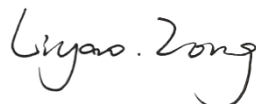


TEST REPORT

Applicant: Shanghai Xiangcheng Communication Technology Co., Ltd
Address: 6th Floor, Building 10, No.3000 Longdong Avenue, Pudong New District, Shanghai
Equipment Type: P18 Smart Desktop Terminal
Model Name: P18
Brand Name: KOZEN
FCC ID: 2A2UU-P1861
Test Standard: FCC 47 CFR Part 2.1093 (refer to section 3.1)
Maximum SAR: Body (1 g@0mm): 0.87 W/kg
Sample Arrival Date: Aug. 06, 2024
Test Date: Oct. 11, 2024 - Oct. 13, 2024
Date of Issue: Nov. 20, 2024

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Xu Rui**Checked by:** Liyao Zong**Approved by:** Tolan Tu
(Testing Director)

Revision History

Version	Issue Date	Revisions Content
<u>Rev. 01</u>	<u>Nov. 08, 2024</u>	<u>Initial Issue</u>
<u>Rev. 02</u>	<u>Nov. 20, 2024</u>	<u>Update product name and brand name.</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	Shanghai Xiangcheng Communication Technology Co., Ltd
Address	6th Floor, Building 10, No.3000 Longdong Avenue, Pudong New District, Shanghai

2.2 Manufacturer Information

Manufacturer	Shanghai Xiangcheng Communication Technology Co., Ltd
Address	6th Floor, Building 10, No.3000 Longdong Avenue, Pudong New District, Shanghai

2.3 General Description for Equipment under Test (EUT)

EUT Name	P18 Smart Desktop Terminal
Model Name Under Test	P18
Series Model Name	N/A
Description of Model Name Differentiation	N/A
Hardware Version	P18714071110000
Software Version	p1861_tekpal_a3
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.4 Ancillary Equipment

Ancillary Equipment 1	Battery	
	Brand Name	N/A
	Model No.	24024-A
	Serial No.	N/A
	Capacity	Rated Capacity: 7900mAh, 30.02Wh Typical Capacity: 8000mAh, 30.4Wh
	Rated Voltage	3.80 V
	Limit Charge Voltage	4.35 V
	Manufacturer	Dongguan HongDe Battery Co., Ltd

2.5 Technical Information

Network and Wireless connectivity	2G Network GSM/GPRS 850/1900 MHz 3G Network WCDMA/HSDPA/HSUPA Band 2/4/5 4G Network LTE FDD Band 2/4/5/7/12 LTE TDD Band 38/41 Bluetooth BLE WIFI 802.11a, 802.11b, 802.11n(HT20/40), 802.11ac(VHT20/40/80) GPS, GLONASS, BDS, Galileo
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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		
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 4	TX: 1710 ~ 1755 MHz	RX: 2110 ~ 2155 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 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/HT40)	2412 ~ 2462 MHz	
	802.11a/ /n(HT20/HT40) /ac(VHT20/VHT40 /VHT80)	5150 ~ 5250 MHz	
		5250 ~ 5350 MHz	
		5470 ~ 5725 MHz	
5725 ~ 5850 MHz			
Bluetooth	2402 ~ 2480 MHz		
Antenna Type	WWAN: PIFA Antenna WIFI: PIFA Antenna Bluetooth: PIFA Antenna		
DTM	N/A		
Hotspot Function	Support		
Power Reduction	Support		
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 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 941225 D01 v03r01	3G SAR MEAUREMENT PROCEDURES
4	KDB 941225 D05 v02r05	SAR Evaluation Considerations for LTE Devices
5	FCC KDB 447498 D04	RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices
6	FCC KDB 865664 D01 v01r04	SAR Measurement 100 MHz to 6 GHz
7	FCC KDB 865664 D02 v01r02	RF Exposure Reporting
8	KDB 248227 D01 v02r02	SAR Guidance for IEEE 802.11 (Wi-Fi) Transmitters
9	KDB 616217 D04 v01r02	SAR for laptop and tablets

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 (1 g Value)

Equipment Class	Band	Maximum Scaled SAR (W/kg)	Maximum Report SAR (W/kg)
		Body (0mm)	Body (0mm)
		1g SAR	1g SAR
PCE	GSM 850	0.45	0.87
	GSM 1900	0.42	
	WCDMA Band 2	0.81	
	WCDMA Band 4	0.79	
	WCDMA Band 5	0.74	
	LTE Band 2	0.74	
	LTE Band 4	0.87	
	LTE Band 5	0.60	
	LTE Band 7	0.68	
	LTE Band 12	0.67	
	LTE Band 38	0.78	
	LTE Band 41	0.70	
DTS	2.4G WIFI	0.82	0.87
NII	5.2/5.3G WIFI	0.24	
	5.6G WIFI	0.19	
	5.8G WIFI	0.28	
DSS	Bluetooth	0.14	
Limit (W/kg)		1.6	1.6
Verdict		PASS	

3.3.2 Highest Simultaneous Transmission SAR Values (1 g Value)

Equipment Class	Maximum Report SAR (W/kg)
	Body (0mm)
	1g SAR
PCE	1.50
DTS	1.50
NII	1.11
DSS	0.93
Limit (W/Kg)	1.6
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 0.87 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:

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

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

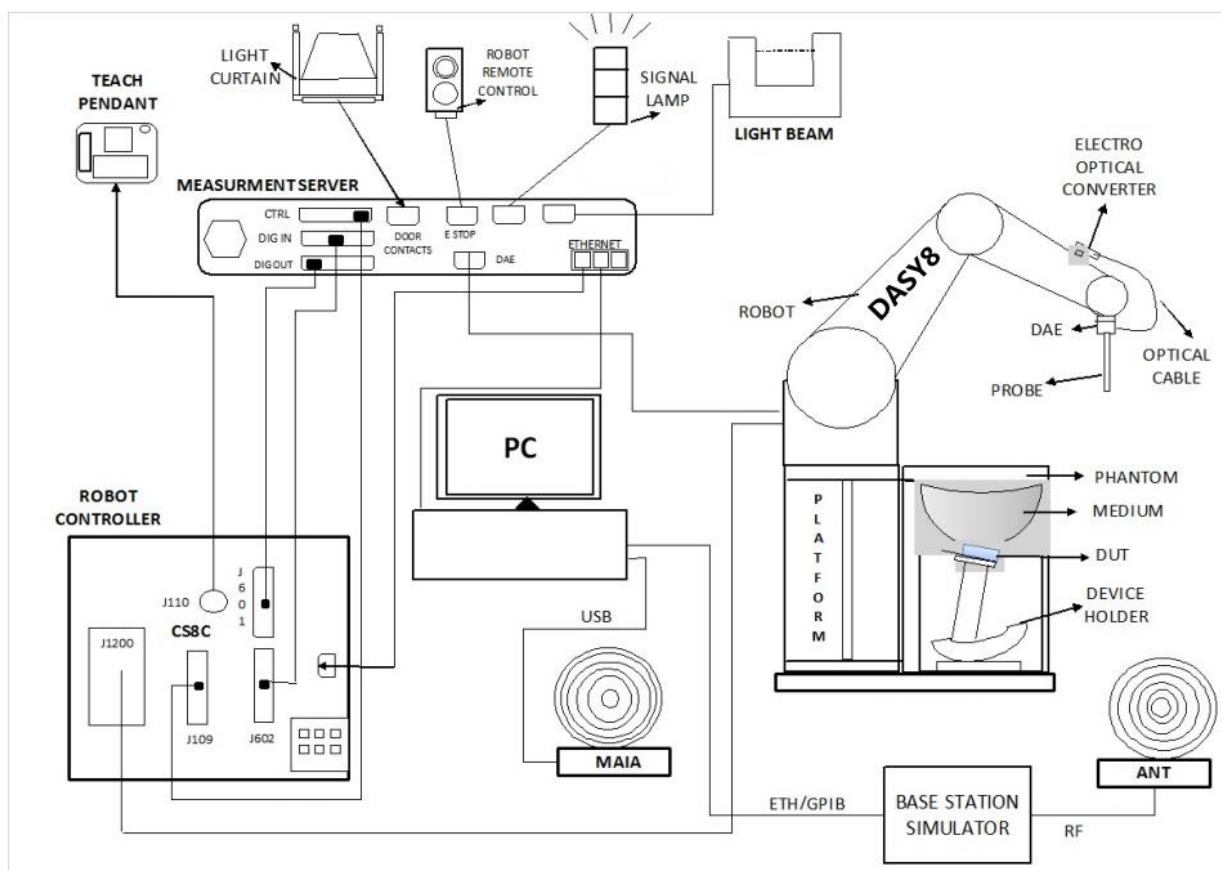
$$SAR = \frac{\sigma E^2}{\rho}$$

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-SN:7510 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	4 MHz to 10 GHz; Linearity: ± 0.2 dB
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 IEC/IEEE 62209-1528 and IEEE 1528 std, with CALISAR, Antennessa proprietary calibration system. The calibration is performed with the IEC/IEEE 62209-1528 annexe technique using reference guide at the five frequencies.

4.2.4 Data Acquisition Electronics

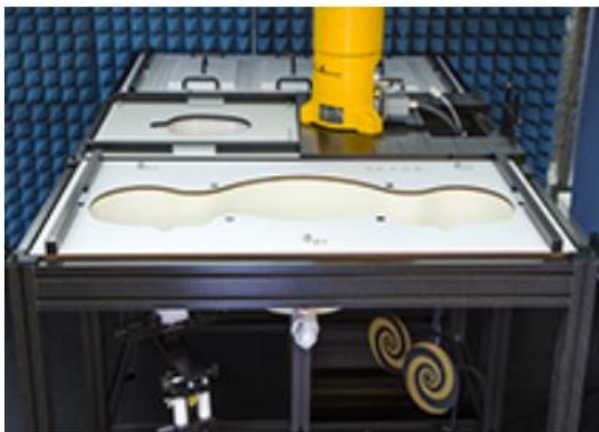
The data acquisition electronics (DAE) consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converte and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through an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

Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of below 10 GHz. ELI4 is fully compatible with the latest draft of the standard IEC 62209 Part II and all known tissue simulating liquids. ELI4 has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points.



· Flat phantom

Photo of Phantom SN2159



Serial Number	Shell Thickness (mm)	Major ellipse axis (mm)	Minor axis (mm)
SN 2159 ELI4	2.0 ± 0.2	600	400

4.2.6 Device Holder

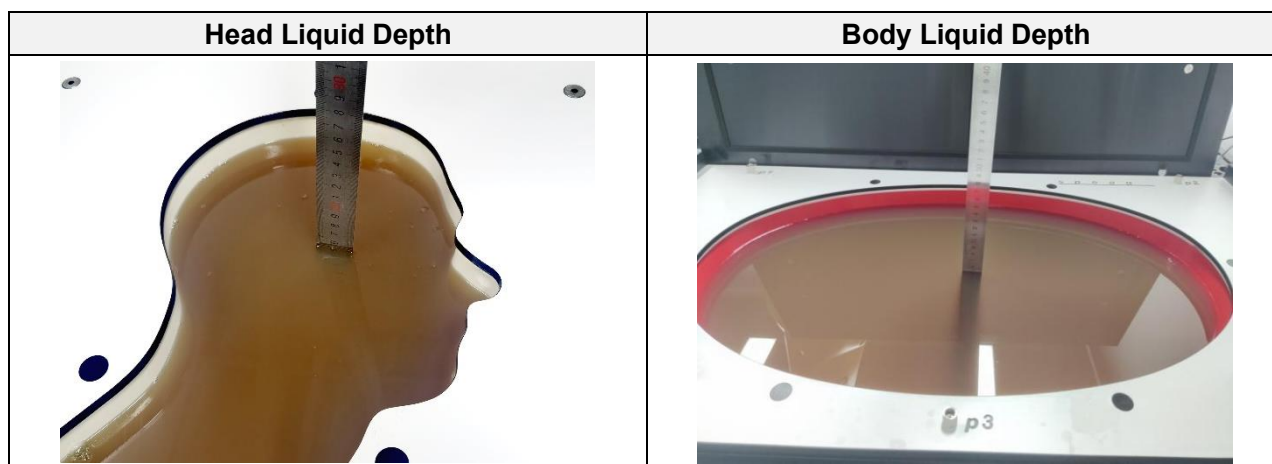
The DASY device holder has two scales for device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The plane between the ear openings and the mouth tip has a rotation angle of 65° . The bottom plate contains three pair of bolts for 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%.



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

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

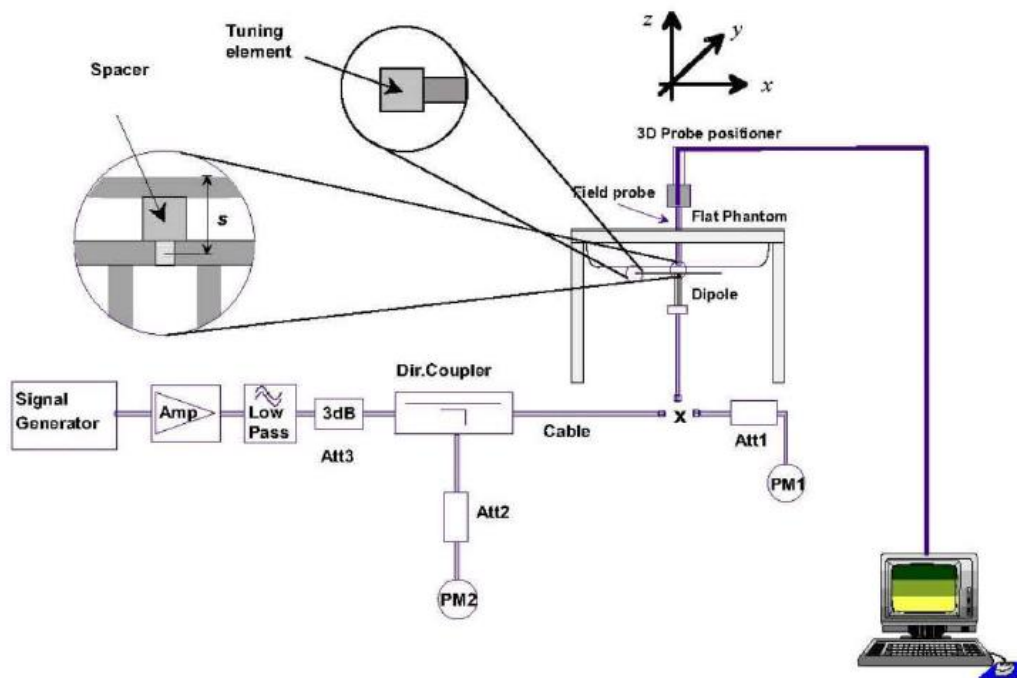
5 SYSTEM VERIFICATION

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:



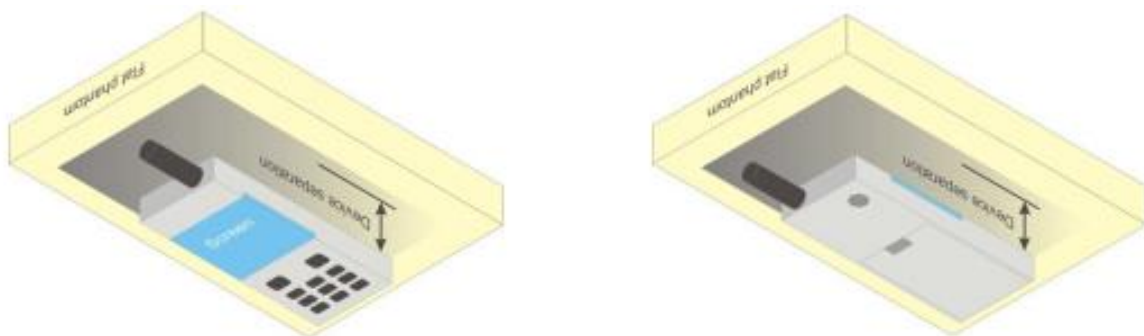
6 TEST POSITION CONFIGURATIONS

6.1 Body-worn Position Conditions

Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in KDB 447498 are used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode. When the reported SAR for a body-worn accessory.

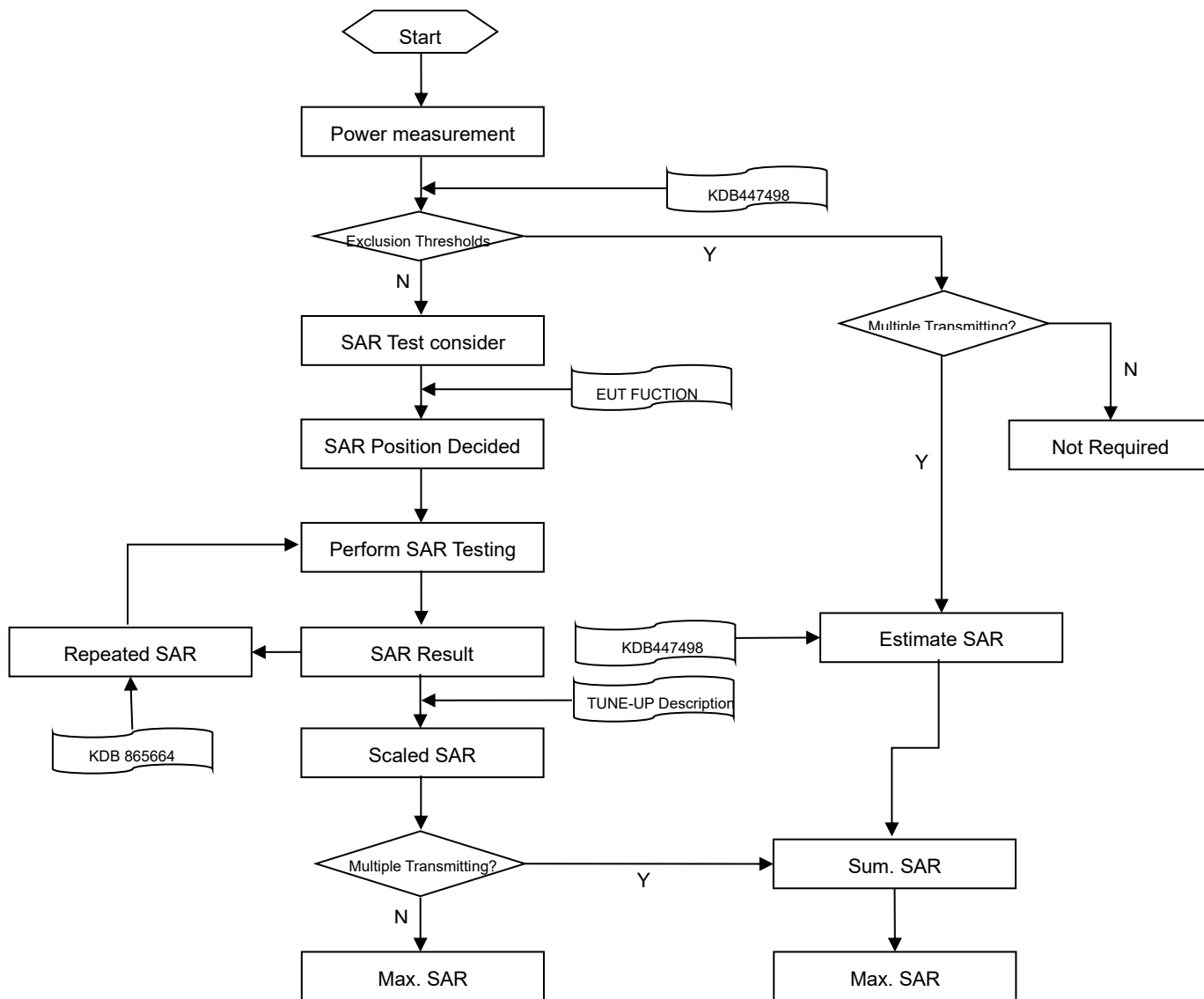
Body-worn accessories that do not contain metallic or conductive components may be tested according to worst-case exposure configurations, typically according to the smallest test separation distance required for the group of body-worn accessories with similar operating and exposure characteristics. All body-worn accessories containing metallic components are tested in conjunction with the host device.

Body-worn accessory SAR compliance is based on a single minimum test separation distance for all wireless and operating modes applicable to each body-worn accessory used by the host, and according to the relevant voice and/or data mode transmissions and operations. If a body-worn accessory supports voice only operations in its normal and expected use conditions, testing of data mode for body-worn compliance is not required. A conservative minimum test separation distance for supporting off-the-shelf body-worn accessories that may be acquired by users of consumer handsets is used to test for body-worn accessory SAR compliance. This distance is determined by the handset manufacturer, according to the requirements of Supplement C 01-01. Devices that are designed to operate on the body of users using lanyards and straps, or without requiring additional body-worn accessories, will be tested using a conservative minimum test separation distance ≤ 5 mm to support compliance.



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
				5–6 GHz: ≤ 2 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:

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.

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.

7.5 Interim Procedures for WIFI 6E

Interim procedures for FCC radio frequency (RF) exposure evaluations of U-NII 6-7 GHz band portable devices have been made available during the TCB workshop in April 2021. The procedure is summarized below:

- a. Evaluate SAR / APD with DASY6 Module SAR V16.0 or higher. The configurations to be tested are defined in the relevant Knowledge Database (KDB). The psSAR and absorbed psPD are reported.
- b. For the configuration with the highest SAR, evaluate the incident power density with DASY6 Module mmWave V2.4.2 or higher. The incident psPD must be adjusted per amount that the measurement uncertainty exceeds 30% before it is included in the test report.

8 CONDUCTED RF OUPUT POWER

8.1 GSM

Please refer the document “BL-SH2470490-AP Power List.pdf”.

8.2 WCDMA

Please refer the document “BL-SH2470490-AP Power List.pdf”.

8.3 LTE

Please refer the document “BL-SH2470490-AP Power List.pdf”.

8.4 WIFI

8.4.1 2.4G WIFI

Band (GHz)	Mode	Channel	Freq. (MHz)	AV Power (dBm)	Tune-up Limit (dBm)	SAR Test Require.
2.4 (2.4~2.4835)	802.11b	1	2412	8.55	9.00	Yes
		6	2437	8.60	9.00	Yes
		11	2462	8.54	9.00	Yes
	802.11g	1	2412	8.64	9.00	No
		6	2437	8.66	9.00	No
		11	2462	8.64	9.00	No
	802.11n(HT20)	1	2412	8.61	9.00	No
		6	2437	8.77	9.00	No
		11	2462	8.80	9.00	No
	802.11n(HT40)	3	2422	8.76	9.00	No
		6	2437	8.73	9.00	No
		9	2452	8.95	9.00	No

Note: According KDB 248227 D01 SAR is not required for the following 2.4 GHz OFDM conditions. 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.

Adjusted SAR = Report SAR * (max power (OFDM)/ max power (DSSS)) = 0.822 * (7.94mW/7.94mW) = 0.822 W/Kg, so the 2.4G OFDM SAR test is not required.

8.4.2 5G WIFI

Band (GHz)	Mode	Channel	Freq. (MHz)	Conducted Power (dBm)	Tune-up Power Limit (dBm)	SAR Test Require.
WIFI 5G (B1/2/3)	802.11a	36	5180	9.62	10.00	No
		44	5220	9.58	10.00	No
		48	5240	9.78	10.00	No
		52	5260	9.89	10.00	No
		60	5300	9.92	10.00	No
		64	5320	9.79	10.00	No
		100	5500	9.49	10.00	No
		116	5580	9.31	10.00	No
		140	5700	8.98	10.00	No
	802.11n(HT20)	36	5180	9.46	10.00	No
		44	5220	9.44	10.00	No
		48	5240	9.64	10.00	No
		52	5260	9.81	10.00	No
		60	5300	9.80	10.00	No
		64	5320	9.65	10.00	No
		100	5500	9.37	10.00	No
		116	5580	9.24	10.00	No
		140	5700	8.84	10.00	No
	802.11n(HT40)	38	5190	9.52	10.00	No
		46	5230	9.65	10.00	No
		54	5270	9.85	10.00	No
		62	5310	9.81	10.00	No
		102	5510	9.35	10.00	No
		118	5590	9.15	10.00	No
		134	5670	8.89	10.00	No
	802.11ac(VHT20)	36	5180	9.40	10.00	No
		44	5220	9.45	10.00	No
		48	5240	9.64	10.00	No
		52	5260	9.82	10.00	No
		60	5300	9.80	10.00	No
		64	5320	9.65	10.00	No
		100	5500	9.32	10.00	No
		116	5580	9.12	10.00	No
		140	5700	8.83	10.00	No
	802.11ac(VHT40)	38	5190	9.56	10.00	No
		46	5230	9.68	10.00	No
		54	5270	9.86	10.00	No
		62	5310	9.85	10.00	No
		102	5510	9.44	10.00	No

		118	5590	9.18	10.00	No
		134	5670	8.91	10.00	No
	802.11ac(VHT80)	42	5210	9.39	10.00	No
		58	5290	9.74	10.00	Yes
		106	5530	9.26	10.00	No
		122	5610	9.42	10.00	Yes
WIFI 5G (B4)	802.11a	149	5745	9.49	10.00	No
		157	5785	9.47	10.00	No
		165	5825	9.39	10.00	No
	802.11n(HT20)	149	5745	9.38	10.00	No
		157	5785	9.35	10.00	No
		165	5825	9.20	10.00	No
	802.11n(HT40)	151	5755	9.51	10.00	No
		159	5795	9.44	10.00	No
	802.11ac(VHT20)	149	5745	9.38	10.00	No
		157	5785	9.36	10.00	No
		165	5825	9.19	10.00	No
	802.11ac(VHT40)	151	5755	9.51	10.00	No
		159	5795	9.50	10.00	No
	802.11ac(VHT80)	155	5775	9.47	10.00	Yes

Note: When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, each band is tested independently for SAR.

8.5 Bluetooth

8.5.1 Bluetooth (Aux. Antenna)

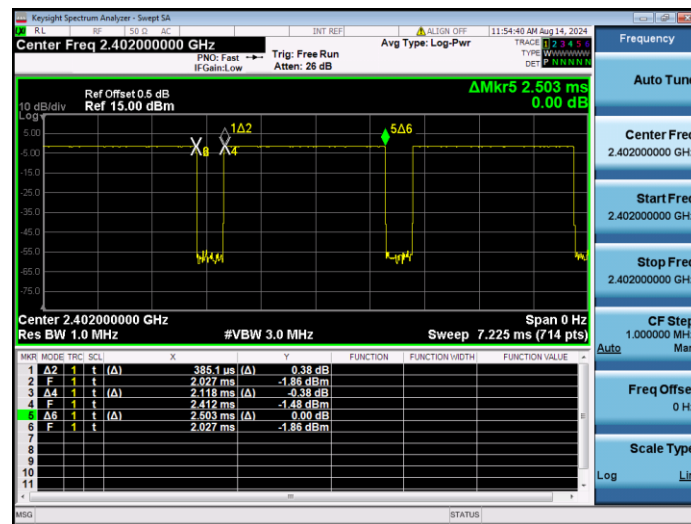
Mode	BLE-1Mbps			BLE-2Mbps		
Channel	0	19	39	1	19	38
Frequency (MHz)	2402	2440	2480	2404	2440	2478
Conducted Power (dBm)	-1.53	-0.93	-0.99	-1.38	-0.78	-0.85
Tune-Up Limit (dBm)	0.50	0.50	0.50	0.50	0.50	0.50
SAR Test Require	Yes	Yes	Yes	No	No	No

Note: Since Bluetooth BR mode is the maximum output power mode, SAR measurements were performed with test software using DH5 modulation, and SAR measurement is not required for the EDR and LE. When the secondary mode is $\leq \frac{1}{4}$ dB higher than the primary mode.

The Bluetooth duty cycle is 84.62 % as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the maximum duty cycle is 100%, therefore the actual duty cycle will be scaled up to 100% for Bluetooth reported SAR calculation.

Duty Cycle

Bluetooth-LE 1M



9 TEST EXCLUSION CONSIDERATION

For antenna location and support bands please refer the document “BL-SH2470490-AI EUT internal photo.pdf”.

9.1 SAR Test 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 method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). The following table shows the power threshold from 5mm to 50mm.

Power Thresholds (mW)					
Frequency (MHz)	At separation distance of ≤ 5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
300	39 mW	65 mW	88 mW	110 mW	129 mW
450	22 mW	44 mW	67 mW	89 mW	112 mW
835	9 mW	25 mW	44 mW	66 mW	90 mW
1900	3 mW	12 mW	26 mW	44 mW	66 mW
2450	3 mW	10 mW	22 mW	38 mW	59 mW
3600	2 mW	8 mW	18 mW	32 mW	49 mW
5800	1 mW	6 mW	14 mW	25 mW	40 mW
Frequency (MHz)	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of 50 mm
300	148 mW	166 mW	184 mW	201 mW	217 mW
450	135 mW	158 mW	180 mW	203 mW	226 mW
835	116 mW	145 mW	175 mW	207 mW	240 mW
1900	92 mW	122 mW	157 mW	195 mW	236 mW
2450	83 mW	111 mW	143 mW	179 mW	219 mW
3600	71 mW	96 mW	125 mW	158 mW	195 mW
5800	58 mW	80 mW	106 mW	136 mW	169 mW

9.1.1 Laptop mode SAR Test Consideration

This host is a notebook computer, under normal use the RF exposure scenarios are shown in the table below:

RF exposure Position	RF exposure scenarios
Back Side	Body
Left Edge	Body
Right Edge	Body
Top Edge	Body
Bottom Edge	Body

Test Position Configurations	Mode	GPRS 850	GPRS 1900	WCDMA B5	WCDMA B4	WCDMA B2
Calculated Frequency(MHz)		848	1909	846	1750	1907
Back Side	Distance to User (mm)	5.00				
	Max. Peak Power (dBm)	22	21.5	20	17.5	17
	Max. Peak Power (mW)	158.0	141.0	100	56.0	50
	Exclusion Threshold (mW)	29.1	39.0	18.4	14.8	13.8
	SAR Test Required	Yes	Yes	Yes	Yes	Yes
Left Edge	Distance to User (mm)	105.2				
	Max. Peak Power (dBm)	22	21.5	20	17.5	17
	Max. Peak Power (mW)	158.0	141.0	100	56.0	50
	Exclusion Threshold (mW)	475.0	661.0	474.0	665.0	661.0
	SAR Test Required	No	No	No	No	No
Right Edge	Distance to User (mm)	142.3				
	Max. Peak Power (dBm)	22	21.5	20	17.5	17
	Max. Peak Power (mW)	158.0	141.0	100	56.0	50
	Exclusion Threshold (mW)	685.0	1032.0	684.0	1036.0	1032.0
	SAR Test Required	No	No	No	No	No
Top Edge	Distance to User (mm)	158.5				
	Max. Peak Power (dBm)	22	21.5	20	17.5	17
	Max. Peak Power (mW)	158.0	141.0	100	56.0	50
	Exclusion Threshold (mW)	776.0	1194.0	775.0	1198.0	1194.0
	SAR Test Required	No	No	No	No	No
Bottom Edge	Distance to User (mm)	5.00				
	Max. Peak Power (dBm)	22	21.5	20	17.5	17
	Max. Peak Power (mW)	158.0	141.0	100	56.0	50
	Exclusion Threshold (mW)	29.1	39.0	18.4	14.8	13.8
	SAR Test Required	Yes	Yes	Yes	Yes	Yes

Test Position Configurations	Mode	LTE B2	LTE B4	LTE B5	LTE B7	LTE B12	LTE B38	LTE B41
Calculated Frequency(MHz)		1909	1754	848	2570	715	2620	2688
Back Side	Distance to User (mm)	5.00						
	Max. Peak Power (dBm)	17.50	18.5	20	16	21.5	18.5	18
	Max. Peak Power (mW)	56.0	71.0	100.0	40.0	141.0	71.0	63.0
	Exclusion Threshold (mW)	9.5	12.0	17.7	7.4	37.4	19.6	20.7
	SAR Test Required	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Left Edge	Distance to User (mm)	105.2						
	Max. Peak Power (dBm)	17.50	18.5	20	16	21.5	18.5	18
	Max. Peak Power (mW)	56.0	71.0	100.0	40.0	141.0	71.0	63.0
	Exclusion Threshold (mW)	441.0	440.0	458.0	475.0	665.0	661.0	643.0
	SAR Test Required	No	No	No	No	No	No	No
Right Edge	Distance to User (mm)	142.3						
	Max. Peak Power (dBm)	17.50	18.5	20	16	21.5	18.5	18
	Max. Peak Power (mW)	56.0	71.0	100.0	40.0	141.0	71.0	63.0
	Exclusion Threshold (mW)	617.0	616.0	652.0	685.0	1036	1032	1014
	SAR Test Required	No	No	No	No	No	No	No
Top Edge	Distance to User (mm)	158.5						
	Max. Peak Power (dBm)	17.50	18.5	20	16	21.5	18.5	18
	Max. Peak Power (mW)	56.0	71.0	100.0	40.0	141.0	71.0	63.0
	Exclusion Threshold (mW)	695.0	693.0	737.0	776.0	1198	1194	1176
	SAR Test Required	No	No	No	No	No	No	No
Bottom Edge	Distance to User (mm)	5.0						
	Max. Peak Power (dBm)	17.50	18.5	20	16	21.5	18.5	18
	Max. Peak Power (mW)	56.0	71.0	100.0	40.0	141.0	71.0	63.0
	Exclusion Threshold (mW)	9.5	12.0	17.7	7.4	37.4	19.6	20.7
	SAR Test Required	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Test Position Configurations	Mode	Bluetooth	2.4G	UNII-2A	UNII-2C	UNII-3
Calculated Frequency(MHz)		2480	2462	5290	5610	5750
Back Side of Monitor	Distance to User (mm)	5.00				
	Max. Peak Power (dBm)	12.00	16.00	12.50	12.50	11.00
	Max. Peak Power (mW)	15.85	39.81	17.78	17.78	12.59
	Exclusion Threshold (mW)	2.72	2.73	1.48	1.41	1.39
	SAR Test Required	Yes	Yes	Yes	Yes	Yes
Left Edge	Distance to User (mm)	125				
	Max. Peak Power (dBm)	12.00	16.00	12.50	12.50	11.00
	Max. Peak Power (mW)	15.85	39.81	17.78	17.78	12.59
	Exclusion Threshold (mW)	1250.01	1250.09	1157.01	1150.09	1147.20
	SAR Test Required	No	No	No	No	No
Right Edge	Distance to User (mm)	109				
	Max. Peak Power (dBm)	12.00	16.00	12.50	12.50	11.00
	Max. Peak Power (mW)	15.85	39.81	17.78	17.78	12.59
	Exclusion Threshold (mW)	962.97	963.29	871.46	864.74	861.93
	SAR Test Required	No	No	No	No	No
Top Edge	Distance to User (mm)	158.5				
	Max. Peak Power (dBm)	12.00	16.00	12.50	12.50	11.00
	Max. Peak Power (mW)	15.85	39.81	17.78	17.78	12.59
	Exclusion Threshold (mW)	1964.88	1965.60	1891.13	1885.53	1883.18
	SAR Test Required	No	No	No	No	No
Bottom Edge	Distance to User (mm)	5.0				
	Max. Peak Power (dBm)	12.00	16.00	12.50	12.50	11.00
	Max. Peak Power (mW)	15.85	39.81	17.78	17.78	12.59
	Exclusion Threshold (mW)	2.72	2.73	1.48	1.41	1.39
	SAR Test Required	Yes	Yes	Yes	Yes	Yes

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 P_{th} (mW) is given by Following:

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

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 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
6. 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.
7. Per KDB 248227 D01 SAR is not required for the following U-NII-1 and U-NII-2A bands conditions.
 - a. When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, each band is tested independently for SAR.
 - b. When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, each band is tested independently for SAR.
8. For Limb SAR, SAR test exemption considered by applying a factor of 2.5 to the applicable power level thresholds.

10 TEST RESULT

10.1GSM 850

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.
Body												
Ant.1	2slot	Back Side	0	251	848.8	0.00	0.394	21.41	22.00	1.146	0.452	1#
		Bottom Edge	0	251	848.8	-0.01	0.202	21.41	22.00	1.146	0.231	/
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)	1 g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune- power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Body												
Ant.1	4slot	Back Side	0	661	1880.0	0.01	0.374	20.95	21.50	1.135	0.424	2#
		Bottom Edge	0	661	1880.0	0.19	0.166	20.95	21.50	1.135	0.188	/
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)	1 g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune- power (dBm)	Scaling Factor	1g Scaled SAR (W/kg)	Meas. No.
Body												
Ant.1	RMC	Back Side	0	9400	1880	0.01	0.659	16.10	17.00	1.230	0.811	3#
		Bottom Edge	0	9400	1880	-0.17	0.233	16.10	17.00	1.230	0.287	/
		Back Side	0	9262	1852.4	-0.14	0.641	16.06	17.00	1.242	0.796	/
		Back Side	0	9538	1907.6	0.10	0.585	15.98	17.00	1.265	0.740	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.												

10.4WCDMA Band 4

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.
Body												
Ant.1	RMC	Back Side	0	1513	1752.6	0.00	0.713	17.03	17.50	1.114	0.794	4#
		Bottom Edge	0	1513	1752.6	0.18	0.356	17.03	17.50	1.114	0.397	/
		Back Side	0	1312	1712.4	-0.04	0.522	16.97	17.50	1.130	0.590	/
		Back Side	0	1412	1732.4	0.03	0.613	16.92	17.50	1.143	0.701	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.												

10.5WCDMA 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.
Body												
Ant.1	RMC	Back Side	0	4182	836.4	0.00	0.637	19.35	20.00	1.161	0.740	5#
		Bottom Edge	0	4182	836.4	0.01	0.288	19.35	20.00	1.161	0.334	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.												

10.6LTE Band 2 (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.
Body														
Ant.1	QPSK	Back Side	0	18900	1880	1	Mid	0.03	0.615	16.68	17.50	1.208	0.743	6#
		Bottom Edge	0	18900	1880	1	Mid	0.17	0.202	16.68	17.50	1.208	0.244	/
		Back Side	0	18900	1880	50	Mid	-0.16	0.557	15.79	16.50	1.178	0.656	/
		Bottom Edge	0	18900	1880	50	Mid	-0.10	0.185	15.79	16.50	1.178	0.218	/

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

10.7LTE Band 4 (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.
Body														
Ant.1	QPSK	Back Side	0	20175	1732.5	1	Mid	0.03	0.785	18.04	18.50	1.112	0.873	7#
		Bottom Edge	0	20175	1732.5	1	Mid	0.12	0.374	18.04	18.50	1.112	0.416	/
		Back Side	0	20175	1732.5	50	Mid	0.00	0.623	17.04	17.50	1.112	0.693	/
		Bottom Edge	0	20175	1732.5	50	Mid	-0.19	0.365	17.04	17.50	1.112	0.406	/
		Back Side	0	20050	1720	1	Mid	-0.03	0.355	18.03	18.50	1.114	0.395	/
		Back Side	0	20300	1745	1	Mid	0.06	0.702	18.01	18.50	1.119	0.786	/
		Back Side	0	20050	1720	50	Mid	0.15	0.558	17.01	17.50	1.119	0.624	/
		Back Side	0	20300	1745	50	Mid	0.10	0.671	16.98	17.50	1.127	0.756	/
		Back Side	0	20175	1732.5	100	Low	0.16	0.663	16.95	17.50	1.135	0.753	/

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

10.8LTE 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.
Body														
Ant.1	QPSK	Back Side	0	20450	829	1	Mid	0.05	0.481	19.05	20.00	1.245	0.599	8#
		Bottom Edge	0	20450	829	1	Mid	0.15	0.213	19.05	20.00	1.245	0.265	/
		Back Side	0	20450	829	1	Mid	-0.15	0.365	18.09	19.00	1.233	0.450	/
		Bottom Edge	0	20450	829	1	Mid	0.19	0.211	18.09	19.00	1.233	0.260	/

10.9LTE 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.
Body														
Ant.1	QPSK	Back Side	0	21100	2535	1	Mid	0.03	0.568	15.20	16.00	1.202	0.683	9#
		Bottom Edge	0	21100	2535	1	Mid	0.14	0.467	15.20	16.00	1.202	0.561	/
		Back Side	0	21100	2535	50	Mid	0.06	0.376	14.18	15.00	1.208	0.454	/
		Bottom Edge	0	21100	2535	50	Mid	-0.11	0.473	14.18	15.00	1.208	0.571	/

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

10.10 LTE Band 12 (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.
Body														
Ant.1	QPSK	Back Side	0	23095	707.5	1	Mid	0.08	0.538	20.55	21.50	1.245	0.670	10#
		Bottom Edge	0	23095	707.5	1	Mid	0.00	0.175	20.55	21.50	1.245	0.218	/
		Back Side	0	23095	707.5	25	Mid	-0.19	0.365	19.57	20.50	1.239	0.452	/
		Bottom Edge	0	23095	707.5	25	Mid	-0.11	0.183	19.57	20.50	1.239	0.227	/

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

10.11 LTE Band 38 (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.
Body														
Ant.1	QPSK	Back Side	0	38150	2610	1	Mid	0.02	0.644	17.67	18.50	1.211	0.780	11#
		Bottom Edge	0	38150	2610	1	Mid	-0.15	0.556	17.67	18.50	1.211	0.673	/
		Back Side	0	38150	2610	50	Mid	0.02	0.521	16.62	17.50	1.225	0.638	/
		Bottom Edge	0	38150	2610	50	Mid	-0.05	0.503	16.62	17.50	1.225	0.616	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.														

10.12 LTE Band 41 (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.
Body														
Ant.1	QPSK	Back Side	0	40640	2595	1	Mid	0.03	0.637	17.59	18.00	1.099	0.700	12#
		Bottom Edge	0	40640	2595	1	Mid	0.07	0.466	17.59	18.00	1.099	0.512	/
		Back Side	0	40640	2595	50	Mid	-0.18	0.565	16.56	17.00	1.107	0.625	/
		Bottom Edge	0	40640	2595	50	Mid	-0.13	0.423	16.56	17.00	1.107	0.468	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.														

10.13 WIFI 2.4GHz

Mode	Antenna	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drif t(dB)	1 g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune- up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	1g Report SAR (W/kg)	Meas. No.
Body														
802.11 b	Ant.2	Back Side	0	6	2437	0.11	0.295	8.60	9.00	1.096	99.56	1.004	0.325	/
		Bottom Edge	0	6	2437	0.03	0.747	8.60	9.00	1.096	99.56	1.004	0.822	13#
		Bottom Edge	0	1	2412	0.07	0.713	8.55	9.00	1.109	99.56	1.004	0.794	/
		Bottom Edge	0	11	2462	-0.02	0.722	8.54	9.00	1.112	99.56	1.004	0.806	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.														

10.14 WIFI 5GHz

Band	Mode	Antenna	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1 g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune- up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	1g Report SAR (W/kg)	Meas. No.
Body-CE															
5.3G	802.11ac80	Ant.2	Back Side	0	58	5290	-0.03	0.188	9.74	10.00	1.062	88.89	1.125	0.225	/
			Bottom Edge	0	58	5290	0.15	0.201	9.74	10.00	1.062	88.89	1.125	0.240	14#
5.6G	802.11ac80	Ant.2	Back Side	0	122	5610	-0.18	0.121	9.42	10.00	1.143	88.89	1.125	0.156	/
			Bottom Edge	0	122	5610	-0.06	0.146	9.42	10.00	1.143	88.89	1.125	0.188	15#
5.6G	802.11ac80	Ant.2	Back Side	0	155	5775	-0.14	0.185	9.47	10.00	1.130	88.89	1.125	0.235	/
			Bottom Edge	0	155	5775	0.10	0.222	9.47	10.00	1.130	88.89	1.125	0.282	16#
Note: Refer to ANNEX C for the detailed test data for each test configuration.															

10.15 Bluetooth

Mode	Antenna	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1 g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	1g Report SAR (W/kg)	Meas. No.
Body														
BLE-1M	Ant.2	Back Side	0	19	2441	0.03	0.032	-0.93	0.5	1.390	84.62	1.182	0.053	/
		Bottom Edge	0	19	2441	0.02	0.070	-0.93	0.5	1.390	84.62	1.182	0.115	17#
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.

Note: For 1g SAR, the highest measured 1g SAR is $0.785 < 0.80$ W/kg, 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 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 $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary.
- c) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.

12.1 Simultaneous Transmission Mode Considerations

No.	Simultaneous Tx Combination	Body
1	WWAN + WLAN 2.4GHz&WLAN5G	Yes
2	WWAN +BT	Yes
Note: 1. WWAN antennas can switch automatically, the standards supported by WWAN are(GSM/GPRS/EDGE/WCDMA/LTE). 2. The maximum SAR summation is calculated based on the same configuration and test position.		

12.2 Sum SAR of Simultaneous Transmission

12.2.1 Body Simultaneous Transmission SAR Evaluation for WWAN Antenna with WLAN and Bluetooth

Band	Antenna	Position	Stand alone SAR				SUM SAR		
			1	2	3	4	Sum SAR (1+2)	Sum SAR (1+3)	Sum SAR (1+4)
			WWAN	2.4GWIFI	5GWIFI Max	BT			
GSM850	ANT1	Back Side 0mm	0.452	0.325	0.235	0.053	0.777	0.687	0.505
		Bottom Edge 0mm	0.231	0.822	0.282	0.115	1.053	0.513	0.346
GSM1900	ANT1	Back Side 0mm	0.424	0.325	0.235	0.053	0.749	0.659	0.477
		Bottom Edge 0mm	0.188	0.822	0.282	0.115	1.010	0.470	0.303
WCDMA B2	ANT1	Back Side 0mm	0.811	0.325	0.235	0.053	1.136	1.046	0.864
		Bottom Edge 0mm	0.287	0.822	0.282	0.115	1.109	0.569	0.402
WCDMA B4	ANT1	Back Side 0mm	0.794	0.325	0.235	0.053	1.119	1.029	0.847
		Bottom Edge 0mm	0.397	0.822	0.282	0.115	1.219	0.679	0.512
WCDMA B5	ANT1	Back Side 0mm	0.740	0.325	0.235	0.053	1.065	0.975	0.793
		Bottom Edge 0mm	0.334	0.822	0.282	0.115	1.156	0.616	0.449
LTE B2	ANT1	Back Side 0mm	0.743	0.325	0.235	0.053	1.068	0.978	0.796
		Bottom Edge 0mm	0.244	0.822	0.282	0.115	1.066	0.526	0.359
LTE B4	ANT1	Back Side 0mm	0.873	0.325	0.235	0.053	1.198	1.108	0.926
		Bottom Edge 0mm	0.416	0.822	0.282	0.115	1.238	0.698	0.531
LTE B5	ANT1	Back Side 0mm	0.599	0.325	0.235	0.053	0.924	0.834	0.652
		Bottom Edge 0mm	0.265	0.822	0.282	0.115	1.087	0.547	0.380
LTE B7	ANT1	Back Side 0mm	0.683	0.325	0.235	0.053	1.008	0.918	0.736
		Bottom Edge 0mm	0.561	0.822	0.282	0.115	1.383	0.843	0.676
LTE B12	ANT1	Back Side 0mm	0.670	0.325	0.235	0.053	0.995	0.905	0.723
		Bottom Edge 0mm	0.218	0.822	0.282	0.115	1.040	0.500	0.333
LTE B38	ANT1	Back Side 0mm	0.780	0.325	0.235	0.053	1.105	1.015	0.833
		Bottom Edge 0mm	0.673	0.822	0.282	0.115	1.495	0.955	0.788
LTE B41	ANT1	Back Side 0mm	0.700	0.325	0.235	0.053	1.025	0.935	0.753
		Bottom Edge 0mm	0.512	0.822	0.282	0.115	1.334	0.794	0.627

Note:

1: The simultaneous transmission combinations of the three antennas contain combinations of two antennas, so only the worst simultaneous transmission combinations was shown in this table.

2: The highest Summed 1g SAR is 1.495 W/Kg < 1.6 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	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
Data Acquisition Electronicsr	Speag	DAE4	SN: 1711	2024/03/18	2025/03/17
E-Field Probe	Speag	EX3DV4	SN: 7510	2024/06/25	2025/06/24
Signal Generator	R&S	SMB100A	177746	2024/04/24	2025/04/23
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
Wireless Communication Test Set	Anritsu	MT8820C	6201502991	2023/11/14	2024/11/13
Network Analyzer	Agilent	E5071C	MY46103472	2023/11/14	2024/11/13
Thermometer	Elitech	RC-4HC	EF720B004811	2023/11/25	2024/11/24
Thermometer	Elitech	RC-4HC	EF7216002985	2023/11/17	2024/11/16
Power Amplifier	SATIMO	6552B	22374	N/A	N/A
Dielectric Probe Kit	Speag	DAK3.5	SN: 1312	N/A	N/A
Phantom	Speag	ELI V8.0	SN: 2159	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.

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 (%)
2021.10.11	Head	750	21.3	0.90	41.88	0.89	41.94	1.12	-0.14
2021.10.11	Head	835	21.3	0.90	41.88	0.90	41.50	0.00	0.92
2024.10.12	Head	1750	21.5	1.38	40.08	1.37	40.08	0.73	0.00
2021.10.12	Head	1950	21.5	1.42	39.13	1.40	40.00	1.43	-2.18
2024.10.13	Head	2450	21.2	1.80	39.60	1.80	39.20	0.00	1.02
2024.10.13	Head	2600	21.2	1.97	38.56	1.96	39.01	0.51	-1.15
2024.10.11	Head	5250	21.3	4.70	35.93	4.71	35.93	-0.21	0.00
2024.10.11	Head	5600	21.3	5.05	35.19	5.07	35.53	-0.39	-0.96
2024.10.11	Head	5750	21.3	5.17	35.64	5.22	35.36	-0.96	0.79
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).

Date	Liquid Type	Freq. (MHz)	Power (mW)	Measured SAR (W/kg)	Normalized SAR (W/kg)	Dipole SAR (W/kg)	Tolerance (%)
2021.10.11	Head	750	100	0.83	8.29	8.46	-2.01
2021.10.11	Head	835	100	0.94	9.38	9.74	-3.70
2024.10.12	Head	1750	100	3.45	34.50	37.00	-6.76
2021.10.12	Head	1950	100	4.10	41.00	41.70	-1.68
2024.10.13	Head	2450	100	5.10	51.00	52.60	-3.04
2024.10.13	Head	2600	100	5.72	57.20	55.90	2.33
2024.10.11	Head	5250	100	7.26	72.60	77.70	-6.56
2024.10.11	Head	5600	100	7.65	76.50	81.30	-5.90
2024.10.11	Head	5750	100	7.26	72.60	77.60	-6.44

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

System Performance Check Data (750MHz)

Exposure Conditions

Phantom	Position, Section, TSL	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [°C]	Liquid Temperature [°C]
Flat, HSL	Distance [mm]	D750	CW, 0--	750.0, 50	10.29	0.898	41.9	22.4	21.3

Hardware Setup

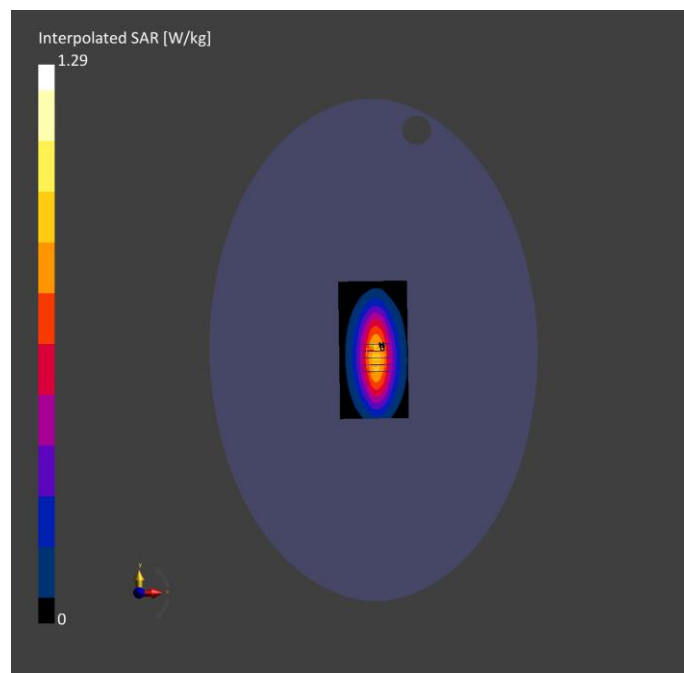
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2024-10-11	EX3DV4 - SN7510, 2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	80.0 x 160.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	10.0 x 10.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.5
MAIA	N/A	N/A
Surface	VMS + 6p	VMS + 6p
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-11	2024-10-11
psSAR1g [W/kg]	0.814	0.829
psSAR10g [W/kg]	0.545	0.549
Power Drift [dB]	0.02	0.00
Power Scaling	Disabled	Disabled
Scaling Factor		
[dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		63.2
Dist 3dB Peak [mm]		18.7



System Performance Check Data (835MHz)

Exposure Conditions

Phantom	Position, Section, TSL	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [°C]	Liquid Temperature [°C]
Flat, HSL	Distance [mm]	CD835	CW, 0--	835.0, 50	9.99	0.903	41.9	22.4	21.3

Hardware Setup

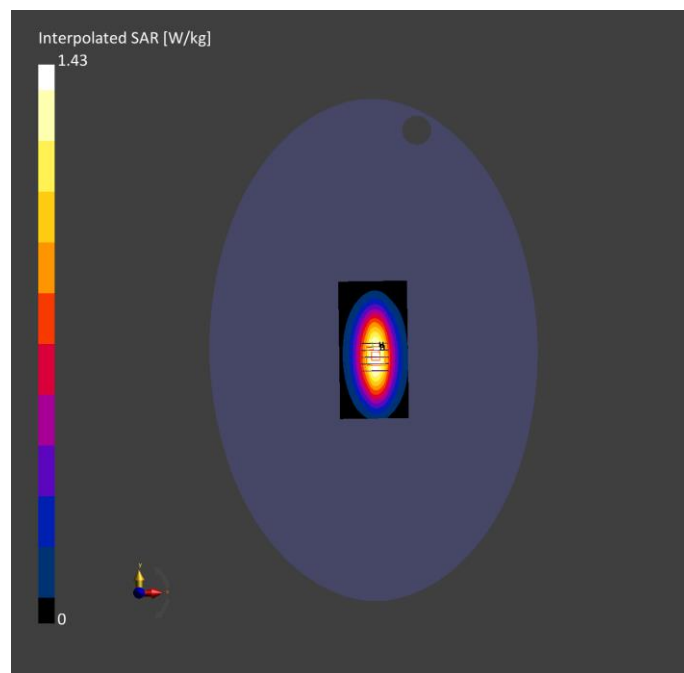
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2024-10-11	EX3DV4 - SN7510, 2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	80.0 x 160.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	10.0 x 10.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.5
MAIA	N/A	N/A
Surface	VMS + 6p	VMS + 6p
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-11	2024-10-11
psSAR1g [W/kg]	0.929	0.938
psSAR10g [W/kg]	0.614	0.620
Power Drift [dB]	-0.03	0.02
Power Scaling	Disabled	Disabled
Scaling Factor		
[dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		64.8
Dist 3dB Peak [mm]		16.7



System Performance Check Data (1750MHz)

Exposure Conditions

Phantom	Position, Section, TSL	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [°C]	Liquid Temperature [°C]
Flat, HSL	Distance [mm]	D1750	CW, 0--	1750.0, 50	8.67	1.38	40.1	22.5	21.5

Hardware Setup

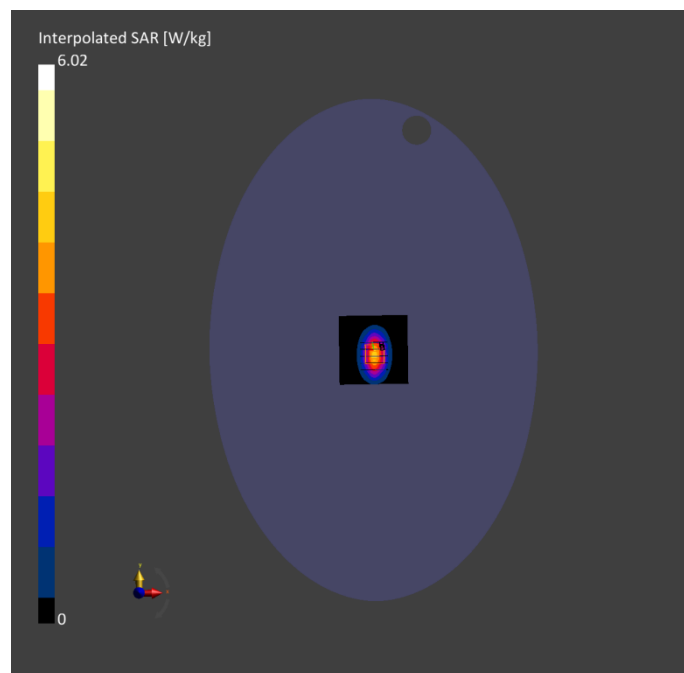
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2024-10-12	EX3DV4 - SN7510, 2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	80.0 x 80.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	10.0 x 10.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.5
MAIA	N/A	N/A
Surface	VMS + 6p	VMS + 6p
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-12	2024-10-12
psSAR1g [W/kg]	3.45	3.45
psSAR10g [W/kg]	1.85	1.88
Power Drift [dB]	-0.01	-0.03
Power Scaling	Disabled	Disabled
Scaling Factor		
[dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		56.2
Dist 3dB Peak [mm]		10.7



System Performance Check Data (1950MHz)

Exposure Conditions

Phantom	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [°C]	Liquid Temperature
Flat, HSL		D1950	CW, 0--	1950.0, 50	8.33	1.42	39.1	22.5	21.5

Hardware Setup

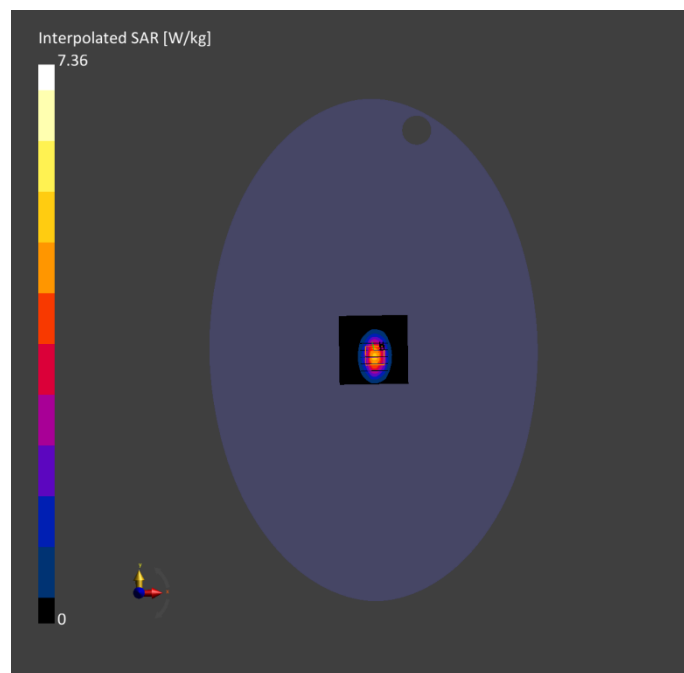
Phantom	TSL, Measured Date		Probe, Calibration Date		DAE, Calibration Date	
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000	2024-10-12	EX3DV4 - SN7510,	2024-06-25	DAE4 Sn1711,	2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	80.0 x 80.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	10.0 x 10.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.5
MAIA	N/A	N/A
Surface	VMS + 6p	VMS + 6p
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-12	2024-10-12
psSAR1g [W/kg]	4.11	4.10
psSAR10g [W/kg]	2.12	2.14
Power Drift [dB]	-0.01	0.01
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		54.6
Dist 3dB Peak [mm]		9.6



System Performance Check Data (2450MHz)

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [°C]	Liquid Temperature [°C]
Flat, HSL		D2450	CW, 0--	2450.0, 2450	7.75	1.80	39.6	22.2	21.2

Hardware Setup

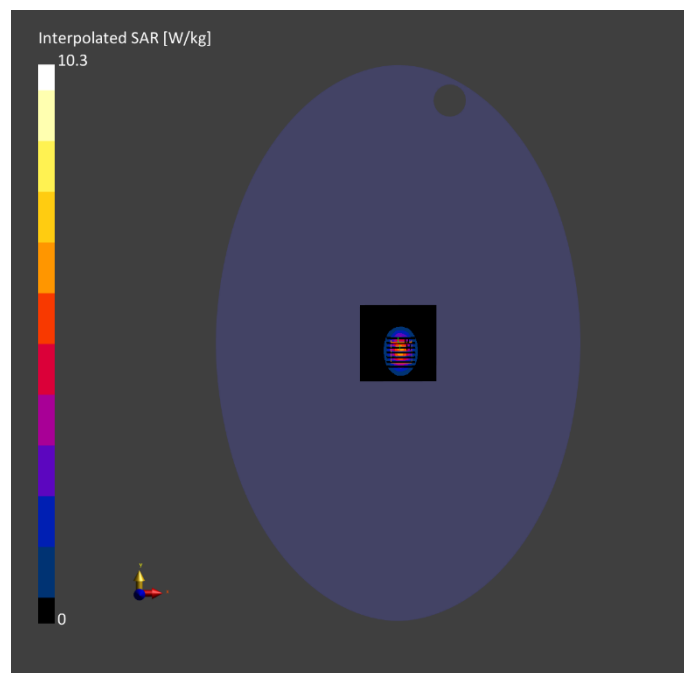
Phantom	TSL, Measured Date		Probe, Calibration Date		DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000	2024-10-13	EX3DV4 - SN7510,	2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	80.0 x 80.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	8.0 x 10.0	5.0 x 5.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.5
MAIA	N/A	N/A
Surface	All points	All points
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-13	2024-10-13
psSAR1g [W/kg]	5.09	5.10
psSAR10g [W/kg]	2.40	2.41
Power Drift [dB]	-0.14	0.01
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		80.6
Dist 3dB Peak [mm]		9.0



System Performance Check Data (2600MHz)

Exposure Conditions

Phantom	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [°C]	Liquid Temperature
Flat, HSL		D2600	CW, 0--	2600.0, 50	7.59	1.97	38.6	22.2	21.2

Hardware Setup

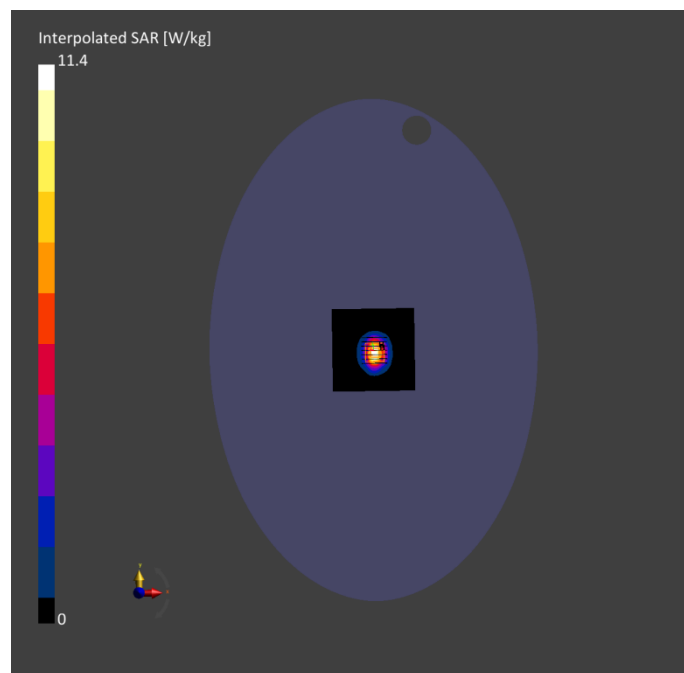
Phantom	TSL, Measured Date		Probe, Calibration Date		DAE, Calibration Date	
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000	2024-10-13	EX3DV4 - SN7510,	2024-06-25	DAE4 Sn1711,	2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	96.0 x 96.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	12.0 x 12.0	5.0 x 5.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.5
MAIA	N/A	N/A
Surface	VMS + 6p	VMS + 6p
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-13	2024-10-13
psSAR1g [W/kg]	5.67	5.72
psSAR10g [W/kg]	2.55	2.62
Power Drift [dB]	-0.01	-0.01
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		49.2
Dist 3dB Peak [mm]		8.5



System Performance Check Data (5250MHz)

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [°C]	Liquid Temperature [°C]
Flat, HSL		D5GHz	CW, 0--	5250.0, 5250	5.74	4.70	35.9	22.4	21.3

Hardware Setup

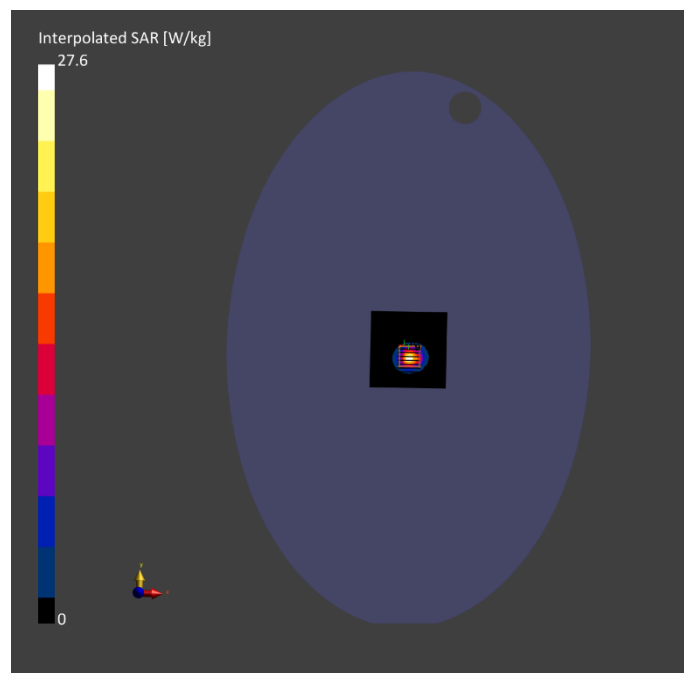
Phantom	TSL, Measured Date		Probe, Calibration Date		DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000	2024-10-11	EX3DV4 - SN7510,	2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	80.0 x 80.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	N/A	N/A
Surface	All points	All points
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-11	2024-10-11
psSAR1g [W/kg]	6.59	7.26
psSAR10g [W/kg]	1.97	2.10
Power Drift [dB]	-0.14	0.01
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		65.1
Dist 3dB Peak [mm]		7.4



System Performance Check Data (5600MHz)

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [°C]	Liquid Temperature [°C]
Flat, HSL		D5GHz	CW, 0--	5600.0, 5600	5.00	5.05	35.2	22.4	21.3

Hardware Setup

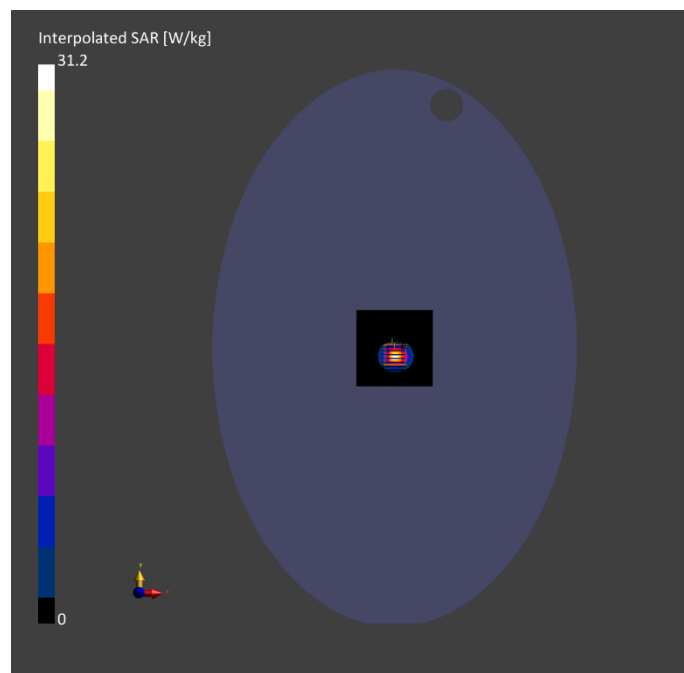
Phantom	TSL, Measured Date		Probe, Calibration Date		DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000	2024-10-11	EX3DV4 - SN7510,	2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	80.0 x 80.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	N/A	N/A
Surface	All points	All points
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-11	2024-10-11
psSAR1g [W/kg]	6.99	7.65
psSAR10g [W/kg]	2.03	2.18
Power Drift [dB]	-0.13	0.02
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		62.5
Dist 3dB Peak [mm]		7.5



System Performance Check Data (5750MHz)

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [°C]	Liquid Temperature [°C]
Flat, HSL		D5GHz	CW, 0--	5750.0, 5750	5.04	5.17	35.6	22.4	21.3

Hardware Setup

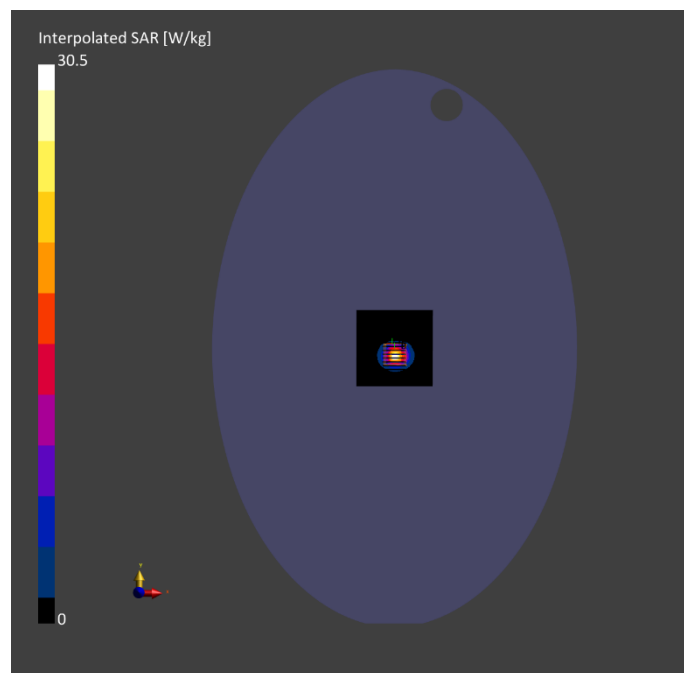
Phantom	TSL, Measured Date		Probe, Calibration Date		DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000	2024-10-11	EX3DV4 - SN7510,	2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	80.0 x 80.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	N/A	N/A
Surface	All points	All points
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-11	2024-10-11
psSAR1g [W/kg]	6.56	7.26
psSAR10g [W/kg]	1.93	2.07
Power Drift [dB]	-0.17	0.02
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		61.5
Dist 3dB Peak [mm]		7.9



ANNEX C TEST DATA

Meas.1 Body Plane with Back Side 0mm on High Channel in GPRS850 2Slots mode with Antenna 1

Exposure Conditions

Phantom	Position	Band	Group	Frequency [MHz]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [°C]	Liquid Temperature [°C]
Section, TSL	Distance [mm]		UID	Channel Number					
Flat, HSL	BACK, 0.00	GSM 850	GSM, 10024-DAC	848.8, 251	9.99	0.917	41.5	22.4	21.3

Hardware Setup

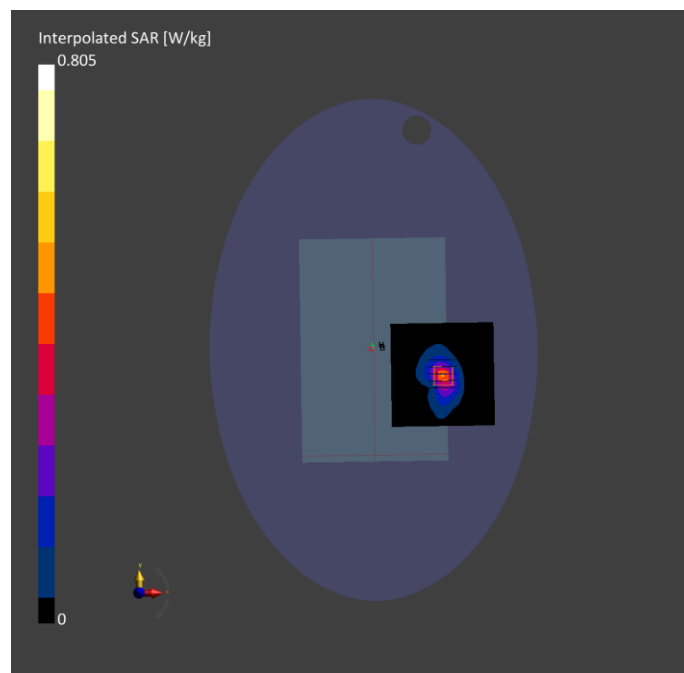
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2024-10-11	EX3DV4 - SN7510, 2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.5
MAIA	N/A	N/A
Surface	VMS + 6p	VMS + 6p
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-11	2024-10-11
psSAR1g [W/kg]	0.391	0.394
psSAR10g [W/kg]	0.222	0.199
Power Drift [dB]	0.07	0.00
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		45.1
Dist 3dB Peak [mm]		9.1



Meas.2 Body Plane with Back Side 0mm on Middle Channel in GPRS1900 4Slots mode with Antenna 1

Exposure Conditions

Phantom	Position	Band	Group	Frequency [MHz]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [°C]	Liquid Temperature [°C]
Section, TSL	Distance [mm]		UID	Channel Number					
Flat, HSL	BACK, 0.00	PCS 1900	GSM, 10028-DAC	1880.0, 661	8.33	1.39	40.1	22.5	21.5

Hardware Setup

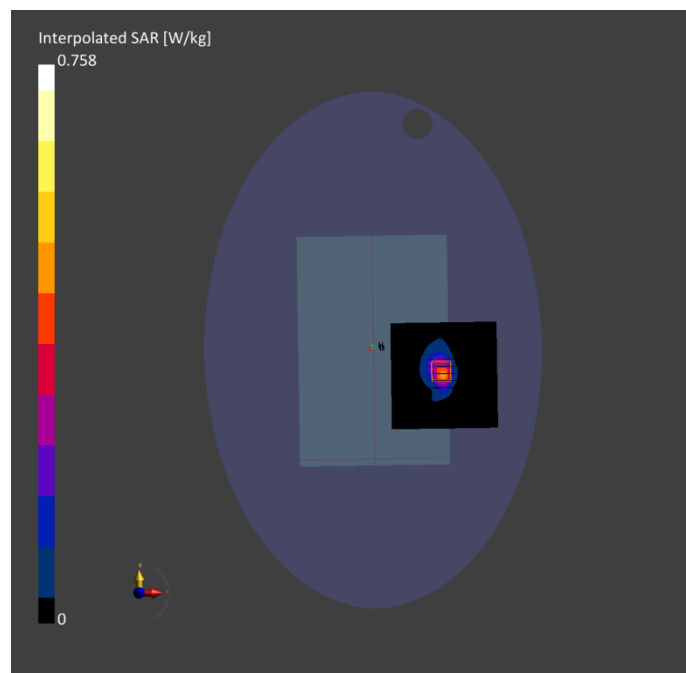
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2024-10-12	EX3DV4 - SN7510, 2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-12	2024-10-12
psSAR1g [W/kg]	0.378	0.374
psSAR10g [W/kg]	0.188	0.183
Power Drift [dB]	-0.02	0.01
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		47.4
Dist 3dB Peak [mm]		9.1



Meas.3 Body Plane with Back Side 0mm on Middle Channel in WCDMA Band2 mode with Antenna 1

Exposure Conditions

Phantom	Position	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [°C]	Liquid Temperature [°C]
Flat, HSL	BACK, 0.00	Band 2	WCDMA , 10011-CAC	1880.0, 9400	8.33	1.39	40.1	22.5	21.5

Hardware Setup

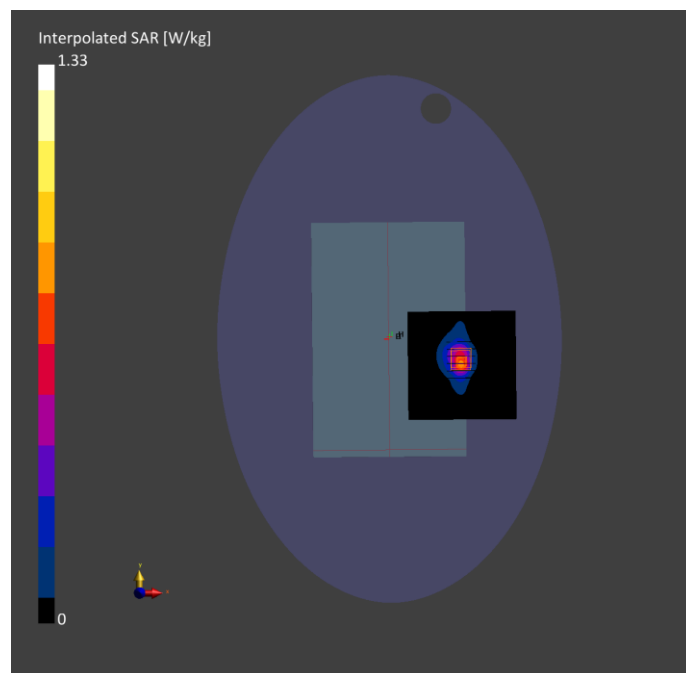
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2024-10-12	EX3DV4 - SN7510, 2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.5
MAIA	N/A	N/A
Surface	VMS + 6p	VMS + 6p
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-12	2024-10-12
psSAR1g [W/kg]	0.646	0.659
psSAR10g [W/kg]	0.326	0.323
Power Drift [dB]	-0.04	0.01
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		46.5
Dist 3dB Peak [mm]		9.7



Meas.4 Body Plane with Back Side 0mm on High Channel in WCDMA Band4 mode with Antenna 1

Exposure Conditions

Phantom	Position	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [°C]	Liquid Temperature [°C]
Flat, HSL	BACK, 0.00	Band 4	WCDMA , 10011-CAC	1752.6, 1513	8.67	1.39	40.0	22.5	21.5

Hardware Setup

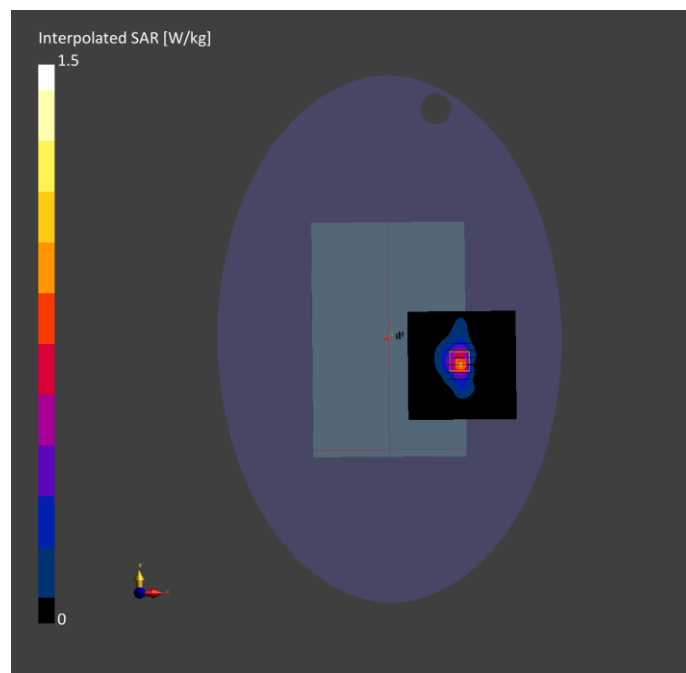
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2024-10-12	EX3DV4 - SN7510, 2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.5
MAIA	N/A	N/A
Surface	VMS + 6p	VMS + 6p
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-12	2024-10-12
psSAR1g [W/kg]	0.708	0.713
psSAR10g [W/kg]	0.364	0.352
Power Drift [dB]	-0.00	0.00
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		43.3
Dist 3dB Peak [mm]		10.2



Meas.5 Body Plane with Back Side 0mm on Middle Channel in WCDMA Band5 mode with Antenna 1

Exposure Conditions

Phantom	Position	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [°C]	Liquid Temperature [°C]
Flat, HSL	BACK, 0.00	Band 5	WCDMA , 10011-CAC	836.4, 4182	9.99	0.905	41.8	22.4	21.3

Hardware Setup

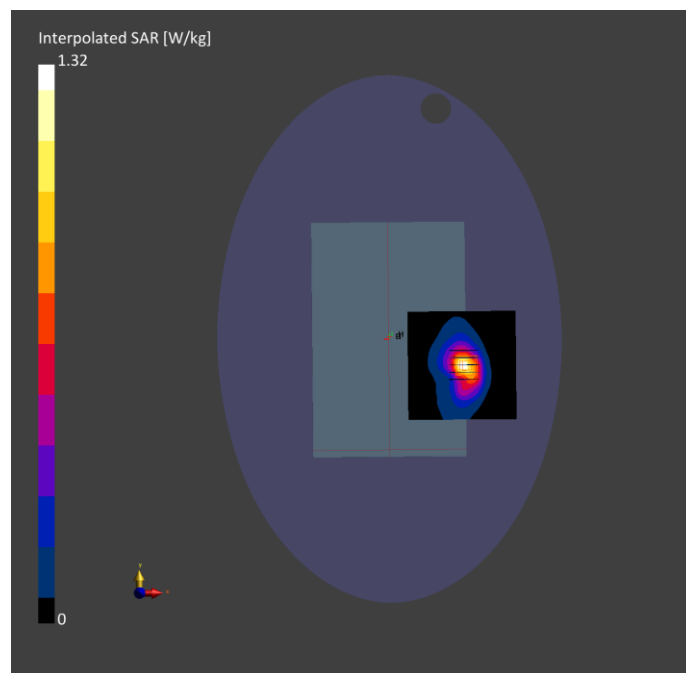
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2024-10-11	EX3DV4 - SN7510, 2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.5
MAIA	N/A	N/A
Surface	VMS + 6p	VMS + 6p
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-11	2024-10-11
psSAR1g [W/kg]	0.591	0.637
psSAR10g [W/kg]	0.345	0.316
Power Drift [dB]	0.02	-0.00
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		44.0
Dist 3dB Peak [mm]		9.1



Meas.6 Body Plane with Back Side 0mm on Middle Channel in LTE Band2 mode with Antenna 1

Exposure Conditions

Phantom	Position	Band	Group	Frequency [MHz],	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature	Liquid Temperature
Section, TSL	Distance [mm]		UID	Channel Number				[°C]	[°C]
Flat, HSL	BACK, 0.00	Band 2	LTE-FDD, 10169-CAF	1880.0, 18900	8.33	1.39	40.1	22.5	21.5

Hardware Setup

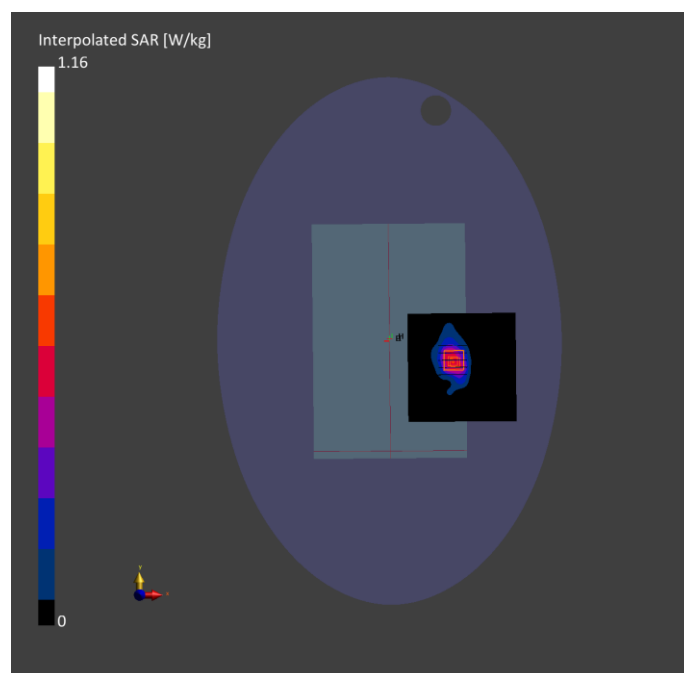
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2024-10-12	EX3DV4 - SN7510, 2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.5
MAIA	N/A	N/A
Surface	All points	All points
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-12	2024-10-12
psSAR1g [W/kg]	0.504	0.615
psSAR10g [W/kg]	0.280	0.304
Power Drift [dB]	0.02	0.03
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		54.1
Dist 3dB Peak [mm]		9.6



Meas.7 Body Plane with Back Side 0mm on Middle Channel in LTE Band4 mode with Antenna 1

Exposure Conditions

Phantom	Position	Band	Group	Frequency [MHz],	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature	Liquid Temperature
Section, TSL	Distance [mm]		UID	Channel Number				[°C]	[°C]
Flat, HSL	BACK, 0.00	Band 4	LTE-FDD, 10169-CAF	1732.5, 20175	8.67	1.36	40.3	22.5	21.5

Hardware Setup

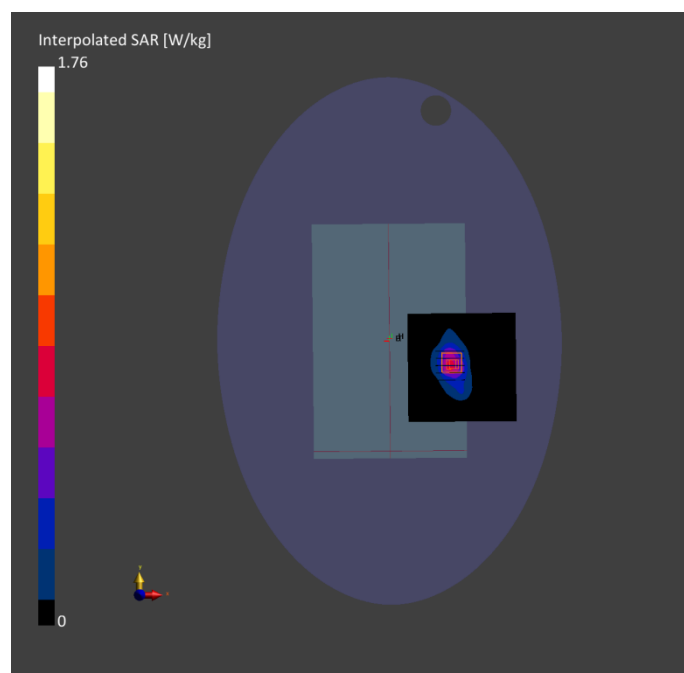
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2024-10-12	EX3DV4 - SN7510, 2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.5
MAIA	N/A	N/A
Surface	All points	All points
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-12	2024-10-12
psSAR1g [W/kg]	0.660	0.785
psSAR10g [W/kg]	0.366	0.377
Power Drift [dB]	0.01	0.03
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		36.1
Dist 3dB Peak [mm]		7.2



Meas.8 Body Plane with Back Side 0mm on Low Channel in LTE Band5 mode with Antenna 1

Exposure Conditions

Phantom	Position	Band	Group	Frequency [MHz],	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature	Liquid Temperature
Section, TSL	Distance [mm]		UID	Channel Number				[°C]	[°C]
Flat, HSL	BACK, 0.00	Band 5	LTE-FDD, 10175-CAH	829.0, 20450	9.99	0.899	42.0	22.4	21.3

Hardware Setup

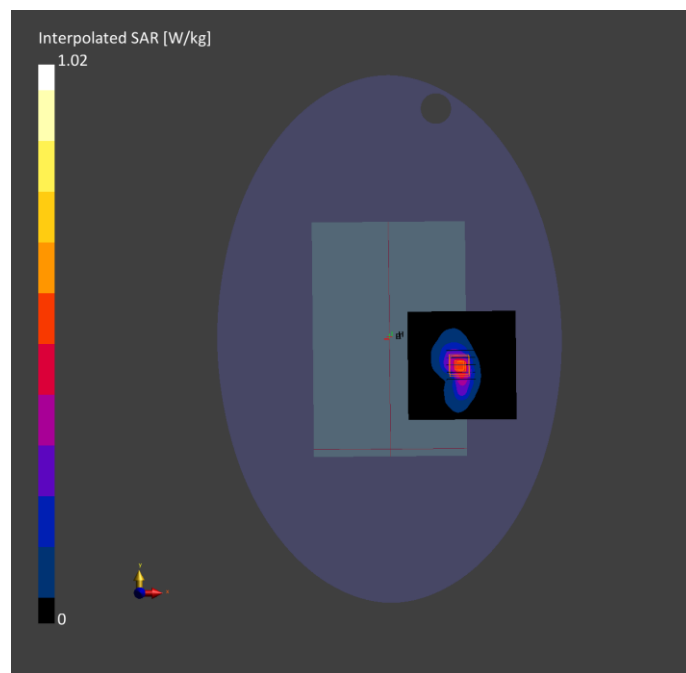
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2024-10-11	EX3DV4 - SN7510, 2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.5
MAIA	N/A	N/A
Surface	All points	All points
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-11	2024-10-11
psSAR1g [W/kg]	0.486	0.481
psSAR10g [W/kg]	0.280	0.240
Power Drift [dB]	-0.02	0.05
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		42.7
Dist 3dB Peak [mm]		7.2



Meas.9 Body Plane with Back Side 0mm on Middle Channel in LTE Band7 mode with Antenna 1

Exposure Conditions

Phantom	Position	Band	Group	Frequency [MHz],	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature	Liquid Temperature
Section, TSL	Distance [mm]		UID	Channel Number				[°C]	[°C]
Flat, HSL	BACK, 0.00	Band 7	LTE-FDD, 10169-CAF	2535.0, 21100	7.75	1.90	39.0	22.2	21.2

Hardware Setup

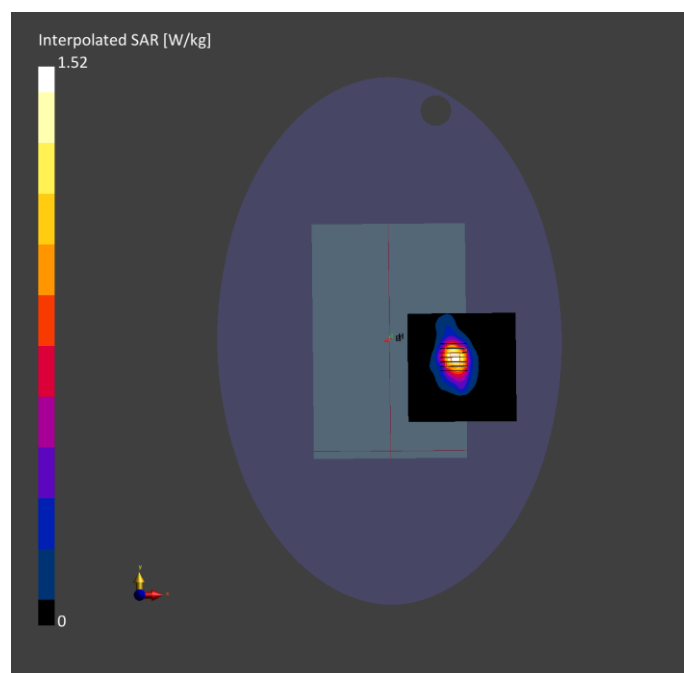
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2024-10-13	EX3DV4 - SN7510, 2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	12.0 x 12.0	5.0 x 5.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.5
MAIA	N/A	N/A
Surface	All points	All points
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-13	2024-10-13
psSAR1g [W/kg]	0.443	0.568
psSAR10g [W/kg]	0.219	0.234
Power Drift [dB]	-0.04	0.03
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		33.0
Dist 3dB Peak [mm]		5.7



Meas.10 Body Plane with Back Side 0mm on Middle Channel in LTE Band12 mode with Antenna 1

Exposure Conditions

Phantom	Position	Band	Group	Frequency [MHz],	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature	Liquid Temperature
Section, TSL	Distance [mm]		UID	Channel Number				[°C]	[°C]
Flat, HSL	BACK, 0.00	Band 12	LTE-FDD, 10175-CAH	707.5, 23095	10.29	0.879	42.5	22.4	21.3

Hardware Setup

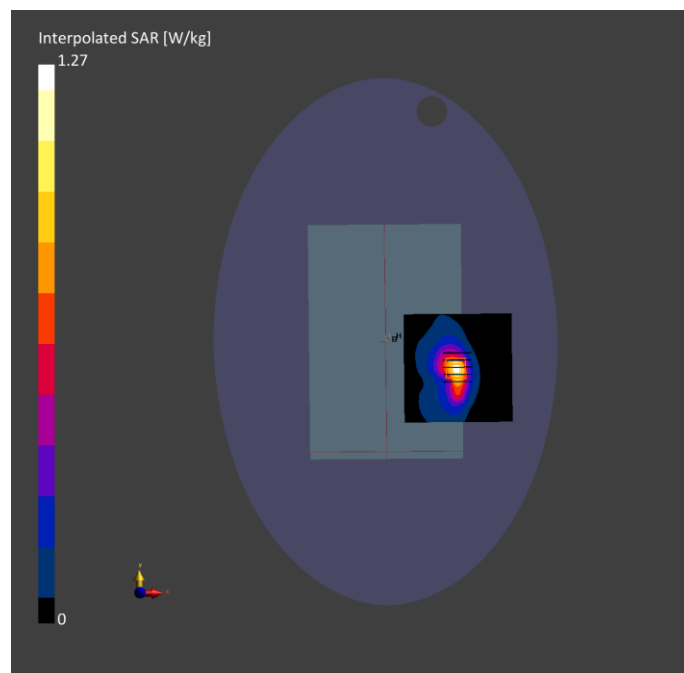
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2024-10-11	EX3DV4 - SN7510, 2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.5
MAIA	N/A	N/A
Surface	All points	All points
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-11	2024-10-11
psSAR1g [W/kg]	0.521	0.538
psSAR10g [W/kg]	0.299	0.254
Power Drift [dB]	-0.03	0.08
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		36.5
Dist 3dB Peak [mm]		6.4



Meas.11 Body Plane with Back Side 0mm on High Channel in LTE Band38 mode with Antenna 1

Exposure Conditions

Phantom	Position	Band	Group	Frequency [MHz],	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature	Liquid Temperature
Section, TSL	Distance [mm]		UID	Channel Number				[°C]	[°C]
Flat, HSL	BACK, 0.00	Band 38	LTE-TDD, 10172-CAH	2610.0, 38150	7.59	1.98	38.5	22.2	21.2

Hardware Setup

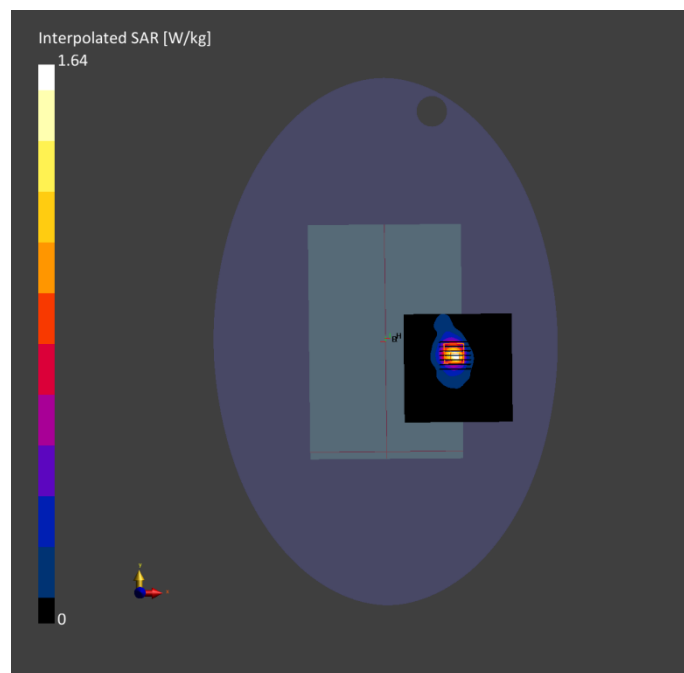
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2024-10-13	EX3DV4 - SN7510, 2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	12.0 x 12.0	5.0 x 5.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.5
MAIA	N/A	N/A
Surface	All points	All points
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-13	2024-10-13
psSAR1g [W/kg]	0.601	0.644
psSAR10g [W/kg]	0.268	0.274
Power Drift [dB]	0.14	0.02
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		31.8
Dist 3dB Peak [mm]		5.1



Meas.12 Body Plane with Back Side 0mm on Middle Channel in LTE Band41 mode with Antenna 1

Exposure Conditions

Phantom	Position	Band	Group	Frequency [MHz],	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature	Liquid Temperature
Section, TSL	Distance [mm]		UID	Channel Number				[°C]	[°C]
Flat, HSL	BACK, 0.00	Band 41	LTE-TDD, 10172-CAH	2595.0, 40640	7.59	1.96	38.6	22.2	21.2

Hardware Setup

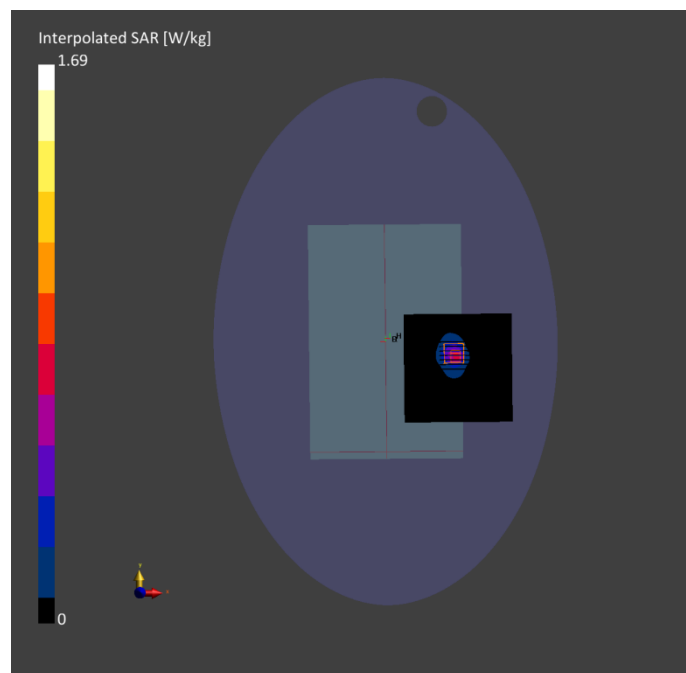
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2024-10-13	EX3DV4 - SN7510, 2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	12.0 x 12.0	5.0 x 5.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.5
MAIA	N/A	N/A
Surface	All points	All points
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-13	2024-10-13
psSAR1g [W/kg]	0.584	0.637
psSAR10g [W/kg]	0.264	0.272
Power Drift [dB]	-0.03	0.03
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		31.7
Dist 3dB Peak [mm]		5.8



Meas.13 Body Plane with Bottom Edge 0mm on 6 Channel in IEEE802.11b mode with Antenna 2

Exposure Conditions

Phantom	Position, Test	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [°C]	Liquid Temperature [°C]
Flat, HSL	EDGE BOTTOM 0.00	WLAN 2.4GH z	WLAN , 10415- AAA	2437.0, 6	7.75	1.78	39.7	22.2	21.2

Hardware Setup

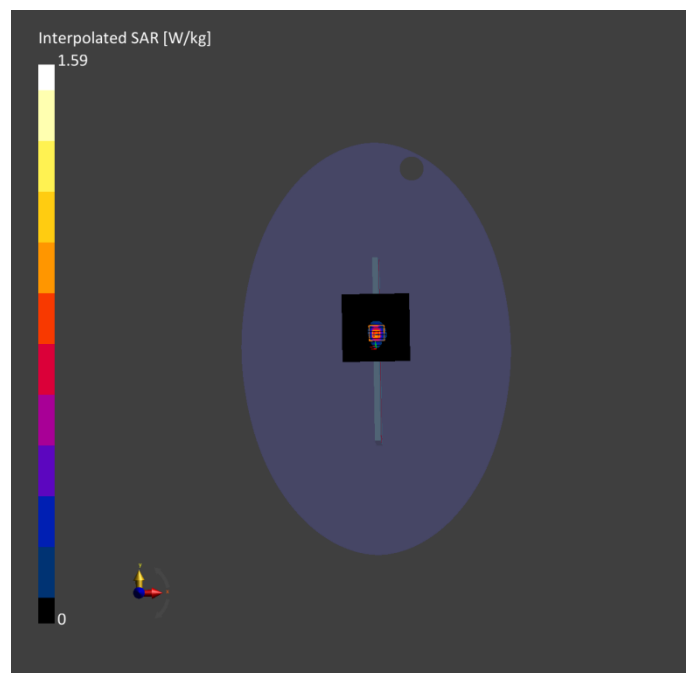
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2024-10-13	EX3DV4 - SN7510, 2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	96.0 x 96.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	12.0 x 12.0	5.0 x 5.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.5
MAIA	N/A	N/A
Surface	VMS + 6p	VMS + 6p
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-13	2024-10-13
psSAR1g [W/kg]	0.713	0.747
psSAR10g [W/kg]	0.278	0.293
Power Drift [dB]	-0.02	0.03
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		47.3
Dist 3dB Peak [mm]		6.3



Meas.14 Body Plane with Bottom Edge 0mm on 58 Channel in IEEE802.11ac80 mode with Antenna 2

Exposure Conditions

Phantom	Position, Test	Band	Group	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [°C]	Liquid Temperature [°C]
Flat, HSL	EDGE BOTTOM	WLA N	WLAN, 10544-	5290.0, 58	5.50	4.79	35.4	22.4	21.3
		5GHz	AAC						
	0.00								

Hardware Setup

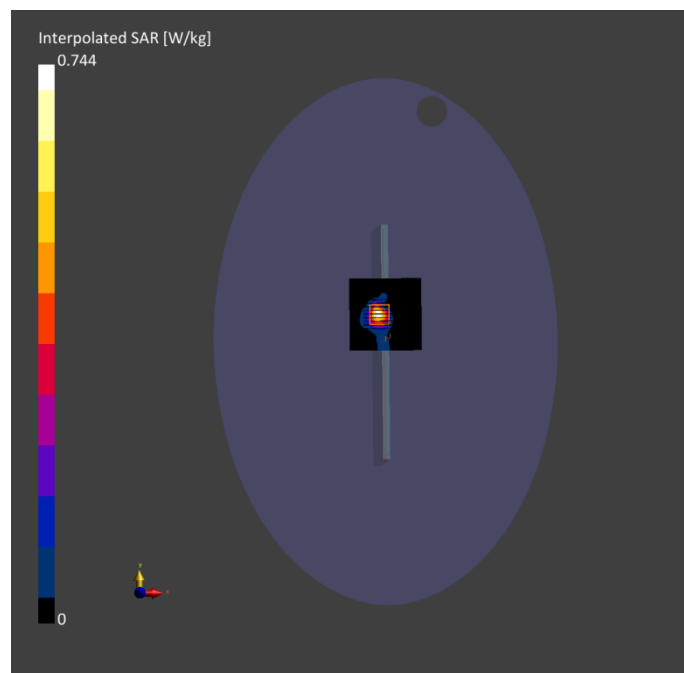
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2024-10-11	EX3DV4 - SN7510, 2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	80.0 x 80.0	24.0 x 24.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 2.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	Y	Y
Surface	VMS + 6p	VMS + 6p
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-11	2024-10-11
psSAR1g [W/kg]	0.166	0.201
psSAR10g [W/kg]	0.052	0.057
Power Drift [dB]	0.17	0.15
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		55.0
Dist 3dB Peak [mm]		6.1



Meas.15 Body Plane with Bottom Edge 0mm on 122 Channel in IEEE802.11ac80 mode with Antenna 2

Exposure Conditions

Phantom	Position, Test	Band	Group	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [°C]	Liquid Temperature [°C]
Flat, HSL	EDGE, BOTTOM	WLAN, 5GHz	WLAN, 10544-AAC	5610.0, 122	5.00	5.07	35.1	22.4	21.3
									0.00

Hardware Setup

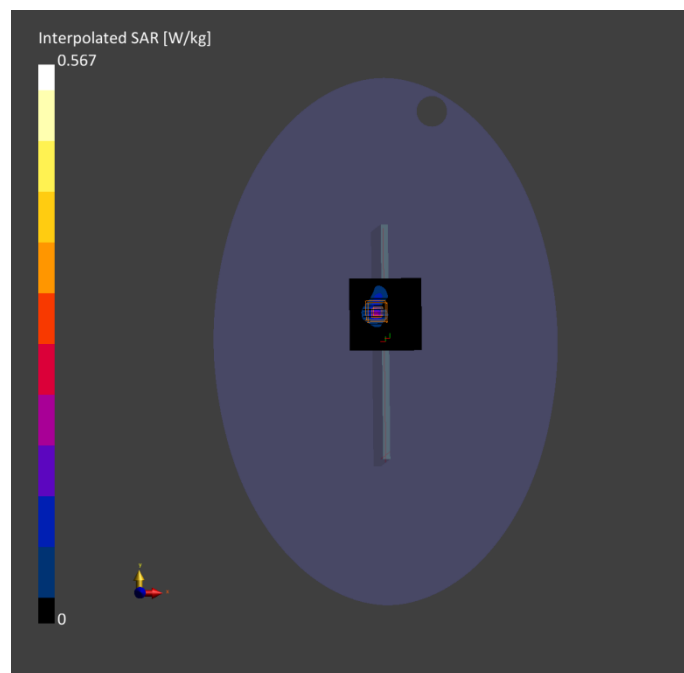
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2024-10-11	EX3DV4 - SN7510, 2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	80.0 x 80.0	24.0 x 24.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 2.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	Y	Y
Surface	VMS + 6p	VMS + 6p
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-11	2024-10-11
psSAR1g [W/kg]	0.132	0.146
psSAR10g [W/kg]	0.041	0.040
Power Drift [dB]	0.02	-0.06
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		53.5
Dist 3dB Peak [mm]		7.4



Meas.16 Body Plane with Bottom Edge 0mm on 155 Channel in IEEE802.11ac80 mode with Antenna 2

Exposure Conditions

Phantom	Position, Test	Band	Group	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [°C]	Liquid Temperature [°C]
Flat, HSL	EDGE, BOTTOM, 0.00	WLAN, 5GHz	WLAN, 10544-AAC	5775.0, 155	5.04	5.22	35.4	22.4	21.3

Hardware Setup

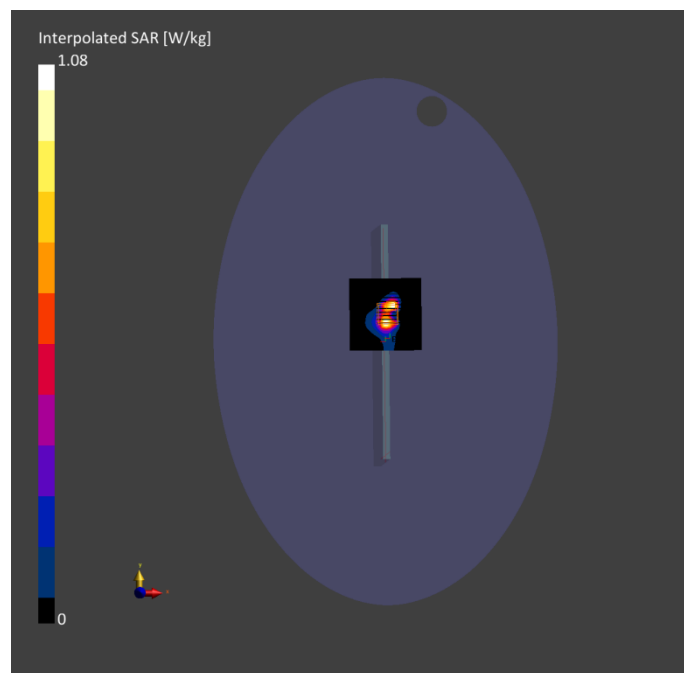
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2024-10-11	EX3DV4 - SN7510, 2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	80.0 x 80.0	24.0 x 24.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 2.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	Y	Y
Surface	VMS + 6p	VMS + 6p
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-11	2024-10-11
psSAR1g [W/kg]	0.200	0.222
psSAR10g [W/kg]	0.063	0.061
Power Drift [dB]	-0.06	0.10
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		49.6
Dist 3dB Peak [mm]		5.1



Meas.17 Body Plane with Bottom Edge 0mm on 19 Channel in Bluetooth mode with Antenna 2

Exposure Conditions

Phantom	Position, Test Distance	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity	Ambient Temperature [°C]	Liquid Temperature [°C]
Flat, HSL	EDGE BOTTOM 0.00	ISM 2.4 GHz Band	Bluetooth , 10670- CAA	2440.0, 19	7.75	1.79	39.7	22.2	21.2

Hardware Setup

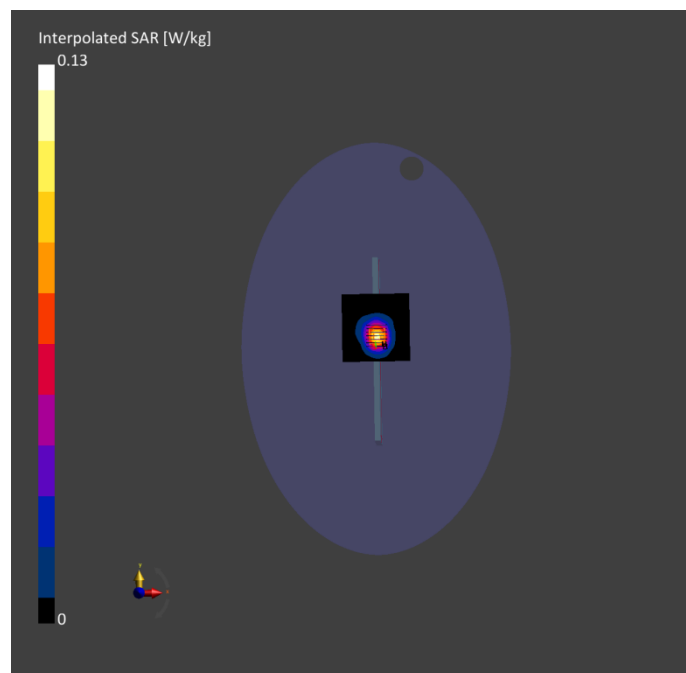
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2024-10-13	EX3DV4 - SN7510, 2024-06-25	DAE4 Sn1711, 2024-03-18

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	96.0 x 96.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	12.0 x 12.0	5.0 x 5.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.5
MAIA	Y	Y
Surface	VMS + 6p	VMS + 6p
Detection		
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-10-13	2024-10-13
psSAR1g [W/kg]	0.069	0.070
psSAR10g [W/kg]	0.035	0.040
Power Drift [dB]	0.08	0.02
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		58.4
Dist 3dB Peak [mm]		12.4



ANNEX D EUT EXTERNAL PHOTOS

Please refer the document “BL-SH2470490-AW.pdf”.

ANNEX E SAR TEST SETUP PHOTOS

Please refer the document “BL-SH2470490-AS.pdf”.

ANNEX F CALIBRATION REPORT

Please refer the document “BL-SH2470490-AC.pdf”.

ANNEX G TUNE-UP PROCEDURE

Please refer the document “BL-SH2470490-AT.pdf”.

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