data Acquisition Electronics

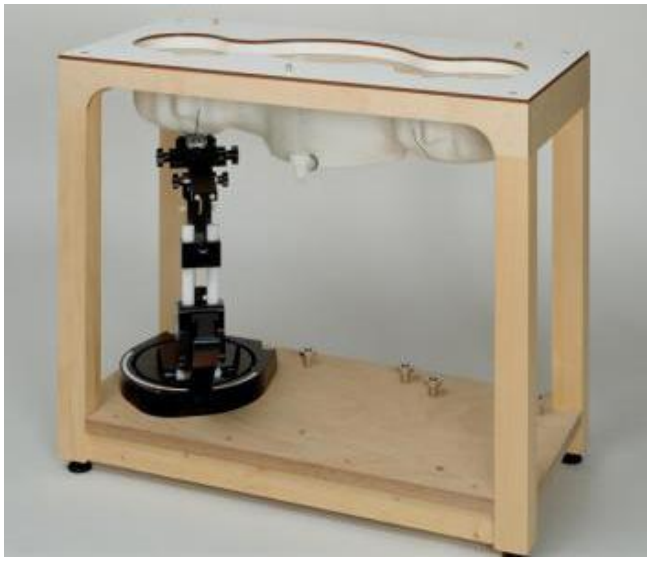
The data acquisition electronics (DAE) consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converte and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information, as well as an optical uplink for commands and the clock.



- Input Impedance: 200MOhm
- The Inputs: Symmetrical and Floating
- Commom Mode Rejection: Above 80dB

4.2.5 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.



- Left hand
- Right hand
- Flat phantom

Photo of Phantom SN1012

Serial Number	Material	Length	Height
SN 1012 SAM1	Vinylester, glass fiber reinforced	1000	500

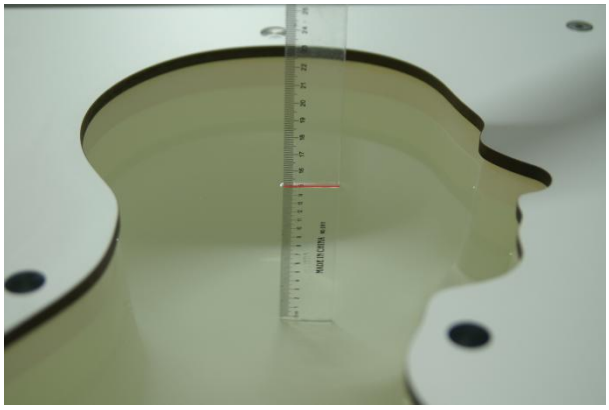
4.2.6 Device Holder

The DASY5 device holder has two scales for device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The plane between the ear openings and the mouth tip has a rotation angle of 65°. The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. This device holder is used for standard mobile phones or PDA"s only. If necessary an additional support of polystyrene material is used. Larger DUT"s (e.g. notebooks) cannot be tested using this device holder. Instead a support of bigger polystyrene cubes and thin polystyrene plates is used to position the DUT in all relevant positions to find and measure spots with maximum SAR values. Therefore those devices are normally only tested at the flat part of the SAM.

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

4.2.7 Simulating Liquid

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15 cm. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm. The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 5%.

Head Liquid Depth	Body Liquid Depth
	

The following table gives the recipes for tissue simulating liquid and the theoretical Conductivity/Permittivity.

Head (Reference IEEE1528)								
Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity σ (S/m)	Permittivity ε
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.4	40.0
2450	55.0	0	0	0.1	0	44.9	1.80	39.2
2600	54.9	0	0	0.1	0	45.0	1.96	39.0
Frequency (MHz)	Water (%)	Hexyl Carbitol (%)			Triton X-100 (%)		Conductivity σ (S/m)	Permittivity ε
5200	62.52	17.24			17.24		4.66	36.0
5800	62.52	17.24			17.24		5.27	35.3
Body (From instrument manufacturer)								
Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity σ (S/m)	Permittivity ε
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
900	50.8	48.2	0	0.9	0.1	0	1.05	55.0
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0.1	0	31.3	1.95	52.7
2600	68.2	0	0	0.1	0	31.7	2.16	52.5
Frequency(MHz)	Water	DGBE			Salt		Conductivity	Permittivity

		(%)	(%)	σ (S/m)	ε
5200	78.60	21.40	/	5.54	47.86
5800	78.50	21.40	0.1	6.0	48.20

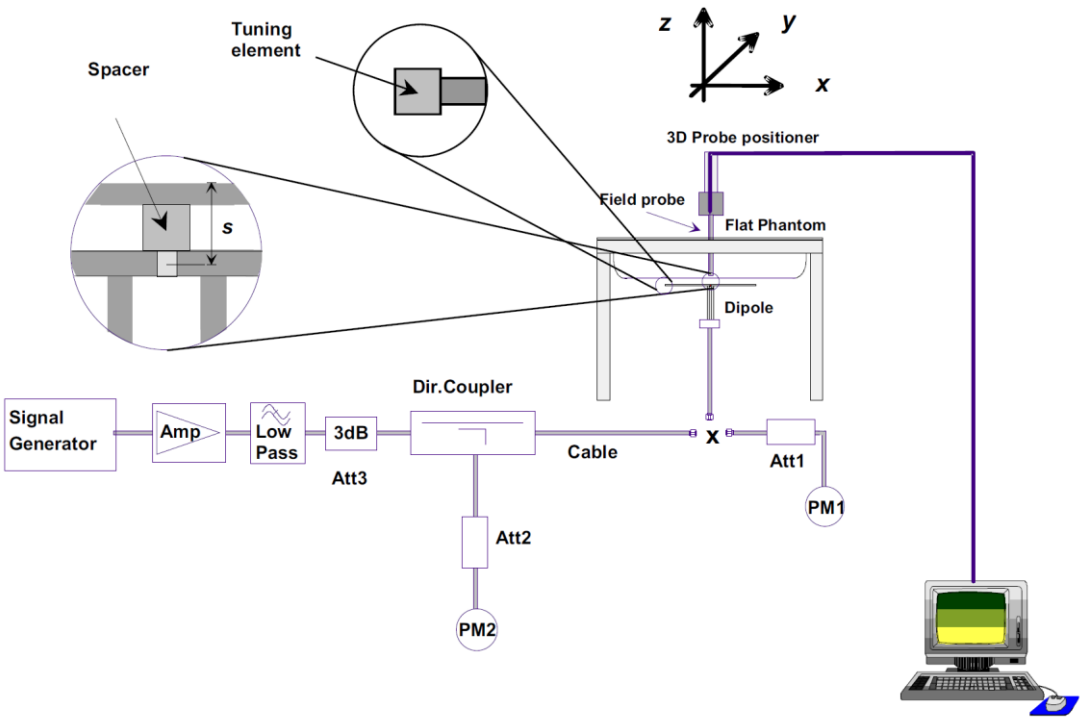
5 SYSTEM VERIFICATION

5.1 Purpose of System Check

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results. The system performance check uses normal SAR measurements in a simplified setup with a well characterized source.This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

5.2 System Check Setup

In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The equipment setup is shown below:

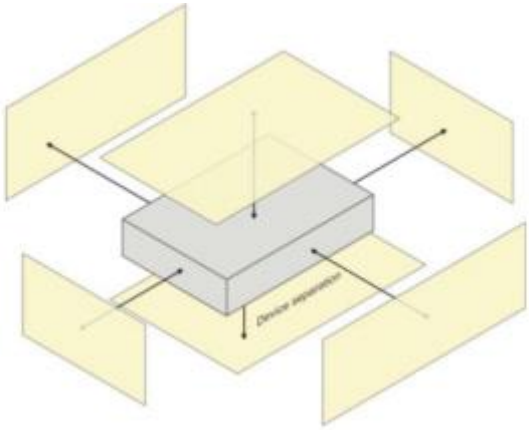


6 TEST POSITION CONFIGURATIONS

According to KDB 648474 D04 Handset, handsets are tested for SAR compliance in head, body-worn accessory and other use configurations described in the following subsections.

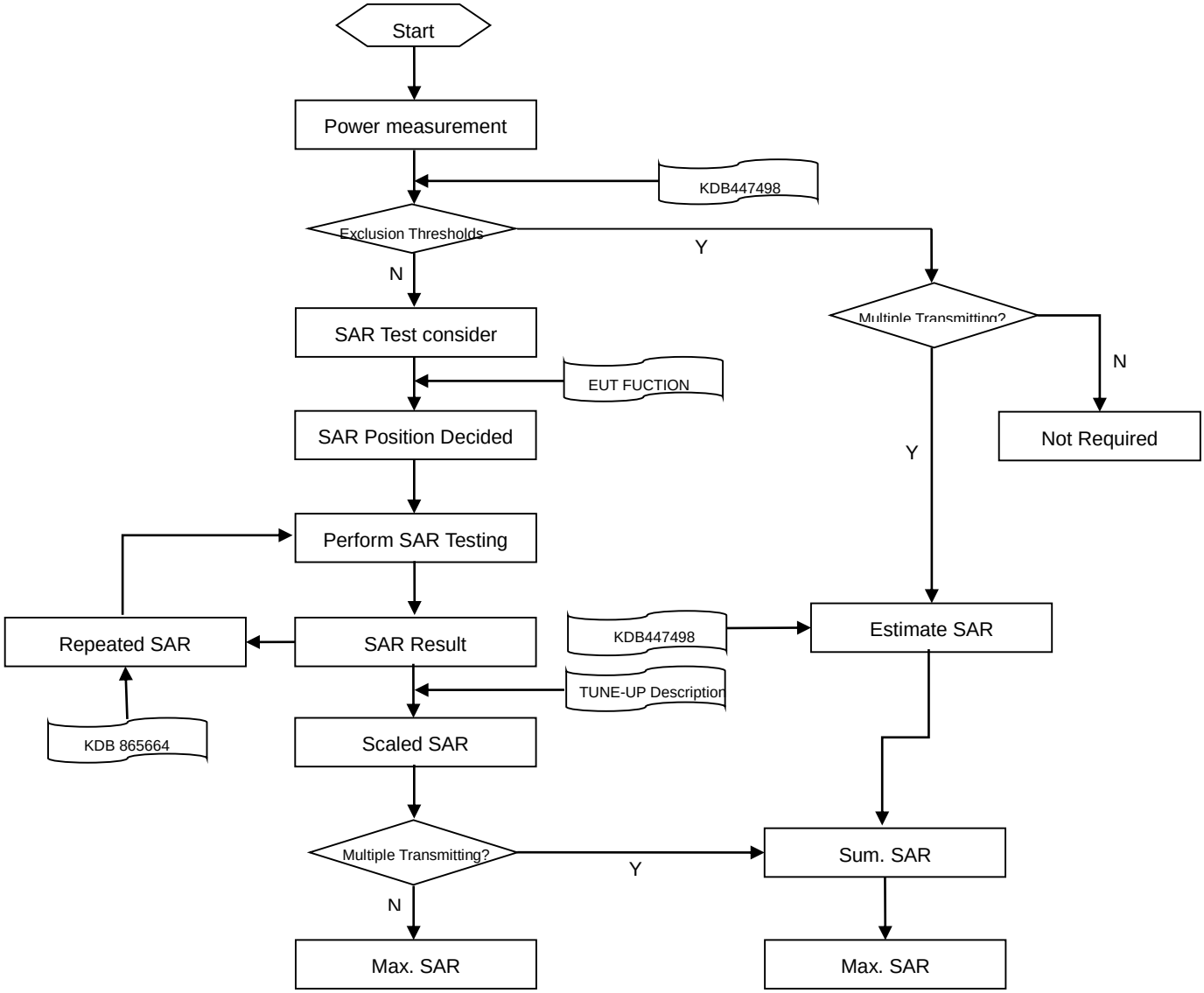
6.1 Hotspot Mode Exposure Position Conditions

For handsets that support hotspot mode operations, with wireless router capabilities and various web browsing functions, the relevant hand and body exposure conditions are tested according to the hotspot SAR procedures in KDB 941225. A test separation distance of 10 mm is required between the phantom and all surfaces and edges with a transmitting antenna located within 25 mm from that surface or edge. When the form factor of a handset is smaller than 9 cm x 5 cm, a test separation distance of 5 mm (instead of 10 mm) is required for testing hotspot mode. When the separation distance required for body-worn accessory testing is larger than or equal to that tested for hotspot mode, in the same wireless mode and for the same surface of the phone, the hotspot mode SAR data may be used to support body-worn accessory SAR compliance for that particular configuration (surface).



7 MEASUREMENT PROCEDURE

7.1 Measurement Process Diagram



7.2 SAR Scan General Requirement

Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Boththe probe tip diameter and sensor offset distance must satisfy measurement protocols; to ensure probe boundary effect errors are minimized and the higher fields closest to the phantom surface can be correctly measured and extrapolated to the phantom surface for computing 1 g SAR. Tolerances of the post-processing algorithms must be verified by the test laboratory for the scan resolutions used in the SAR measurements, according to the reference distribution functions specified in IEEE Std 1528-2013.

<table>
<tr><th colspan="3"></th><th>≤3GHz</th><th>>3GHz</th></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="6">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2" rowspan="3">uniform grid: Δz Zoom (n)</td><td rowspan="3">≤ 5 mm</td><td>3–4 GHz: ≤ 4 mm</td></tr>
<tr><td>4–5 GHz: ≤ 3 mm</td></tr>
<tr><td>5–6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="3">graded grid</td><td rowspan="2">Δz Zoom (1): between 1st two points closest to phantom surface</td><td rowspan="2">≤ 4 mm</td><td>3–4 GHz: ≤ 3 mm</td></tr>
<tr><td>4–5 GHz: ≤ 2.5 mm
5–6 GHz: ≤ 2 mm</td></tr>
<tr><td>Δz Zoom (n>1): between subsequent points</td><td colspan="2">≤ 1.5·Δz Zoom (n-1)</td></tr>
<tr><td rowspan="3">Minimum zoom scan volume</td><td colspan="2" rowspan="3">x, y, z</td><td rowspan="3">≥30 mm</td><td>3–4 GHz: ≥ 28 mm</td></tr>
<tr><td>4–5 GHz: ≥ 25 mm</td></tr>
<tr><td>5–6 GHz: ≥ 22 mm</td></tr>
<tr><td colspan="5">Note:
1. δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.
2. * 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 3GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

7.3 Measurement Procedure

The following steps are used for each test position

a. Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface

b. Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible power drift.

c. Measurement of the SAR distribution with a grid of 8 to 16mm * 8 to16 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.

d. 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.

7.4 Area & Zoom Scan Procedure

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g. Area scan and zoom scan resolution setting follows KDB 865664 D01v01r04 quoted below.

When the 1 g SAR of the highest peak is within 2 dB of the SAR limit, additional zoom scans are required for other peaks within 2 dB of the highest peak that have not been included in any zoom scan to ensure there is no increase in SAR.

8 CONDUCTED RF OUPUT POWER

8.1 WCDMA

Please refer the document “Conducted RF Output Power List.pdf”.

8.2 LTE

Please refer the document “Conducted RF Output Power List.pdf”.

8.3 WIFI

8.3.1 2.4G WIFI

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Limit (dBm)	SAR Test Require.
2.4 (2.4~2.4835)	802.11b	1	2412	15.62	16.00	Yes
		6	2437	**15.68**	16.00	Yes
		11	2462	15.45	16.00	Yes
	802.11g	1	2412	12.76	13.00	No
		6	2437	12.74	13.00	No
		11	2462	12.50	13.00	No
	802.11n(HT20)	1	2412	11.74	12.00	No
		6	2437	11.73	12.00	No
		11	2462	11.80	12.00	No
	802.11n(HT40)	3	2422	11.49	12.00	No
		6	2437	11.43	12.00	No
		9	2452	11.75	12.00	No

Note: When multiple channel bandwidth configurations in a frequency band have the same maximum tune-up output power, the test configuration is determined by applying the following steps sequentially.

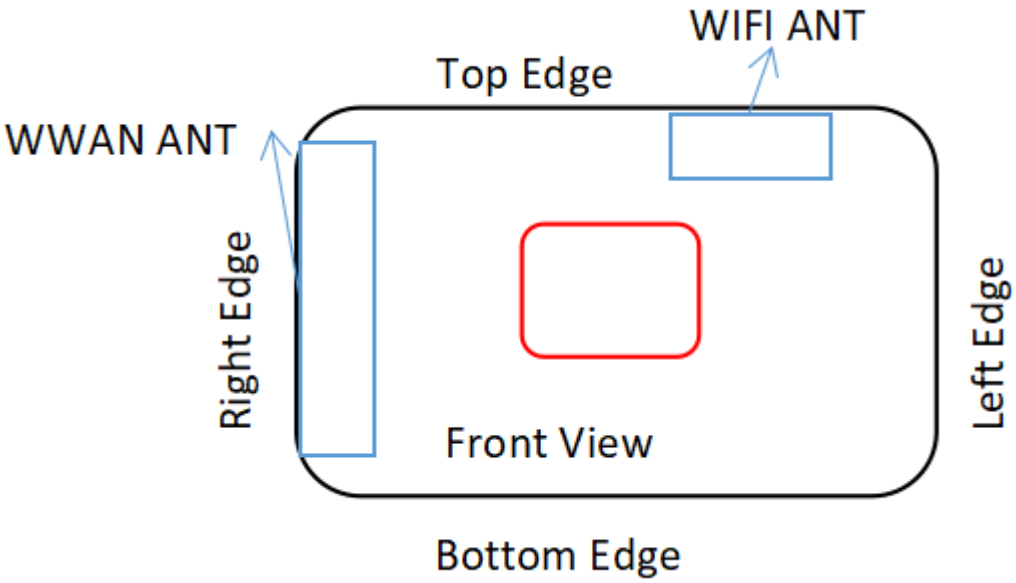
1) The largest channel bandwidth configuration is selected between the multiple configurations in a frequency band with the same maximum tune-up output power.

2) When multiple transmission modes (802.11b/g/n) have the same maximum tune-up output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11b is chosen over 802.11g, and 802.11g chosen over 802.11n.

3) According KDB 247228, when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, OFDM SAR test is not required.

Adjusted SAR = 0.031 * (19.95mW/39.81mW) = 0.016 W/Kg, so 2.4G OFDM SAR test is not required.

9 TEST EXCLUSION CONSIDERATION



Antenna	Support Bands
Ant.0	WCDMA B5 LTE B5/7
WLAN ANT	WLAN2.4G

9.1 SAR Test Exclusion Consideration Table

According with FCC KDB 447498 D04, Appendix B, The SAR-based exemption formula applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, of less than or equal to the threshold Pth (mW), this Device SAR test configurations consider as following :

Ant 0:

Band	Mode	Max. Peak Power		Test Position Configurations					
		dBm	mW	Front Side	Back Side	Left Edge	Right Edge	Top Edge	Bottom Edge
WCDMA Band 5	Distance to User			<5mm	<5mm	10mm	<5mm	<5mm	<5mm
	RMC	23.50	223.87	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 5	Distance to User			<5mm	<5mm	10mm	<5mm	<5mm	<5mm
	VOIP	23.50	223.87	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 7	Distance to User			<5mm	<5mm	10mm	<5mm	<5mm	<5mm
	VOIP	23.00	199.53	Yes	Yes	Yes	Yes	Yes	Yes

WLAN ANT

Band	Mode	Max. Peak Power		Test Position Configurations					
		dBm	mW	Front Side	Back Side	Left Edge	Right Edge	Top Edge	Bottom Edge
WLAN 2.4 G	Distance to User			<5mm	<5mm	<5mm	8mm	<5mm	6mm
	802.11b	16.00	39.81	Yes	Yes	Yes	No	Yes	Yes
	802.11g	13.00	19.95	No	No	No	No	No	No
	802.11n(HT20)	12.00	15.85	No	No	No	No	No	No
	802.11n(HT40)	12.00	15.85	No	No	No	No	No	No

Note:

1. Maximum power is the source-based time-average power and represents the maximum RF output power including tune-up tolerance among production units
2. Per KDB 447498 D04, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
3. Per KDB 447498 D04, standalone SAR test exclusion threshold is applied; If the distance of the antenna to the user is < 5mm, 5mm is used to determine SAR exclusion threshold
4. Per KDB 447498 D04, for separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive), the threshold Pth (mW) is given by Following:

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

where

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

a. f(GHz) is the RF channel transmit frequency in GHz

b. d is the separation distance (cm), The result is rounded to one decimal place for comparison

c. ERP_{20cm} are determined by:

$$ERP_{20cm}(mW) = f(x) = \begin{cases} 2040f & 0.3GHz \leq f < 1.5GHz \\ 3060 & 1.5GHz \leq f \leq 6GHz \end{cases}$$

5. Per KDB 941225 D01, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA /HSUPA /DC-HSDPA output power is < 0.25dB higher than RMC12.2Kbps, or reported SAR with RMC 12.2kbps setting is ≤ 1.2W/kg, HSDPA/HSUPA/DC-HSDPA SAR evaluation can be excluded.
6. Per KDB 248227 D01, choose the highest output power channel to test SAR and determine further SAR exclusion.8. For each frequency band, testing at higher data rates and higher order modulations is not required when the maximum average output power for each of these configurations is less than 1/4dB higher than those measured at the lowest data rate
7. Per KDB 248227 D01 SAR is not required for the following 2.4 GHz OFDM conditions.
   a. When KDB Publication 447498 D04 SAR test exclusion applies to the OFDM configuration.
   b. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

10 TEST RESULT

10.1WCDMA Band 5

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1 g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Hotspot												
Ant.0	RMC	Front Side	10	4182	836.4	0.00	0.600	21.77	23.50	1.489	0.893	/
		Back Side	10	4182	836.4	-0.13	0.521	21.77	23.50	1.489	0.776	/
		Left Edge	10	4182	836.4	0.12	0.021	21.77	23.50	1.489	0.031	/
		Right Edge	10	4182	836.4	0.07	0.076	21.77	23.50	1.489	0.113	/
		Top Edge	10	4182	836.4	0.19	0.278	21.77	23.50	1.489	0.414	/
		Bottom Edge	10	4182	836.4	0.10	0.271	21.77	23.50	1.489	0.404	/
		Front Side	10	4132	826.4	0.09	0.643	21.38	23.00	1.452	**0.934**	1#
		Front Side	10	4233	846.6	-0.16	0.599	21.45	23.00	1.429	0.856	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.												

10.2 LTE Band 5 (10MHz Bandwidth)

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	RB Num.	RB Start	Power Drift (dB)	1 g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Hotspot														
Ant.0	QPSK	Front Side	10	20600	844.0	1	Low	-0.08	0.888	22.76	23.50	1.186	1.053	2#
		Back Side	10	20600	844.0	1	Low	0.01	0.716	22.76	23.50	1.186	0.849	/
		Left Edge	10	20600	844.0	1	Low	-0.09	0.021	22.76	23.50	1.186	0.025	/
		Right Edge	10	20600	844.0	1	Low	-0.11	0.134	22.76	23.50	1.186	0.159	/
		Top Edge	10	20600	844.0	1	Low	0.10	0.396	22.76	23.50	1.186	0.470	/
		Bottom Edge	10	20600	844.0	1	Low	-0.18	0.426	22.76	23.50	1.186	0.505	/
		Front Side	10	20450	829.0	1	High	0.11	0.729	22.71	23.50	1.199	0.874	/
		Front Side	10	20525	836.5	1	Low	-0.09	0.716	22.55	23.50	1.245	0.891	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.														

10.3 LTE Band 7 (20MHz Bandwidth)

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	RB Num.	RB Start	Power Drift (dB)	1 g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Hotspot														
Ant.0	QPSK	Front Side	10	21350	2560.0	1	High	0.00	0.444	22.42	23.00	1.143	0.507	/
		Back Side	10	21350	2560.0	1	High	0.02	0.558	22.42	23.00	1.143	**0.638**	3#
		Left Edge	10	21350	2560.0	1	High	-0.02	0.065	22.42	23.00	1.143	0.074	/
		Right Edge	10	21350	2560.0	1	High	-0.06	0.402	22.42	23.00	1.143	0.459	/
		Top Edge	10	21350	2560.0	1	High	-0.15	0.512	22.42	23.00	1.143	0.585	/
		Bottom Edge	10	21350	2560.0	1	High	0.17	0.188	22.42	23.00	1.143	0.215	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.														

10.4WIFI 2.4GHz

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1 g Meas SAR (W/kg)	Duty cycle (%)	Duty cycle Factor	Meas. Power (dBm)	Max. tune-power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Hotspot														
WLAN ANT	802.11 b	Front Side	10	6	2437	0.03	0.029	99.14	1.009	15.68	16.00	1.076	**0.031**	4#
		Back Side	10	6	2437	-0.16	0.019	99.14	1.009	15.68	16.00	1.076	0.021	/
		Left Edge	10	6	2437	0.07	0.013	99.14	1.009	15.68	16.00	1.076	0.014	/
		Right Edge	10	6	2437	-0.13	0.002	99.14	1.009	15.68	16.00	1.076	0.002	/
		Top Edge	10	6	2437	-0.05	0.012	99.14	1.009	15.68	16.00	1.076	0.013	/
		Bottom Edge	10	6	2437	0.16	0.001	99.14	1.009	15.68	16.00	1.076	0.001	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.														

11 SAR Measurement Variability

According to KDB 865664 D01, SAR measurement variability was assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. Alternatively, if the highest measured SAR for both head and body tissue-equivalent media are ≤ 1.45 W/kg and the ratio of these highest SAR values, i.e., largest divided by smallest value, is ≤ 1.10, the highest SAR configuration for either head or body tissue-equivalent medium may be used to perform the repeated measurement. These 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.

SAR repeated measurement procedure:

1. When the highest measured SAR is < 0.80 W/kg, repeated measurement is not required.
2. When the highest measured SAR is >= 0.80 W/kg, repeat that measurement once.
3. 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, perform a second repeated measurement.
4. If the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20, and the original, first or second repeated measurement is >= 1.5 W/kg, perform a third repeated measurement.

Frequency Band (MHz)	Wireless Band	RF Exposure Conditions	Test Position	Highest Measured SAR (W/kg)	Repeated SAR (Yes/No)	Repeated^{1th} Measured SAR (W/kg)	Largest to Smallest SAR Radio
835	LTE band 5	Hotspot	Front Side	0.888	Yes	0.875	1.01
Note: The ratio of largest to smallest SAR for the original and first repeated measurements is < 1.20, the second repeated measurement. is not required.							

12 SIMULTANEOUS TRANSMISSION

Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneous transmitting antenna. When the sum of SAR 1g of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit (SAR 1g 1.6 W/kg), the simultaneous transmission SAR is not required. When the sum of SAR 1g is greater than the SAR limit (SAR 1g 1.6 W/kg), SAR test exclusion is determined by the SAR to Peak Location Ratio (SPLSR).

12.1 Simultaneous Transmission Mode Consider

No.	Simultaneous Tx Combination	Hotspot
1	WWAN+WLAN2.4G	Yes

Note:
1. When stand-alone SAR is not required for a side of antenna, its SAR is considered zero in the SAR summing process to assess Multi-band transmission SAR compliance.
2. The maximum SAR summation is calculated based on the same configuration and test position.
3. The simultaneous transmission combinations of the more antennas contain combinations of less antennas, so only the worst simultaneous transmission combinations is shown in this report.

12.2 Sum SAR of Simultaneous Transmission

12.2.1 Hotspot Simultaneous Transmission SAR Evaluation for WLAN Antenna with WWAN

Band	Position	Stand alone SAR		SUM SAR
		1	2	
		WWAN	WLAN 2.4GHz	Sum SAR （1+2）
WCDMA Band5	Front Side 10mm	0.934	0.031	0.965
	Back Side 10mm	0.776	0.021	0.797
	Left Edge 10mm	0.031	0.014	0.045
	Right Edge 10mm	0.113	0.002	0.115
	Top Edge 10mm	0.414	0.013	0.427
	Bottom Edge 10mm	0.404	0.001	0.405
LTE Band5	Front Side 10mm	1.053	0.031	**1.084**
	Back Side 10mm	0.827	0.021	0.848
	Left Edge 10mm	0.021	0.014	0.035
	Right Edge 10mm	0.138	0.002	0.140
	Top Edge 10mm	0.470	0.013	0.483
	Bottom Edge 10mm	0.505	0.001	0.506
LTE Band7	Front Side 10mm	0.507	0.031	0.538
	Back Side 10mm	0.638	0.021	0.659
	Left Edge 10mm	0.074	0.014	0.088
	Right Edge 10mm	0.459	0.002	0.461
	Top Edge 10mm	0.585	0.013	0.598
	Bottom Edge 10mm	0.215	0.001	0.216

Note:

1: The highest Summed 1g SAR is 1.084W/Kg < 1.60 W/kg, so Simultaneous Transmission SAR test is not required.

13 TEST EQUIPMENTS LIST

Description	Manufacturer	Model	Serial No./Version	Cal. Date	Cal. Due
PC	Dell	N/A	N/A	N/A	N/A
Test Software	Speag	DASY5	52.8.8.1222	N/A	N/A
835MHz Validation Dipole	Speag	D835V2	SN: 4d187	2021/05/17	2024/05/16
2450MHz Validation Dipole	Speag	D2450V2	SN: 952	2021/05/19	2024/05/18
2600MHz Validation Dipole	Speag	D2600V2	SN: 1095	2021/05/19	2024/05/18
E-Field Probe	Speag	EX3DV4	SN: 7607	2022/07/04	2023/07/03
Data Acquisition Electronicsr	Speag	DAE4	SN: 878	2022/06/13	2023/06/12
Signal Generator	R&S	SMB100A	177746	2022/05/19	2023/05/18
Power Meter	R&S	NRVD-B2	7250BJ-0112/2011	2022/09/06	2023/09/05
Power Sensor	R&S	NRV-Z4	100381	2022/09/06	2023/09/05
Power Sensor	R&S	NRV-Z2	100211	2022/09/06	2023/09/05
Wireless Communication Test Set	Anritsu	MT8820C	6201502991	2022/12/27	2023/12/26
Network Analyzer	Agilent	E5071C	MY46103472	2022/12/06	2023/12/05
Thermometer	Elitech	RC-4HC	EF720B004811	2022/11/25	2023/11/24
Thermometer	Elitech	RC-4HC	EF720B004817	2022/11/18	2023/11/17
Power Amplifier	SATIMO	6552B	22374	N/A	N/A
Dielectric Probe Kit	Speag	DAK3.5	SN: 1312	N/A	N/A
Phantom	Speag	ELI4	SN: 1012	N/A	N/A
Attenuator	COM-MW	ZA-S1-31	1305003187	N/A	N/A
Directional coupler	AA-MCS	AAMCS-UDC	000272	N/A	N/A

Note: For dipole antennas, BALUN has adopted 3 years as calibration intervals, and on annual basis, every measurement dipole has been evaluated and is in compliance with the following criteria:

1. There is no physical damage on the dipole;
2. System validation with specific dipole is within 10% of calibrated value;
3. Return-loss in within 20% of calibrated measurement.
4. Impedance (real or imaginary parts) in within 5 Ohms of calibrated measurement.

ANNEX A SIMULATING LIQUID VERIFICATION RESULT

The dielectric parameters of the liquids were verified prior to the SAR evaluation using a DAK3.5 Dielectric Probe Kit.

Head Liquid

Date	Liquid Type	Fre. (MHz)	Temp. (℃)	Meas. Conductivity (σ) (S/m)	Meas. Permittivity (ε)	Target Conductivity (σ) (S/m)	Target Permittivity (ε)	Conductivity Tolerance (%)	Permittivity Tolerance (%)
2023.03.06	Head	835	21.4	0.90	41.86	0.90	41.50	0.00	0.87
2023.03.07	Head	2450	21.2	1.80	39.60	1.80	39.20	0.00	1.02
2023.03.06	Head	2600	21.4	1.97	38.53	1.96	39.01	0.51	-1.23
Note: The tolerance limit of Conductivity and Permittivity is± 5%.									

ANNEX B SYSTEM CHECK RESULT

Comparing to the original SAR value provided by SPEAG, the validation data should be within itsspecification of 10 %(for 1 g).

Head liquid 1g

Date	Liquid Type	Freq. (MHz)	Power (mW)	Measured SAR (W/kg)	Normalized SAR (W/kg)	Dipole SAR (W/kg)	Tolerance (%)
2023.03.06	Head	835	100	0.987	9.87	9.76	1.13
2023.03.07	Head	2450	100	5.050	50.50	53.0	-4.72
2023.03.06	Head	2600	100	5.610	56.10	56.8	-1.23
Note: The tolerance limit of System validation ±10%.							

System Performance Check Data (835MHz Head)

Date: 2023.03.06

Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz;Duty Cycle: 1:1

Medium parameters used: f = 835 MHz; σ = 0.899 S/m; ε_r = 41.858; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.3℃ Liquid Temperature:21.4℃

DASY5 Configuration:

- Probe: EX3DV4 - SN7607; ConvF(10.44, 10.44, 10.44); Calibrated: 2022.07.04;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn878; Calibrated: 2022.06.13
- Phantom: ELI v4.0 (30deg probe tilt); Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

CW 835/Area Scan (61x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 1.09 W/kg

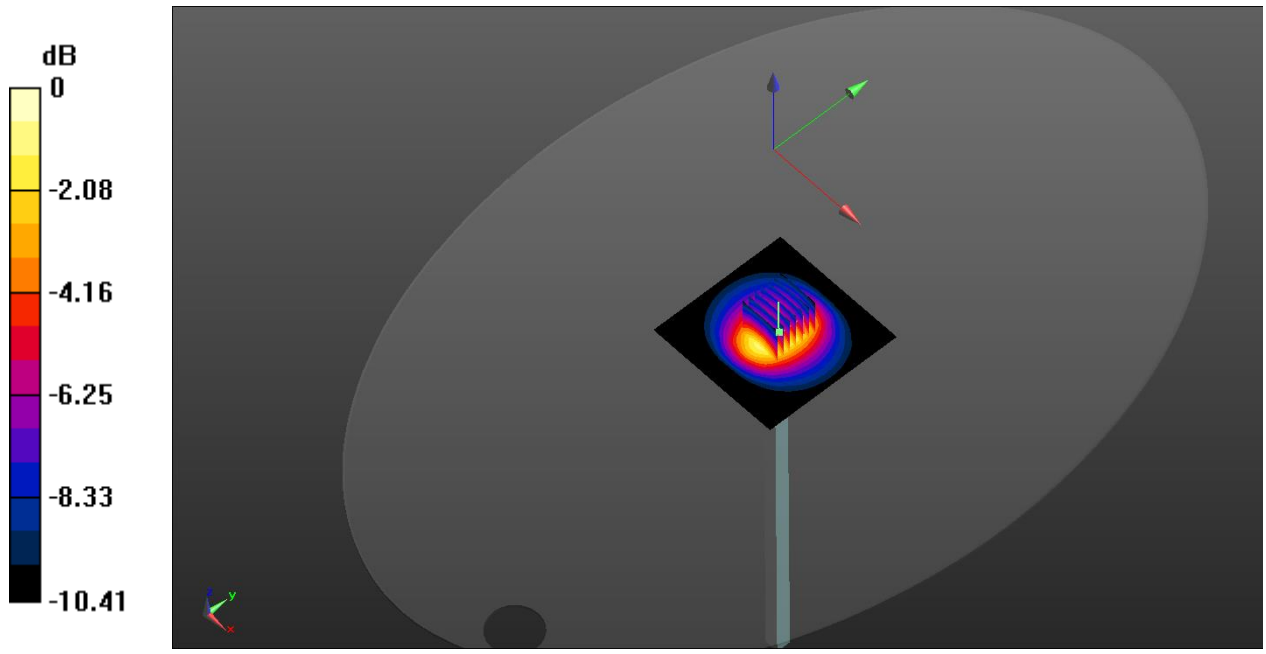
CW 835/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 34.65 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 1.49 W/kg

SAR(1 g) = 0.987 W/kg; SAR(10 g) = 0.641 W/kg

Maximum value of SAR (measured) = 1.05 W/kg



0 dB = 1.05 W/kg

System Performance Check Data (2450MHz Head)

Date: 2023.03.07

Communication System Band: D2450 (2450.0 MHz); Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2450 MHz; σ = 1.798 S/m; εr = 39.604; ρ = 1000 kg/m3

Phantom section: Flat Section

Ambient Temperature:22.2℃ Liquid Temperature:21.2℃

DASY5 Configuration:

- Probe: EX3DV4 - SN7607; ConvF(7.79, 7.79, 7.79); Calibrated: 2022.07.04;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn878; Calibrated: 2022.06.13
- Phantom: ELI v4.0 (30deg probe tilt); Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

CW 2450/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 6.35 W/kg

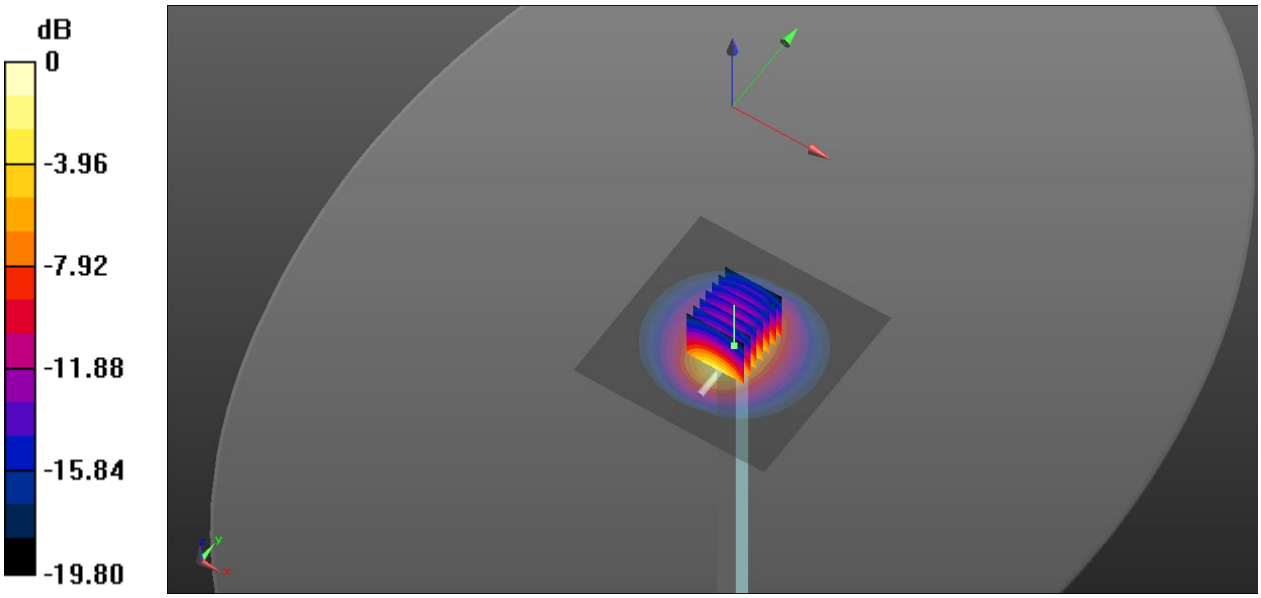
CW 2450/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

2.42Reference Value = 56.42V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 13.7 W/kg

SAR(1 g) = 5.05 W/kg; SAR(10 g) = 2.32 W/kg

Maximum value of SAR (measured) = 6.11 W/kg



0 dB = 6.11 W/kg

System Performance Check Data (2600MHz Head)

Date: 2023.03.06

Communication System Band: D2600 (2600.0 MHz); Frequency: 2600 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 2600 MHz; σ = 1.971 S/m; ε_r = 38.527; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.3℃ Liquid Temperature:21.4℃

DASY5 Configuration:

- Probe: EX3DV4 - SN7607; ConvF(7.56, 7.56, 7.56); Calibrated: 2022.07.04;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn878; Calibrated: 2022.06.13
- Phantom: ELI v4.0 (30deg probe tilt); Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

CW 2600/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 6.60 W/kg

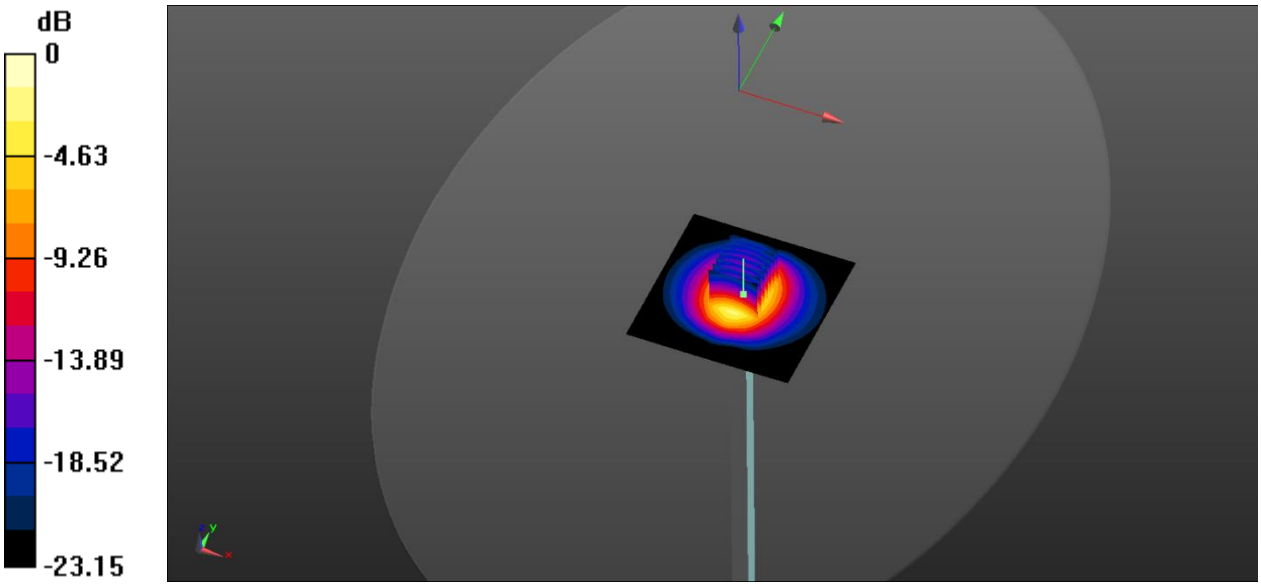
CW 2600/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 45.73 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 12.5 W/kg

SAR(1 g) = 5.61 W/kg; SAR(10 g) = 2.46 W/kg

Maximum value of SAR (measured) = 6.44 W/kg



0 dB = 6.44 W/kg

ANNEX C TEST DATA

Meas.1 Body Plane with Front Side 0mm on Low Channel in WCDMA Band5 mode with Antenna 0

Date: 2023.03.06

Communication System Band: BAND 5; Frequency: 826.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.893 S/m; ε_r = 42.055; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.3℃ Liquid Temperature:21.4℃

DASY5 Configuration:

- Probe: EX3DV4 - SN7607; ConvF(10.44, 10.44, 10.44); Calibrated: 2022.07.04;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn878; Calibrated: 2022.06.13
- Phantom: ELI v4.0 (30deg probe tilt); Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch4132/Area Scan (61x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.758 W/kg

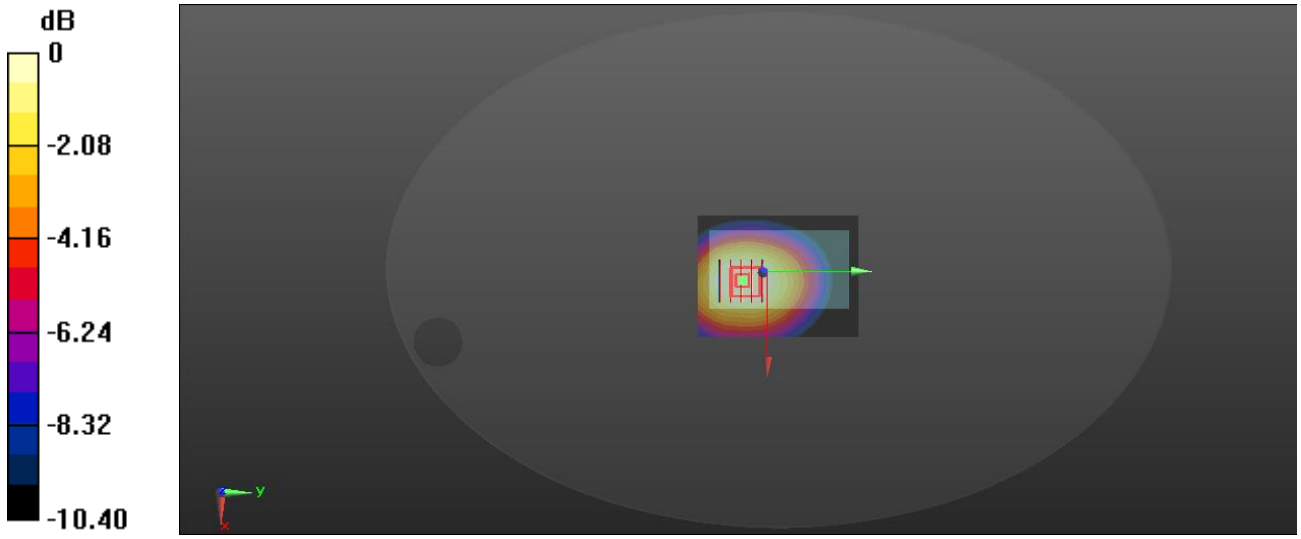
Ch4132/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.73 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.862 W/kg

SAR(1 g) = 0.643 W/kg; SAR(10 g) = 0.461 W/kg

Maximum value of SAR (measured) = 0.683 W/kg



0 dB = 0.683 W/kg

Meas.2 Body Plane with Front Side 0mm on High Channel in LTE Band5 mode with Antenna 0

Date: 2023.03.06

Communication System Band: BAND 5; Frequency: 844 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 844 MHz; σ = 0.908 S/m; ε_r = 41.611; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.3℃ Liquid Temperature:21.4℃

DASY5 Configuration:

- Probe: EX3DV4 - SN7607; ConvF(10.44, 10.44, 10.44); Calibrated: 2022.07.04;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn878; Calibrated: 2022.06.13
- Phantom: ELI v4.0 (30deg probe tilt); Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch20600/Area Scan (61x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.639 W/kg

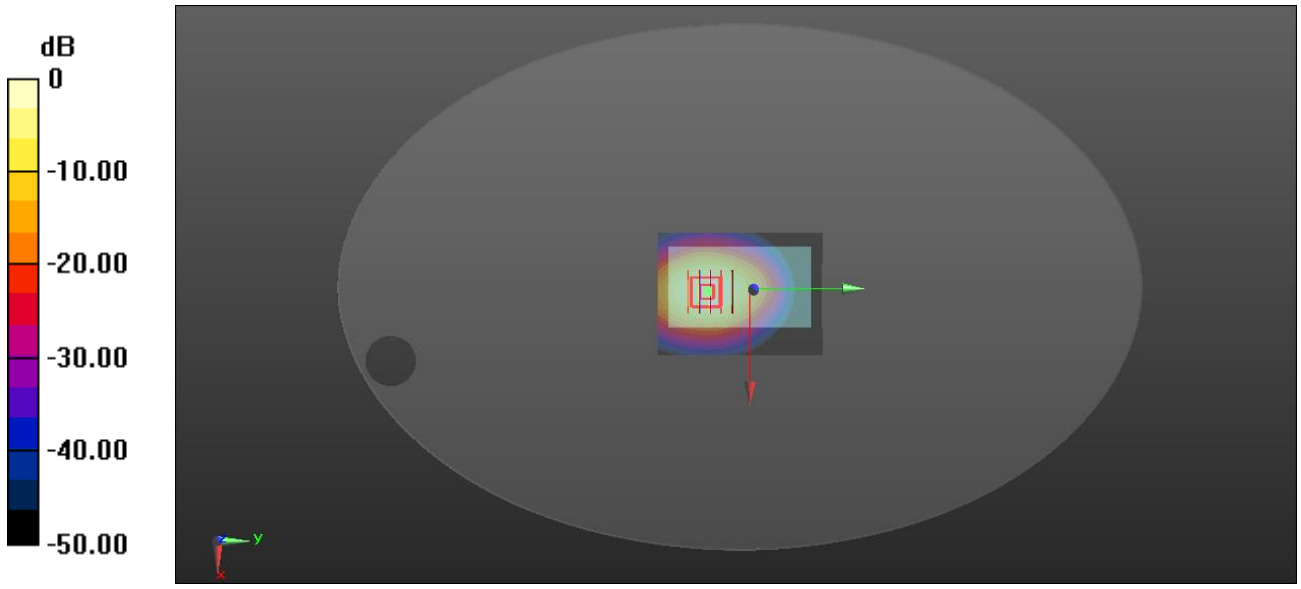
Ch20600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.38 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 1.89 W/kg

SAR(1 g) = 0.888 W/kg; SAR(10 g) = 0.418 W/kg

Maximum value of SAR (measured) = 0.787 W/kg



0 dB = 0.787 W/kg

Meas.3 Body Plane with Back Side 0mm on High Channel in LTE Band7 mode with Antenna 0

Date: 2023.03.06

Communication System Band: BAND 7; Frequency: 2560 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 2560 MHz; σ = 1.928 S/m; ε_r = 38.836; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.3℃ Liquid Temperature:21.4℃

DASY5 Configuration:

- Probe: EX3DV4 - SN7607; ConvF(7.56, 7.56, 7.56); Calibrated: 2022.07.04;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn878; Calibrated: 2022.06.13
- Phantom: ELI v4.0 (30deg probe tilt); Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch21350/Area Scan (81x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.776 W/kg

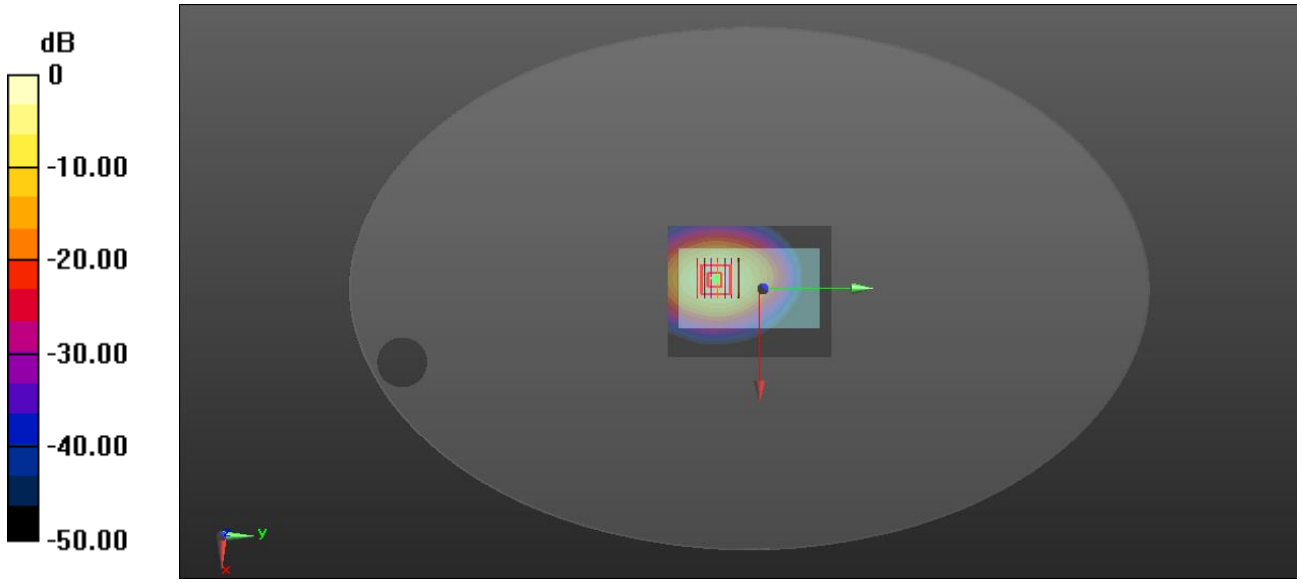
Ch21350/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.260 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 1.57 W/kg

SAR(1 g) = 0.558 W/kg; SAR(10 g) = 0.211 W/kg

Maximum value of SAR (measured) = 0.777 W/kg



0 dB = 0.777 W/kg

Meas.4 Body Plane with Front Side 0mm on 6 Channel in IEEE802.11b mode with Antenna WLAN

Date: 2023.03.07

Communication System Band: WLAN(b); Frequency: 2437 MHz;Duty Cycle: 1:1.009

Medium parameters used (interpolated): f = 2437 MHz; σ = 1.78 S/m; ε_r = 39.666; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient Temperature:22.2℃ Liquid Temperature:21.2℃

DASY5 Configuration:

- Probe: EX3DV4 - SN7607; ConvF(7.79, 7.79, 7.79); Calibrated: 2022.07.04;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn878; Calibrated: 2022.06.13
- Phantom: ELI v4.0 (30deg probe tilt); Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch6/Area Scan (61x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.0282 W/kg

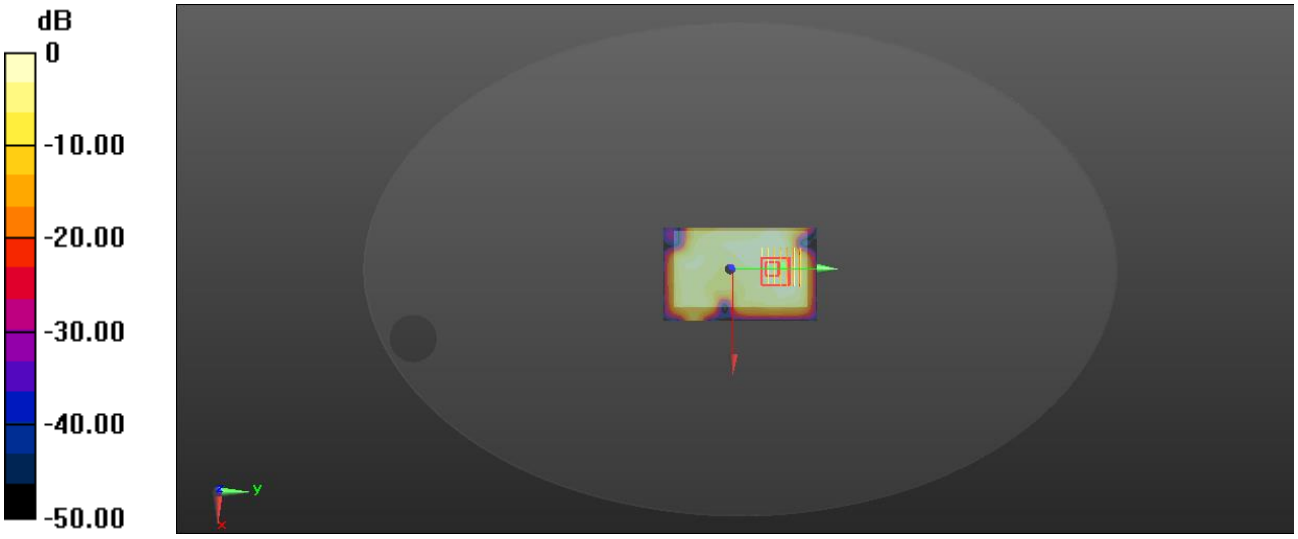
Ch6/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.092 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.0570 W/kg

SAR(1 g) = 0.029 W/kg; SAR(10 g) = 0.016 W/kg

Maximum value of SAR (measured) = 0.0326 W/kg



0 dB = 0.0326 W/kg

ANNEX D EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ2310721-AW.pdf”.

ANNEX E SAR TEST SETUP PHOTOS

Please refer the document “BL-SZ2310721-AS.pdf”.

ANNEX F CALIBRATION REPORT

Please refer the document “CALIBRATION REPORT.pdf”.

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