



TEST REPORT

Applicant: unitech electronics co., ltd.
Address: 5F., No. 136, Ln. 235, Baoqiao Rd., Xindian Dist.,
New Taipei City 231, Taiwan
Equipment Type: Rugged Handheld Computer
Model Name: PA768e (refer to section 2.3)
Brand Name: unitech
FCC ID: HLE-PA768EBWNWU
Test Standard: ANSI/IEEE C95.1-1992
(refer to section 3.1)
Maximum SAR: Hotspot (1 g@10mm): 1.16 W/kg
Limbs (10 g@0mm): 2.57 W/kg
Sample Arrival Date: Jun. 03, 2025
Test Date: Jun. 04, 2025 - Sep. 03, 2025
Date of Issue: Sep. 05, 2025

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Guo Guangwei**Checked by:** Xu Rui**Approved by:** Tolan Tu
(Testing Director)

Revision History

Version	Issue Date	Revisions Content
<u>Rev. 01</u>	<u>Aug. 07, 2025</u>	<u>Initial Issue</u>
<u>Rev. 02</u>	<u>Sep. 05, 2025</u>	<u>Retest WIFI 6E SAR, update the report homepage and chapters 3.3, 3.4, 10.16, 11.12.2, and 13, and update ANNEX A&B&C</u>

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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°C to 25°C
Ambient Relative Humidity	30% to 70%

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	unitech electronics co., ltd.
Address	5F., No. 136, Ln. 235, Baoqiao Rd., Xindian Dist., New Taipei City 231, Taiwan

2.2 Manufacturer Information

Manufacturer	unitech electronics co., ltd.
Address	5F., No. 136, Ln. 235, Baoqiao Rd., Xindian Dist., New Taipei City 231, Taiwan

2.3 General Description for Equipment under Test (EUT)

EUT Name	Rugged Handheld Computer
Model Name Under Test	PA768e
Series Model Name	PA768
Description of Model Name Differentiation	Only differences are model names for trading purpose. (this information provided by the applicant).
Hardware Version	FH22_MB_PCB_V1.2
Software Version	RAYAe_V14.00.00.09_20250517
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.4 Ancillary Equipment

Ancillary Equipment 1	Battery	
	Brand Name	N/A
	Model No.	1400-900069G
	Serial No.	N/A
	Capacitance	4950mAh
	Rated Voltage	3.85V
	Limited Voltage	N/A
	Manufacturer	LiFun Technology Corporation Ltd

2.5 Technical Information

Network and Wireless connectivity	2G Network GPRS/EDGE 850/900/1800/1900 MHz 3G Network WCDMA/HSDPA/HSUPA/DC-HSDPA/HSPA+ Band 1/2/5/8 4G Network LTE FDD Band 1/2/3/4/5/7/8/12/14/17/20/28 LTE TDD Band 38/39/41 Bluetooth (BR+EDR+BLE) WIFI 802.11a, 802.11b, 802.11g, 802.11n, 802.11ac and 802.11ax NFC, GPS, GLONASS, Galileo, BDS, UHF
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The requirement for the following technical information of the EUT was tested in this report:

Operating Mode	GSM, WCDMA, LTE, WIFI, Bluetooth, NFC, UHF		
Frequency Range	GSM 850	TX: 824 ~ 849 MHz	RX: 869 ~ 894 MHz
	GSM 1900	TX: 1850 ~ 1910 MHz	RX: 1930 ~ 1990 MHz
	WCDMA Band 2	TX: 1850 ~ 1910 MHz	RX: 1930 ~ 1990 MHz
	WCDMA Band 5	TX: 824 ~ 849 MHz	RX: 869 ~ 894 MHz
	LTE Band 2	TX: 1850 ~ 1910 MHz	RX: 1930 ~ 1990 MHz
	LTE Band 4	TX: 1710 ~ 1755 MHz	RX: 2110 ~ 2155 MHz
	LTE Band 5	TX: 824 ~ 849 MHz	RX: 869 ~ 894 MHz
	LTE Band 7	TX: 2500 ~ 2570 MHz	RX: 2620 ~ 2690 MHz
	LTE Band 12	TX: 699 ~ 716 MHz	RX: 729 ~ 746 MHz
	LTE Band 14	TX: 788 ~ 798 MHz	RX: 758 ~ 768 MHz
	LTE Band 17	TX: 704 ~ 716 MHz	RX: 734 ~ 746 MHz
	LTE Band 38	TX: 2570 ~ 2620 MHz	RX: 2570 ~ 2620 MHz
	LTE Band 41	TX: 2496 ~ 2690 MHz	RX: 2496 ~ 2690 MHz
	802.11b/g/n(HT20)/ax(HE20)	2412 ~ 2462 MHz	
	802.11a/n(HT20/HT40)/ac(VHT20/VHT40/VHT80)/ax(HE20/HE40/HE80)	5150 ~ 5250 MHz	
		5250 ~ 5350 MHz	
		5470 ~ 5725 MHz	
		5725 ~ 5850 MHz	
		5925 ~ 6425 MHz	
		6425 ~ 6525 MHz	
		6525 ~ 6875 MHz	
		6875 ~ 7125 MHz	
	Bluetooth	2402 ~ 2480 MHz	
	UHF	902 ~ 928 MHz	
	NFC	13.56 MHz	
Antenna Type	WWAN	PIFA Antenna	
	WLAN	PIFA Antenna	
	Bluetooth	PIFA Antenna	
	UHF	PIFA Antenna	
	NFC	PIFA Antenna	

Hotspot Function	N/A	
Exposure Category	General Population/Uncontrolled exposure	
Product Type	Portable Device	
EUT 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/IEEE C95.1-1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
3	IEC/IEEE 62209-1528:2020	Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Part 1528: Human models, instrumentation, and procedures (Frequency range of 4 MHz to 10 GHz)
4 ☆	KDB 447498 D04 v01	447498 D04 Interim General RF Exposure Guidance v01
5 ☆	KDB 941225 D01 v03r01	3G SAR MEAUREMENT PROCEDURES
6 ☆	KDB 941225 D05 v02r05	SAR EVALUATION CONSIDERATIONS FOR LTE DEVICES
7 ☆	KDB 941225 D06 v02r01	SAR EVALUATION PROCEDURES FOR PORTABLE DEVICES WITH WIRELESS ROUTER CAPABILITIES
8 ☆	KDB 865664 D01 v01r04	SAR Measurement 100 MHz to 6 GHz
9 ☆	KDB 865664 D02 v01r02	RF Exposure Reporting
10 ☆	KDB 248227 D01 v02r02	SAR Guidance for IEEE 802.11 (Wi-Fi) Transmitters

Note: Compared with the EUT of test report BL-SZ2551267-702, the changes of the EUT of this report as below:

1. Add WiFi 6E.
2. Change FCC ID HLEPA768EBWNWU to HLE-PA768EBWNWU.

Other hardware circuit and software are the same as EUT referred in test report BL-SZ2551267-702.

Therefore, in addition to the above differences, only added the WiFi 6E test data in section 10.1, section 12 and ANNEX A/B/C, others test data and EUT information are derived from the report BL-SZ2551267-702 published by Shenzhen BALUN Technology Co., Ltd. on Jul. 23, 2025.

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/ Controlled Exposure
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

Equipment Class	Band	Maximum Scaled SAR (W/kg)		Maximum Report SAR (W/kg)	
		Hotspot	Limbs	Hotspot	Limbs
		(10mm)	(0mm)	(10mm)	(0mm)
		1g SAR	10g SAR	1g SAR	10g SAR
PCB	GSM 850	0.95	/	1.16	2.57
	GSM 1900	1.03	/		
	WCDMA Band 2	0.64	/		
	WCDMA Band 5	0.50	/		
	LTE Band 2	0.62	/		
	LTE Band 4	0.37	/		
	LTE Band 5	0.62	/		
	LTE Band 7	0.32	/		
	LTE Band 12	0.33	/		
	LTE Band 14	0.09	/		
	LTE Band 17	0.34	/		
	LTE Band 38	0.30	/		
	LTE Band 41	0.33	/		
DTS	2.4G WIFI	0.39	/	1.16	2.57
NII	5.2G WIFI	0.18	/		
	5.3G WIFI	/	0.23		
	5.6G WIFI	/	0.32		
	5.8G WIFI	0.17	/		
	6G WIFI	/	2.57		
DSS	Bluetooth	0.06	/	1.16	2.57
UHF	FHSS	1.16	/		
Limit (W/kg)		1.60	4.00	1.60	4.00
Verdict		Pass			

3.3.2 Highest Simultaneous Transmission SAR Values

Equipment Class	Maximum Scaled SAR	
	(W/kg)	
	Hotspot 1g (10mm)	Limb 10g (0mm)
PCB	1.43	/
DTS	1.56	/
NII	1.52	3.04
DSS	1.52	/
UHF	1.56	/
Limit (W/Kg)	1.60	4.00
Verdict	Pass	

Note: The simultaneous transmission SAR detail please refer to section 12.

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 1.16 W/kg, which is lower than 1.5 W/kg, so the extensive SAR measurement uncertainty analysis is not required in this report.

The maximum 10 g SAR for the EUT in this report is 2.57 W/kg, which is lower than 3.75 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:

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

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

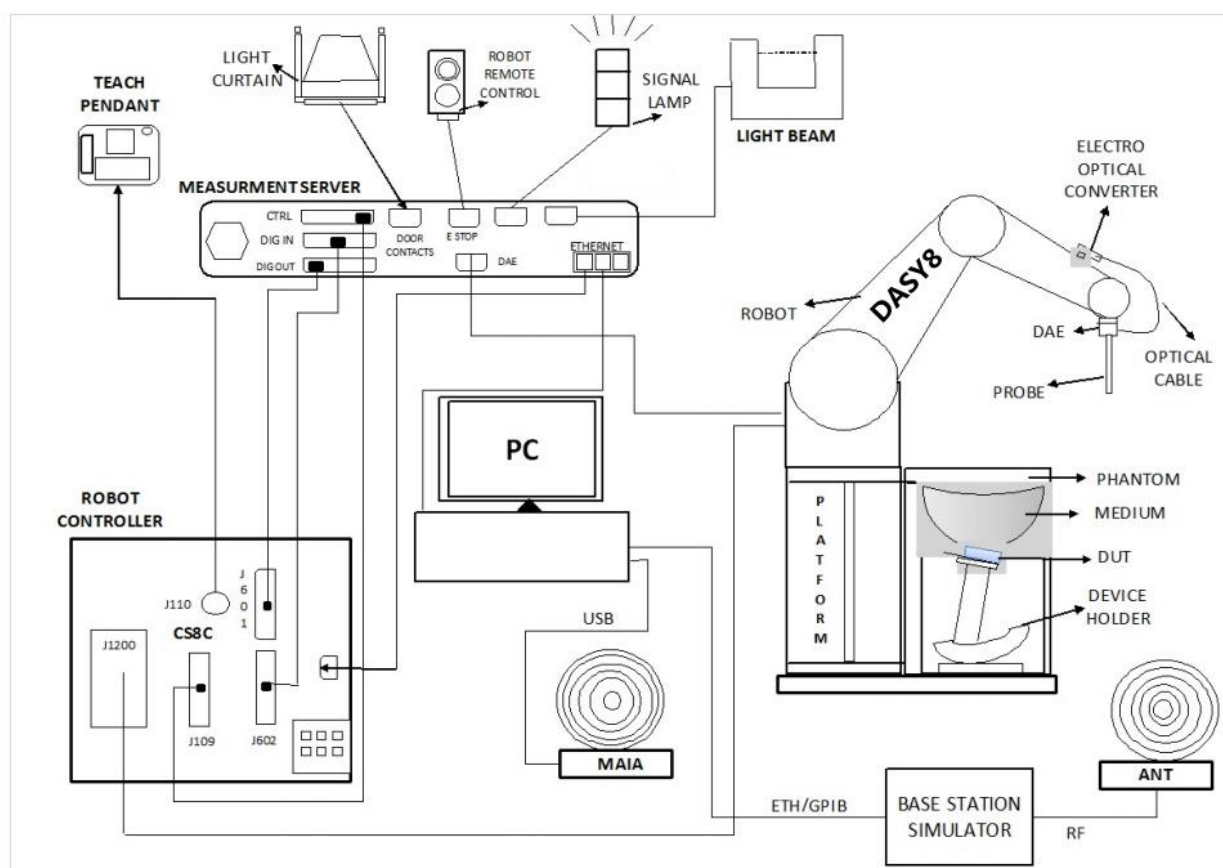
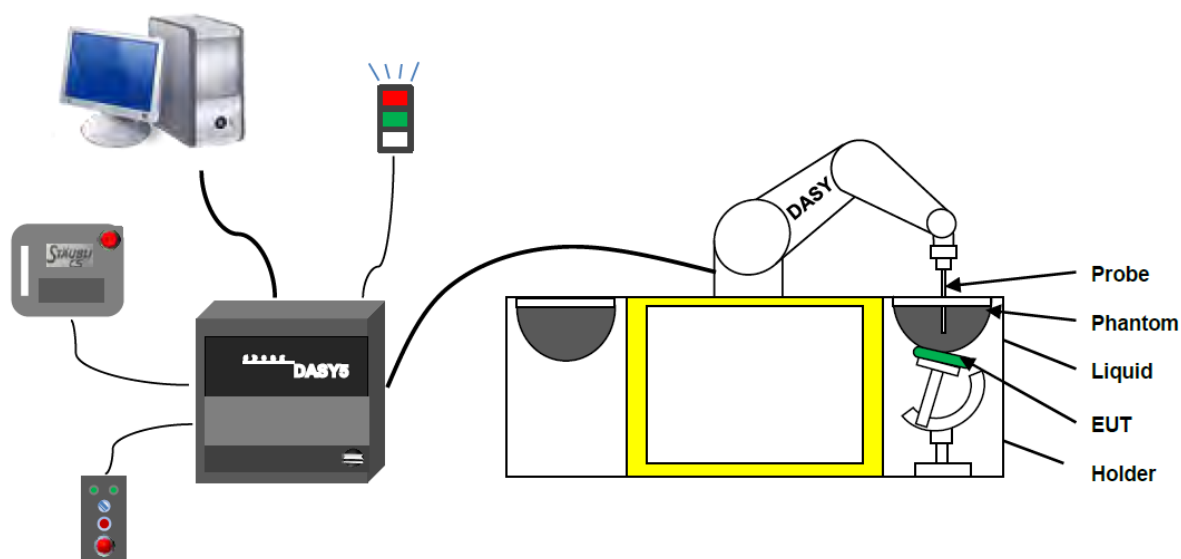
$$SAR = \frac{\sigma E^2}{\rho}$$

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 DASY 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.

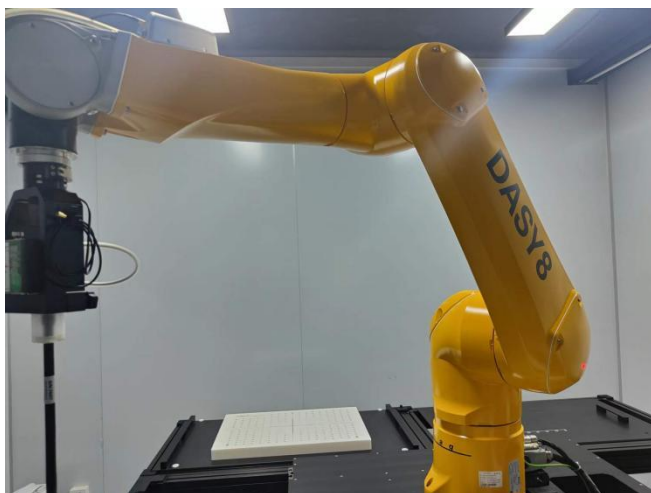
3. A data acquisition electronic (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to 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 DASY measurement server.
6. The DASY measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation.
7. DASY 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 with following specifications is used.

Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection system Built-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 μ W/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: 200M Ω m
- 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 SN 1576



Photo of Phantom SN 1859



Serial Number	Material	Length	Height
SN 1576 SAM1	Vinylester, glass fiber reinforced	1000	500
SN 1859 SAM2	Vinylester, glass fiber reinforced	1000	500

4.2.6 Device Holder

The DASY 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° .

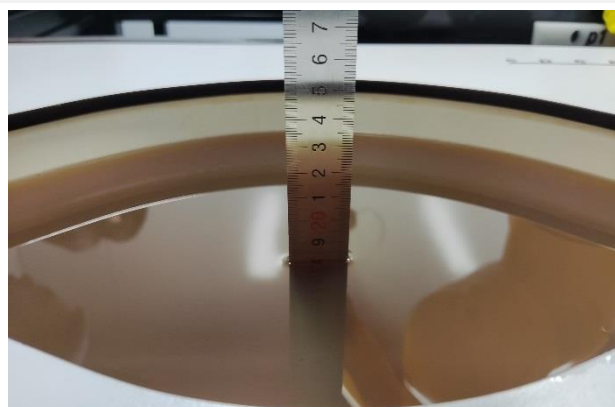
4.2.7 Simulating Liquid

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.

TSL	Manufacturer / Model	Freq Range (MHz)	Main Ingredients
Head WideBand	SPEAG HBBL600-10000V6	600-10000	Ethenediol, Sodium petroleum sulfonate, Hexylene Glycol / 2-Methyl-pentane-2.4-diol, Alkoxylated alcohol

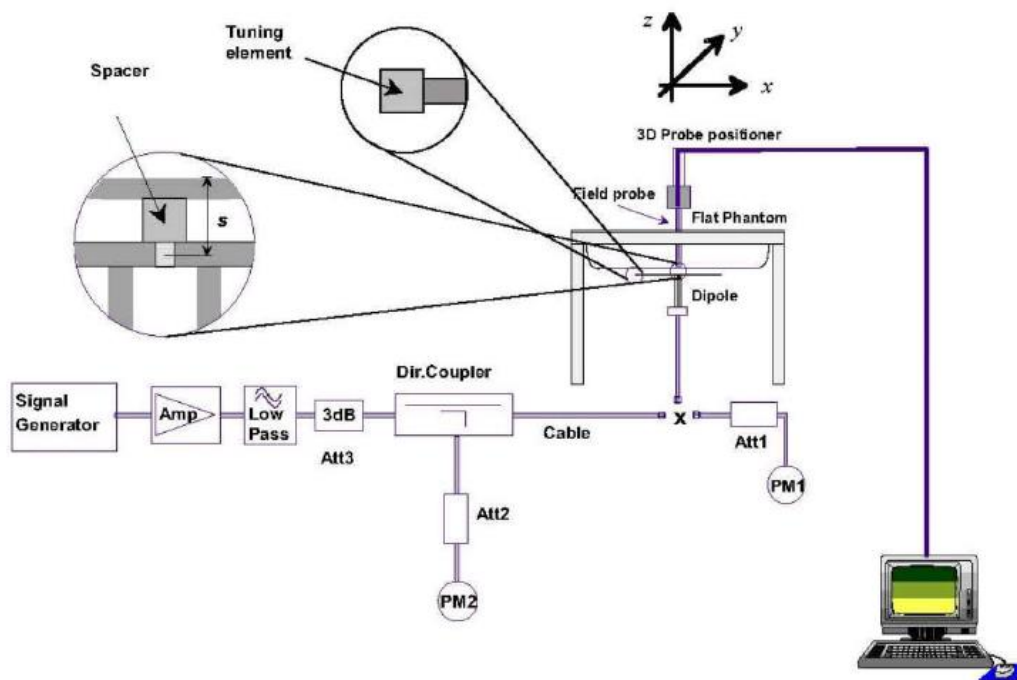
5 SYSTEM VERIFICATION

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

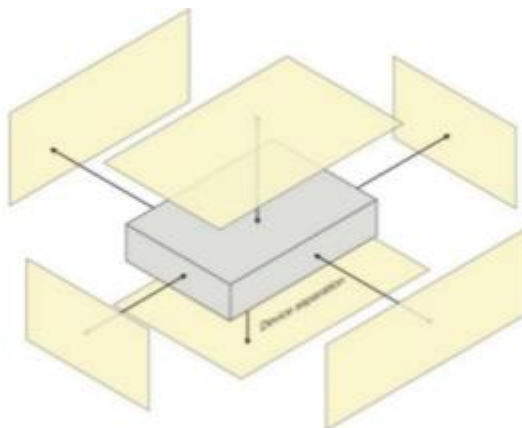
In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. 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

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).



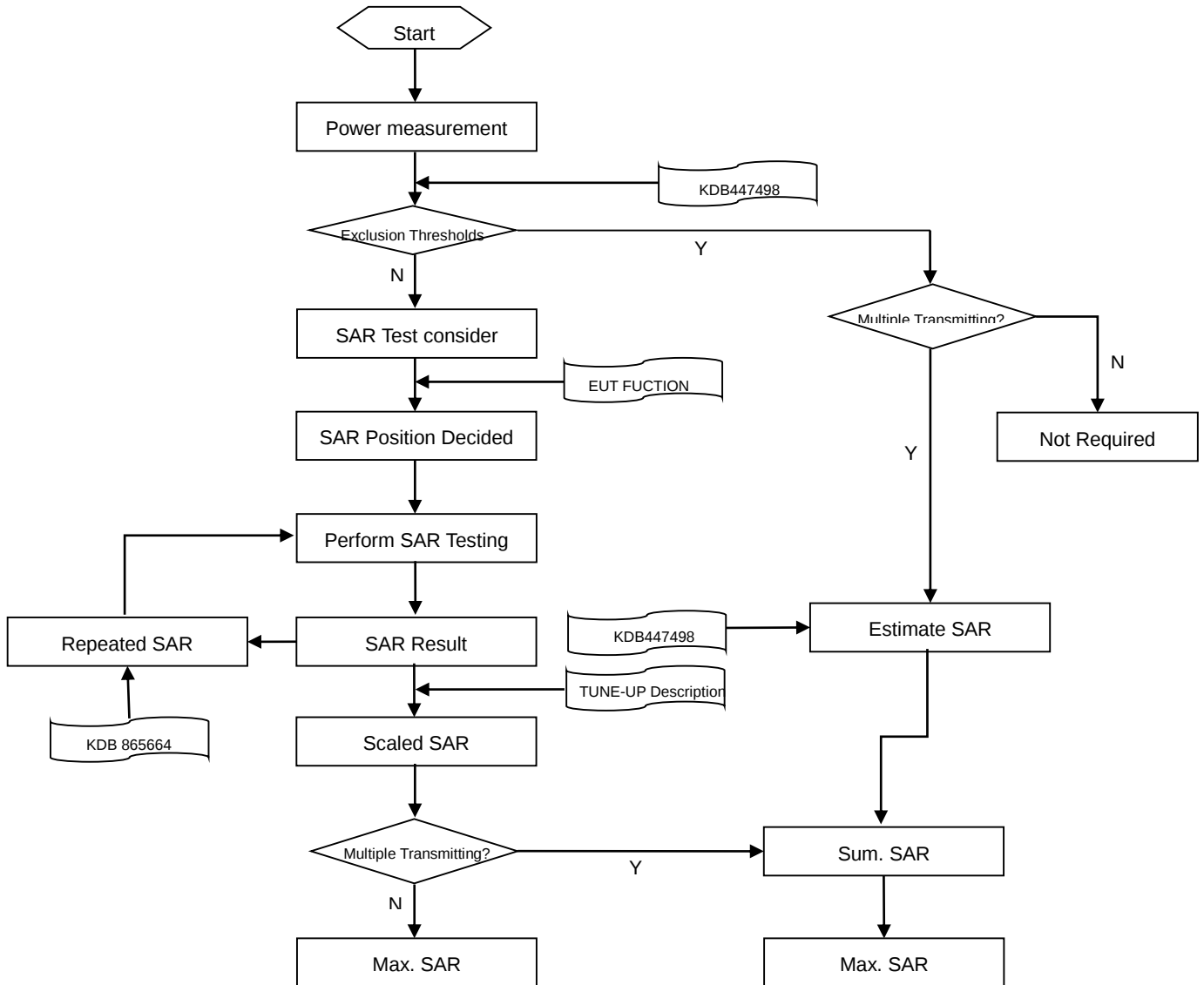
6.2 Product Specific 10g Exposure Consideration

According with FCC KDB 648474 D04, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, unless it is confirmed otherwise through KDB inquiries, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance;

The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions. The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.

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. Both the 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.

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

Note:

- δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.
- * When zoom scan is required and the reported SAR from the area scan based 1 g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

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 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.
- 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 GSM

Please refer the document “BL-SZ2580053-AP-1.pdf”.

8.2 WCDMA

Please refer the document “BL-SZ2580053-AP-1.pdf”.

8.3 LTE

Please refer the document “BL-SZ2580053-AP-1.pdf”.

8.4 WIFI

Please refer the document “BL-SZ2580053-AP-1.pdf”.

8.5 Bluetooth

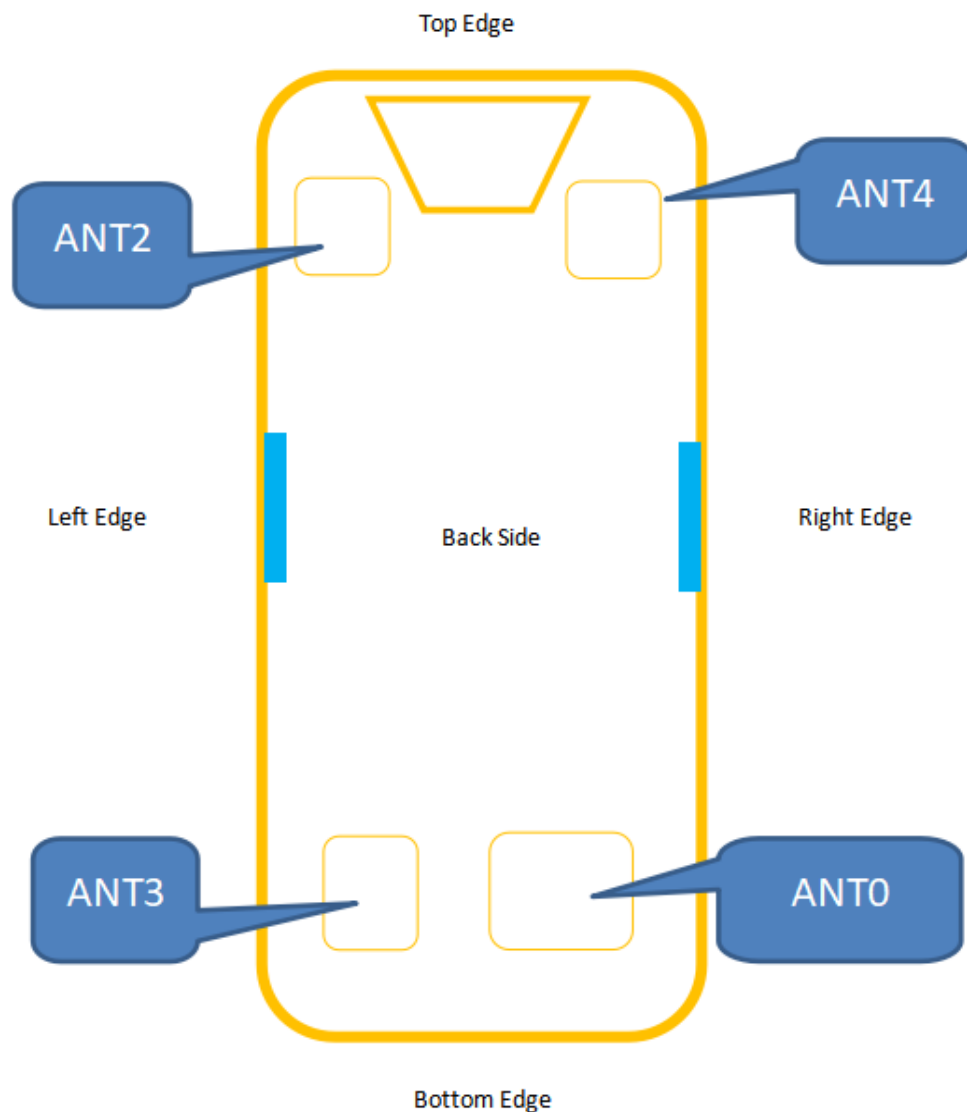
Please refer the document “BL-SZ2580053-AP-1.pdf”.

8.6 UHF

Please refer the document “BL-SZ2580053-AP-1.pdf”.

9 TEST EXCLUSION CONSIDERATION

9.1 Antenna Location Sketch



Antenna	Support Bands
Ant.0	GSM 850/1900
	WCDMA Band 2/5
	LTE Band 2/4/5/7/12/14/17/38/41
Ant.2	WIFI 2.4G/5G/6G
	BT
Ant.3	WIFI 2.4G/5G/6G
Ant.4	UHF

Antenna	Front Side (mm)	Back Side (mm)	Left Edge (mm)	Right Edge (mm)	Top Edge (mm)	Bottom Edge (mm)
Ant.0	<25	<25	<25	<25	>25	<25
Ant.2	<25	<25	<25	>25	<25	>25
Ant.3	<25	<25	<25	>25	>25	<25
Ant.4	<25	<25	>25	<25	<25	>25

Note: Per KDB 941225 DO6, When the overall length and width of a device is > 9 cm *5 cm, a test separation distance of 10 mm is required for hotspot mode SAR measurements and hotspot mode SAR is measured for all edges and surfaces of the device with a transmitting antenna located within 25 mm from that surface or edge.

10 TEST RESULT

10.1GSM 850

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Hotspot												
Ant.0	GPRS 4slots	Front Side	10	251	848.8	0.18	0.183	28.03	29.00	1.250	0.229	/
		Back Side	10	251	848.8	-0.08	0.757	28.03	29.00	1.250	0.946	1#
		Left Edge	10	251	848.8	-0.16	0.184	28.03	29.00	1.250	0.230	/
		Right Edge	10	251	848.8	-0.14	0.112	28.03	29.00	1.250	0.140	/
		Bottom Edge	10	251	848.8	-0.06	0.258	28.03	29.00	1.250	0.323	/
		Back Side	10	128	824.2	-0.08	0.630	27.86	29.00	1.300	0.819	/
		Back Side	10	190	836.6	-0.08	0.739	27.95	29.00	1.274	0.941	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.												

10.2GSM 1900

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Hotspot												
Ant.0	GPRS 4slots	Front Side	10	512	1850.2	-0.15	0.417	28.83	29.00	1.040	0.434	/
		Back Side	10	512	1850.2	0.02	0.994	28.83	29.00	1.040	1.034	2#
		Left Edge	10	512	1850.2	-0.18	0.152	28.83	29.00	1.040	0.158	/
		Right Edge	10	512	1850.2	0.18	0.386	28.83	29.00	1.040	0.401	/
		Bottom Edge	10	512	1850.2	-0.12	0.914	28.83	29.00	1.040	0.951	/
		Back Side	10	661	1880	-0.05	0.934	28.58	29.00	1.102	1.029	/
		Back Side	10	810	1909.8	0.19	0.794	28.36	29.00	1.159	0.920	/
		Bottom Edge	10	661	1880	0.05	0.895	28.58	29.00	1.102	0.986	/
		Bottom Edge	10	810	1909.8	0.11	0.758	28.36	29.00	1.159	0.879	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.												

10.3WCDMA Band 2

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Hotspot												
Ant.0	RCM	Front Side	10	9538	1907.6	0.18	0.260	23.37	23.50	1.030	0.268	/
		Back Side	10	9538	1907.6	0.08	0.579	23.37	23.50	1.030	0.596	/
		Left Edge	10	9538	1907.6	-0.17	0.095	23.37	23.50	1.030	0.098	/
		Right Edge	10	9538	1907.6	0.09	0.215	23.37	23.50	1.030	0.221	/
		Bottom Edge	10	9538	1907.6	0.09	0.572	23.37	23.50	1.030	0.589	/
		Back Side	10	9262	1852.4	0.12	0.573	23.04	23.50	1.112	0.637	/
		Back Side	10	9400	1880	-0.04	0.609	23.29	23.50	1.050	0.639	3#
Note: Refer to ANNEX C for the detailed test data for each test configuration.												

10.4WCDMA Band 5

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Hotspot												
Ant.0	RCM	Front Side	10	4183	836.6	0.13	0.132	23.69	24.00	1.074	0.142	/
		Back Side	10	4183	836.6	-0.03	0.469	23.69	24.00	1.074	0.504	4#
		Left Edge	10	4183	836.6	0.15	0.135	23.69	24.00	1.074	0.145	/
		Right Edge	10	4183	836.6	-0.15	0.088	23.69	24.00	1.074	0.095	/
		Bottom Edge	10	4183	836.6	0.11	0.198	23.69	24.00	1.074	0.213	/
		Back Side	10	4132	826.4	-0.01	0.415	23.32	24.00	1.169	0.485	/
		Back Side	10	4233	846.6	0.06	0.455	23.57	24.00	1.104	0.502	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.												

10.5LTE Band 2

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Bandwi dth	RB Num.	RB Start	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Hotspot															
Ant.0	QPSK	Front Side	10	19100	1900	20	1	MID	0.06	0.245	22.58	23.00	1.102	0.270	/
		Back Side	10	19100	1900	20	1	MID	0.04	0.431	22.58	23.00	1.102	0.475	/
		Left Edge	10	19100	1900	20	1	MID	0.11	0.095	22.58	23.00	1.102	0.105	/
		Right Edge	10	19100	1900	20	1	MID	-0.05	0.203	22.58	23.00	1.102	0.224	/
		Bottom Edge	10	19100	1900	20	1	MID	-0.03	0.482	22.58	23.00	1.102	0.531	/
		Back Side	10	18700	1860	20	1	MID	0.12	0.462	22.31	23.00	1.172	0.541	/
		Back Side	10	18900	1880	20	1	MID	-0.01	0.563	22.57	23.00	1.104	0.622	5#
		Front Side	10	19100	1900	20	50	LOW	0.03	0.186	21.42	22.00	1.143	0.213	/
		Back Side	10	19100	1900	20	50	LOW	0.05	0.333	21.42	22.00	1.143	0.381	/
		Left Edge	10	19100	1900	20	50	LOW	-0.06	0.073	21.42	22.00	1.143	0.083	/
		Right Edge	10	19100	1900	20	50	LOW	0.04	0.151	21.42	22.00	1.143	0.173	/
		Bottom Edge	10	19100	1900	20	50	LOW	0.01	0.371	21.42	22.00	1.143	0.424	/
		Back Side	10	18700	1860	20	50	LOW	0.02	0.345	21.07	22.00	1.239	0.427	/
		Back Side	10	18900	1880	20	50	LOW	0.11	0.433	21.42	22.00	1.143	0.495	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.															

10.6LTE Band 4

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Bandwi dth	RB Num.	RB Start	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Hotspot															
Ant.0	QPSK	Front Side	10	20050	1720	20	1	MID	0.03	0.117	21.73	22.00	1.064	0.124	/
		Back Side	10	20050	1720	20	1	MID	-0.08	0.343	21.73	22.00	1.064	0.365	6#
		Left Edge	10	20050	1720	20	1	MID	0.12	0.051	21.73	22.00	1.064	0.054	/
		Right Edge	10	20050	1720	20	1	MID	0.13	0.079	21.73	22.00	1.064	0.084	/
		Bottom Edge	10	20050	1720	20	1	MID	0.06	0.012	21.73	22.00	1.064	0.013	/
		Back Side	10	20175	1732.5	20	1	MID	-0.05	0.329	21.69	22.00	1.074	0.353	/
		Back Side	10	20300	1745	20	1	MID	0.14	0.122	21.61	22.00	1.094	0.133	/
		Front Side	10	20050	1720	20	50	MID	-0.12	0.094	20.70	21.00	1.072	0.101	/
		Back Side	10	20050	1720	20	50	MID	0.06	0.273	20.70	21.00	1.072	0.293	/
		Left Edge	10	20050	1720	20	50	MID	0.13	0.042	20.70	21.00	1.072	0.045	/
		Right Edge	10	20050	1720	20	50	MID	0.04	0.064	20.70	21.00	1.072	0.069	/
		Bottom Edge	10	20050	1720	20	50	MID	0.12	0.011	20.70	21.00	1.072	0.012	/
		Back Side	10	20175	1732.5	20	50	MID	-0.05	0.263	20.66	21.00	1.081	0.284	/
		Back Side	10	20300	1745	20	50	HIGH	0.07	0.097	20.61	21.00	1.094	0.106	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.															

10.7LTE Band 5

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Bandwi dth	RB Num.	RB Start	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Hotspot															
Ant.0	QPSK	Front Side	10	20450	829	10	1	MID	-0.19	0.109	24.26	24.50	1.057	0.115	/
		Back Side	10	20450	829	10	1	MID	0.08	0.366	24.26	24.50	1.057	0.387	/
		Left Edge	10	20450	829	10	1	MID	0.15	0.045	24.26	24.50	1.057	0.048	/
		Right Edge	10	20450	829	10	1	MID	0.03	0.067	24.26	24.50	1.057	0.071	/
		Bottom Edge	10	20450	829	10	1	MID	-0.15	0.043	24.26	24.50	1.057	0.045	/
		Back Side	10	20525	836.5	10	1	MID	0.11	0.492	23.83	24.50	1.167	0.574	/
		Back Side	10	20600	844	10	1	MID	0.10	0.508	23.63	24.50	1.222	0.621	7#
		Front Side	10	20450	829	10	25	MID	0.06	0.076	22.82	23.50	1.169	0.089	/
		Back Side	10	20450	829	10	25	MID	0.08	0.264	22.82	23.50	1.169	0.309	/
		Left Edge	10	20450	829	10	25	MID	-0.12	0.034	22.82	23.50	1.169	0.040	/
		Right Edge	10	20450	829	10	25	MID	0.04	0.047	22.82	23.50	1.169	0.055	/
		Bottom Edge	10	20450	829	10	25	MID	-0.06	0.034	22.82	23.50	1.169	0.040	/
		Back Side	10	20525	836.5	10	25	MID	0.09	0.371	22.64	23.50	1.219	0.452	/
		Back Side	10	20600	844	10	25	MID	0.14	0.398	22.58	23.50	1.236	0.492	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.															

10.8LTE Band 7

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Bandwi dth	RB Num.	RB Start	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Hotspot															
Ant.0	QPSK	Front Side	10	21100	2535	20	1	MID	0.07	0.084	23.54	24.00	1.112	0.093	/
		Back Side	10	21100	2535	20	1	MID	0.00	0.210	23.54	24.00	1.112	0.234	/
		Left Edge	10	21100	2535	20	1	MID	-0.19	0.051	23.54	24.00	1.112	0.057	/
		Right Edge	10	21100	2535	20	1	MID	-0.04	0.090	23.54	24.00	1.112	0.100	/
		Bottom Edge	10	21100	2535	20	1	MID	-0.02	0.154	23.54	24.00	1.112	0.171	/
		Back Side	10	20850	2510	20	1	MID	0.10	0.190	23.10	24.00	1.230	0.234	/
		Back Side	10	21350	2560	20	1	MID	0.05	0.260	23.12	24.00	1.225	0.319	8#
		Front Side	10	21350	2560	20	50	MID	0.02	0.063	22.24	23.00	1.191	0.075	/
		Back Side	10	21350	2560	20	50	MID	0.03	0.157	22.24	23.00	1.191	0.187	/
		Left Edge	10	21350	2560	20	50	MID	0.12	0.036	22.24	23.00	1.191	0.043	/
		Right Edge	10	21350	2560	20	50	MID	-0.06	0.000	22.24	23.00	1.191	0.000	/
		Bottom Edge	10	21350	2560	20	50	MID	0.06	0.113	22.24	23.00	1.191	0.135	/
		Back Side	10	20850	2510	20	50	MID	0.03	0.153	22.13	23.00	1.222	0.187	/
		Back Side	10	21100	2535	20	50	HIGH	-0.05	0.208	22.18	23.00	1.208	0.251	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.															

10.9LTE Band 12

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Bandwi dth	RB Num.	RB Start	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Hotspot															
Ant.0	QPSK	Front Side	10	23060	704	10	1	MID	0.05	0.085	24.36	24.50	1.033	0.088	/
		Back Side	10	23060	704	10	1	MID	0.15	0.316	24.36	24.50	1.033	0.326	9#
		Left Edge	10	23060	704	10	1	MID	-0.11	0.068	24.36	24.50	1.033	0.070	/
		Right Edge	10	23060	704	10	1	MID	0.05	0.052	24.36	24.50	1.033	0.054	/
		Bottom Edge	10	23060	704	10	1	MID	0.08	0.089	24.36	24.50	1.033	0.092	/
		Back Side	10	23095	707.5	10	1	MID	-0.15	0.254	24.02	24.50	1.117	0.284	/
		Back Side	10	23130	711	10	1	MID	0.12	0.209	23.85	24.50	1.161	0.243	/
		Front Side	10	23130	711	10	25	LOW	0.02	0.063	22.96	23.50	1.132	0.071	/
		Back Side	10	23130	711	10	25	LOW	0.11	0.228	22.96	23.50	1.132	0.258	/
		Left Edge	10	23130	711	10	25	LOW	0.13	0.048	22.96	23.50	1.132	0.054	/
		Right Edge	10	23130	711	10	25	LOW	-0.04	0.037	22.96	23.50	1.132	0.042	/
		Bottom Edge	10	23130	711	10	25	LOW	0.09	0.067	22.96	23.50	1.132	0.076	/
		Back Side	10	23095	707.5	10	25	MID	-0.03	0.192	22.83	23.50	1.167	0.224	/
		Back Side	10	23060	704	10	25	MID	0.06	0.167	22.94	23.50	1.138	0.190	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.															

10.10 LTE Band 14

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Bandwi dth	RB Num.	RB Start	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Hotspot															
Ant.0	QPSK	Front Side	10	23330	793	10	1	MID	0.05	0.033	24.04	24.50	1.112	0.037	/
		Back Side	10	23330	793	10	1	MID	0.09	0.076	24.04	24.50	1.112	0.085	10#
		Left Edge	10	23330	793	10	1	MID	0.14	0.021	24.04	24.50	1.112	0.023	/
		Right Edge	10	23330	793	10	1	MID	0.05	0.020	24.04	24.50	1.112	0.022	/
		Bottom Edge	10	23330	793	10	1	MID	-0.07	0.035	24.04	24.50	1.112	0.039	/
		Front Side	10	23330	793	10	25	LOW	0.03	0.026	22.83	23.50	1.167	0.030	/
		Back Side	10	23330	793	10	25	LOW	-0.06	0.057	22.83	23.50	1.167	0.067	/
		Left Edge	10	23330	793	10	25	LOW	0.04	0.017	22.83	23.50	1.167	0.020	/
		Right Edge	10	23330	793	10	25	LOW	0.05	0.014	22.83	23.50	1.167	0.016	/
		Bottom Edge	10	23330	793	10	25	LOW	0.08	0.027	22.83	23.50	1.167	0.032	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.															

10.11 LTE Band 17

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Bandwi dth	RB Num.	RB Start	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Hotspot															
Ant.0	QPSK	Front Side	10	23780	709	10	1	MID	0.11	0.086	24.31	24.50	1.045	0.090	/
		Back Side	10	23780	709	10	1	MID	0.15	0.285	24.31	24.50	1.045	0.298	/
		Left Edge	10	23780	709	10	1	MID	-0.03	0.079	24.31	24.50	1.045	0.083	/
		Right Edge	10	23780	709	10	1	MID	0.11	0.045	24.31	24.50	1.045	0.047	/
		Bottom Edge	10	23780	709	10	1	MID	0.07	0.077	24.31	24.50	1.045	0.080	/
		Back Side	10	23790	710	10	1	MID	-0.16	0.299	24.01	24.50	1.119	0.335	11#
		Back Side	10	23800	711	10	1	MID	0.11	0.265	23.90	24.50	1.148	0.304	/
		Front Side	10	23780	709	10	25	MID	0.06	0.064	22.91	24.50	1.442	0.092	/
		Back Side	10	23780	709	10	25	MID	0.03	0.204	22.91	24.50	1.442	0.294	/
		Left Edge	10	23780	709	10	25	MID	-0.06	0.058	22.91	24.50	1.442	0.084	/
		Right Edge	10	23780	709	10	25	MID	0.05	0.034	22.91	24.50	1.442	0.049	/
		Bottom Edge	10	23780	709	10	25	MID	-0.11	0.054	22.91	24.50	1.442	0.078	/
		Back Side	10	23790	710	10	25	MID	0.08	0.223	22.82	24.50	1.472	0.328	/
		Back Side	10	23800	711	10	25	MID	0.03	0.206	22.86	24.50	1.459	0.301	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.															

10.12 LTE Band 38

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Bandwi dth	RB Num.	RB Start	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Hotspot															
Ant.0	QPSK	Front Side	10	37850	2580	20	1	MID	0.06	0.068	24.95	25.00	1.012	0.069	/
		Back Side	10	37850	2580	20	1	MID	0.01	0.184	24.95	25.00	1.012	0.186	/
		Left Edge	10	37850	2580	20	1	MID	-0.18	0.041	24.95	25.00	1.012	0.041	/
		Right Edge	10	37850	2580	20	1	MID	-0.14	0.078	24.95	25.00	1.012	0.079	/
		Bottom Edge	10	37850	2580	20	1	MID	-0.09	0.140	24.95	25.00	1.012	0.142	/
		Back Side	10	38000	2595	20	1	MID	0.17	0.184	23.28	25.00	1.486	0.273	/
		Back Side	10	38150	2610	20	1	MID	0.09	0.211	23.49	25.00	1.416	0.299	12#
		Front Side	10	37850	2580	20	50	LOW	0.06	0.057	23.99	24.00	1.002	0.057	/
		Back Side	10	37850	2580	20	50	LOW	0.12	0.146	23.99	24.00	1.002	0.146	/
		Left Edge	10	37850	2580	20	50	LOW	-0.03	0.031	23.99	24.00	1.002	0.031	/
		Right Edge	10	37850	2580	20	50	LOW	-0.05	0.065	23.99	24.00	1.002	0.065	/
		Bottom Edge	10	37850	2580	20	50	LOW	0.06	0.112	23.99	24.00	1.002	0.112	/
		Back Side	10	38000	2595	20	50	MID	-0.01	0.191	23.41	24.00	1.146	0.219	/
		Back Side	10	38150	2610	20	50	LOW	0.03	0.171	22.62	24.00	1.374	0.235	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.															

10.13 LTE Band 41

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Bandwi dth	RB Num.	RB Start	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Hotspot															
Ant.0	QPSK	Front Side	10	41490	2680	20	1	MID	0.19	0.064	23.41	23.50	1.021	0.065	/
		Back Side	10	41490	2680	20	1	MID	0.04	0.318	23.41	23.50	1.021	0.325	13#
		Left Edge	10	41490	2680	20	1	MID	0.02	0.033	23.41	23.50	1.021	0.034	/
		Right Edge	10	41490	2680	20	1	MID	0.11	0.048	23.41	23.50	1.021	0.049	/
		Bottom Edge	10	41490	2680	20	1	MID	-0.01	0.135	23.41	23.50	1.021	0.138	/
		Back Side	10	39750	2506	20	1	HIGH	-0.14	0.123	22.78	23.50	1.180	0.145	/
		Back Side	10	40185	2549.5	20	1	HIGH	-0.06	0.127	22.82	23.50	1.169	0.148	/
		Back Side	10	40620	2593	20	1	MID	0.00	0.176	23.20	23.50	1.072	0.189	/
		Back Side	10	41055	2636.5	20	1	MID	0.06	0.185	23.23	23.50	1.064	0.197	/
		Front Side	10	41490	2680	20	50	LOW	0.12	0.041	21.31	22.50	1.315	0.054	/
		Back Side	10	41490	2680	20	50	LOW	0.02	0.199	21.31	22.50	1.315	0.262	/
		Left Edge	10	41490	2680	20	50	LOW	0.06	0.021	21.31	22.50	1.315	0.028	/
		Right Edge	10	41490	2680	20	50	LOW	0.13	0.032	21.31	22.50	1.315	0.042	/
		Bottom Edge	10	41490	2680	20	50	LOW	-0.01	0.081	21.31	22.50	1.315	0.107	/
		Back Side	10	39750	2506	20	50	MID	0.14	0.082	21.10	22.50	1.380	0.113	/
		Back Side	10	40185	2549.5	20	50	LOW	0.02	0.089	21.12	22.50	1.374	0.122	/
		Back Side	10	40620	2593	20	50	LOW	-0.01	0.113	21.18	22.50	1.355	0.153	/
		Back Side	10	41055	2636.5	20	50	LOW	-0.04	0.119	21.23	22.50	1.340	0.159	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.															

10.14 WIFI 2.4GHz

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	1g Scaled SAR (W/kg)	Meas. No.
Hotspot														
Ant.2	802.11b	Front Side	10	6	2437	-0.03	0.013	17.86	18.00	1.033	98.85	1.012	0.014	/
		Back Side	10	6	2437	0.02	0.311	17.86	18.00	1.033	98.85	1.012	0.325	/
		Left Edge	10	6	2437	0.06	0.071	17.86	18.00	1.033	98.85	1.012	0.074	/
		Top Edge	10	6	2437	-0.08	0.009	17.86	18.00	1.033	98.85	1.012	0.009	/
		Back Side	10	1	2412	-0.05	0.305	17.04	18.00	1.247	98.85	1.012	0.385	14#
		Back Side	10	11	2462	0.06	0.152	17.03	18.00	1.250	98.85	1.012	0.192	/
Ant.3		Front Side	10	6	2437	0.03	0.006	17.87	18.00	1.030	98.85	1.012	0.006	/
		Back Side	10	6	2437	0.12	0.011	17.87	18.00	1.030	98.85	1.012	0.011	/
		Left Edge	10	6	2437	0.09	0.009	17.87	18.00	1.030	98.85	1.012	0.009	/
		Bottom Edge	10	6	2437	-0.06	0.006	17.87	18.00	1.030	98.85	1.012	0.006	/
		Back Side	10	1	2412	-0.07	0.012	17.25	18.00	1.189	98.85	1.012	0.014	/
		Back Side	10	11	2462	0.05	0.008	16.19	18.00	1.517	98.85	1.012	0.012	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.														

10.15 WIFI 5GHz

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	1g Scaled SAR (W/kg)	Meas. No.
Hotspot-5.2G														
Ant.2	802.11a	Front Side	10	44	5220	-0.02	0.006	16.47	17.00	1.130	93.37	1.071	0.007	/
		Back Side	10	44	5220	0.02	0.037	16.47	17.00	1.130	93.37	1.071	0.045	/
		Left Edge	10	44	5220	-0.08	0.008	16.47	17.00	1.130	93.37	1.071	0.010	/
		Top Edge	10	44	5220	0.02	0.094	16.47	17.00	1.130	93.37	1.071	0.114	/
		Top Edge	10	36	5180	-0.06	0.006	16.36	17.00	1.159	93.37	1.071	0.007	/
		Top Edge	10	48	5240	0.08	0.009	16.31	17.00	1.172	93.37	1.071	0.011	/
Ant.3		Front Side	10	44	5220	-0.04	0.079	16.14	17.00	1.219	93.37	1.071	0.103	/
		Back Side	10	44	5220	0.02	0.136	16.14	17.00	1.219	93.37	1.071	0.178	15#
		Left Edge	10	44	5220	0.07	0.061	16.14	17.00	1.219	93.37	1.071	0.080	/
		Bottom Edge	10	44	5220	-0.05	0.131	16.14	17.00	1.219	93.37	1.071	0.171	/
		Back Side	10	36	5180	0.07	0.121	16.13	17.00	1.222	93.37	1.071	0.158	/
		Back Side	10	48	5240	0.00	0.128	16.08	17.00	1.236	93.37	1.071	0.169	/
Hotspot-5.8G														
Ant.2	802.11a	Front Side	10	165	5825	-0.01	0.006	16.40	17.00	1.148	93.37	1.071	0.007	/
		Back Side	10	165	5825	0.08	0.095	16.40	17.00	1.148	93.37	1.071	0.117	/
		Left Edge	10	165	5825	0.10	0.099	16.40	17.00	1.148	93.37	1.071	0.122	/
		Top Edge	10	165	5825	0.01	0.007	16.40	17.00	1.148	93.37	1.071	0.009	/
		Back Side	10	149	5745	0.00	0.098	16.26	17.00	1.186	93.37	1.071	0.124	/
		Back Side	10	157	5785	-0.05	0.087	16.18	17.00	1.208	93.37	1.071	0.113	/
Ant.3		Front Side	10	149	5745	0.03	0.082	16.09	17.00	1.233	93.37	1.071	0.108	/
		Back Side	10	149	5745	0.12	0.104	16.09	17.00	1.233	93.37	1.071	0.137	/
		Left Edge	10	149	5745	-0.06	0.076	16.09	17.00	1.233	93.37	1.071	0.100	/
		Bottom Edge	10	149	5745	-0.07	0.099	16.09	17.00	1.233	93.37	1.071	0.131	/
		Bottom Edge	10	165	5825	-0.08	0.119	15.87	17.00	1.297	93.37	1.071	0.165	16#
		Bottom Edge	10	157	5785	-0.05	0.108	15.95	17.00	1.274	93.37	1.071	0.147	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.														

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	10g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	10g Scaled SAR (W/kg)	Meas. No.
Limbs-5.3G														
Ant.2	802.11a	Front Side	0	60	5300	0.12	0.006	16.51	17.00	1.119	93.37	1.071	0.007	/
		Back Side	0	60	5300	-0.08	0.009	16.51	17.00	1.119	93.37	1.071	0.011	/
		Left Edge	0	60	5300	0.09	0.018	16.51	17.00	1.119	93.37	1.071	0.022	/
		Top Edge	0	60	5300	-0.02	0.014	16.51	17.00	1.119	93.37	1.071	0.017	/
		Left Edge	0	52	5260	-0.11	0.059	16.42	17.00	1.143	93.37	1.071	0.072	/
Left Edge		0	60	5300	0.11	0.016	16.37	17.00	1.156	93.37	1.071	0.020	/	
Ant.3		Front Side	0	52	5260	-0.03	0.019	16.10	17.00	1.230	93.37	1.071	0.025	/
		Back Side	0	52	5260	0.04	0.175	16.10	17.00	1.230	93.37	1.071	0.231	17#
		Left Edge	0	52	5260	-0.03	0.096	16.10	17.00	1.230	93.37	1.071	0.126	/
		Bottom Edge	0	52	5260	0.05	0.071	16.10	17.00	1.230	93.37	1.071	0.094	/
		Back Side	0	60	5300	0.09	0.053	15.75	17.00	1.334	93.37	1.071	0.076	/
Back Side	0	64	5320	-0.06	0.086	15.84	17.00	1.306	93.37	1.071	0.120	/		
Limbs-5.6G														
Ant.2	802.11a	Front Side	0	100	5500	0.06	0.023	16.54	17.00	1.112	93.37	1.071	0.027	/
		Back Side	0	100	5500	0.07	0.026	16.54	17.00	1.112	93.37	1.071	0.031	/
		Left Edge	0	100	5500	-0.01	0.016	16.54	17.00	1.112	93.37	1.071	0.019	/
		Top Edge	0	100	5500	-0.05	0.006	16.54	17.00	1.112	93.37	1.071	0.007	/
		Back Side	0	116	5580	0.00	0.016	15.83	17.00	1.309	93.37	1.071	0.022	/
Back Side		0	140	5700	-0.12	0.014	15.73	17.00	1.340	93.37	1.071	0.020	/	
Ant.3		Front Side	0	100	5500	-0.03	0.096	16.76	17.00	1.057	93.37	1.071	0.109	/
		Back Side	0	100	5500	0.02	0.254	16.76	17.00	1.057	93.37	1.071	0.287	/
		Left Edge	0	100	5500	-0.12	0.116	16.76	17.00	1.057	93.37	1.071	0.131	/
		Bottom Edge	0	100	5500	-0.02	0.098	16.76	17.00	1.057	93.37	1.071	0.111	/
		Back Side	0	116	5580	0.07	0.275	16.62	17.00	1.091	93.37	1.071	0.321	18#
Back Side	0	140	5700	-0.08	0.253	16.39	17.00	1.151	93.37	1.071	0.312	/		
Note: Refer to ANNEX C for the detailed test data for each test configuration.														

Note: Refer to ANNEX C for the detailed test data for each test configuration.

10.16 WIFI 6GHz

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	10g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	10g Scaled SAR (W/kg)	Meas. No.
Limbs														
Ant.2	802.11ax80	Front Side	0	199	6945	-0.16	0.199	18.32	18.50	1.042	93.08	1.074	0.223	/
		Back Side	0	199	6945	-0.12	1.830	18.32	18.50	1.042	93.08	1.074	2.048	/
		Left Edge	0	199	6945	0.19	1.290	18.32	18.50	1.042	93.08	1.074	1.444	/
		Right Edge	0	199	6945	-0.13	0.031	18.32	18.50	1.042	93.08	1.074	0.035	/
		Top Edge	0	199	6945	0.02	0.361	18.32	18.50	1.042	93.08	1.074	0.404	/
		Bottom Edge	0	199	6945	0.10	0.011	18.32	18.50	1.042	93.08	1.074	0.012	/
		Back Side	0	7	5985	0.16	0.590	13.14	14.00	1.219	93.08	1.074	0.772	/
		Back Side	0	39	6145	-0.07	0.632	12.34	14.00	1.466	93.08	1.074	0.995	/
		Back Side	0	87	6385	-0.19	0.566	12.61	14.00	1.377	93.08	1.074	0.837	/
		Back Side	0	103	6465	0.06	1.580	16.92	18.50	1.439	93.08	1.074	2.442	/
		Back Side	0	119	6545	0.05	1.550	16.78	18.50	1.486	93.08	1.074	2.474	/
		Back Side	0	135	6625	-0.02	1.840	17.64	18.50	1.219	93.08	1.074	2.409	/
		Back Side	0	151	6705	0.07	1.670	18.08	18.50	1.102	93.08	1.074	1.977	/
		Back Side	0	167	6785	-0.10	2.020	18.09	18.50	1.099	93.08	1.074	2.384	/
		Back Side	0	183	6865	-0.02	2.200	18.14	18.50	1.086	93.08	1.074	2.566	21#
		Back Side	0	215	7025	0.13	1.430	17.61	18.50	1.227	93.08	1.074	1.884	/
Ant.3	802.11ax80	Front Side	0	151	6705	-0.17	0.315	17.77	18.50	1.183	93.08	1.074	0.400	/
		Back Side	0	151	6705	0.08	0.370	17.77	18.50	1.183	93.08	1.074	0.470	/
		Left Edge	0	151	6705	0.05	0.572	17.77	18.50	1.183	93.08	1.074	0.727	/
		Right Edge	0	151	6705	-0.06	0.024	17.77	18.50	1.183	93.08	1.074	0.030	/
		Top Edge	0	151	6705	0.07	0.056	17.77	18.50	1.183	93.08	1.074	0.071	/
		Bottom Edge	0	151	6705	-0.17	0.306	17.77	18.50	1.183	93.08	1.074	0.389	/
		Left Edge	0	7	5985	0.12	0.157	13.61	14.00	1.094	93.08	1.074	0.184	/
		Left Edge	0	39	6145	-0.06	0.159	12.82	14.00	1.312	93.08	1.074	0.224	/
		Left Edge	0	87	6385	0.03	0.161	13.05	14.00	1.245	93.08	1.074	0.215	/
		Left Edge	0	103	6465	0.17	0.569	17.43	18.50	1.279	93.08	1.074	0.782	/
		Left Edge	0	119	6545	-0.09	0.578	17.61	18.50	1.227	93.08	1.074	0.762	/
		Left Edge	0	135	6625	0.07	0.577	17.63	18.50	1.222	93.08	1.074	0.757	/
		Left Edge	0	167	6785	-0.18	0.572	17.65	18.50	1.216	93.08	1.074	0.747	/
		Left Edge	0	183	6865	0.00	0.575	17.64	18.50	1.219	93.08	1.074	0.753	/
		Left Edge	0	199	6945	0.19	0.765	17.52	18.50	1.253	93.08	1.074	1.029	/
		Left Edge	0	215	7025	-0.09	0.576	17.05	18.50	1.396	93.08	1.074	0.864	/

Note: Refer to ANNEX C for the detailed test data for each test configuration.

10.17 Bluetooth

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	1g Scaled SAR (W/kg)	Meas. No.
Hotspot														
Ant.2	DH5	Front Side	10	39	2441	0.03	0.012	8.65	9.50	1.216	77.14	1.296	0.019	/
		Back Side	10	39	2441	0.01	0.038	8.65	9.50	1.216	77.14	1.296	0.060	19#
		Left Edge	10	39	2441	-0.02	0.009	8.65	9.50	1.216	77.14	1.296	0.014	/
		Top Edge	10	39	2441	-0.06	0.005	8.65	9.50	1.216	77.14	1.296	0.008	/
		Back Side	10	0	2402	0.06	0.032	8.23	9.50	1.340	77.14	1.296	0.056	/
		Back Side	10	78	2480	-0.02	0.026	7.45	9.00	1.429	77.14	1.296	0.048	/
	BLE-1M	Front Side	10	0	2402	0.07	0.006	9.08	9.50	1.102	62.12	1.610	0.011	/
		Back Side	10	0	2402	-0.01	0.021	9.08	9.50	1.102	62.12	1.610	0.037	/
		Left Edge	10	0	2402	0.04	0.005	9.08	9.50	1.102	62.12	1.610	0.009	/
		Top Edge	10	0	2402	-0.10	0.003	9.08	9.50	1.102	62.12	1.610	0.005	/
		Back Side	10	39	2441	0.18	0.018	8.82	9.50	1.169	62.12	1.610	0.034	/
		Back Side	10	78	2480	-0.16	0.016	7.84	9.00	1.306	62.12	1.610	0.034	/

Note: Refer to ANNEX C for the detailed test data for each test configuration.

10.18 UHF

Antenna	Mode	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	1g Scaled SAR (W/kg)	Meas. No.
Hotspot														
Ant.4	UHF	Front Side	10	1	902.75	0.01	0.141	27.22	27.50	1.067	27.79	2.879	0.433	/
		Back Side	10	1	902.75	-0.01	0.379	27.22	27.50	1.067	27.79	2.879	1.164	20#
		Right Edge	10	1	902.75	-0.02	0.042	27.22	27.50	1.067	27.79	2.879	0.129	/
		Top Edge	10	1	902.75	-0.02	0.237	27.22	27.50	1.067	27.79	2.879	0.728	/
		Back Side	10	26	915.25	0.19	0.345	27.21	27.50	1.069	27.79	2.879	1.062	/
		Back Side	10	50	927.25	-0.16	0.339	27.04	27.50	1.112	27.79	2.879	1.085	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.														

10.19 NFC SAR

According to the ANSI C63.10 clause 11.12.2.2:

The value of maximum peak output power is according to the method described in ANSI C63.10 clause 11.12.2.2 General procedure for conducted measurements in restricted bands:

- a) Measure the conducted output power (in dBm) using the detector specified (see guidance regarding measurement procedures for determining quasi-peak, peak, and average conducted output power, respectively).
- b) Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP level (see guidance on determining the applicable antenna gain)
- c) Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies $\leq$ 30 MHz, 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies $>$ 1000 MHz).
- d) For devices with multiple antenna-ports, measure the power of each individual chain and sum the EIRP of all chains in linear terms (e.g., Watts, mW).
- e) Convert the resultant EIRP level to an equivalent electric field strength using the following relationship: $E = \text{EIRP} - 20\log D + 104.8$

where:

E = electric field strength in dB μ V/m,

EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

Mode	f (MHz)	Max. E-Field strength (dB μ V/m)	D (m)	Ground reflection factor (dB)	ERP (dBm)
NFC (13.56MHz)	13.56	57.47	10	6	-24.33

Note:

1. Add the appropriate maximum ground reflection factor to the ERP level (6 dB for frequencies $\leq$ 30 MHz).
2. ERP = $57.47 + 20 \cdot \log(10) - 104.8 + 6 = -24.33$ (dBm)

According to the FCC KDB 447498 D04

Estimated SAR: SAR test = $1.6 \cdot P_{\text{ant}} / P_{\text{th}}$ [W/kg]

Estimated SAR	1.6 · P _{ant} / P _{th} [W/kg]		
P _{meas.} (dBm)	-24.33	P _{meas.} (mW)	0.00368
P _{th.} (mW)	443.13		
NFC Estimated 1g SAR [W/kg]	<0.001		

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	Antenna	RF Exposure Conditions	Test Position	Highest Measured SAR (W/kg)	Repeated SAR (Yes/No)	Highest Measured SAR (W/kg)	Largest to Smallest SAR Ratio
1850.2	GSM 1900	Ant.0	Hotspot	Back Side	0.994	Yes	0.958	1.04
1850.2	GSM 1900	Ant.0	Hotspot	Bottom Edge	0.914	Yes	0.897	1.02
1880	GSM 1900	Ant.0	Hotspot	Back Side	0.934	Yes	0.903	1.03
6865	6G WIFI	Ant.2	Limbs	Back Side	2.200	Yes	2.180	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).

According to KDB 447498 D04, simultaneous transmission:

- a) $SPLSR = (SAR1 + SAR2)^{1.5} / R_i$ (min. separation distance, mm), and the peak separation distance is determined from the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
SAR1 is the highest reported or estimated SAR for the first of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition.
SAR2 is the highest reported or estimated SAR for the second of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition as the first.
- b) If $SPLSR \leq 0.04$, simultaneous transmission SAR measurement is not necessary.
- c) Simultaneous transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.

12.1 Simultaneous Transmission Mode Considerations

No.	Simultaneous Tx Combination	Hotspot	Limbs
1	WWAN+WIFI2.4G(Ant.2)+WIFI2.4G(Ant.3)	Yes	/
2	WIFI2.4G(Ant.2)+WIFI2.4G(Ant.3)+UHF	Yes	/
3	WWAN+WIFI5G(Ant.2)+WIFI5G(Ant.3)+Bluetooth	Yes	/
4	WIFI5G(Ant.2)+WIFI5G(Ant.3)+Bluetooth+UHF	Yes	/
5	WIFI5G(Ant.2)+WIFI5G(Ant.3)	Yes	Yes
6	WIFI6G(Ant.2)+WIFI6G(Ant.3)	/	Yes

Note:

1. WiFi 2.4G and Bluetooth share the same antenna, and can't transmit simultaneously.
2. 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.
3. The maximum SAR summation is calculated based on the same configuration and test position.
4. 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 Simultaneous Transmission SAR Evaluation

Please refer the document “BL-SZ2580053-AST.pdf”.

12.2.2 Highest Total Exposure Ratio of Simultaneous Transmission

NFC multi-transmit requires the use of the TER formula:

$$TER = \sum_{k=1}^{N_s} \left(\frac{SAR_k}{SAR_{lim}} \right) + \sum_{k=1}^{N_f} \left(\frac{MPE_{field, k}}{MPE_{field, lim}} \right)^2 + \sum_{k=1}^{N_{PD}} \left(\frac{MPE_{PD, k}}{MPE_{PD, lim}} \right)$$

The maximum Body SAR value for Simultaneous Transmission is 1.542 [W/kg]. Therefore, the worst $TER = (1.563 + 0.001) / 1.6 = 0.978 < 1$, the NFC SAR transmit simultaneously Pass.

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
Test Software	Speag	DASY8	16.2.2.1588	N/A	N/A
750MHz Validation Dipole	Speag	D750V3	SN: 1208	2024/08/19	2027/08/18
835MHz Validation Dipole	Speag	D835V2	SN: 4d187	2024/05/08	2027/05/07
1750MHz Validation Dipole	Speag	D1750V2	SN: 1130	2024/05/08	2027/05/07
1950MHz Validation Dipole	Speag	D1950V3	SN: 1240	2024/08/22	2027/08/21
2450MHz Validation Dipole	Speag	D2450V2	SN: 952	2024/05/07	2027/05/06
2600MHz Validation Dipole	Speag	D2600V2	SN: 1095	2024/05/08	2027/05/07
5GHz Validation Dipole	Speag	D5GHzV2	SN: 1200	2024/05/09	2027/05/08
6.5GHz Validation Dipole	Speag	D6.5GHzV2	SN: 1037	2024/05/28	2027/05/27
Data Acquisition Electronics	Speag	DAE4	SN: 1710	2025/01/20	2026/01/19
E-Field Probe	Speag	EX3DV4	SN: 7510	2024/06/25	2025/06/24
E-Field Probe	Speag	EX3DV4	SN: 7893	2024/09/05	2025/09/04
E-Field Probe	Speag	EX3DV4	SN: 3974	2025/06/05	2026/06/04
Signal Generator	Keysight	N5173B	MY62150163	2024/08/12	2025/08/11
Power Meter	R&S	NRVD-B2	835843/014	2024/08/08	2025/08/07
Power Sensor	R&S	NRV-Z4	100381	2024/08/08	2025/08/07
Power Sensor	R&S	NRV-Z2	100211	2024/08/08	2025/08/07
Signal Generator	Keysight	N5173B	MY62150163	2025/07/15	2026/07/14
Power Meter	R&S	NRVD-B2	835843/014	2025/07/15	2026/07/14
Power Sensor	R&S	NRV-Z4	100381	2025/07/15	2026/07/14
Power Sensor	R&S	NRV-Z2	100211	2025/07/15	2026/07/14
Wireless Communication Test Set	Anritsu	MT8820C	6201502974	2024/08/01	2025/07/31
Network Analyzer	Agilent	E5071C	MY46103472	2024/09/11	2025/09/10
Thermometer	Elitech	RC-4HC	EF7216002985	2024/10/31	2025/10/30
Thermometer	Elitech	RC-4HC	EF720B004811	2024/10/31	2025/10/30
Thermometer	Elitech	RC-4HC	EF7239002655	2024/10/31	2025/10/30
Thermometer	Elitech	RC-4HC	EF7216002974	2024/10/31	2025/10/30
Power Amplifier	Mini-Circuits	ZVA-183W-S+	932502132	N/A	N/A
Dielectric Probe Kit	Speag	DAK3.5	SN: 1312	N/A	N/A
Phantom	Speag	SAM	SN: 1576	N/A	N/A
Phantom	Speag	SAM	SN: 1859	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. (°C)	Meas. Conductivity (σ) (S/m)	Meas. Permittivity (ϵ)	Target Conductivity (σ) (S/m)	Target Permittivity (ϵ)	Conductivity Tolerance (%)	Permittivity Tolerance (%)
2025.06.04	Head	750	21.2	0.90	41.49	0.89	41.94	1.12	-1.07
2025.06.05	Head	835	21.1	0.90	41.66	0.90	41.50	0.00	0.39
2025.06.06	Head	835	21.2	0.91	41.63	0.90	41.50	1.11	0.31
2025.06.07	Head	835	21.3	0.91	41.63	0.90	41.50	1.11	0.31
2025.06.08	Head	1750	21.4	1.41	40.02	1.37	40.08	2.92	-0.15
2025.06.09	Head	1950	21.2	1.43	39.58	1.40	40.00	2.14	-1.05
2025.06.10	Head	1950	21.3	1.42	39.34	1.40	40.00	1.43	-1.65
2025.06.11	Head	1950	21.5	1.43	39.42	1.40	40.00	2.14	-1.45
2025.06.12	Head	2600	21.4	1.99	38.57	1.96	39.01	1.53	-1.13
2025.06.13	Head	2600	21.2	1.98	39.05	1.96	39.01	1.02	0.10
2025.06.14	Head	2600	21.3	1.98	39.17	1.96	39.01	1.02	0.41
2025.07.08	Head	2450	21.5	1.79	39.56	1.80	39.20	-0.56	0.92
2025.06.28	Head	2450	21.4	1.79	39.46	1.80	39.20	-0.56	0.66
2025.06.29	Head	5250	21.4	4.77	35.40	4.71	35.93	1.27	-1.48
2025.06.30	Head	5250	21.2	4.62	36.63	4.71	35.93	-1.91	1.95
2025.07.01	Head	5600	21.3	5.07	35.80	5.07	35.53	0.00	0.76
2025.07.02	Head	5600	21.3	5.05	35.41	5.07	35.53	-0.39	-0.34
2025.07.03	Head	5750	21.2	5.18	35.75	5.22	35.36	-0.77	1.10
2025.07.04	Head	5750	21.1	5.16	35.86	5.22	35.36	-1.15	1.41
2025.07.05	Head	6500	21.2	6.11	34.75	6.07	34.46	0.66	0.84
2025.07.06	Head	6500	21.3	6.12	34.75	6.07	34.46	0.82	0.84
2025.07.21	Head	835	21.1	0.87	42.59	0.90	41.50	-3.33	2.63
2025.09.02	Head	6500	21.1	6.07	33.96	6.07	34.46	0.00	-1.45
2025.09.02	Head	6500	21.1	6.16	34.41	6.07	34.46	1.48	-0.15

Note: The tolerance limit of Conductivity and Permittivity is $\pm 5\%$.

ANNEX B SYSTEM CHECK RESULT

Comparing to the original SAR value provided by SPEAG, the validation data should be within its specification 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 (%)
2025.06.04	Head	750	100	0.857	8.57	8.46	1.30
2025.06.05	Head	835	100	0.968	9.68	9.74	-0.62
2025.06.06	Head	835	100	0.975	9.75	9.74	0.10
2025.06.07	Head	835	100	0.954	9.54	9.74	-2.05
2025.06.08	Head	1750	100	3.680	36.80	37.00	-0.54
2025.06.09	Head	1950	100	4.250	42.50	41.70	1.92
2025.06.10	Head	1950	100	4.210	42.10	41.70	0.96
2025.06.11	Head	1950	100	4.140	41.40	41.70	-0.72
2025.06.12	Head	2600	100	5.640	56.40	55.90	0.89
2025.06.13	Head	2600	100	5.720	57.20	55.90	2.33
2025.06.14	Head	2600	100	5.520	55.20	55.90	-1.25
2025.07.08	Head	2450	100	5.460	54.60	52.60	3.80
2025.06.28	Head	2450	100	5.330	53.30	52.60	1.33
2025.06.29	Head	5250	100	7.740	77.40	77.70	-0.39
2025.06.30	Head	5250	100	7.840	78.40	77.70	0.90
2025.07.03	Head	5750	100	7.750	77.50	77.60	-0.13
2025.07.04	Head	5750	100	7.710	77.10	77.60	-0.64
2025.07.21	Head	835	100	0.947	9.47	9.74	-2.77

Note 1: The tolerance limit of System validation $\pm 10\%$.

Note 2: Please refer the document "BL-SZ2580053-ASC-1.pdf".

Head liquid 10g

Date	Liquid Type	Freq. (MHz)	Power (mW)	Measured SAR (W/kg)	Normalized SAR (W/kg)	Dipole SAR (W/kg)	Tolerance (%)
2025.06.29	Head	5250	100	2.160	21.60	22.00	-1.82
2025.06.30	Head	5250	100	2.120	21.20	22.00	-3.64
2025.07.01	Head	5600	100	2.310	23.10	23.10	0.00
2025.07.02	Head	5600	100	2.450	24.50	23.10	6.06
2025.09.02	Head	6500	100	5.620	56.20	55.20	1.81
2025.09.02	Head	6500	100	5.380	53.80	55.20	-2.54

Note 1: The tolerance limit of System validation $\pm 10\%$.

Note 2: Please refer the document “BL-SZ2580053-ASC-1.pdf”.

ANNEX C TEST DATA

Please refer the document “BL-SZ2580053-ATD-1.pdf”.

ANNEX D EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ2580053-AW.pdf”.

ANNEX E SAR TEST SETUP PHOTOS

Please refer the document “BL-SZ2580053-AS-1.pdf”.

ANNEX F CALIBRATION REPORT

Please refer the document “BL-SZ2580053-AC-1.pdf”.

ANNEX G TUNE-UP PROCEDURE

Please refer the document “BL-SZ2580053-AT-1.pdf”.

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