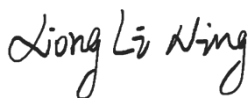


# TEST REPORT

**Applicant:** MediaTek Inc.  
**Address:** No. 1, Dusing 1st Rd., Hsinchu Science Park  
Hsinchu City 30078 Taiwan  
**Equipment Type:** 2TX 11be (WiFi7) BW320 + BT/BLE Combo Card  
**Model Name:** MT7927  
**Brand Name:** N/A  
**FCC ID:** RAS-MT7927  
**Test Standard:** FCC 47 CFR Part 2.1093  
(refer section 3.1)  
**Maximum SAR:** Body 2.4GHz(1 g): 0.05 W/kg  
Body 5GHz(1 g): 0.36 W/kg  
Body 6GHz(1 g): 0.10 W/kg  
Limbs 2.4GHz(10 g): 0.20 W/kg  
Limbs 5GHz(10 g): 0.41 W/kg  
Limbs 6GHz(10 g): 0.12 W/kg  
**Sample Arrival Date:** Apr. 10, 2023  
**Test Date:** Apr. 21, 2023 - Apr. 27, 2023  
**Date of Issue:** May 23, 2023

**ISSUED BY:**

Shenzhen BALUN Technology Co., Ltd.

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

(Testing Director)



Revision History		
Version	Issue Date	Revisions Content
<u>Rev. 01</u>	<u>May 18, 2023</u>	<u>Initial Issue</u>
<u>Rev. 02</u>	<u>May 23, 2023</u>	<u>Update page 72 test equipment list for D6.5GHzV2 calibration date with page 74 5250MHz system check results.</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	<input checked="" type="checkbox"/> Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	<input type="checkbox"/> 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	MediaTek Inc.
Address	No. 1, Dusing 1st Rd., Hsinchu Science Park Hsinchu City 30078 Taiwan

### 2.2 Manufacturer Information

Manufacturer	MediaTek Inc.
Address	No. 1, Dusing 1st Rd., Hsinchu Science Park Hsinchu City 30078 Taiwan

### 2.3 General Description for Equipment under Test (EUT)

EUT Name	2TX 11be (WiFi7) BW320 + BT/BLE Combo Card
Model Name Under Test	MT7927
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	N/A
Software Version	N/A
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

#### 2.3.1 Host Information:

Product Name	Notebook Computer
Model Name	Legion 9 16IRX8
Brand Name	Lenovo

### 2.3.2 Antenna Information:

Antenna Port	Model Name	Antenna Manufacturer	Antenna Type	Antenna Gain (dBi)									
				2.4 GHz	5.15 - 5.25 GHz	5.25 - 5.35 GHz	5.47 - 5.725 GHz	5.725- 5.895 GHz	5.925 - 6.425 GHz	6.425 - 6.525 GHz	6.525 - 6.875 GHz	6.875 - 7.125 GHz	
Main Antenna	DC330021K10 (AYF6Y-200006)	AWAN (Mode 1)	PIFA	2.88	3.05	3.05	1.80	1.50	3.73	1.71	2.51	1.95	
Auxiliary Antenna	DC330021K10 (AYF6Y-200006)		PIFA	2.90	3.41	3.41	3.25	2.60	3.81	3.81	2.65	1.44	
Main Antenna	DC330021K10 (AYF6Y-200006)	AWAN (Mode 2)	PIFA	2.74	1.10	0.93	-0.03	2.42	2.96	2.24	2.81	1.60	
Auxiliary Antenna	DC330021K10 (AYF6Y-200006)		PIFA	2.48	0.88	0.18	1.15	3.12	3.49	1.65	1.48	1.56	

## 2.4 Ancillary Equipment

Note: Not application.

## 2.5 Technical Information

Network and Wireless connectivity	Bluetooth (BR+EDR+BLE) 2.4G WIFI 802.11b, 802.11g, 802.11n(HT20/40), VHT20/40, 802.11ax(HE20/40) and 802.11be(EHT20/40) 5G WIFI 802.11a, 802.11n(HT20/40), 802.11ac(VHT20/40/80/160), 802.11ax(HE20/40/80/160) and 802.11be(EHT20/40/80), U-NII-1/2A/2C/3 6G WIFI 802.11a, 802.11ax(HE20/40/80/160) and 802.11be(EHT20/40/80/160/320), U-NII-5/6/7/8
-----------------------------------	---

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

Operating Mode	2.4G WLAN, 5G WLAN, 6G WLAN, Bluetooth		
Frequency Range	802.11b/g	2412 MHz ~ 2472 MHz	
	VHT20/VHT40	2412 MHz ~ 2472 MHz	
	802.11ax(HE20/HE40)	2412 MHz ~ 2472 MHz	
	802.11be(EHT20/40)	2412 MHz ~ 2472 MHz	
	802.11a	5150 MHz ~ 5250 MHz	
		5250 MHz ~ 5350 MHz	
		5470 MHz ~ 5725 MHz	
		5725 MHz ~ 5850 MHz	
	802.11n(HT20/HT40)	5150 MHz ~ 5250 MHz	
		5250 MHz ~ 5350 MHz	
		5470 MHz ~ 5725 MHz	
		5725 MHz ~ 5850 MHz	
	802.11ac(VHT20/VHT40/VHT80)	5150 MHz ~ 5250 MHz	
		5250 MHz ~ 5350 MHz	
		5470 MHz ~ 5725 MHz	
		5725 MHz ~ 5850 MHz	
	802.11ax(HE20/HE40/HE80)	5150 MHz ~ 5250 MHz	
		5250 MHz ~ 5350 MHz	
		5470 MHz ~ 5725 MHz	
		5725 MHz ~ 5850 MHz	
	802.11ac(VHT160)/ax(HE160)	5150 MHz ~ 5250 MHz	
		5250 MHz ~ 5350 MHz	
		5470 MHz ~ 5725 MHz	
	802.11be(EHT20/40/80)	5150 MHz ~ 5250 MHz	
		5725 MHz ~ 5850 MHz	
	802.11a	5925 MHz ~ 6425 MHz	
		6425 MHz ~ 6525 MHz	
		6525 MHz ~ 6875 MHz	
		6875 MHz ~ 7125 MHz	
	802.11ax(HE20/HE40/HE80/HE160)	5925 MHz ~ 6425 MHz	
		6425 MHz ~ 6525 MHz	
		6525 MHz ~ 6875 MHz	

		6875 MHz ~ 7125 MHz
	802.11 be(EHT20/40/80/160/320)	5925 MHz ~ 6425 MHz
		6425 MHz ~ 6525 MHz
		6525 MHz ~ 6875 MHz
		6875 MHz ~ 7125 MHz
Bluetooth	2402 MHz ~ 2480 MHz	
Antenna Type	WLAN: PIFA Antenna Bluetooth: PIFA Antenna	
Hotspot Function	N/A	
Exposure Category	General Population/Uncontrolled exposure	
EUT Stage	Portable Device	
Product	Type	
	<input checked="" type="checkbox"/> Production unit	<input type="checkbox"/> Identical prototype



### 3 SUMMARY OF TEST RESULT

#### 3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 2.1093	Radiofrequency radiation exposure evaluation: portable devices
2	ANSI C95.1-1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
3	KDB 447498 D04 v01	RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices
4	KDB 865664 D01 v01r04	SAR Measurement 100 MHz to 6 GHz
5	KDB 865664 D02 v01r02	RF Exposure Reporting
6	KDB 248227 D01 v02r02	SAR Guidance for IEEE 802.11 (Wi-Fi) Transmitters
7	KDB 616217 D04v01r02	SAR for laptop and tablets
8	IEC/IEEE 62209- 1528:2020	Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Part 1528: Human models, instrumentation, and procedures (Frequency range of 4 MHz to 10 GHz)

### 3.2 Device Category and SAR Limit

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

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

Table of Exposure Limits:

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

**NOTE:**

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

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

### 3.3 Test Result Summary

#### 3.3.1 Highest SAR (1 g Value)

Equipment Class	Band	Antenna	Maximum Scaled SAR (W/kg)	Maximum Report SAR (W/kg)
			Body (0mm)	Body (0mm)
DTS	2.4G WLAN	Aux.	0.05	<b>0.36</b>
	2.4G WLAN	Main	0.03	
U-NII-2A	5.3G WLAN	Aux.	0.16	
	5.3G WLAN	Main	0.03	
U-NII-2C	5.6G WLAN	Aux.	0.05	
	5.6G WLAN	Main	0.08	
U-NII-3	5.8G WLAN	Aux.	<b>0.36</b>	
	5.8G WLAN	Main	0.11	
U-NII-5/6/7/8	6G WLAN	Aux.	0.10	
	6G WLAN	Main	0.04	
DSSS	Bluetooth	Aux.	0.02	
Limit (W/kg)			1.60	
Verdict			Pass	

#### 3.3.2 Highest SAR (10 g Value)

Equipment Class	Band	Antenna	Maximum Scaled SAR (W/kg)	Maximum Report SAR (W/kg)
			Limbs (0mm)	Limbs (0mm)
DTS	2.4G WLAN	Aux.	0.20	<b>0.41</b>
	2.4G WLAN	Main	0.14	
U-NII-2A	5.3G WLAN	Aux.	0.25	
	5.3G WLAN	Main	0.25	
U-NII-2C	5.6G WLAN	Aux.	0.10	
	5.6G WLAN	Main	0.33	
U-NII-3	5.8G WLAN	Aux.	0.37	
	5.8G WLAN	Main	<b>0.41</b>	
U-NII-5/6/7/8	6G WLAN	Aux.	0.12	
	6G WLAN	Main	0.08	
DSSS	Bluetooth	Aux.	0.03	
Limit (W/kg)			4.00	
Verdict			Pass	

### 3.3.3 Highest Simultaneous Transmission SAR Values (1 g Value)

Equipment Class	Maximum Report SAR (W/kg)	SPLSR
	Body (0mm)	
	1g SAR	
DTS	<b>0.53</b>	N/A
NII	<b>0.53</b>	N/A
DSS	0.48	N/A
Limit (W/Kg)	1.60	N/A
Verdict	Pass	Pass

Note: The simultaneous transmission SAR detail please refer to section 13.

### 3.3.4 Highest Simultaneous Transmission SAR Values (10 g Value)

Equipment Class	Maximum Report SAR (W/kg)	SPLSR
	Limbs (0mm)	
	10g SAR	
DTS	<b>1.11</b>	N/A
NII	<b>1.11</b>	N/A
DSS	0.80	N/A
Limit (W/Kg)	4.00	N/A
Verdict	Pass	Pass

Note: The simultaneous transmission SAR detail please refer to section 13.

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

The maximum 10 g SAR for the EUT in this report is 0.41 W/kg, which is lower than 3.75 W/kg, so the extensive SAR measurement uncertainty analysis is not required in this report.

## 4 MEASUREMENT SYSTEM

### 4.1 Specific Absorption Rate (SAR) Definition

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

The SAR definition is the time derivative (rate) of the incremental energy ( $dW$ ) absorbed by (dissipated in) an incremental mass ( $dm$ ) contained in a volume element ( $dv$ ) of a given density ( $\rho$ ). 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

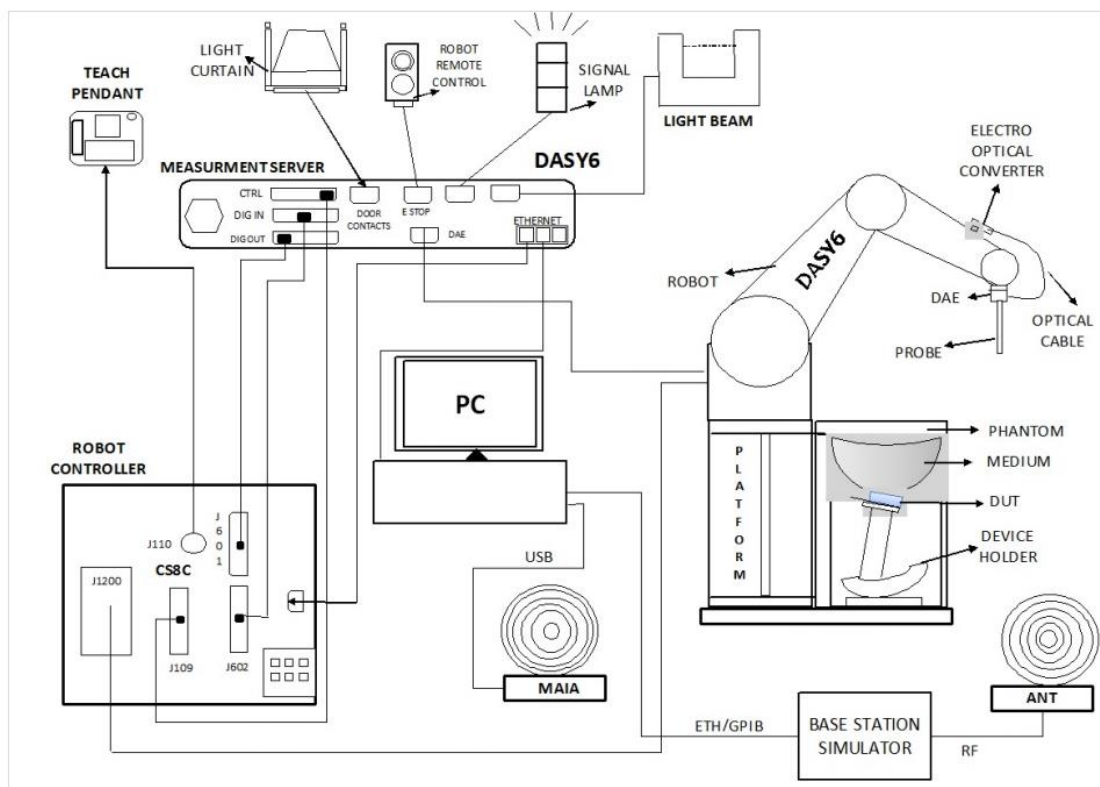
$$SAR = \frac{\sigma E^2}{\rho}$$

Where:  $\sigma$  is the conductivity of the tissue,

$\rho$  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

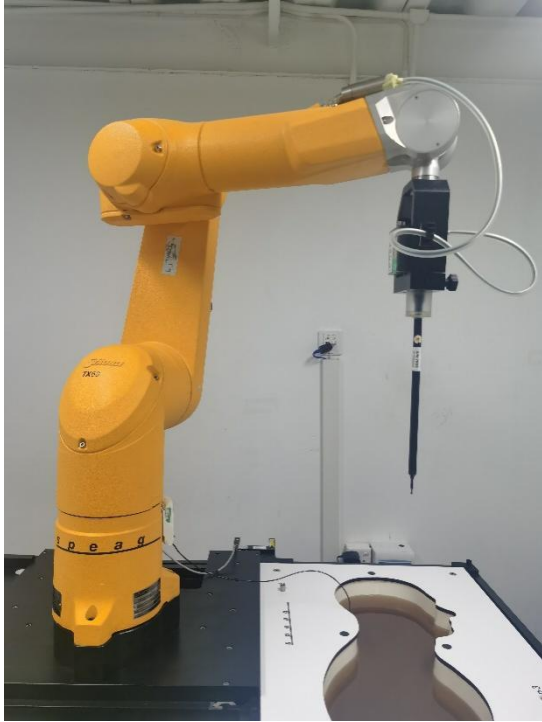


The DASY system for performing compliance tests consists of the following items:

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  $\pm 0.02$  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 fields shielded via the closed metallic construction shields)



### 4.2.3 E-Field Probe

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

Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection 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: $\pm 0.2$ dB
Directivity	$\pm 0.2$ dB in HSL (rotation around probe axis) ; $\pm 0.4$ dB in HSL (rotation normal to probe axis)
Dynamic range	5 $\mu$ W/g to > 100 mW/g; Linearity: $\pm 0.2$ 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

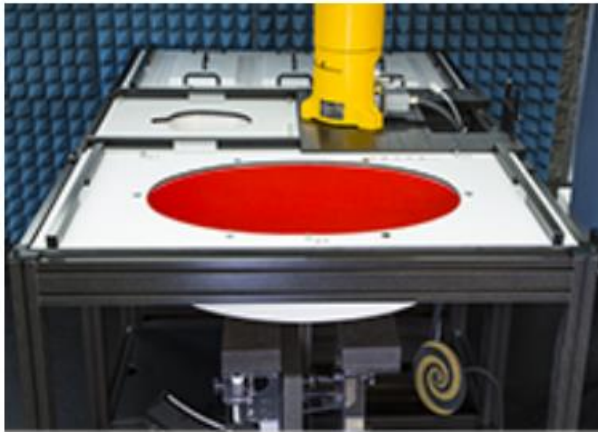
The data acquisition electronics (DAE) consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converte and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through an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



- Input Impedance: 200M $\Omega$ 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. ELI V8.0 is fully compatible with the latest draft of the standard IEC 62209 Part II and all known tissue simulating liquids. ELI V8.0 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 ELI V8.0	2.0 ± 0.2	600	400

#### 4.2.6 Device Holder

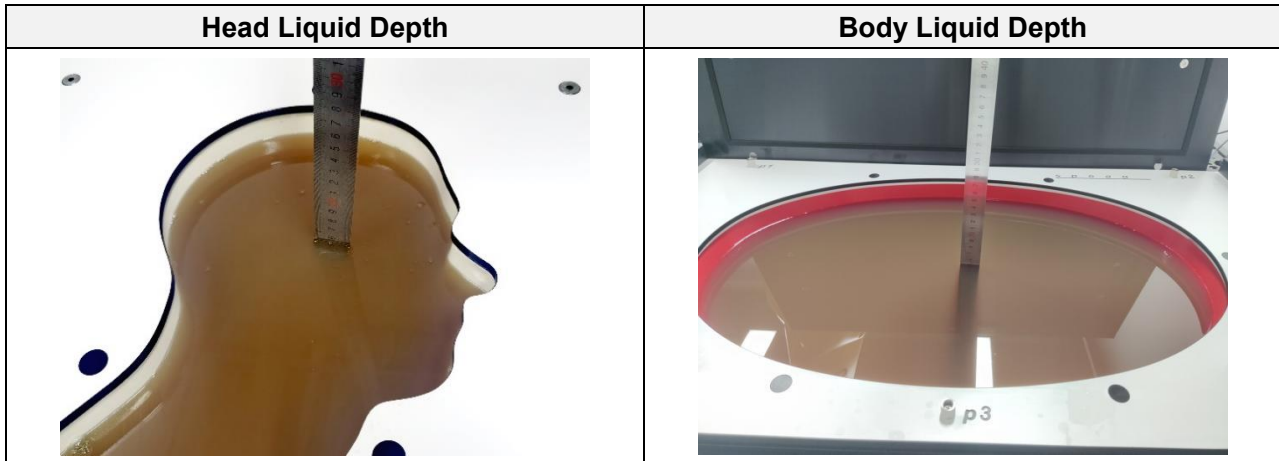
The DASY device holder has two scales for device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The plane between the ear openings and the mouth tip has a rotation angle of  $65^\circ$ . The bottom plate contains three pair of 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  $1^\circ$ .

### 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	Ethanediol, Sodium petroleum sulfonate, Hexylene Glycol / 2-Methyl-pentane-2.4-diol, Alkoxyated alcohol

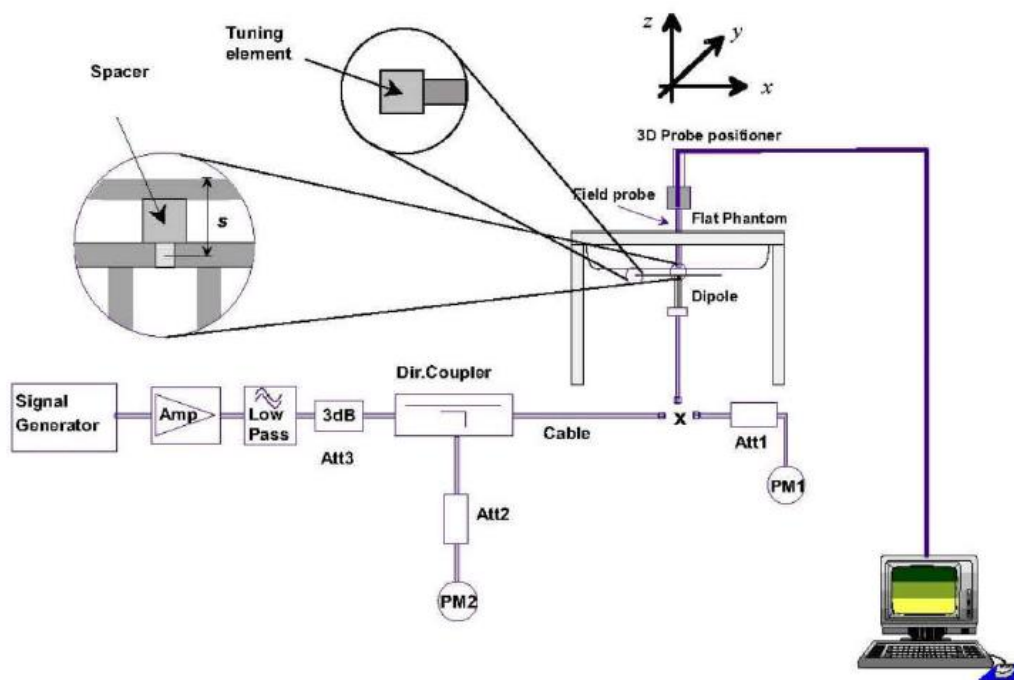
## 5 SYSTEM VERIFICATION

### 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

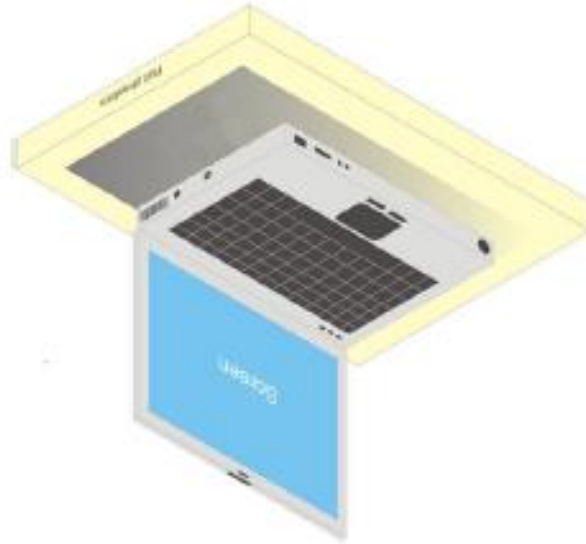
In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder.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

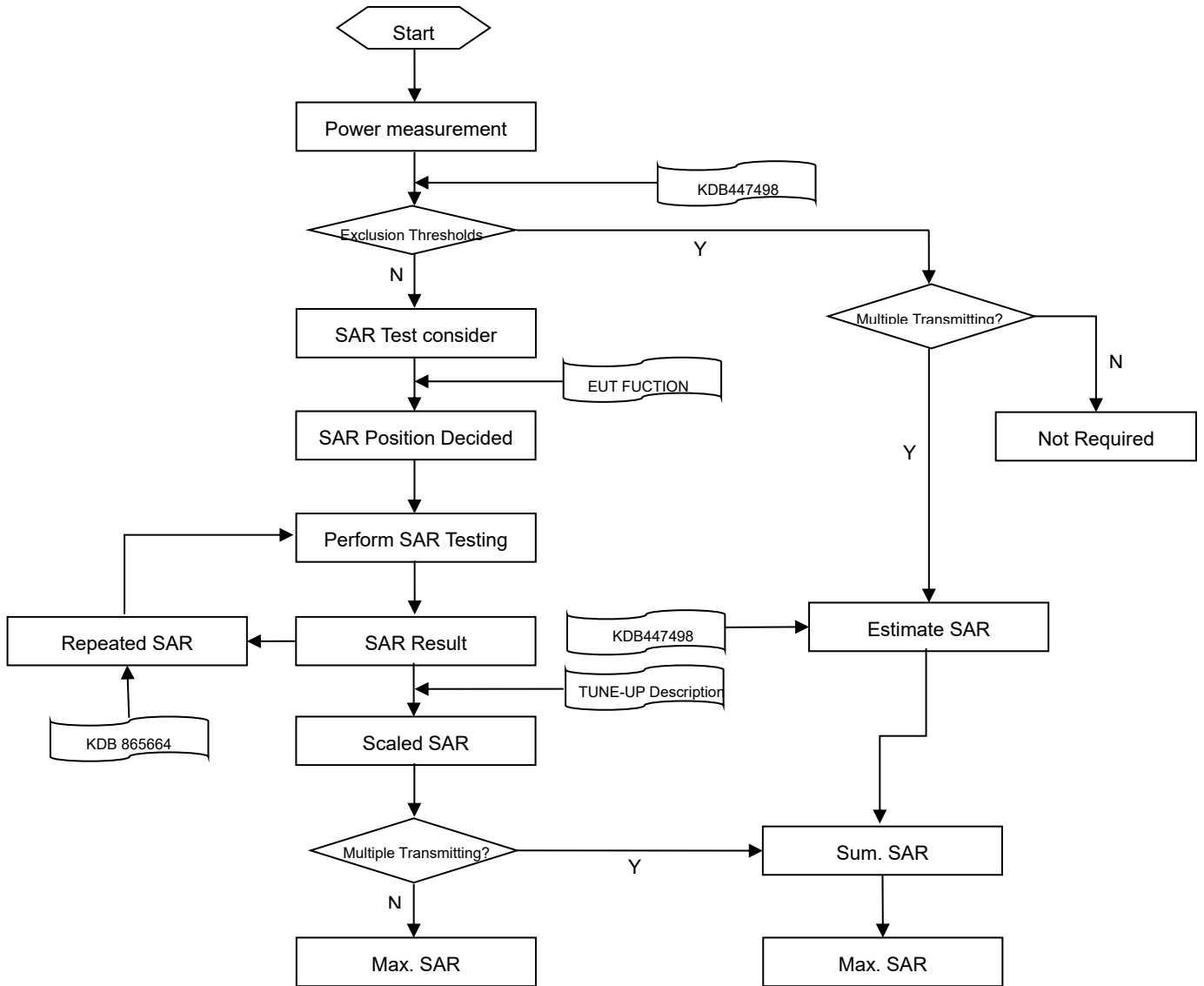
### 6.1 Laptop Exposure Condition

This DUT should consider one position which is bottom of laptop touching with phantom 0 mm air gap and the screen portion of the device shall be an open position at a 90° angle.



# 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: $\Delta x$ Area , $\Delta y$ 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: $\Delta x$ Zoom , $\Delta y$ Zoom		≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3–4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z$ Zoom (n)	≤ 5 mm	3–4 GHz: ≤ 4 mm
			4–5 GHz: ≤ 3 mm
			5–6 GHz: ≤ 2 mm
	graded grid	$\Delta z$ Zoom (1): between 1st two points closest to phantom surface	≤ 4 mm
4–5 GHz: ≤ 2.5 mm			
	$\Delta z$ Zoom (n>1): between subsequent points	≤ 1.5· $\Delta z$ Zoom (n-1)	
Minimum zoom scan volume	x, y, z	≥30 mm	3–4 GHz: ≥ 28 mm
			4–5 GHz: ≥ 25 mm
			5–6 GHz: ≥ 22 mm

### Note:

1.  $\delta$  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 WLAN 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. 2. 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 WIFI

#### 8.1.1 2.4G WIFI (Main Antenna)

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Limit (dBm)	SAR Test Require.
2.4 (2.4~2.4835)	802.11b	1	2412	22.52	23.00	Yes
		6	2437	22.59	23.00	Yes
		11	2462	<b>22.86</b>	23.00	Yes
		12	2467	17.25	17.50	No
		13	2472	13.43	14.00	No
	802.11g	1	2412	18.36	19.00	No
		6	2437	21.13	21.50	No
		11	2462	17.55	18.00	No
		12	2467	15.72	16.00	No
		13	2472	13.71	14.00	No
	VHT20	1	2412	17.37	17.50	No
		6	2437	21.49	21.50	No
		11	2462	16.81	17.50	No
		12	2467	14.74	15.00	No
		13	2472	12.78	13.00	No
	VHT40	3	2422	14.47	15.00	No
		6	2437	17.39	18.00	No
		9	2452	14.54	15.00	No
		10	2457	13.58	14.00	No
		11	2462	12.73	13.50	No
	802.11ax(HE20)	1	2412	17.23	17.50	No
		6	2437	21.17	21.50	No
		11	2462	17.03	17.50	No
		12	2467	14.47	15.00	No
		13	2472	12.51	13.00	No
	802.11ax(HE40)	3	2422	14.45	15.00	No
		6	2437	17.36	18.00	No
		9	2452	14.56	15.00	No
		10	2457	13.71	14.00	No
		11	2462	13.18	13.50	No
	802.11be(EHT20)	1	2412	16.78	17.50	No
		6	2437	21.15	21.50	No
		11	2462	17.10	17.50	No

		12	2467	14.58	15.00	No
		13	2472	12.76	13.00	No
	802.11be(EHT40)	3	2422	14.76	15.00	No
		6	2437	17.62	18.00	No
		9	2452	14.67	15.00	No
		10	2457	13.42	14.00	No
		11	2462	13.08	13.50	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  $\leq 1.2$  W/kg.

Adjusted SAR = Report SAR \* (max power (OFDM)/ max power (DSSS)) = 0.029 \* (141.25mW/199.53mW) = 0.021 W/Kg, so the 2.4G OFDM SAR test is not required.

## 8.1.2 2.4G WIFI (Aux. Antenna)

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Limit (dBm)	SAR Test Require.
2.4 (2.4~2.4835)	802.11b	1	2412	<b>22.72</b>	23.00	Yes
		6	2437	22.42	23.00	Yes
		11	2462	22.63	23.00	Yes
		12	2467	17.24	17.50	No
		13	2472	13.75	14.00	No
	802.11g	1	2412	18.44	19.00	No
		6	2437	21.09	21.50	No
		11	2462	17.42	18.00	No
		12	2467	15.45	16.00	No
		13	2472	13.58	14.00	No
	VHT20	1	2412	17.22	17.50	No
		6	2437	21.47	21.50	No
		11	2462	17.11	17.50	No
		12	2467	14.58	15.00	No
		13	2472	12.68	13.00	No
	VHT40	3	2422	14.67	15.00	No
		6	2437	17.37	18.00	No
		9	2452	14.85	15.00	No
		10	2457	13.74	14.00	No
		11	2462	13.19	13.50	No
	802.11ax(HE20)	1	2412	16.90	17.50	No
		6	2437	21.05	21.50	No
		11	2462	17.29	17.50	No
		12	2467	14.89	15.00	No
		13	2472	12.69	13.00	No
	802.11ax(HE40)	3	2422	14.61	15.00	No
		6	2437	17.86	18.00	No
		9	2452	14.79	15.00	No
		10	2457	13.44	14.00	No
		11	2462	13.31	13.50	No
802.11be(EHT20)	1	2412	17.06	17.50	No	
	6	2437	21.25	21.50	No	
	11	2462	17.37	17.50	No	
	12	2467	14.97	15.00	No	
	13	2472	12.52	13.00	No	
802.11be(EHT40)	3	2422	14.68	15.00	No	

		6	2437	17.42	18.00	No
		9	2452	14.76	15.00	No
		10	2457	13.42	14.00	No
		11	2462	13.17	13.50	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  $\leq 1.2$  W/kg.

Adjusted SAR = Report SAR \* (max power (OFDM)/ max power (DSSS)) = 0.046 \* (141.25mW/199.53mW) = 0.033 W/Kg, so the 2.4G OFDM SAR test is not required.

## 8.1.3 2.4G WIFI (TOTAL)

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Limit (dBm)	SAR Test Require.
2.4 (2.4~2.4835)	802.11b	1	2412	25.63	26.00	No
		6	2437	25.52	26.00	No
		11	2462	25.76	26.00	No
		12	2467	20.26	20.50	No
		13	2472	16.60	17.00	No
	802.11g	1	2412	21.41	22.00	No
		6	2437	24.12	24.50	No
		11	2462	20.50	21.00	No
		12	2467	18.60	19.00	No
		13	2472	16.66	17.00	No
	VHT20	1	2412	20.31	20.50	No
		6	2437	24.49	24.50	No
		11	2462	19.97	20.50	No
		12	2467	17.67	18.00	No
		13	2472	15.74	16.00	No
	VHT40	3	2422	17.58	18.00	No
		6	2437	20.39	21.00	No
		9	2452	17.71	18.00	No
		10	2457	16.67	17.00	No
		11	2462	15.98	16.50	No
	802.11ax(HE20)	1	2412	20.08	20.50	No
		6	2437	24.12	24.50	No
		11	2462	20.17	20.50	No
		12	2467	17.70	18.00	No
		13	2472	15.61	16.00	No
	802.11ax(HE40)	3	2422	17.54	18.00	No
		6	2437	20.63	21.00	No
		9	2452	17.69	18.00	No
		10	2457	16.59	17.00	No
		11	2462	16.26	16.50	No
802.11be(EHT20)	1	2412	19.93	20.50	No	
	6	2437	24.21	24.50	No	
	11	2462	20.25	20.50	No	
	12	2467	17.79	18.00	No	
	13	2472	15.65	16.00	No	
802.11be(EHT40)	3	2422	17.73	18.00	No	

		6	2437	20.53	21.00	No
		9	2452	17.73	18.00	No
		10	2457	16.43	17.00	No
		11	2462	16.14	16.50	No

Note: For WiFi SAR testing was performed on single antenna RF power in SISO mode that is larger to the single antenna RF power in MIMO mode, and for RF exposure assessment of TOTAL mode simultaneous transmission used more conservative "Max. (main ant) + Max. (aux. ant) " method to determine SAR compliance. When the sum of 1-g SISO transmission SAR measurement is <1.6 W/kg, MIMO SAR test is not required.



## 8.1.4 5G WIFI (Main Antenna)

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Power Limit (dBm)	SAR Test Require.
5.2 (5.15~5.25)	802.11a	36	5180	18.76	19.00	No
		40	5200	18.63	19.00	No
		48	5240	18.45	19.00	No
	802.11n(HT20)	36	5180	18.60	19.00	No
		40	5200	18.51	19.00	No
		48	5240	18.45	19.00	No
	802.11n(HT40)	38	5190	15.44	15.50	No
		46	5230	19.90	20.50	No
	802.11ac(VHT20)	36	5180	18.71	19.00	No
		40	5200	18.61	19.00	No
		48	5240	18.48	19.00	No
	802.11ac(VHT40)	38	5190	15.21	15.50	No
		46	5230	20.07	20.50	No
	802.11ac(VHT80)	42	5210	14.31	14.50	No
	802.11ac(VHT160)	50	5250	13.02	14.00	No
	802.11ax(HE20)	36	5180	18.73	19.00	No
		40	5200	18.59	19.00	No
		48	5240	18.54	19.00	No
	802.11ax(HE40)	38	5190	15.05	15.50	No
		46	5230	20.40	20.50	No
	802.11ax(HE80)	42	5210	14.06	14.50	No
802.11ax(HE160)	50	5250	13.09	14.00	No	
802.11be(EHT20)	36	5180	18.81	19.00	No	
	40	5200	15.50	19.00	No	
	48	5240	18.64	19.00	No	
802.11be(EHT40)	38	5190	15.15	15.50	No	
	46	5230	20.36	20.50	No	
802.11be(EHT80)	42	5210	14.01	14.50	No	
5.3 (5.25~5.35)	802.11a	52	5260	18.51	19.00	No
		60	5300	18.46	19.00	No
		64	5320	18.63	19.00	No
	802.11n(HT20)	52	5260	18.56	19.00	No
		60	5300	18.45	19.00	No
		64	5320	18.54	19.00	No
	802.11n(HT40)	54	5270	<b>20.20</b>	20.50	Yes
		62	5310	15.10	15.50	Yes
	802.11ac(VHT20)	52	5260	18.66	19.00	No
		60	5300	18.55	19.00	No
		64	5320	18.75	19.00	No

	802.11ac(VHT40)	54	5270	20.09	20.50	No
		62	5310	14.94	15.50	No
	802.11ac(VHT80)	58	5290	15.18	15.50	No
	802.11ax(HE160)	50	5250	13.02	14.00	No
	802.11ax(HE20)	52	5260	18.65	19.00	No
		60	5300	18.59	19.00	No
		64	5320	18.78	19.00	No
	802.11ax(HE40)	54	5270	19.97	20.50	No
		62	5310	15.90	16.00	No
802.11ax(HE80)	58	5290	15.43	15.50	No	
802.11ax(HE160)	50	5250	13.09	14.00	No	
5.6 (5.47~5.725)	802.11a	100	5500	18.38	19.00	No
		116	5580	18.61	19.00	No
		140	5700	18.61	19.00	No
		144	5720	18.51	19.00	No
	802.11n(HT20)	100	5500	18.68	19.00	No
		116	5580	18.64	19.00	No
		140	5700	18.18	19.00	No
		144	5720	18.70	19.00	No
	802.11n(HT40)	102	5510	14.50	15.00	No
		110	5550	19.80	20.50	Yes
		134	5670	18.25	19.00	Yes
	802.11ac(VHT20)	142	5710	<b>19.88</b>	20.50	Yes
		100	5500	18.85	19.00	No
		116	5580	18.62	19.00	No
		140	5700	18.12	19.00	No
	802.11ac(VHT40)	144	5720	18.79	19.00	No
		102	5510	14.85	15.00	No
		110	5550	20.09	20.50	No
		134	5670	18.71	19.00	No
	802.11ac(VHT80)	142	5710	20.19	20.50	No
		106	5530	15.31	15.50	No
		122	5610	19.48	20.00	No
	802.11ac(VHT160)	138	5690	19.74	20.00	No
		114	5570	14.15	14.50	No
	802.11ax(HE20)	100	5500	18.46	19.00	No
		116	5580	18.69	19.00	No
		140	5700	18.17	19.00	No
		144	5720	18.80	19.00	No
	802.11ax(HE40)	102	5510	15.31	15.50	No
		110	5550	20.02	20.50	No
		134	5670	19.14	19.50	No
		142	5710	20.13	20.50	No

	802.11ax(HE80)	106	5530	15.00	15.50	No
		122	5610	19.72	20.00	No
		138	5690	19.48	20.00	No
	802.11ax(HE160)	114	5570	13.93	14.50	No
5.8 (5.725~5.85)	802.11a	149	5745	21.69	22.00	Yes
		157	5785	21.73	22.00	Yes
		165	5825	<b>21.75</b>	22.00	Yes
	802.11n(HT20)	149	5745	21.41	21.50	No
		157	5785	21.00	21.50	No
		165	5825	21.02	21.50	No
	802.11n(HT40)	151	5755	21.23	21.50	No
		159	5795	21.29	21.50	No
	802.11ac(VHT20)	149	5745	21.40	21.50	No
		157	5785	21.42	21.50	No
		165	5825	21.39	21.50	No
	802.11ac(VHT40)	151	5755	20.91	21.50	No
		159	5795	21.01	21.50	No
	802.11ac(VHT80)	155	5775	18.91	19.00	No
	802.11ax(HE20)	149	5745	21.24	21.50	No
		157	5785	21.34	21.50	No
		165	5825	21.35	21.50	No
	802.11ax(HE40)	151	5755	21.40	21.50	No
		159	5795	21.43	21.50	No
	802.11ax(HE80)	155	5775	18.71	19.00	No
	802.11be(EHT20)	149	5745	18.56	19.00	No
		157	5785	18.68	19.00	No
		165	5825	18.43	19.00	No
	802.11be(EHT40)	151	5755	21.41	21.50	No
159		5795	21.39	21.50	No	
802.11be(EHT80)	155	5775	18.67	19.00	No	

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  $\leq 1.2$  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.

## 8.1.5 5G WIFI (Aux. Antenna)

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Power Limit (dBm)	SAR Test Require.
5.2 (5.15~5.25)	802.11a	36	5180	18.27	19.00	No
		40	5200	18.25	19.00	No
		48	5240	18.34	19.00	No
	802.11n(HT20)	36	5180	18.21	19.00	No
		40	5200	18.17	19.00	No
		48	5240	18.23	19.00	No
	802.11n(HT40)	38	5190	15.24	15.50	No
		46	5230	20.14	20.50	No
	802.11ac(VHT20)	36	5180	18.04	19.00	No
		40	5200	18.56	19.00	No
		48	5240	18.10	19.00	No
	802.11ac(VHT40)	38	5190	15.41	15.50	No
		46	5230	20.28	20.50	No
	802.11ac(VHT80)	42	5210	14.32	14.50	No
	802.11ac(VHT160)	50	5250	13.27	14.00	No
	802.11ax(HE20)	36	5180	18.60	19.00	No
		40	5200	18.56	19.00	No
		48	5240	18.53	19.00	No
	802.11ax(HE40)	38	5190	15.40	15.50	No
		46	5230	20.21	20.50	No
	802.11ax(HE80)	42	5210	14.06	14.50	No
802.11ax(HE160)	50	5250	13.11	14.00	No	
802.11be(EHT20)	36	5180	18.60	19.00	No	
	40	5200	18.65	19.00	No	
	48	5240	18.52	19.00	No	
802.11be(EHT40)	38	5190	15.34	15.50	No	
	46	5230	20.24	20.50	No	
802.11be(EHT80)	42	5210	14.05	14.50	No	
5.3 (5.25~5.35)	802.11a	52	5260	18.50	19.00	No
		60	5300	18.16	19.00	No
		64	5320	18.54	19.00	No
	802.11n(HT20)	52	5260	18.46	19.00	No
		60	5300	18.05	19.00	No
		64	5320	17.96	19.00	No
	802.11n(HT40)	54	5270	<b>20.05</b>	20.50	Yes
		62	5310	15.39	15.50	Yes
	802.11ac(VHT20)	52	5260	18.30	19.00	No
		60	5300	17.93	19.00	No
		64	5320	18.32	19.00	No

	802.11ac(VHT40)	54	5270	19.95	20.50	No
		62	5310	15.25	15.50	No
	802.11ac(VHT80)	58	5290	15.29	15.50	No
	802.11ax(HE160)	50	5250	13.27	14.00	No
	802.11ax(HE20)	52	5260	18.36	19.00	No
		60	5300	18.45	19.00	No
		64	5320	18.34	19.00	No
	802.11ax(HE40)	54	5270	20.32	20.50	No
		62	5310	15.72	16.00	No
802.11ax(HE80)	58	5290	15.05	15.50	No	
802.11ax(HE160)	50	5250	13.11	14.00	No	
5.6 (5.47~5.725)	802.11a	100	5500	18.34	19.00	No
		116	5580	18.63	19.00	No
		140	5700	18.37	19.00	No
		144	5720	18.05	19.00	No
	802.11n(HT20)	100	5500	18.31	19.00	No
		116	5580	18.14	19.00	No
		140	5700	17.79	19.00	No
		144	5720	17.96	19.00	No
	802.11n(HT40)	102	5510	14.26	15.00	No
		110	5550	<b>20.11</b>	20.50	Yes
		134	5670	18.26	19.00	Yes
		142	5710	19.89	20.50	Yes
	802.11ac(VHT20)	100	5500	18.11	19.00	No
		116	5580	18.47	19.00	No
		140	5700	17.67	19.00	No
		144	5720	18.75	19.00	No
	802.11ac(VHT40)	102	5510	14.55	15.00	No
		110	5550	20.01	20.50	No
		134	5670	18.65	19.00	No
		142	5710	19.93	20.50	No
	802.11ac(VHT80)	106	5530	14.97	15.50	No
		122	5610	19.38	20.00	No
		138	5690	19.03	20.00	No
	802.11ac(VHT160)	114	5570	14.14	14.50	No
	802.11ax(HE20)	100	5500	18.12	19.00	No
		116	5580	18.39	19.00	No
		140	5700	17.66	19.00	No
		144	5720	18.69	19.00	No
	802.11ax(HE40)	102	5510	15.01	15.50	No
		110	5550	20.34	20.50	No
		134	5670	19.01	19.50	No
		142	5710	19.86	20.50	No

	802.11ax(HE80)	106	5530	15.23	15.50	No
		122	5610	19.59	20.00	No
		138	5690	18.86	20.00	No
	802.11ax(HE160)	114	5570	14.21	14.50	No
5.8 (5.725~5.85)	802.11a	149	5745	21.52	22.00	Yes
		157	5785	<b>21.76</b>	22.00	Yes
		165	5825	21.61	22.00	Yes
	802.11n(HT20)	149	5745	21.00	21.50	No
		157	5785	21.36	21.50	No
		165	5825	21.17	21.50	No
	802.11n(HT40)	151	5755	21.12	21.50	No
		159	5795	20.99	21.50	No
	802.11ac(VHT20)	149	5745	21.31	21.50	No
		157	5785	21.20	21.50	No
		165	5825	21.04	21.50	No
	802.11ac(VHT40)	151	5755	21.36	21.50	No
		159	5795	21.20	21.50	No
	802.11ac(VHT80)	155	5775	18.35	19.00	No
	802.11ax(HE20)	149	5745	21.40	21.50	No
		157	5785	21.15	21.50	No
		165	5825	21.03	21.50	No
	802.11ax(HE40)	151	5755	21.22	21.50	No
		159	5795	21.14	21.50	No
	802.11ax(HE80)	155	5775	18.64	19.00	No
	802.11be(EHT20)	149	5745	18.64	19.00	No
		157	5785	18.52	19.00	No
		165	5825	18.81	19.00	No
	802.11be(EHT40)	151	5755	21.20	21.50	No
159		5795	21.03	21.50	No	
802.11be(EHT80)	155	5775	18.64	19.00	No	

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  $\leq 1.2$  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.

## 8.1.6 5G WIFI (TOTAL)

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Power Limit (dBm)	SAR Test Require.
5.2 (5.15~5.25)	802.11a	36	5180	21.53	22.00	No
		40	5200	21.45	22.00	No
		48	5240	21.41	22.00	No
	802.11n(HT20)	36	5180	21.42	22.00	No
		40	5200	21.35	22.00	No
		48	5240	21.35	22.00	No
	802.11n(HT40)	38	5190	18.35	18.50	No
		46	5230	23.03	23.50	No
	802.11ac(VHT20)	36	5180	21.40	22.00	No
		40	5200	21.60	22.00	No
		48	5240	21.30	22.00	No
	802.11ac(VHT40)	38	5190	18.32	18.50	No
		46	5230	23.19	23.50	No
	802.11ac(VHT80)	42	5210	17.33	17.50	No
	802.11ac(VHT160)	50	5250	16.16	17.00	No
	802.11ax(HE20)	36	5180	21.68	22.00	No
		40	5200	21.59	22.00	No
		48	5240	21.55	22.00	No
	802.11ax(HE40)	38	5190	18.24	18.50	No
		46	5230	23.32	23.50	No
	802.11ax(HE80)	42	5210	17.07	17.50	No
802.11ax(HE160)	50	5250	16.11	17.00	No	
802.11be(EHT20)	36	5180	21.72	22.00	No	
	40	5200	20.36	22.00	No	
	48	5240	21.59	22.00	No	
802.11be(EHT40)	38	5190	18.26	18.50	No	
	46	5230	23.31	23.50	No	
802.11be(EHT80)	42	5210	17.04	17.50	No	
5.3 (5.25~5.35)	802.11a	52	5260	21.52	22.00	No
		60	5300	21.32	22.00	No
		64	5320	21.60	22.00	No
	802.11n(HT20)	52	5260	21.52	22.00	No
		60	5300	21.26	22.00	No
		64	5320	21.27	22.00	No
	802.11n(HT40)	54	5270	23.14	23.50	No
		62	5310	18.26	18.50	No
	802.11ac(VHT20)	52	5260	21.49	22.00	No
		60	5300	21.26	22.00	No
		64	5320	21.55	22.00	No

	802.11ac(VHT40)	54	5270	23.03	23.50	No
		62	5310	18.11	18.50	No
	802.11ac(VHT80)	58	5290	18.25	18.50	No
	802.11ax(HE160)	50	5250	16.16	17.00	No
	802.11ax(HE20)	52	5260	21.52	22.00	No
		60	5300	21.53	22.00	No
		64	5320	21.58	22.00	No
	802.11ax(HE40)	54	5270	23.16	23.50	No
		62	5310	18.82	19.00	No
802.11ax(HE80)	58	5290	18.25	18.50	No	
802.11ax(HE160)	50	5250	16.11	17.00	No	
5.6 (5.47~5.725)	802.11a	100	5500	21.37	22.00	No
		116	5580	21.63	22.00	No
		140	5700	21.50	22.00	No
		144	5720	21.30	22.00	No
	802.11n(HT20)	100	5500	21.51	22.00	No
		116	5580	21.41	22.00	No
		140	5700	21.00	22.00	No
		144	5720	21.36	22.00	No
	802.11n(HT40)	102	5510	17.39	18.00	No
		110	5550	22.97	23.50	No
		134	5670	21.27	22.00	No
		142	5710	22.90	23.50	No
	802.11ac(VHT20)	100	5500	21.51	22.00	No
		116	5580	21.56	22.00	No
		140	5700	20.91	22.00	No
		144	5720	21.78	22.00	No
	802.11ac(VHT40)	102	5510	17.71	18.00	No
		110	5550	23.06	23.50	No
		134	5670	21.69	22.00	No
		142	5710	23.07	23.50	No
	802.11ac(VHT80)	106	5530	18.15	18.50	No
		122	5610	22.44	23.00	No
		138	5690	22.41	23.00	No
	802.11ac(VHT160)	114	5570	17.16	17.50	No
	802.11ax(HE20)	100	5500	21.30	22.00	No
		116	5580	21.55	22.00	No
		140	5700	20.93	22.00	No
		144	5720	21.76	22.00	No
	802.11ax(HE40)	102	5510	18.17	18.50	No
		110	5550	23.19	23.50	No
		134	5670	22.09	22.50	No
		142	5710	23.01	23.50	No



	802.11ax(HE80)	106	5530	18.13	18.50	No
		122	5610	22.67	23.00	No
		138	5690	22.19	23.00	No
	802.11ax(HE160)	114	5570	17.08	17.50	No
5.8 (5.725~5.85)	802.11a	149	5745	24.62	25.00	No
		157	5785	24.76	25.00	No
		165	5825	24.69	25.00	No
	802.11n(HT20)	149	5745	24.22	24.50	No
		157	5785	24.19	24.50	No
		165	5825	24.11	24.50	No
	802.11n(HT40)	151	5755	24.19	24.50	No
		159	5795	24.15	24.50	No
	802.11ac(VHT20)	149	5745	24.37	24.50	No
		157	5785	24.32	24.50	No
		165	5825	24.23	24.50	No
	802.11ac(VHT40)	151	5755	24.15	24.50	No
		159	5795	24.12	24.50	No
	802.11ac(VHT80)	155	5775	21.65	22.00	No
	802.11ax(HE20)	149	5745	24.33	24.50	No
		157	5785	24.26	24.50	No
		165	5825	24.20	24.50	No
	802.11ax(HE40)	151	5755	24.32	24.50	No
		159	5795	24.30	24.50	No
	802.11ax(HE80)	155	5775	21.69	22.00	No
	802.11be(EHT20)	149	5745	21.61	22.00	No
		157	5785	21.61	22.00	No
		165	5825	21.63	22.00	No
	802.11be(EHT40)	151	5755	24.32	24.50	No
159		5795	24.22	24.50	No	
802.11be(EHT80)	155	5775	21.67	22.00	No	

Note: For WiFi SAR testing was performed on single antenna RF power in SISO mode that is larger to the single antenna RF power in TOTAL mode, and for RF exposure assessment of TOTAL mode simultaneous transmission used more conservative "Max. (main ant) + Max. (aux. ant) " method to determine SAR compliance. When the sum of 1-g SISO transmission SAR measurement is <1.6 W/kg, TOTAL SAR test is not required.

## 8.1.7 6G WIFI (Main Antenna)

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Power Limit (dBm)	SAR Test Require.
6 (5.925~7.125)	802.11a	1	5955	6.51	7.00	No
		45	6175	6.25	7.00	No
		93	6415	6.35	7.00	No
		97	6435	7.12	7.50	No
		105	6475	7.18	7.50	No
		113	6515	6.93	7.50	No
		117	6535	6.37	7.00	No
		153	6715	6.52	7.00	No
		181	6855	6.67	7.00	No
		185	6875	7.09	7.50	No
		213	7015	6.85	7.50	No
		233	7115	6.88	7.50	No
	802.11ax(HE20)	1	5955	6.98	7.00	No
		45	6175	6.80	7.00	No
		93	6415	6.92	7.00	No
		97	6435	7.17	7.50	No
		105	6475	7.24	7.50	No
		113	6515	6.93	7.50	No
		117	6535	6.92	7.00	No
		153	6715	6.61	7.00	No
		181	6855	6.82	7.00	No
		185	6875	7.26	7.50	No
		213	7015	7.04	7.50	No
		233	7115	7.01	7.50	No
	802.11ax(HE40)	3	5965	9.79	10.00	No
		43	6165	9.81	10.00	No
		91	6405	9.45	10.00	No
		99	6445	9.74	10.00	No
		107	6485	9.74	10.00	No
		115	6525	9.91	10.00	No
		123	6565	9.35	10.00	No
		155	6725	9.49	10.00	No
		179	6845	9.32	10.00	No
		187	6885	10.18	10.50	No
		211	7005	10.22	10.50	No
		227	7085	10.39	10.50	No
802.11ax(HE80)	7	5985	12.63	13.00	No	
	39	6145	12.77	13.00	No	
	87	6385	12.39	13.00	No	

		103	6465	12.71	13.00	No
		119	6545	12.52	13.00	No
		135	6625	12.47	13.00	No
		151	6705	12.57	13.00	No
		167	6785	12.45	13.00	No
		183	6865	12.72	13.00	No
		199	6945	12.7	13.50	No
		215	7025	12.8	13.50	No
	802.11ax(HE160)	15	6025	15.1	15.50	No
		47	6185	14.8	15.50	No
		79	6345	14.9	15.50	No
		111	6505	14.9	15.50	No
		143	6665	14.8	15.50	No
		175	6825	15.4	15.50	No
		207	6985	15.0	15.50	No
	802.11be(EHT20)	1	5955	6.6	7.00	No
		45	6175	6.7	7.00	No
		93	6415	6.95	7.00	No
		97	6435	7.15	7.50	No
		105	6475	7.18	7.50	No
		113	6515	7.35	7.50	No
		117	6535	6.57	7.00	No
		153	6715	6.56	7.00	No
		181	6855	6.81	7.00	No
		185	6875	7.19	7.50	No
		213	7015	7.46	7.50	No
	233	7115	7.42	7.50	No	
	802.11be(EHT40)	3	5965	9.39	10.00	No
		43	6165	9.64	10.00	No
		91	6405	9.91	10.00	No
		99	6445	9.63	10.00	No
		107	6485	9.62	10.00	No
		115	6525	9.80	10.00	No
		123	6565	9.55	10.00	No
		155	6725	9.87	10.00	No
		179	6845	9.85	10.00	No
		187	6885	10.08	10.50	No
		211	7005	10.13	10.50	No
	227	7085	10.26	10.50	No	
	802.11be(EHT80)	7	5985	12.60	13.00	No
		39	6145	12.70	13.00	No
		87	6385	12.30	13.00	No
		103	6465	12.83	13.00	No

		119	6545	12.62	13.00	No
		135	6625	12.43	13.00	No
		151	6705	12.97	13.00	No
		167	6785	12.91	13.00	No
		183	6865	12.70	13.00	No
		199	6945	13.48	13.50	No
		215	7025	13.18	13.50	No
	802.11be(EHT160)	15	6025	15.11	15.50	No
		47	6185	14.89	15.50	No
		79	6345	14.83	15.50	No
		111	6505	14.92	15.50	No
		143	6665	14.31	15.50	No
		175	6825	15.02	15.50	No
	802.11be(EHT320)	207	6985	15.49	15.50	No
		31	6105	15.01	16.50	Yes
		63	6265	<b>15.52</b>	16.50	Yes
		95	6425	15.03	16.50	Yes
		127	6585	14.82	15.50	Yes
		159	6745	15.16	15.50	Yes
		191	6905	15.45	15.50	Yes

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

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

## 8.1.8 6G WIFI (Aux. Antenna)

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Power Limit (dBm)	SAR Test Require.
6 (5.925~7.125)	802.11a	1	5955	6.43	7.00	No
		45	6175	6.31	7.00	No
		93	6415	6.46	7.00	No
		97	6435	7.07	7.50	No
		105	6475	6.71	7.50	No
		113	6515	7.06	7.50	No
		117	6535	6.36	7.00	No
		153	6715	6.40	7.00	No
		181	6855	6.30	7.00	No
		185	6875	6.79	7.50	No
		213	7015	7.20	7.50	No
		233	7115	6.90	7.50	No
	802.11ax(HE20)	1	5955	6.65	7.00	No
		45	6175	6.93	7.00	No
		93	6415	6.56	7.00	No
		97	6435	7.10	7.50	No
		105	6475	6.79	7.50	No
		113	6515	7.31	7.50	No
		117	6535	6.59	7.00	No
		153	6715	6.79	7.00	No
		181	6855	6.89	7.00	No
		185	6875	7.11	7.50	No
		213	7015	7.13	7.50	No
		233	7115	7.29	7.50	No
	802.11ax(HE40)	3	5965	9.32	10.00	No
		43	6165	9.79	10.00	No
		91	6405	9.38	10.00	No
		99	6445	9.95	10.00	No
		107	6485	9.81	10.00	No
		115	6525	9.68	10.00	No
		123	6565	9.72	10.00	No
		155	6725	9.61	10.00	No
		179	6845	9.93	10.00	No
		187	6885	9.89	10.50	No
		211	7005	10.02	10.50	No
		227	7085	10.25	10.50	No
802.11ax(HE80)	7	5985	12.81	13.00	No	
	39	6145	12.58	13.00	No	
	87	6385	12.68	13.00	No	

		103	6465	12.96	13.00	No
		119	6545	12.57	13.00	No
		135	6625	12.31	13.00	No
		151	6705	12.58	13.00	No
		167	6785	12.53	13.00	No
		183	6865	12.79	13.00	No
		199	6945	12.91	13.50	No
		215	7025	12.98	13.50	No
	802.11ax(HE160)	15	6025	15.21	15.50	No
		47	6185	14.78	15.50	No
		79	6345	14.79	15.50	No
		111	6505	14.87	15.50	No
		143	6665	15.07	15.50	No
		175	6825	14.77	15.50	No
		207	6985	15.09	15.50	No
	802.11be(EHT20)	1	5955	6.69	7.00	No
		45	6175	6.55	7.00	No
		93	6415	6.57	7.00	No
		97	6435	7.12	7.50	No
		105	6475	7.50	7.50	No
		113	6515	7.34	7.50	No
		117	6535	6.61	7.00	No
		153	6715	6.77	7.00	No
		181	6855	6.91	7.00	No
		185	6875	7.23	7.50	No
		213	7015	7.18	7.50	No
	233	7115	7.34	7.50	No	
	802.11be(EHT40)	3	5965	9.33	10.00	No
		43	6165	9.85	10.00	No
		91	6405	9.91	10.00	No
		99	6445	9.92	10.00	No
		107	6485	9.80	10.00	No
		115	6525	9.61	10.00	No
		123	6565	9.73	10.00	No
		155	6725	9.65	10.00	No
		179	6845	9.62	10.00	No
		187	6885	10.42	10.50	No
		211	7005	10.10	10.50	No
	227	7085	10.13	10.50	No	
	802.11be(EHT80)	7	5985	12.35	13.00	No
		39	6145	12.62	13.00	No
		87	6385	12.65	13.00	No
		103	6465	12.93	13.00	No

		119	6545	12.81	13.00	No
		135	6625	12.74	13.00	No
		151	6705	12.98	13.00	No
		167	6785	12.63	13.00	No
		183	6865	12.83	13.00	No
		199	6945	13.42	13.50	No
		215	7025	13.19	13.50	No
	802.11be(EHT160)	15	6025	14.84	15.50	No
		47	6185	15.04	15.50	No
		79	6345	14.76	15.50	No
		111	6505	14.90	15.50	No
		143	6665	15.16	15.50	No
		175	6825	15.06	15.50	No
		207	6985	15.15	15.50	No
	802.11be(EHT320)	31	6105	<b>16.07</b>	16.50	Yes
		63	6265	15.33	16.50	Yes
		95	6425	15.26	16.50	Yes
		127	6585	15.15	15.50	Yes
		159	6745	15.06	15.50	Yes
		191	6905	14.89	15.50	Yes

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

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

## 8.1.9 6G WIFI (TOTAL)

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Power Limit (dBm)	SAR Test Require.
6 (5.925~7.125)	802.11a	1	5955	3.47	4.00	No
		45	6175	3.39	4.00	No
		93	6415	3.50	4.00	No
		97	6435	3.14	4.00	No
		105	6475	3.22	4.00	No
		113	6515	3.46	4.00	No
		117	6535	3.44	4.00	No
		153	6715	3.60	4.00	No
		181	6855	3.51	4.00	No
		185	6875	3.91	4.50	No
		213	7015	3.85	4.50	No
		233	7115	3.91	4.50	No
	802.11ax(HE20)	1	5955	6.49	7.00	No
		45	6175	6.65	7.00	No
		93	6415	6.66	7.00	No
		97	6435	7.21	7.50	No
		105	6475	7.29	7.50	No
		113	6515	7.28	7.50	No
		117	6535	6.60	7.00	No
		153	6715	6.79	7.00	No
		181	6855	6.78	7.00	No
		185	6875	7.06	7.50	No
		213	7015	7.22	7.50	No
		233	7115	7.34	7.50	No
	802.11ax(HE40)	3	5965	8.86	9.50	No
		43	6165	8.91	9.50	No
		91	6405	9.17	9.50	No
		99	6445	9.24	9.50	No
		107	6485	9.30	9.50	No
		115	6525	9.34	9.50	No
		123	6565	8.88	9.50	No
		155	6725	8.96	9.50	No
		179	6845	8.85	9.50	No
		187	6885	9.67	10.00	No
		211	7005	9.65	10.00	No
		227	7085	9.67	10.00	No
802.11ax(HE80)	7	5985	11.88	12.50	No	
	39	6145	12.12	12.50	No	
	87	6385	12.18	12.50	No	



		103	6465	12.79	13.00	No
		119	6545	12.44	12.50	No
		135	6625	12.43	12.50	No
		151	6705	11.99	12.50	No
		167	6785	12.02	12.50	No
		183	6865	12.15	12.50	No
		199	6945	12.53	13.00	No
		215	7025	12.82	13.00	No
	802.11ax(HE160)	15	6025	15.17	15.50	No
		47	6185	14.88	15.50	No
		79	6345	14.91	15.50	No
		111	6505	15.45	16.00	No
		143	6665	14.97	15.50	No
		175	6825	15.02	15.50	No
		207	6985	15.46	16.00	No
	802.11be(EHT20)	1	5955	6.63	7.00	No
		45	6175	6.75	7.00	No
		93	6415	6.77	7.00	No
		97	6435	5.70	7.50	No
		105	6475	7.21	7.50	No
		113	6515	7.46	7.50	No
		117	6535	6.91	7.00	No
		153	6715	6.71	7.00	No
		181	6855	6.62	7.00	No
		185	6875	7.12	7.50	No
		213	7015	7.14	7.50	No
	233	7115	7.39	7.50	No	
	802.11be(EHT40)	3	5965	8.96	9.50	No
		43	6165	9.22	9.50	No
		91	6405	9.21	9.50	No
		99	6445	9.41	9.50	No
		107	6485	9.35	9.50	No
		115	6525	9.28	9.50	No
		123	6565	8.95	9.50	No
		155	6725	8.93	9.50	No
		179	6845	9.06	9.50	No
		187	6885	9.43	10.00	No
		211	7005	9.79	10.00	No
	227	7085	9.84	10.00	No	
	802.11be(EHT80)	7	5985	12.19	12.50	No
		39	6145	12.11	12.50	No
		87	6385	12.21	12.50	No
		103	6465	12.71	13.00	No

		119	6545	12.28	12.50	No
		135	6625	12.49	12.50	No
		151	6705	11.99	12.50	No
		167	6785	11.83	12.50	No
		183	6865	12.25	12.50	No
		199	6945	12.84	13.00	No
		215	7025	12.89	13.00	No
	802.11be(EHT160)	15	6025	15.03	15.50	No
		47	6185	14.95	15.50	No
		79	6345	14.98	15.50	No
		111	6505	15.54	16.00	No
		143	6665	14.89	15.50	No
		175	6825	14.87	15.50	No
		207	6985	15.41	16.00	No
	802.11be(EHT320)	31	6105	17.37	18.00	No
		63	6265	17.48	18.00	No
		95	6425	17.56	18.00	No
		127	6585	17.51	18.00	No
		159	6745	17.55	18.00	No
		191	6905	17.65	18.00	No

Note: For WiFi SAR testing was performed on single antenna RF power in SISO mode that is larger to the single antenna RF power in MIMO mode, and for RF exposure assessment of MIMO mode simultaneous transmission used more conservative "Max. (main ant) + Max. (aux. ant) " method to determine SAR compliance. When the sum of 1-g SISO transmission SAR measurement is <1.6 W/kg, MIMO SAR test is not required.

## 8.2 Bluetooth

### 8.2.1 Bluetooth (Aux. Antenna)

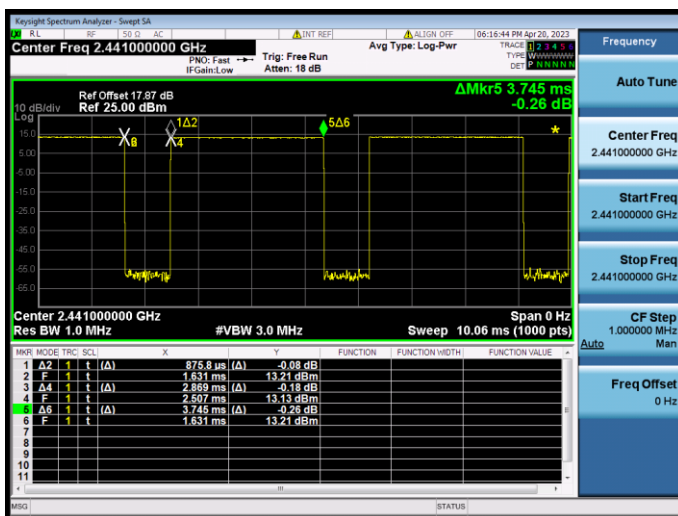
Mode	GFSK			π/4-DQPSK		
Channel	0	39	78	0	39	78
Frequency (MHz)	2402	2441	2480	2402	2441	2480
Average Power (dBm)	<b>13.39</b>	13.17	13.35	10.61	10.52	10.59
Tune-Up Limit (dBm)	14.50	14.50	14.50	11.50	11.50	11.50
SAR Test Require	Yes	Yes	Yes	No	No	No
Mode	8-DPSK			/		
Channel	0	39	78	/	/	/
Frequency (MHz)	2402	2441	2480	/	/	/
Average Power (dBm)	10.70	10.56	10.61	/	/	/
Tune-Up Limit (dBm)	11.50	11.50	11.50	/	/	/
SAR Test Require	No	No	No	/	/	/
Mode	BLE-1Mbps			BLE-2Mbps		
Channel	0	19	39	0	19	39
Frequency (MHz)	2402	2440	2480	2402	2440	2480
Average Power (dBm)	13.47	13.25	13.27	13.48	13.22	13.47
Tune-Up Limit (dBm)	14.50	14.50	14.50	14.50	14.50	14.50
SAR Test Require	No	No	No	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.

Note: The Bluetooth duty cycle is 76.61% 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.

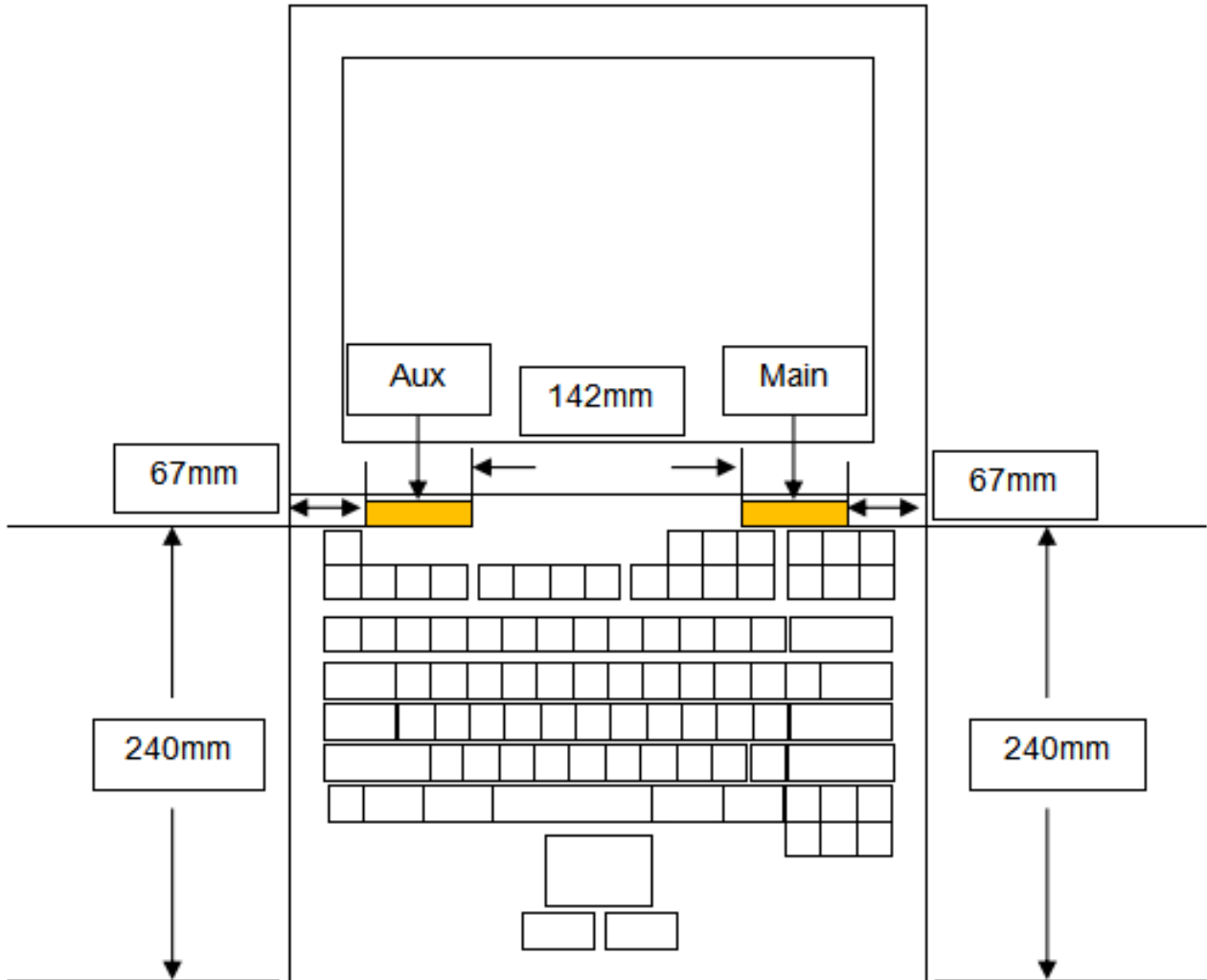
#### Duty Cycle

#### Bluetooth-GFSK



## 9 TEST EXCLUSION CONSIDERATION

### 9.1 Laptop Mode antenna location sketch



Antenna	Support Bands
Antenna Aux.	BT、WLAN 2.4/5G/6G
Antenna Main	WLAN 2.4/5G/6G

## 9.2 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 $\leq 5$ 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

### 9.2.1 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
Bottom Side	Body
Left Edge	Limbs
Right Edge	Limbs
Top Edge	Limbs
Bottom Edge	Limbs

## Main Antenna Body RF exposure scenarios

Main Antenna					
Test Position Configurations	Mode	WLAN 2.4GHz	U-NII-2A	U-NII-2C	U-NII-3
Calculated Frequency(MHz)		2462	5320	5710	5825
Bottom Side	Distance to User (mm)	16.00			
	Max. Peak Power (dBm)	23.00	20.50	20.50	22.00
	Max. Peak Power (mW)	199.53	112.20	112.20	158.49
	Exclusion Threshold (mW)	25.01	16.39	15.76	15.59
	SAR Test Required	Yes	Yes	Yes	Yes

## Main Antenna Limbs RF exposure scenarios

Main Antenna					
Test Position Configurations	Mode	WLAN 2.4GHz	U-NII-2A	U-NII-2C	U-NII-3
Calculated Frequency(MHz)		2462	5320	5710	5825
Left Edge	Distance to User (mm)	210.00			
	Max. Peak Power (dBm)	23.00	20.50	20.50	22.00
	Max. Peak Power (mW)	199.53	112.20	112.20	158.49
	Exclusion Threshold (mW)	3357.76	3385.28	3387.82	3388.53
	SAR Test Required	No	No	No	No
Right Edge	Distance to User (mm)	67.00			
	Max. Peak Power (dBm)	23.00	20.50	20.50	22.00
	Max. Peak Power (mW)	199.53	112.20	112.20	158.49
	Exclusion Threshold (mW)	381.75	317.92	312.62	311.14
	SAR Test Required	No	No	No	No
Top Edge	Distance to User (mm)	5.00			
	Max. Peak Power (dBm)	23.00	20.50	20.50	22.00
	Max. Peak Power (mW)	199.53	112.20	112.20	158.49
	Exclusion Threshold (mW)	2.73	1.47	1.39	1.37
	SAR Test Required	Yes	Yes	Yes	Yes
Bottom Edge	Distance to User (mm)	240.00			
	Max. Peak Power (dBm)	23.00	20.50	20.50	22.00
	Max. Peak Power (mW)	199.53	112.20	112.20	158.49
	Exclusion Threshold (mW)	4329.33	4463.43	4475.94	4479.48
	SAR Test Required	No	No	No	No

Note: The combination of test distance and 1-g SAR measurements required for body exposure are more rigorous; therefore, separate 10-g extremity SAR evaluation is replaced.

## Aux. Antenna Body RF exposure scenarios

Aux. Antenna						
Test Position Configurations	Mode	Bluetooth	WLAN 2.4GHz	U-NII-2A	U-NII-2C	U-NII-3
Calculated Frequency(MHz)		2480	2462	5320	5710	5825
Bottom Side	Distance to User (mm)	16.00				
	Max. Peak Power (dBm)	14.50	23.00	20.50	20.50	22.00
	Max. Peak Power (mW)	28.18	199.53	112.20	112.20	158.49
	Exclusion Threshold (mW)	24.91	25.01	16.39	15.76	15.59
	SAR Test Required	Yes	Yes	Yes	Yes	Yes

## Aux. Antenna Limbs RF exposure scenarios

Aux. Antenna						
Test Position Configurations	Mode	Bluetooth	WLAN 2.4GHz	U-NII-2A	U-NII-2C	U-NII-3
Calculated Frequency(MHz)		2480	2462	5320	5710	5825
Left Edge	Distance to User (mm)	67.00				
	Max. Peak Power (dBm)	14.50	23.00	20.50	20.50	22.00
	Max. Peak Power (mW)	28.18	199.53	112.20	112.20	158.49
	Exclusion Threshold (mW)	381.09	381.75	317.92	312.62	311.14
	SAR Test Required	No	No	No	No	No
Right Edge	Distance to User (mm)	210.00				
	Max. Peak Power (dBm)	14.50	23.00	20.50	20.50	22.00
	Max. Peak Power (mW)	28.18	199.53	112.20	112.20	158.49
	Exclusion Threshold (mW)	3358.02	3357.76	3385.28	3387.82	3388.53
	SAR Test Required	No	No	No	No	No
Top Edge	Distance to User (mm)	5.00				
	Max. Peak Power (dBm)	14.50	23.00	20.50	20.50	22.00
	Max. Peak Power (mW)	28.18	199.53	112.20	112.20	158.49
	Exclusion Threshold (mW)	2.72	2.73	1.47	1.39	1.37
	SAR Test Required	Yes	Yes	Yes	Yes	Yes
Bottom Edge	Distance to User (mm)	240.00				
	Max. Peak Power (dBm)	14.50	23.00	20.50	20.50	22.00
	Max. Peak Power (mW)	28.18	199.53	112.20	112.20	158.49
	Exclusion Threshold (mW)	4330.57	4329.33	4463.43	4475.94	4479.48
	SAR Test Required	No	No	No	No	No

Note: The combination of test distance and 1-g SAR measurements required for body exposure are more rigorous; therefore, separate 10-g extremity SAR evaluation is replaced.



## Note:

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

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

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  $\leq 1.2$  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  $\leq 1.2$  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  $\leq 1.2$  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 Limbs SAR, SAR test exemption considered by applying a factor of 2.5 to the applicable power level thresholds.

## 10 SMART ANTENNA

This product support smart antenna technology, the laptop have main and auxiliary antennas, each antenna has two modes, mode1 or mode2. The modes of the two antennas does not affect each other and the smart antenna will not affect the conducted power of the laptop, only change the radiation pattern of the antenna. The laptop will only be in antenna mode1 or antenna mode2 at any time during use. So the smart antenna design can be considered as passive design component, the SAR test of the two modes of each antenna separately.

The two antennas have a total of 4 combined transmission states as follows:

State	Main antenna mode	Aux. antenna mode
0	Mode1	Mode1
1	Mode2	Mode1
2	Mode1	Mode2
3	Mode2	Mode2

Note1: Used worse case SAR values in mode1 and mode2 for simultaneous transmission Mode considerations.

Note2: This product supports 802.11be mode, and the bandwidth can support up to 320MHz. According to the guidance of TCB Workshop 2022.10, the test method of 802.11be mode can refer to KDB 248227 v02r02, and 802.11be is a higher order modulation.

Note3: 6G WLAN power density test according to the guidance of TCB Workshop 2022.10.

## 11 TEST RESULT

1. The reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
  - a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
  - b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)".
  - c. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)\* Duty Cycle scaling factor \* Tune-up scaling factor
2. Absorbed power density (APD) using a 4cm<sup>2</sup> averaging area is reported based on SAR measurements.
3. Per KDB 447498 D04, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
  - $\leq 0.8$  W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is  $\leq 100$  MHz
  - $\leq 0.6$  W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
  - $\leq 0.4$  W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is  $\geq 200$  MHz
4. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is  $\geq 0.8$ W/kg
5. This product supports 802.11be mode, and the bandwidth can support up to 320MHz. According to the guidance of TCB Workshop 2022.10, the test method of 802.11be mode can refer to KDB 248227 v02r02, and 802.11be is a higher order modulation.

## 11.1 Bluetooth (Aux. Antenna)

### 11.1.1 Bluetooth Body SAR

Mode	Antenna State	Antenna	Test State	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	1g Scaled SAR (W/kg)	Meas. No.
<b>Body</b>																
DH5	Mode1	Aux.	Laptop	Bottom Side	0	0	2402	0.02	0.013	13.39	14.50	1.291	76.61	1.305	<b>0.022</b>	1#
					0	39	2441	0.01	0.011	13.17	14.50	1.358	76.61	1.305	0.019	/
					0	78	2480	0.19	0.010	13.35	14.50	1.303	76.61	1.305	0.017	/
	Mode2				0	0	2402	-0.09	0.011	13.39	14.50	1.291	76.61	1.305	0.019	/
					0	39	2441	0.12	0.009	13.17	14.50	1.358	76.61	1.305	0.016	/
					0	78	2480	0.08	0.008	13.35	14.50	1.303	76.61	1.305	0.014	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.																

### 11.1.2 Bluetooth Limbs SAR

Mode	Antenna State	Antenna	Test State	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	10g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	10g Scaled SAR (W/kg)	Meas. No.
<b>Limbs</b>																
DH5	Mode1	Aux.	Laptop	Top Edge	0	0	2402	0.19	0.017	13.39	14.50	1.291	76.61	1.305	0.029	2#
					0	39	2441	0.04	0.015	13.17	14.50	1.358	76.61	1.305	0.027	/
					0	78	2480	-0.04	0.013	13.35	14.50	1.303	76.61	1.305	0.022	/
	Mode2				0	0	2402	0.00	0.014	13.39	14.50	1.291	76.61	1.305	0.024	/
					0	39	2441	0.04	0.011	13.17	14.50	1.358	76.61	1.305	0.019	/
					0	78	2480	0.14	0.012	13.35	14.50	1.303	76.61	1.305	0.020	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.																

## 11.2 WIFI 2.4GHz

### 11.2.1 WIFI 2.4GHz Body SAR

Mode	Antenna State	Antenna	Test State	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	1g Scaled SAR (W/kg)	Meas. No.
<b>Body</b>																
802.11b	Mode1	Main	Laptop	Bottom Side	0	11	2462	0.07	0.028	22.86	23.00	1.033	98.26	1.018	<b>0.029</b>	3#
					0	1	2412	0.16	0.021	22.52	23.00	1.117	98.26	1.018	0.024	/
	0				6	2437	0.03	0.018	22.59	23.00	1.099	98.26	1.018	0.020	/	
	0				11	2462	-0.16	0.020	22.86	23.00	1.033	98.26	1.018	0.021	/	
	Mode2	0			1	2412	0.18	0.023	22.52	23.00	1.117	98.26	1.018	0.026	/	
		0			6	2437	-0.06	0.021	22.59	23.00	1.099	98.26	1.018	0.023	/	
	Mode1	Aux.			0	1	2412	-0.06	0.042	22.72	23.00	1.067	98.26	1.018	<b>0.046</b>	4#
					0	6	2437	0.19	0.038	22.42	23.00	1.143	98.26	1.018	0.044	/
	0		11		2462	0.04	0.031	22.63	23.00	1.089	98.26	1.018	0.034	/		
	Mode2		0		1	2412	0.12	0.035	22.72	23.00	1.067	98.26	1.018	0.038	/	
		0	6		2437	-0.16	0.032	22.42	23.00	1.143	98.26	1.018	0.037	/		
	0	11	2462		-0.08	0.029	22.63	23.00	1.089	98.26	1.018	0.032	/			

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

### 11.2.2 WIFI 2.4GHz Limbs SAR

Mode	Antenna State	Antenna	Test State	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	10g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	10g Scaled SAR (W/kg)	Meas. No.
<b>Limbs</b>																
802.11b	Mode1	Main	Laptop	Top Edge	0	11	2462	-0.15	0.131	22.86	23.00	1.033	98.26	1.018	<b>0.138</b>	5#
					0	1	2412	0.14	0.117	22.52	23.00	1.117	98.26	1.018	0.133	/
	0				6	2437	-0.03	0.115	22.59	23.00	1.099	98.26	1.018	0.129	/	
	Mode2				0	11	2462	-0.08	0.113	22.86	23.00	1.033	98.26	1.018	0.119	/
		0			1	2412	0.07	0.112	22.52	23.00	1.117	98.26	1.018	0.127	/	
	Mode1	Aux.			0	6	2437	-0.01	0.102	22.59	23.00	1.099	98.26	1.018	0.114	/
					0	1	2412	-0.04	0.186	22.72	23.00	1.067	98.26	1.018	<b>0.202</b>	6#
	Mode2				0	6	2437	-0.08	0.171	22.42	23.00	1.143	98.26	1.018	0.199	/
			0		11	2462	0.19	0.166	22.63	23.00	1.089	98.26	1.018	0.184	/	
	Mode1	0	1		2412	-0.04	0.167	22.72	23.00	1.067	98.26	1.018	0.181	/		
		Mode2	0		6	2437	0.16	0.149	22.42	23.00	1.143	98.26	1.018	0.173	/	
	0		11		2462	-0.18	0.161	22.63	23.00	1.089	98.26	1.018	0.178	/		

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

# 11.3 WIFI 5GHz

## 11.3.1 WIFI 5GHz Body SAR

Fre. Band	Mode	Antenna State	Antenna	Test State	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	1g Scaled SAR (W/kg)	Meas. No.
<b>Body</b>																	
U-NII-2A	802.11 n40	Mode1	Main	Laptop	Bottom Side	0	54	5270	-0.02	0.019	20.20	20.50	1.072	92.39	1.082	0.022	/
						0	62	5310	0.11	0.023	15.65	15.50	0.966	92.39	1.082	0.024	/
		0				54	5270	0.02	0.029	20.20	20.50	1.072	92.39	1.082	<b>0.034</b>	7#	
		0				62	5310	-0.19	0.021	15.65	15.50	0.966	92.39	1.082	0.022	/	
	Mode1	Aux.	0			54	5270	-0.17	0.102	20.05	20.50	1.109	92.39	1.082	0.122	/	
			0			62	5310	-0.19	0.113	15.39	15.50	1.026	92.39	1.082	0.125	/	
			0			54	5270	-0.03	0.133	20.05	20.50	1.109	92.39	1.082	<b>0.160</b>	8#	
			0			62	5310	-0.02	0.126	15.39	15.50	1.026	92.39	1.082	0.140	/	
U-NII-2C	802.11 n40	Mode1	Main	0	110	5550	-0.18	0.040	19.80	20.50	1.175	92.39	1.082	0.051	/		
				0	134	5670	0.12	0.033	18.25	19.00	1.189	92.39	1.082	0.042	/		
		0		142	5710	0.00	0.048	19.88	20.50	1.153	92.39	1.082	0.060	/			
		0		110	5550	-0.14	0.058	19.80	20.50	1.175	92.39	1.082	0.074	/			
	Mode2	Aux.	0	134	5670	0.06	0.046	18.25	19.00	1.189	92.39	1.082	0.059	/			
			0	142	5710	-0.05	0.063	19.88	20.50	1.153	92.39	1.082	<b>0.079</b>	9#			
			0	110	5550	-0.17	0.011	20.11	20.50	1.094	92.39	1.082	0.013	/			
			0	134	5670	0.11	0.010	18.26	19.00	1.186	92.39	1.082	0.013	/			
U-NII-3	802.11a	Mode1	Main	0	142	5710	0.00	0.018	19.89	20.50	1.151	92.39	1.082	0.022	/		
				0	110	5550	0.07	0.039	20.11	20.50	1.094	92.39	1.082	<b>0.046</b>	10#		
		Mode2		Aux.	0	134	5670	0.02	0.034	18.26	19.00	1.186	92.39	1.082	0.044	/	
					0	142	5710	-0.17	0.026	19.89	20.50	1.151	92.39	1.082	0.032	/	
	0		165		5825	0.15	0.042	21.75	22.00	1.059	96.27	1.039	0.046	/			
	0		149		5745	-0.18	0.031	21.69	22.00	1.074	96.27	1.039	0.035	/			
	Mode1	Aux.	0	157	5785	-0.11	0.038	21.73	22.00	1.064	96.27	1.039	0.042	/			
			0	165	5825	-0.18	0.100	21.75	22.00	1.059	96.27	1.039	<b>0.110</b>	11#			
0			149	5745	0.00	0.091	21.69	22.00	1.074	96.27	1.039	0.102	/				
0			157	5785	-0.19	0.094	21.73	22.00	1.064	96.27	1.039	0.104	/				
Mode2	Aux.	0	157	5785	0.13	0.122	21.76	22.00	1.057	96.27	1.039	0.134	/				
		0	149	5745	0.19	0.131	21.52	22.00	1.117	96.27	1.039	0.152	/				
		0	165	5825	0.10	0.142	21.61	22.00	1.094	96.27	1.039	0.161	/				
		0	157	5785	-0.05	0.323	21.76	22.00	1.057	96.27	1.039	<b>0.355</b>	12#				
0	149	5745	-0.01	0.288	21.52	22.00	1.117	96.27	1.039	0.334	/						
0	165	5825	-0.19	0.223	21.61	22.00	1.094	96.27	1.039	0.253	/						

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

### 11.3.2 WIFI 5GHz Limbs SAR

Fre. Band	Mode	Antenna State	Antenna	Test State	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	10g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	10g Scaled SAR (W/kg)	Meas. No.		
<b>Limbs</b>																			
U-NII-2A	802.11 n40	Mode1	Main		Laptop	Top Edge	0	54	5270	-0.07	0.188	20.20	20.50	1.072	92.39	1.082	0.218	/	
							0	62	5310	0.03	0.206	15.65	15.50	0.966	92.39	1.082	0.215	/	
		0					54	5270	-0.03	0.217	20.20	20.50	1.072	92.39	1.082	<b>0.252</b>	13#		
		0					62	5310	-0.11	0.211	15.65	15.50	0.966	92.39	1.082	0.221	/		
			Mode1				Aux.	0	54	5270	-0.11	0.165	20.05	20.50	1.109	92.39	1.082	0.198	/
								0	62	5310	-0.03	0.151	15.39	15.50	1.026	92.39	1.082	0.168	/
			0					54	5270	0.14	0.204	20.05	20.50	1.109	92.39	1.082	<b>0.245</b>	14#	
			0					62	5310	0.15	0.188	15.39	15.50	1.026	92.39	1.082	0.209	/	
U-NII-2C	802.11 n40	Mode1	Main	0	110	5550	0.00	0.147	19.80	20.50	1.175	92.39	1.082	0.187	/				
				0	134	5670	-0.03	0.135	18.25	19.00	1.189	92.39	1.082	0.174	/				
		0		142	5710	0.02	0.170	19.88	20.50	1.153	92.39	1.082	0.212	/					
		0		110	5550	0.19	0.255	19.80	20.50	1.175	92.39	1.082	0.324	/					
			Mode2	Main	0	134	5670	0.05	0.223	18.25	19.00	1.189	92.39	1.082	0.287	/			
					0	142	5710	0.02	0.261	19.88	20.50	1.153	92.39	1.082	<b>0.326</b>	15#			
			Mode1		Aux.	0	110	5550	-0.11	0.051	20.11	20.50	1.094	92.39	1.082	0.060	/		
						0	134	5670	-0.14	0.026	18.26	19.00	1.186	92.39	1.082	0.033	/		
		Mode2	Aux.	0		142	5710	0.00	0.048	19.89	20.50	1.151	92.39	1.082	0.060	/			
				0		110	5550	0.08	0.086	20.11	20.50	1.094	92.39	1.082	<b>0.102</b>	16#			
U-NII-3	802.11a	Mode1		Main	0	165	5825	0.00	0.251	21.75	22.00	1.059	96.27	1.039	0.276	/			
					0	149	5745	-0.01	0.216	21.69	22.00	1.074	96.27	1.039	0.241	/			
		0	157		5785	0.01	0.237	21.73	22.00	1.064	96.27	1.039	0.262	/					
		0	165		5825	-0.13	0.373	21.75	22.00	1.059	96.27	1.039	<b>0.410</b>	17#					
			Mode2	Main	0	149	5745	-0.02	0.365	21.69	22.00	1.074	96.27	1.039	0.407	/			
					0	157	5785	-0.18	0.323	21.73	22.00	1.064	96.27	1.039	0.357	/			
			Mode1		Aux.	0	157	5785	-0.10	0.216	21.76	22.00	1.057	96.27	1.039	0.237	/		
						0	149	5745	-0.10	0.188	21.52	22.00	1.117	96.27	1.039	0.218	/		
		Mode2	Aux.	0		165	5825	0.16	0.265	21.61	22.00	1.094	96.27	1.039	0.301	/			
				0		157	5785	-0.07	0.337	21.76	22.00	1.057	96.27	1.039	<b>0.370</b>	18#			
0	149	5745		0.13	0.311	21.52	22.00	1.117	96.27	1.039	0.361	/							
0	165	5825		0.10	0.312	21.61	22.00	1.094	96.27	1.039	0.355	/							

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

# 11.4 WIFI 6GHZ

## 11.4.1 WIFI 6GHz Body SAR

Mode	Antenna State	Antenna	Test State	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	1g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	1g Scaled SAR (W/kg)	Meas. No.	Measured APD (W/m²)	Scaled APD (W/m²)		
<b>Body</b>																				
802.11 be320	Mode1	Main	Laptop	Bottom	0	31	6105	-0.16	0.011	15.01	16.50	1.409	80.03	1.250	0.019	/	0.115	0.203		
					0	63	6265	0.03	0.015	15.52	16.50	1.253	80.03	1.250	0.023	/	0.157	0.246		
					0	95	6425	0.14	0.006	15.03	16.50	1.403	80.03	1.250	0.011	/	0.063	0.110		
					0	127	6585	0.08	0.009	14.82	15.50	1.169	80.03	1.250	0.013	/	0.094	0.137		
					0	159	6745	-0.05	0.013	15.16	15.50	1.081	80.03	1.250	0.018	/	0.136	0.184		
					0	191	6905	0.03	0.007	15.45	15.50	1.012	80.03	1.250	0.009	/	0.073	0.092		
					Mode2	0	31	6105	-0.04	0.024	15.01	16.50	1.409	80.03	1.250	<b>0.042</b>	19#	0.254	<b>0.447</b>	
						0	63	6265	0.13	0.021	15.52	16.50	1.253	80.03	1.250	0.033	/	0.220	0.345	
						0	95	6425	0.09	0.018	15.03	16.50	1.403	80.03	1.250	0.032	/	0.189	0.331	
						0	127	6585	-0.05	0.023	14.82	15.50	1.169	80.03	1.250	0.034	/	0.241	0.352	
						0	159	6745	0.19	0.016	15.16	15.50	1.081	80.03	1.250	0.022	/	0.168	0.227	
						0	191	6905	-0.01	0.018	15.45	15.50	1.012	80.03	1.250	0.023	/	0.189	0.239	
	Mode1	Aux.	Laptop	Bottom	Side	0	31	6105	-0.01	0.056	16.07	16.50	1.104	80.03	1.250	0.077	/	0.515	0.711	
						0	63	6265	-0.16	0.051	15.33	16.50	1.309	80.03	1.250	0.083	/	0.469	0.767	
						0	95	6425	0.09	0.044	15.26	16.50	1.330	80.03	1.250	0.073	/	0.405	0.673	
						0	127	6585	-0.17	0.033	15.15	15.50	1.084	80.03	1.250	0.045	/	0.303	0.411	
						0	159	6745	0.01	0.029	15.06	15.50	1.107	80.03	1.250	0.040	/	0.267	0.369	
						0	191	6905	0.09	0.038	14.89	15.50	1.151	80.03	1.250	0.055	/	0.349	0.502	
						Mode2	0	31	6105	-0.01	0.070	16.07	16.50	1.104	80.03	1.250	<b>0.097</b>	20#	0.645	<b>0.890</b>
							0	63	6265	-0.09	0.058	15.33	16.50	1.309	80.03	1.250	0.095	/	0.534	0.874
							0	95	6425	0.06	0.055	15.26	16.50	1.330	80.03	1.250	0.091	/	0.506	0.841
							0	127	6585	0.00	0.048	15.15	15.50	1.084	80.03	1.250	0.065	/	0.442	0.599
							0	159	6745	0.10	0.043	15.06	15.50	1.107	80.03	1.250	0.060	/	0.396	0.548
							0	191	6905	-0.14	0.035	14.89	15.50	1.151	80.03	1.250	0.050	/	0.322	0.463

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



### 11.4.2 WIFI 6GHz Limbs SAR

Mode	Antenna State	Antenna	Test State	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	10g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	10g Scaled SAR (W/kg)	Meas. No.	Measured APD (W/m <sup>2</sup> )	Scaled APD (W/m <sup>2</sup> )	
<b>Limbs</b>																			
802.11 be320	Mode1	Main	Laptop	Top Edge	0	31	6105	-0.17	0.035	15.01	16.50	1.409	80.03	1.250	0.062	/	0.771	1.358	
					0	63	6265	-0.12	0.005	15.52	16.50	1.253	80.03	1.250	0.008	/	0.111	0.174	
					0	95	6425	0.07	0.038	15.03	16.50	1.403	80.03	1.250	0.067	/	0.841	1.475	
					0	127	6585	0.18	0.021	14.82	15.50	1.169	80.03	1.250	0.031	/	0.462	0.675	
					0	159	6745	-0.16	0.044	15.16	15.50	1.081	80.03	1.250	0.059	/	0.976	1.319	
					0	191	6905	-0.17	0.041	15.45	15.50	1.012	80.03	1.250	0.052	/	0.910	1.151	
					Mode2	0	31	6105	0.00	0.041	15.01	16.50	1.409	80.03	1.250	0.072	/	0.957	1.686
						0	63	6265	-0.02	0.009	15.52	16.50	1.253	80.03	1.250	0.014	/	0.191	0.299
						0	95	6425	0.04	0.045	15.03	16.50	1.403	80.03	1.250	<b>0.079</b>	21#	1.000	<b>1.754</b>
						0	127	6585	0.09	0.027	14.82	15.50	1.169	80.03	1.250	0.039	/	0.597	0.872
						0	159	6745	0.01	0.051	15.16	15.50	1.081	80.03	1.250	0.069	/	1.150	1.554
						0	191	6905	0.07	0.057	15.45	15.50	1.012	80.03	1.250	0.072	/	1.270	1.607
	Mode1	Aux.	Laptop	Top Edge	0	31	6105	-0.10	0.071	16.07	16.50	1.104	80.03	1.250	0.098	/	1.480	2.042	
					0	63	6265	0.05	0.045	15.33	16.50	1.309	80.03	1.250	0.074	/	0.985	1.612	
					0	95	6425	0.01	0.041	15.26	16.50	1.330	80.03	1.250	0.068	/	0.894	1.486	
					0	127	6585	-0.05	0.039	15.15	15.50	1.084	80.03	1.250	0.053	/	0.843	1.142	
					0	159	6745	-0.03	0.011	15.06	15.50	1.107	80.03	1.250	0.015	/	0.242	0.335	
					0	191	6905	-0.01	0.006	14.89	15.50	1.151	80.03	1.250	0.009	/	0.133	0.191	
					Mode2	0	31	6105	-0.02	0.084	16.07	16.50	1.104	80.03	1.250	<b>0.116</b>	22#	1.840	<b>2.539</b>
						0	63	6265	0.01	0.058	15.33	16.50	1.309	80.03	1.250	0.095	/	1.280	2.094
						0	95	6425	-0.18	0.050	15.26	16.50	1.330	80.03	1.250	0.083	/	1.100	1.829
						0	127	6585	0.06	0.045	15.15	15.50	1.084	80.03	1.250	0.061	/	0.991	1.343
						0	159	6745	0.03	0.018	15.06	15.50	1.107	80.03	1.250	0.025	/	0.395	0.547
						0	191	6905	0.01	0.015	14.89	15.50	1.151	80.03	1.250	0.022	/	0.329	0.473

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

## 12 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  $\leq 1.45$  W/kg and the ratio of these highest SAR values, i.e., largest divided by smallest value, is  $\leq 1.10$ , 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  $\geq 0.80$  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  $\geq 1.45$  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  $\geq 1.5$  W/kg, perform a third repeated measurement.

Note: For product specific 1g SAR, the highest measured 1g SAR is  $0.32 < 0.80$  W/kg, repeated measurement is not required.

Note: For product specific 10g SAR, the highest measured 10g SAR is  $0.37 < 2.00$  W/kg, repeated measurement is not required.

## 13 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.

### 13.1 Simultaneous Transmission Mode Considerations

No.	Simultaneous Tx Combination	Body&Limbs
1	2.4G·WLAN+5G·WLAN	Yes
2	2.4G·WLAN+6G·WLAN	Yes
3	Bluetooth+5G·WLAN	Yes
4	Bluetooth+6G·WLAN	Yes

Note:

- The EUT supports the Antenna Auxiliary with TX/RX diversity function for WLAN and Bluetooth, the Antenna Main with TX/RX diversity function for WLAN.
- WLAN 2.4GHz and Bluetooth will not be transmitting at same time.
- The simultaneous transmission combinations of the more antennas contain combinations of less antennas, so only the worst simultaneous transmission combinations is shown in this report.

### 13.2 Sum SAR of Simultaneous Transmission

#### 13.2.1 Body Simultaneous Transmission SAR Evaluation for WLAN Antenna with Bluetooth

Mode	Smart ant mode	Mode	SimultaneousTxCombination		Position	Standalone SAR							SUM SAR
						WIFI2.4G	WIFI2.4G	WIFI5G	WIFI5G	WIFI6G	WIFI6G	Bluetooth	
						Main Ant.	Aux. Ant.	Main Ant.	Aux. Ant.	Main Ant.	Aux. Ant.	Aux. Ant.	
1	Ant.Main(Mode2)+Ant.Aux(Mode2)	2.4G-WLAN+5G-WLAN	WIFI2.4G Main Ant(Mode2)+WIFI2.4G Aux Ant(Mode2)	WIFI5G Main Ant(Mode2)+WIFI5G Aux Ant(Mode2)	Bottom Side	0.026	0.038	0.110	0.355	/	/	/	0.529
2		2.4G-WLAN+6G-WLAN	WIFI2.4G Main Ant(Mode2)+WIFI2.4G Aux Ant(Mode2)	WIFI6G Main Ant(Mode2)+WIFI6G Aux Ant(Mode2)	Bottom Side	0.026	0.038	/	/	0.042	0.097	/	0.203
3		Bluetooth+5G-WLAN	Bluetooth Aux Ant(Mode2)	WIFI5G Main Ant(Mode2)+WIFI5G Aux Ant(Mode2)	Bottom Side	/	/	0.110	0.355	/	/	0.019	0.484
4		Bluetooth+6G-WLAN	Bluetooth Aux Ant(Mode2)	WIFI6G Main Ant(Mode2)+WIFI6G Aux Ant(Mode2)	Bottom Side	/	/	/	/	0.042	0.097	0.019	0.158
5	Ant.Main(Mode2)+Ant.Aux(Mode1)	2.4G-WLAN+5G-WLAN	WIFI2.4G Main Ant(Mode2)+WIFI2.4G Aux Ant(Mode1)	WIFI5G Main Ant(Mode2)+WIFI5G Aux Ant(Mode1)	Bottom Side	0.026	0.046	0.110	0.161	/	/	/	0.343
6		2.4G-WLAN+6G-WLAN	WIFI2.4G Main Ant(Mode2)+WIFI2.4G Aux Ant(Mode1)	WIFI6G Main Ant(Mode2)+WIFI6G Aux Ant(Mode1)	Bottom Side	0.026	0.046	/	/	0.042	0.083	/	0.197
7		Bluetooth+5G-WLAN	Bluetooth Aux Ant(Mode1)	WIFI5G Main Ant(Mode2)+WIFI5G Aux Ant(Mode1)	Bottom Side	/	/	0.110	0.161	/	/	0.022	0.293
8		Bluetooth+6G-WLAN	Bluetooth Aux Ant(Mode1)	WIFI6G Main Ant(Mode2)+WIFI6G Aux Ant(Mode1)	Bottom Side	/	/	/	/	0.042	0.083	0.022	0.147
9	Ant.Main(Mode1)+Ant.Aux(Mode2)	2.4G-WLAN+5G-WLAN	WIFI2.4G Main Ant(Mode1)+WIFI2.4G Aux Ant(Mode2)	WIFI5G Main Ant(Mode1)+WIFI5G Aux Ant(Mode2)	Bottom Side	0.029	0.038	0.051	0.355	/	/	/	0.473
10		2.4G-WLAN+6G-WLAN	WIFI2.4G Main Ant(Mode1)+WIFI2.4G Aux Ant(Mode2)	WIFI6G Main Ant(Mode1)+WIFI6G Aux Ant(Mode2)	Bottom Side	0.029	0.038	/	/	0.023	0.097	/	0.187
11		Bluetooth+5G-WLAN	Bluetooth Aux Ant(Mode2)	WIFI5G Main Ant(Mode1)+WIFI5G Aux Ant(Mode2)	Bottom Side	/	/	0.051	0.355	/	/	0.019	0.425
12		Bluetooth+6G-WLAN	Bluetooth Aux Ant(Mode2)	WIFI6G Main Ant(Mode1)+WIFI6G Aux Ant(Mode2)	Bottom Side	/	/	/	/	0.023	0.097	0.019	0.139

13	Ant.Main(Mode1)+Ant.Aux(Mode1 )	2.4G-WLAN+5G-WLAN	WIFI2.4G Main Ant(Mode1)+WIFI2.4G Aux Ant(Mode1 )	WIFI5G Main Ant(Mode1)+WIFI5G Aux Ant(Mode1 )	Bottom Side	0.029	0.046	0.051	0.161	/	/	/	0.287
14		2.4G-WLAN+6G-WLAN	WIFI2.4G Main Ant(Mode1)+WIFI2.4G Aux Ant(Mode1 )	WIFI6G Main Ant(Mode1)+WIFI6G Aux Ant(Mode1 )	Bottom Side	0.029	0.046	/	/	0.023	0.083	/	0.181
15		Bluetooth+5G-WLAN	Bluetooth Aux Ant(Mode1 )	WIFI5G Main Ant(Mode1)+WIFI5G Aux Ant(Mode1 )	Bottom Side	/	/	0.051	0.161	/	/	0.022	0.234
16		Bluetooth+6G-WLAN	Bluetooth Aux Ant(Mode1 )	WIFI6G Main Ant(Mode1)+WIFI6G Aux Ant(Mode1 )	Bottom Side	/	/	/	/	0.023	0.083	0.022	0.128

Note:  
1: The highest Summed 1g SAR is 0.529W/Kg < 1.6 W/kg, so Simultaneous Transmission SAR test is required.

### 13.2.2 Limbs Simultaneous Transmission SAR Evaluation for WLAN Antenna with Bluetooth

Mode	Smart ant mode	Mode	SimultaneousTxCombination		Position	Standalone SAR							SUM SAR
						WIFI2.4G Main Ant.	WIFI2.4G Aux. Ant.	WIFI5G Main Ant.	WIFI5G Aux. Ant.	WIFI6G Main Ant.	WIFI6G Aux. Ant.	Bluetooth Aux. Ant.	
1	Ant.Main(Mode2)+Ant.Aux(Mode2)	2.4G-WLAN+5G-WLAN	WIFI2.4G Main Ant(Mode2)+WIFI2.4G Aux Ant(Mode2)	WIFI5G Main Ant(Mode2)+WIFI5G Aux Ant(Mode2)	Top Edge	0.127	0.202	0.410	0.370	/	/	/	1.109
2		2.4G-WLAN+6G-WLAN	WIFI2.4G Main Ant(Mode2)+WIFI2.4G Aux Ant(Mode2)	WIFI6G Main Ant(Mode2)+WIFI6G Aux Ant(Mode2)	Top Edge	0.127	0.202	/	/	0.079	0.116	/	0.524
3		Bluetooth+5G-WLAN	Bluetooth Aux Ant(Mode2)	WIFI5G Main Ant(Mode2)+WIFI5G Aux Ant(Mode2)	Top Edge	/	/	0.410	0.370	/	/	0.024	0.804
4		Bluetooth+6G-WLAN	Bluetooth Aux Ant(Mode2)	WIFI6G Main Ant(Mode2)+WIFI6G Aux Ant(Mode2)	Top Edge	/	/	/	/	0.079	0.116	0.024	0.219
5	Ant.Main(Mode2)+Ant.Aux(Mode1)	2.4G-WLAN+5G-WLAN	WIFI2.4G Main Ant(Mode2)+WIFI2.4G Aux Ant(Mode1)	WIFI5G Main Ant(Mode2)+WIFI5G Aux Ant(Mode1)	Top Edge	0.127	0.178	0.410	0.301	/	/	/	1.016
6		2.4G-WLAN+6G-WLAN	WIFI2.4G Main Ant(Mode2)+WIFI2.4G Aux Ant(Mode1)	WIFI6G Main Ant(Mode2)+WIFI6G Aux Ant(Mode1)	Top Edge	0.127	0.178	/	/	0.079	0.098	/	0.482
7		Bluetooth+5G-WLAN	Bluetooth Aux Ant(Mode1)	WIFI5G Main Ant(Mode2)+WIFI5G Aux Ant(Mode1)	Top Edge	/	/	0.410	0.301	/	/	0.029	0.740
8		Bluetooth+6G-WLAN	Bluetooth Aux Ant(Mode1)	WIFI6G Main Ant(Mode2)+WIFI6G Aux Ant(Mode1)	Top Edge	/	/	/	/	0.079	0.098	0.029	0.206
9	Ant.Main(Mode1)+Ant.Aux(Mode2)	2.4G-WLAN+5G-WLAN	WIFI2.4G Main Ant(Mode1)+WIFI2.4G Aux Ant(Mode2)	WIFI5G Main Ant(Mode1)+WIFI5G Aux Ant(Mode2)	Top Edge	0.138	0.202	0.276	0.370	/	/	/	0.986
10		2.4G-WLAN+6G-WLAN	WIFI2.4G Main Ant(Mode1)+WIFI2.4G Aux Ant(Mode2)	WIFI6G Main Ant(Mode1)+WIFI6G Aux Ant(Mode2)	Top Edge	0.138	0.202	/	/	0.067	0.116	/	0.523
11		Bluetooth+5G-WLAN	Bluetooth Aux Ant(Mode2)	WIFI5G Main Ant(Mode1)+WIFI5G Aux Ant(Mode2)	Top Edge	/	/	0.276	0.370	/	/	0.024	0.670
12		Bluetooth+6G-WLAN	Bluetooth Aux Ant(Mode2)	WIFI6G Main Ant(Mode1)+WIFI6G Aux Ant(Mode2)	Top Edge	/	/	/	/	0.067	0.116	0.024	0.207

13	Ant.Main(Mode1)+Ant.Aux(Mode1 )	2.4G-WLAN+5G-WLAN	WIFI2.4G Main Ant(Mode1)+WIFI2.4G Aux Ant(Mode1 )	WIFI5G Main Ant(Mode1)+WIFI5G Aux Ant(Mode1 )	Top Edge	0.138	0.178	0.276	0.301	/	/	/	0.893
14		2.4G-WLAN+6G-WLAN	WIFI2.4G Main Ant(Mode1)+WIFI2.4G Aux Ant(Mode1 )	WIFI6G Main Ant(Mode1)+WIFI6G Aux Ant(Mode1 )	Top Edge	0.138	0.178	/	/	0.067	0.098	/	0.481
15		Bluetooth+5G-WLAN	Bluetooth Aux Ant(Mode1 )	WIFI5G Main Ant(Mode1)+WIFI5G Aux Ant(Mode1 )	Top Edge	/	/	0.276	0.301	/	/	0.029	0.606
16		Bluetooth+6G-WLAN	Bluetooth Aux Ant(Mode1 )	WIFI6G Main Ant(Mode1)+WIFI6G Aux Ant(Mode1 )	Top Edge	/	/	/	/	0.067	0.098	0.029	0.194

Note:  
1: The highest Summed 1g SAR is 1.109W/Kg < 4.0 W/kg, so Simultaneous Transmission SAR test is required.

## 14 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	DASY6	16.0.0.116	N/A	N/A
2450MHz Validation Dipole	Speag	D2450V2	SN: 952	2021/05/19	2024/05/18
5GHz Validation Dipole	Speag	D5GHzV2	SN: 1200	2021/05/18	2024/05/17
6.5GHz Validation Dipole	Speag	D6.5GHzV2	SN: 1037	2021/07/01	2024/06/30
E-Field Probe	Speag	EX3DV4	SN: 7607	2022/07/04	2023/07/03
Data Acquisition Electronicsr	Speag	DAE4	SN: 878	2022/06/13	2023/06/12
Signal Generator	R&S	SMB100A	177746	2022/05/19	2023/05/18
Power Meter	R&S	NRVD-B2	7250BJ-0112/2011	2022/09/06	2023/09/05
Power Sensor	R&S	NRV-Z4	100381	2022/09/06	2023/09/05
Power Sensor	R&S	NRV-Z2	100211	2022/09/06	2023/09/05
Network Analyzer	Agilent	E5071C	MY46103472	2022/12/06	2023/12/05
Thermometer	Elitech	RC-4HC	EF7216002985	2022/11/18	2023/11/17
Thermometer	Elitech	RC-4HC	EF720B004813	2022/11/18	2023/11/17
Power Amplifier	SATIMO	6552B	22374	N/A	N/A
Dielectric Probe Kit	Speag	DAK3.5	SN: 1312	N/A	N/A
Phantom	Speag	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 ( $\sigma$ ) (S/m)	Meas. Permittivity ( $\epsilon$ )	Target Conductivity ( $\sigma$ ) (S/m)	Target Permittivity ( $\epsilon$ )	Conductivity Tolerance (%)	Permittivity Tolerance (%)
2023.04.23	Head	2450	21.6	1.80	39.62	1.80	39.20	0.00	1.07
2023.04.25	Head	5250	21.1	4.70	35.80	4.71	35.93	-0.21	-0.36
2023.04.26	Head	5600	21.3	5.06	35.29	5.07	35.53	-0.20	-0.68
2023.04.27	Head	5750	21.4	5.18	35.64	5.22	35.36	-0.77	0.79
2023.04.21	Head	6500	21.1	6.12	34.21	6.07	34.46	0.82	-0.73
2023.04.22	Head	6500	21.6	6.15	34.26	6.07	34.46	1.32	-0.58

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

## ANNEX B SYSTEM CHECK RESULT

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

### Head liquid 1g

Date	Liquid Type	Freq. (MHz)	Power (mW)	Measured SAR (W/kg)	Normalized SAR (W/kg)	Dipole SAR (W/kg)	Tolerance (%)
2023.04.23	Head	2450	100	5.36	53.60	53.00	1.13
2023.04.25	Head	5250	100	7.32	73.20	77.80	-5.91
2023.04.26	Head	5600	100	8.23	82.30	81.20	1.35
2023.04.27	Head	5750	100	7.69	76.90	77.20	-0.39
2023.04.21	Head	6500	100	29.30	293.00	286.00	2.45
2023.04.22	Head	6500	100	26.90	269.00	286.00	-5.94

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

### Head liquid 10g

Date	Liquid Type	Freq. (MHz)	Power (mW)	Measured SAR (W/kg)	Normalized SAR (W/kg)	Dipole SAR (W/kg)	Tolerance (%)
2023.04.23	Head	2450	100	2.35	23.50	24.10	-2.49
2023.04.25	Head	5250	100	2.16	21.60	22.10	-2.26
2023.04.26	Head	5600	100	2.38	23.80	23.10	3.03
2023.04.27	Head	5750	100	2.15	21.50	21.70	-0.92
2023.04.21	Head	6500	100	5.32	53.20	52.60	1.14
2023.04.22	Head	6500	100	4.98	49.80	52.60	-5.32

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

# System Performance Check Data (2450MHz)

## Device under Test Properties

Model, Manufacturer	Dimensions [mm]	DUT Type
D2450V2, SPEAG	40.0 x 8.0 x 8.0	Dipole

## 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		Validation band	CW, 0--	2450.0, 2450	7.79	1.80	39.6	22.3	21.6

## Hardware Setup

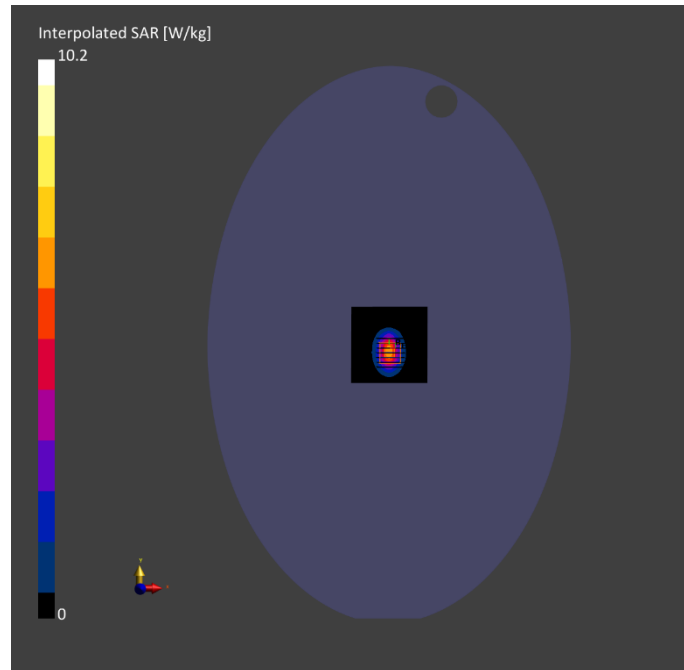
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2023-04-23	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

## 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

## Measurement Results

	Area Scan	Zoom Scan
Date	2023-04-23	2023-04-23
psSAR1g [W/kg]	5.33	5.36
psSAR10g [W/kg]	2.28	2.35
Power Drift [dB]	0.03	0.11
M2/M1 [%]		80.1
Dist 3dB Peak [mm]		8.5



# System Performance Check Data (5250MHz)

## Device under Test Properties

Model, Manufacturer	Dimensions [mm]	DUT Type
D5GHZV2, SPEAG	10.0 x 10.0 x 3.0	Dipole

## 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, 25	5.45	4.70	35.8	22.8	21.1

## Hardware Setup

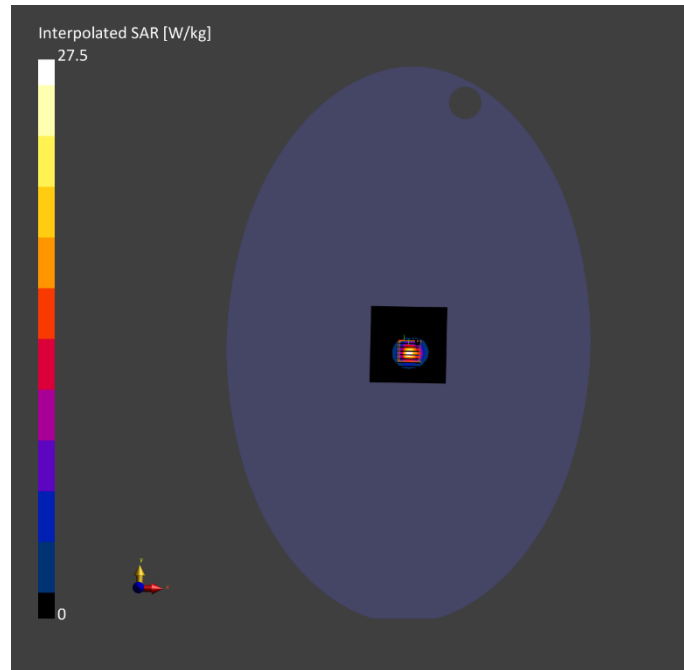
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2023-04-25	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

## 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

## Measurement Results

	Area Scan	Zoom Scan
Date	2023-04-25	2023-04-25
psSAR1g [W/kg]	6.52	7.32
psSAR10g [W/kg]	1.96	2.16
Power Drift [dB]	0.15	-0.11
M2/M1 [%]		64.8
Dist 3dB Peak [mm]		7.4



# System Performance Check Data (5600MHz)

## Device under Test Properties

Model, Manufacturer	Dimensions [mm]	DUT Type
D5GHzV2, SPEAG	10.0 x 10.0 x 3.0	Dipole

## 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		Validation band	CW, 0--	5600.0, 5600	4.9	5.06	35.3	22.6	21.3

## Hardware Setup

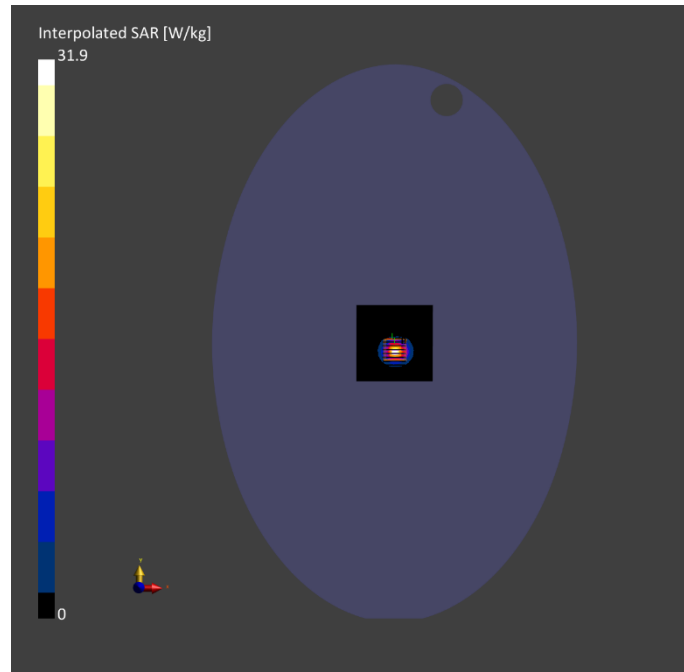
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2023-04-26	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

## 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

## Measurement Results

	Area Scan	Zoom Scan
Date	2023-04-26	2023-04-26
psSAR1g [W/kg]	8.05	8.23
psSAR10g [W/kg]	2.26	2.38
Power Drift [dB]	-0.11	0.17
M2/M1 [%]		62.6
Dist 3dB Peak [mm]		7.3





# System Performance Check Data (5750MHz)

## Device under Test Properties

Model, Manufacturer	Dimensions [mm]	DUT Type
D5GHzV2, SPEAG	10.0 x 10.0 x 3.0	Dipole

## 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		Validation band	CW, 0--	5750.0, 5750	5.0	5.18	35.6	22.7	21.4

## Hardware Setup

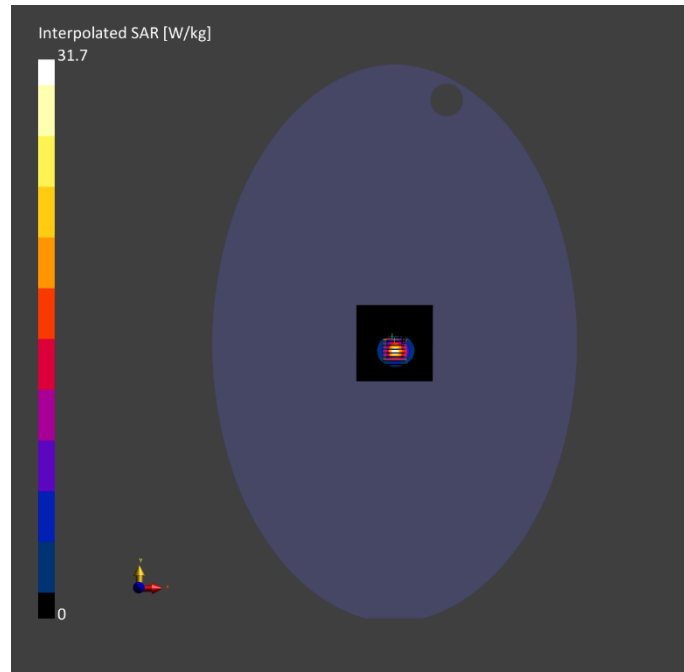
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2023-04-27	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

## 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

## Measurement Results

	Area Scan	Zoom Scan
Date	2023-04-27	2023-04-27
psSAR1g [W/kg]	7.74	7.69
psSAR10g [W/kg]	2.07	2.15
Power Drift [dB]	-0.06	0.03
M2/M1 [%]		61.7
Dist 3dB Peak [mm]		8.3



# System Performance Check Data (6500MHz)

## Device under Test Properties

Model, Manufacturer	Dimensions [mm]	DUT Type
D6.5GHzV2, SPEAG	10.0 x 10.0 x 3.0	Dipole

## 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		Validation band	CW, 0--	6500.0, 6500	5.55	6.12	34.2	22.1	21.1

## Hardware Setup

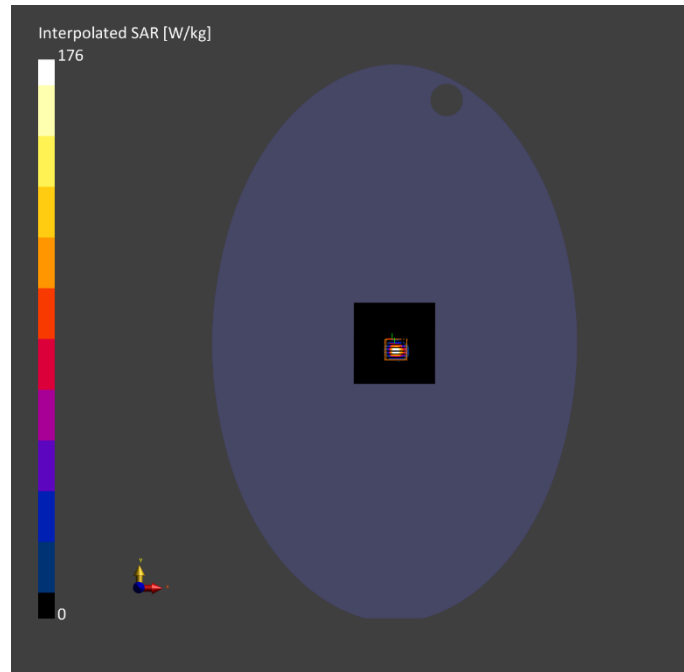
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2023-04-21	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

## Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	85.0 x 85.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	8.5 x 8.5	3.4 x 3.4 x 1.4
Sensor Surface [mm]	3.0	1.4

## Measurement Results

	Area Scan	Zoom Scan
Date	2023-04-21	2023-04-21
psSAR1g [W/kg]	29.9	29.3
psSAR10g [W/kg]	5.06	5.32
Power Drift [dB]	0.07	-0.01
M2/M1 [%]		49.3
Dist 3dB Peak [mm]		4.6



# System Performance Check Data (6500MHz)

## Device under Test Properties

Model, Manufacturer	Dimensions [mm]	DUT Type
D6.5GHzV2, SPEAG	10.0 x 10.0 x 3.0	Dipole

## 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		Validation band	CW, 0--	6500.0, 6500	5.55	6.15	34.3	22.2	21.6

## Hardware Setup

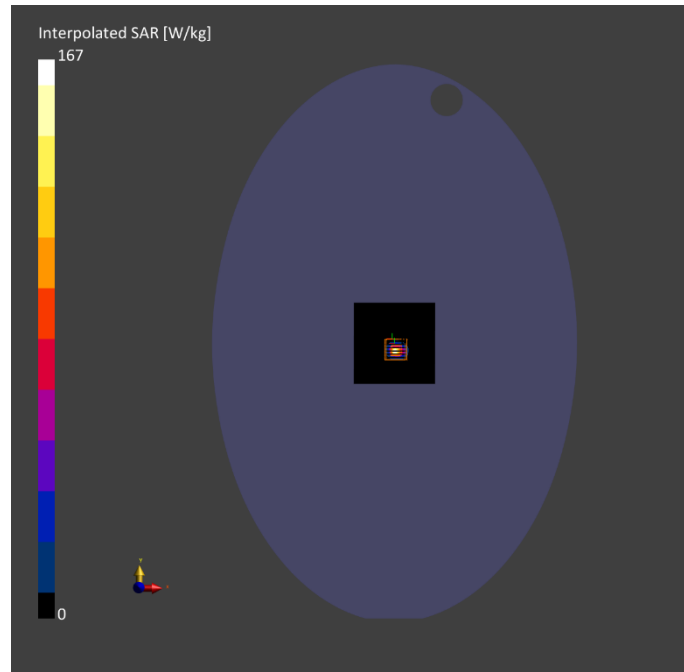
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 2023-04-22	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

## Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	85.0 x 85.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	8.5 x 8.5	3.4 x 3.4 x 1.4
Sensor Surface [mm]	3.0	1.4

## Measurement Results

	Area Scan	Zoom Scan
Date	2023-04-22	2023-04-22
psSAR1g [W/kg]	21.5	26.9
psSAR10g [W/kg]	4.42	4.98
Power Drift [dB]	0.19	0.01
M2/M1 [%]		49.6
Dist 3dB Peak [mm]		4.8



## ANNEX C TEST DATA

### Meas.1 Body Plane with Bottom Side 0mm on 0 Channel in Bluetooth Mode with Antenna Main Device under Test Properties

Model, Manufacturer	Dimensions [mm]	DUT Type
Legion 9 16IRX8	368.0 x 272.0 x 15.0	Laptop

### 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	BOTTOM, 0.00	ISM 2.4 GHz Band	Bluetooth, 10032-CAA	2402.0, 0	7.79	1.74	40.0	22.3	21.6

### Hardware Setup

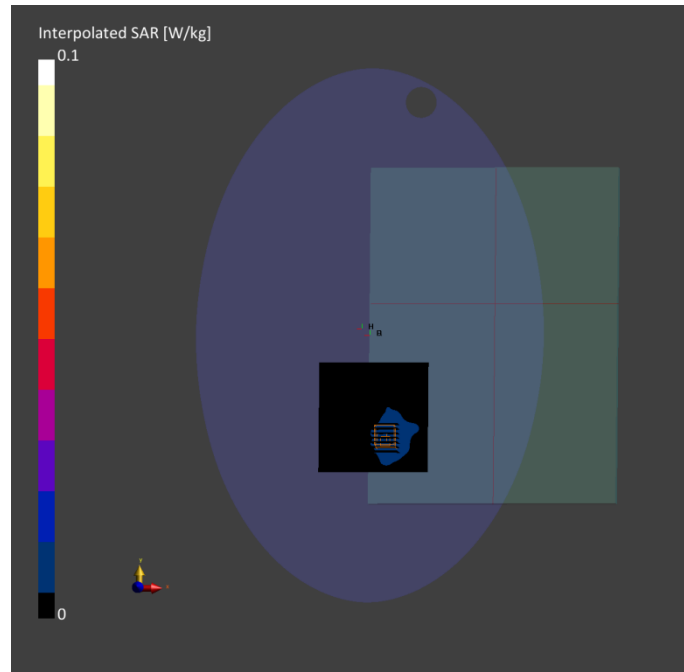
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000 , 2023-04-23	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

### 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

### Measurement Results

	Area Scan	Zoom Scan
Date	2023-04-23	2023-04-23
psSAR1g [W/kg]	0.013	0.013
psSAR10g [W/kg]	0.007	0.007
Power Drift [dB]	-0.02	0.02
M2/M1 [%]		57.1
Dist 3dB Peak [mm]		> 15.0





**Meas.2 Limbs Plane with Top Edge 0mm on 0 Channel in Bluetooth Mode with Antenna Main**

**Device under Test Properties**

Model, Manufacturer	Dimensions [mm]	DUT Type
Legion 9 16IRX8	272.0 x 368.0 x 15.0	Laptop

**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	EDGE TOP, 0.00	ISM 2.4 GHz Band	Bluetooth, 10032-CAA	2402.0, 0	7.79	1.74	40.0	22.3	21.6

**Hardware Setup**

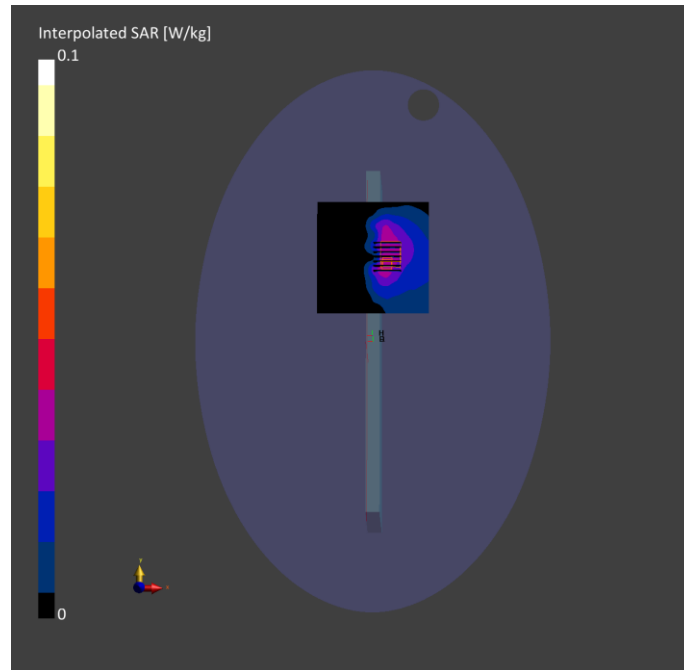
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000, 2023-04-23	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

**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

**Measurement Results**

	Area Scan	Zoom Scan
Date	2023-04-23	2023-04-23
psSAR1g [W/kg]	0.033	0.032
psSAR10g [W/kg]	0.019	0.017
Power Drift [dB]	-0.09	0.19
M2/M1 [%]		54.3
Dist 3dB Peak [mm]		> 15.0



## Meas.3 Body Plane with Bottom Side 0mm on 11 Channel in IEEE802.11b Mode with Antenna Main

### Device under Test Properties

Model, Manufacturer	Dimensions [mm]	DUT Type
Legion 9 16IRX8	368.0 x 272.0 x 15.0	Laptop

### 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	BOTTOM, 0.00	WLAN, 2.4GHz	WLAN, 10012-CAB	2462.0, 11	7.79	1.82	39.6	22.3	21.6

### Hardware Setup

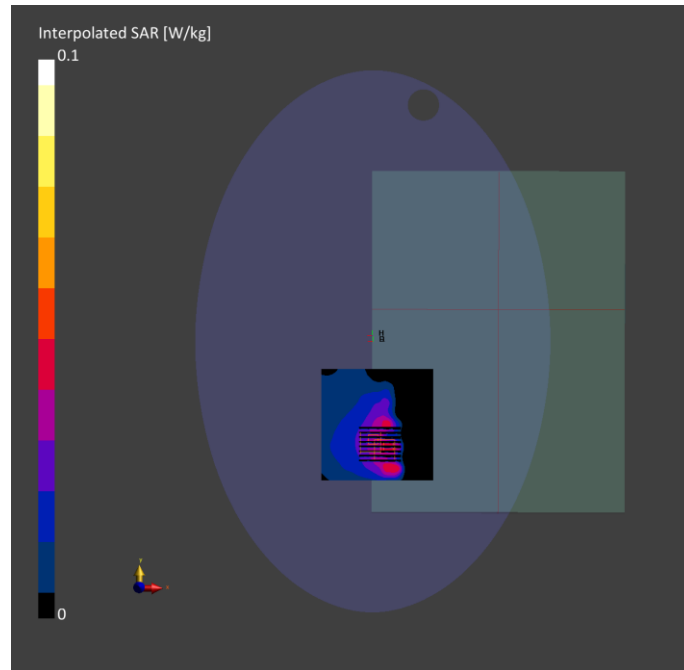
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000, 2023-04-23	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

### 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

### Measurement Results

	Area Scan	Zoom Scan
Date	2023-04-23	2023-04-23
psSAR1g [W/kg]	0.038	0.028
psSAR10g [W/kg]	0.020	0.015
Power Drift [dB]	0.03	0.07
M2/M1 [%]		50.5
Dist 3dB Peak [mm]		> 15.0



## Meas.4 Body Plane with Bottom Side 0mm on 1 Channel in IEEE802.11b Mode with Antenna Auxiliary

### Device under Test Properties

Model, Manufacturer	Dimensions [mm]	DUT Type
Legion 9 16IRX8	368.0 x 272.0 x 15.0	Laptop

### 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	BOTTOM, 0.00	WLAN, 2.4GHz	WLAN, 10012-CAB	2412.0, 1	7.79	1.75	39.9	22.3	21.6

### Hardware Setup

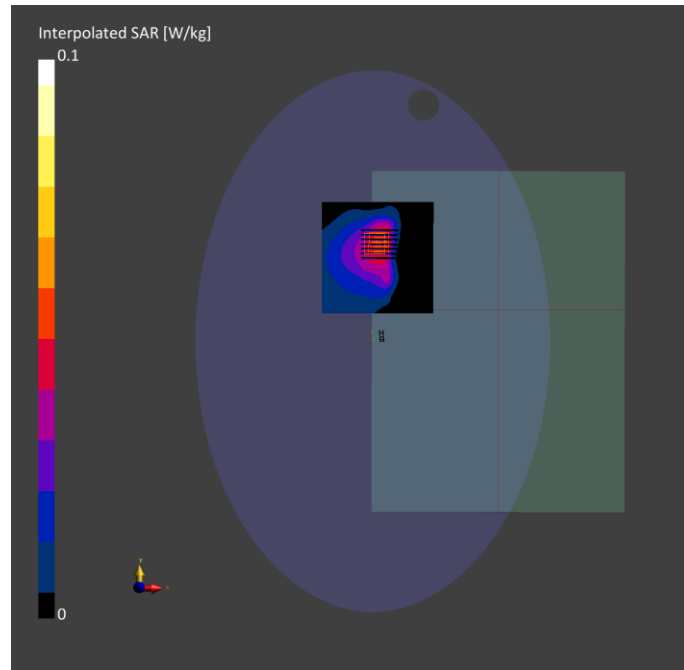
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000, 2023-04-23	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

### 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

### Measurement Results

	Area Scan	Zoom Scan
Date	2023-04-23	2023-04-23
psSAR1g [W/kg]	0.046	0.042
psSAR10g [W/kg]	0.026	0.024
Power Drift [dB]	0.01	-0.06
M2/M1 [%]		52.2
Dist 3dB Peak [mm]		> 15.0



## Meas.5 Limbs Plane with Top Edge 0mm on 11 Channel in IEEE802.11b Mode with Antenna Main

### Device under Test Properties

Model, Manufacturer	Dimensions [mm]	DUT Type
Legion 9 16IRX8	272.0 x 368.0 x 15.0	Laptop

### 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	EDGE, TOP, 0.00	WLAN, 2.4GHz	WLAN, 10012-CAB	2462.0, 11	7.79	1.82	39.6	22.3	21.6

### Hardware Setup

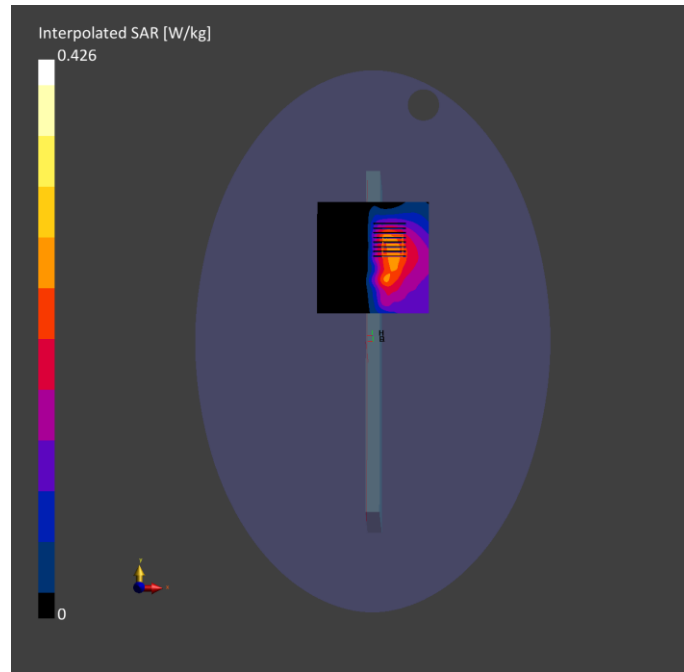
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000, 2023-04-23	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

### 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

### Measurement Results

	Area Scan	Zoom Scan
Date	2023-05-02, 17:52	2023-05-02, 18:01
psSAR1g [W/kg]	0.218	0.225
psSAR10g [W/kg]	0.128	0.131
Power Drift [dB]	-0.04	-0.15
M2/M1 [%]		44.0
Dist 3dB Peak [mm]		7.1





**Meas.6 Limbs Plane with Top Edge 0mm on 1 Channel in IEEE802.11b Mode with Antenna Auxiliary**

**Device under Test Properties**

Model, Manufacturer	Dimensions [mm]	DUT Type
Legion 9 16IRX8	272.0 x 368.0 x 15.0	Laptop

**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	EDGE TOP, 0.00	WLAN 2.4GHz	WLAN, 10012-CAB	2412.0, 1	7.79	1.75	39.9	22.3	21.6

**Hardware Setup**

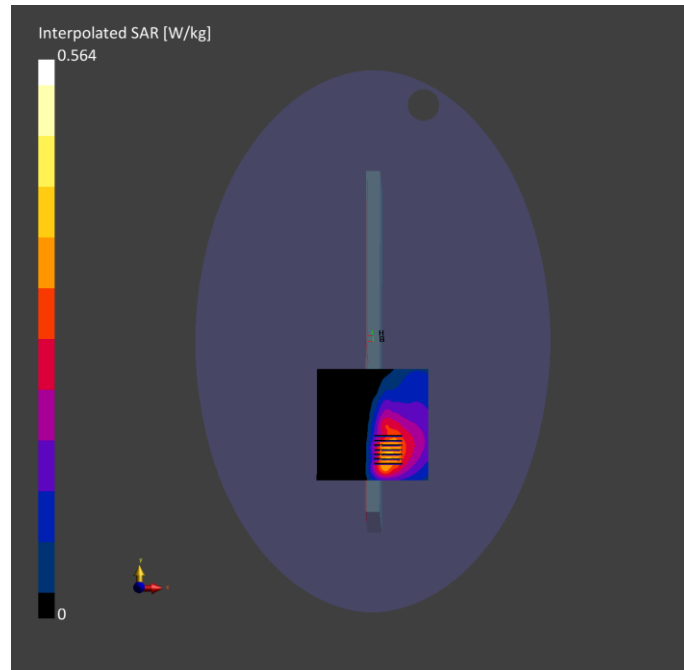
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000, 2023-04-23	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

**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

**Measurement Results**

	Area Scan	Zoom Scan
Date	2023-04-23	2023-04-23
psSAR1g [W/kg]	0.321	0.319
psSAR10g [W/kg]	0.185	0.186
Power Drift [dB]	0.00	-0.04
M2/M1 [%]		53.0
Dist 3dB Peak [mm]		14.0



**Meas.7 Body Plane with Bottom Side 0mm on 54 Channel in IEEE802.11n40 Mode with Antenna Main**

**Device under Test Properties**

Model, Manufacturer	Dimensions [mm]	DUT Type
Legion 9 16IRX8	368.0 x 272.0 x 15.0	Laptop

**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	BOTTOM, 0.00	WLAN, 5GHz	WLAN, 10114-CAD	5270.0, 54	5.45	4.74	35.5	22.8	21.1

**Hardware Setup**

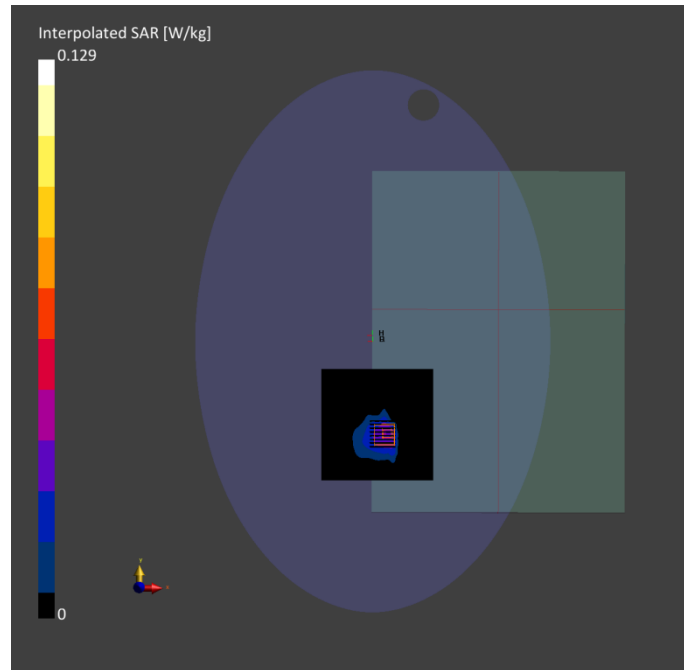
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000, 2023-04-25	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

**Scan Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	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

**Measurement Results**

	Area Scan	Zoom Scan
Date	2023-04-25	2023-04-25
psSAR1g [W/kg]	0.034	0.029
psSAR10g [W/kg]	0.015	0.011
Power Drift [dB]	0.06	0.02
M2/M1 [%]		68.0
Dist 3dB Peak [mm]		> 12.0



## Meas.8 Body Plane with Bottom Side 0mm on 54 Channel in IEEE802.11n40 Mode with Antenna Auxiliary

### Device under Test Properties

Model, Manufacturer	Dimensions [mm]	DUT Type
Legion 9 16IRX8	368.0 x 272.0 x 15.0	Laptop

### 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	BOTTOM, 0.00	WLAN	WLAN, 10114-CAD	5270.0, 54	5.45	4.74	35.5	22.8	21.1

### Hardware Setup

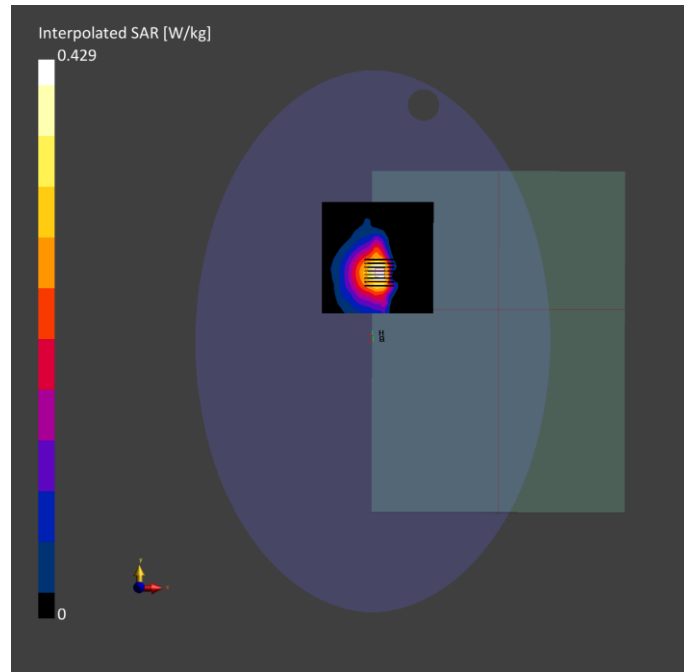
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000, 2023-04-25	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

### Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	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

### Measurement Results

	Area Scan	Zoom Scan
Date	2023-04-25	2023-04-25
psSAR1g [W/kg]	0.141	0.133
psSAR10g [W/kg]	0.060	0.054
Power Drift [dB]	0.03	-0.03
M2/M1 [%]		59.3
Dist 3dB Peak [mm]		6.6



## Meas.9 Body Plane with Bottom Side 0mm on 142 Channel in IEEE802.11n40 Mode with Antenna Main

### Device under Test Properties

Model, Manufacturer	Dimensions [mm]	DUT Type
Legion 9 16IRX8	368.0 x 272.0 x 15.0	Laptop

### 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	BOTTOM, 0.00	WLAN, 5GHz	WLAN, 10114-CAD	5710.0, 142	5.0	5.23	35.0	22.6	21.3

### Hardware Setup

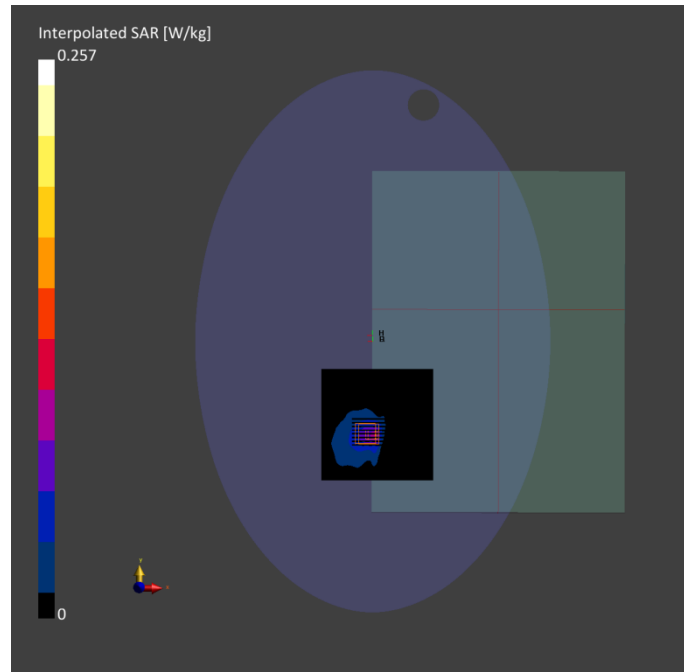
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000, 2023-04-26	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

### Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	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

### Measurement Results

	Area Scan	Zoom Scan
Date	2023-04-26	2023-04-26
psSAR1g [W/kg]	0.068	0.063
psSAR10g [W/kg]	0.028	0.025
Power Drift [dB]	-0.04	-0.05
M2/M1 [%]		54.7
Dist 3dB Peak [mm]		11.2





**Meas.10 Body Plane with Bottom Side 0mm on 110 Channel in IEEE802.11n40 Mode with Antenna Auxiliary**

**Device under Test Properties**

Model, Manufacturer	Dimensions [mm]	DUT Type
Legion 9 16IRX8	368.0 x 272.0 x 15.0	Laptop

**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	BOTTOM, 0.00	WLAN, 5GHz	WLAN, 10114-CAD	5550.0, 110	4.9	4.98	35.9	22.6	21.3

**Hardware Setup**

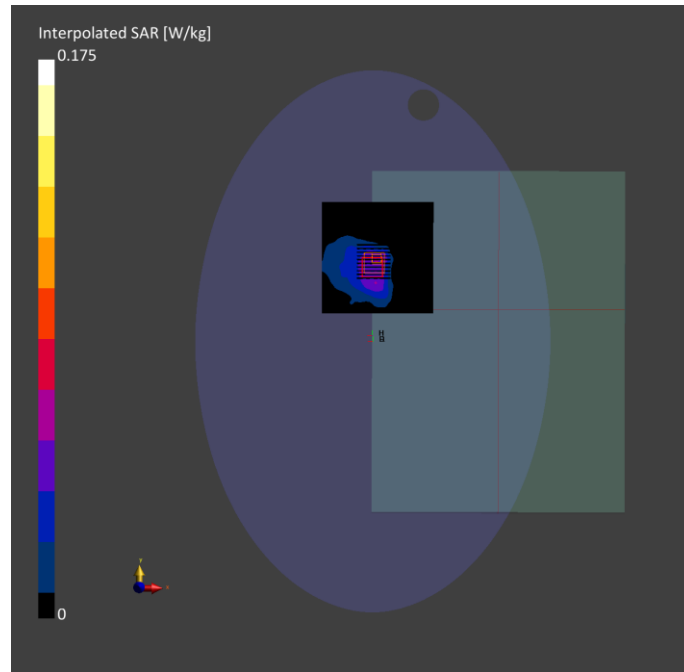
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000, 2023-04-26	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

**Scan Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	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

**Measurement Results**

	Area Scan	Zoom Scan
Date	2023-04-26	2023-04-26
psSAR1g [W/kg]	0.044	0.039
psSAR10g [W/kg]	0.020	0.016
Power Drift [dB]	0.02	0.07
M2/M1 [%]		61.0
Dist 3dB Peak [mm]		12.4



**Meas.11 Body Plane with Bottom Side 0mm on 165 Channel in IEEE802.11a Mode with Antenna Main**

**Device under Test Properties**

Model, Manufacturer	Dimensions [mm]	DUT Type
Legion 9 16IRX8	368.0 x 272.0 x 15.0	Laptop

**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	BOTTOM, 0.00	WLAN, 5GHz	WLAN, 10062-CAD	5825.0, 165	5.0	5.31	34.7	22.7	21.4

**Hardware Setup**

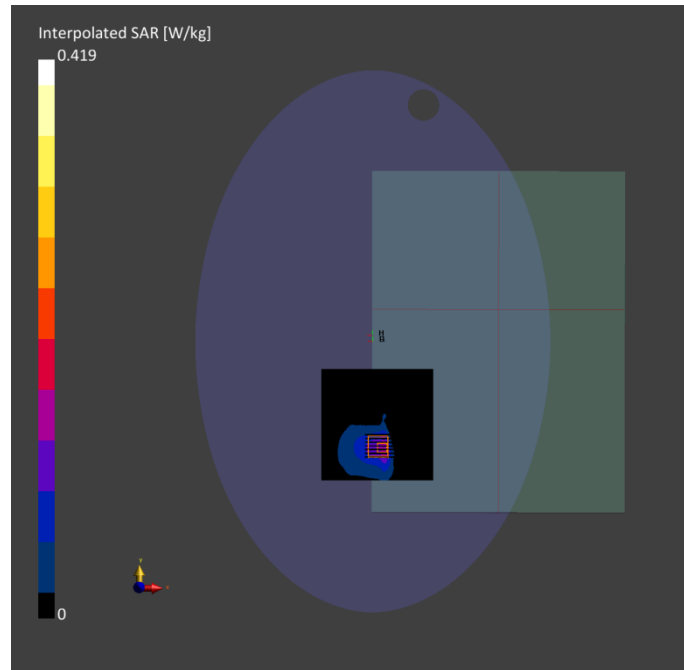
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000, 2023-04-27	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

**Scan Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	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

**Measurement Results**

	Area Scan	Zoom Scan
Date	2023-04-27	2023-04-27
psSAR1g [W/kg]	0.119	0.100
psSAR10g [W/kg]	0.048	0.042
Power Drift [dB]	-0.02	-0.18
M2/M1 [%]		54.1
Dist 3dB Peak [mm]		4.8



**Meas.12 Body Plane with Bottom Side 0mm on 157 Channel in IEEE802.11a Mode with Antenna Auxiliary**

**Device under Test Properties**

Model, Manufacturer	Dimensions [mm]	DUT Type
Legion 9 16IRX8	368.0 x 272.0 x 15.0	Laptop

**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	BOTTOM, 0.00	WLAN, 5GHz	WLAN, 10062-CAD	5785.0, 157	5.0	5.24	35.2	22.7	21.4

**Hardware Setup**

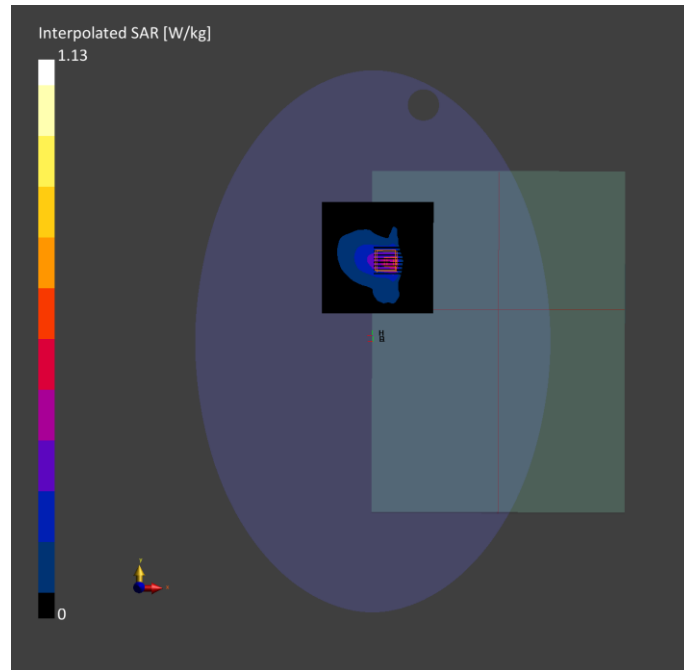
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000, 2023-04-27	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

**Scan Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	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

**Measurement Results**

	Area Scan	Zoom Scan
Date	2023-04-27	2023-04-27
psSAR1g [W/kg]	0.331	0.323
psSAR10g [W/kg]	0.139	0.138
Power Drift [dB]	-0.16	-0.05
M2/M1 [%]		48.5
Dist 3dB Peak [mm]		8.8



**Meas.13 Limbs Plane with Top Edge 0mm on 54 Channel in IEEE802.11n40 Mode with Antenna Main**

**Device under Test Properties**

Model, Manufacturer	Dimensions [mm]	DUT Type
Legion 9 16IRX8	272.0 x 368.0 x 15.0	Laptop

**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	EDGE, TOP, 0.00	WLAN, N	WLAN, 10114-CAD	5270.0, 54	5.45	4.74	35.5	22.8	21.1

**Hardware Setup**

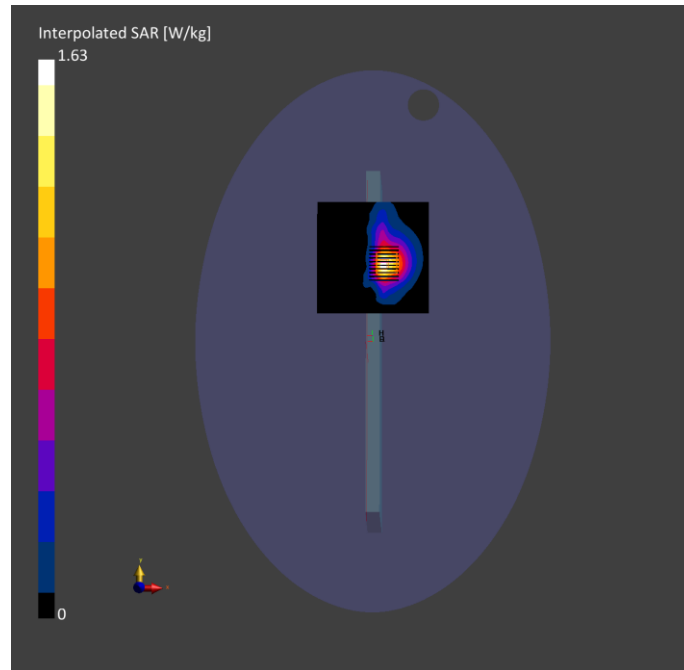
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000, 2023-04-25	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

**Scan Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	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

**Measurement Results**

	Area Scan	Zoom Scan
Date	2023-04-25	2023-04-25
psSAR1g [W/kg]	0.517	0.518
psSAR10g [W/kg]	0.211	0.217
Power Drift [dB]	-0.02	-0.03
M2/M1 [%]		59.6
Dist 3dB Peak [mm]		8.0





## Meas.14 Limbs Plane with Top Edge 0mm on 54 Channel in IEEE802.11n40 Mode with Antenna Auxiliary

### Device under Test Properties

Model, Manufacturer	Dimensions [mm]	DUT Type
Legion 9 16IRX8	272.0 x 368.0 x 15.0	Laptop

### Exposure Conditions

Phantom	Position, Test 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	EDGE, TOP, 0.00	WLAN, N, 5GHz	WLAN, 10114-CAD	5270.0, 54	5.45	4.74	35.5	22.8	21.1

### Hardware Setup

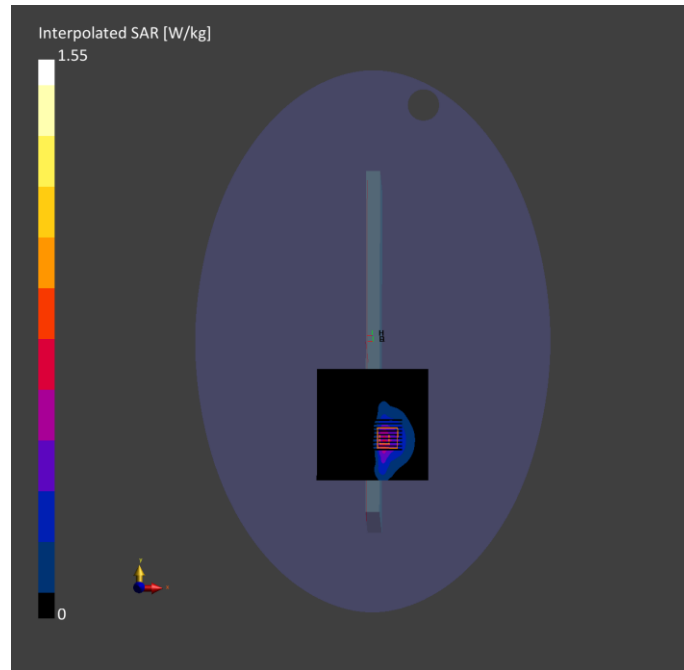
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000, 2023-04-25	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

### Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	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

### Measurement Results

	Area Scan	Zoom Scan
Date	2023-04-25	2023-04-25
psSAR1g [W/kg]	0.487	0.490
psSAR10g [W/kg]	0.197	0.204
Power Drift [dB]	0.01	0.14
M2/M1 [%]		58.2
Dist 3dB Peak [mm]		6.1



**Meas.15 Limbs Plane with Top Edge 0mm on 142 Channel in IEEE802.11n40 Mode with Antenna Main**

**Device under Test Properties**

Model, Manufacturer	Dimensions [mm]	DUT Type
Legion 9 16IRX8	272.0 x 368.0 x 15.0	Laptop

**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	EDGE, TOP, 0.00	WLAN, N	WLAN, 10114-CAD	5710.0, 142	5.0	5.23	35.0	22.6	21.3

**Hardware Setup**

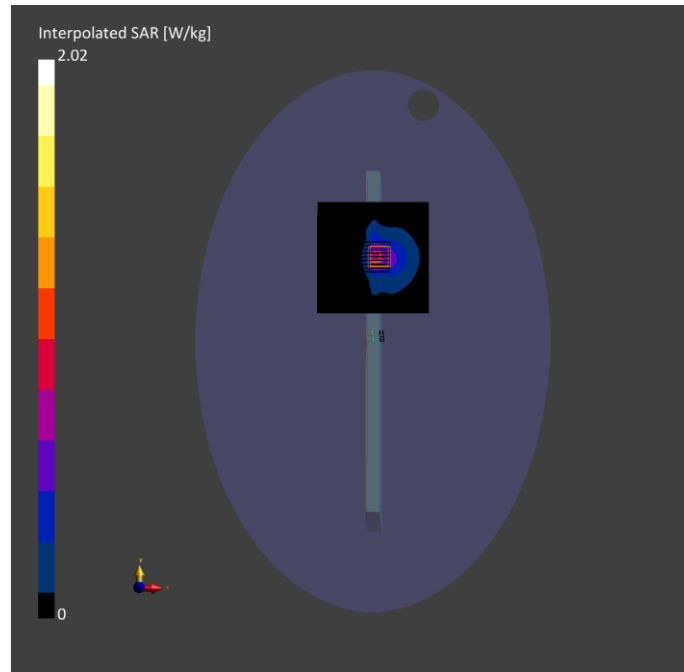
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000, 2023-04-26	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

**Scan Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	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

**Measurement Results**

	Area Scan	Zoom Scan
Date	2023-04-26	2023-04-26
psSAR1g [W/kg]	0.618	0.595
psSAR10g [W/kg]	0.256	0.261
Power Drift [dB]	0.01	0.02
M2/M1 [%]		55.2
Dist 3dB Peak [mm]		8.4



## Meas.16 Limbs Plane with Top Edge 0mm on 110 Channel in IEEE802.11n40 Mode with Antenna Auxiliary

### Device under Test Properties

Model, Manufacturer	Dimensions [mm]	DUT Type
Legion 9 16IRX8	272.0 x 368.0 x 15.0	Laptop

### Exposure Conditions

Phantom	Position, Test Section, 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	EDGE, TOP, 0.00	WLAN, N	WLAN, 10114-CAD	5550.0, 110	4.9	4.98	35.9	22.6	21.3

### Hardware Setup

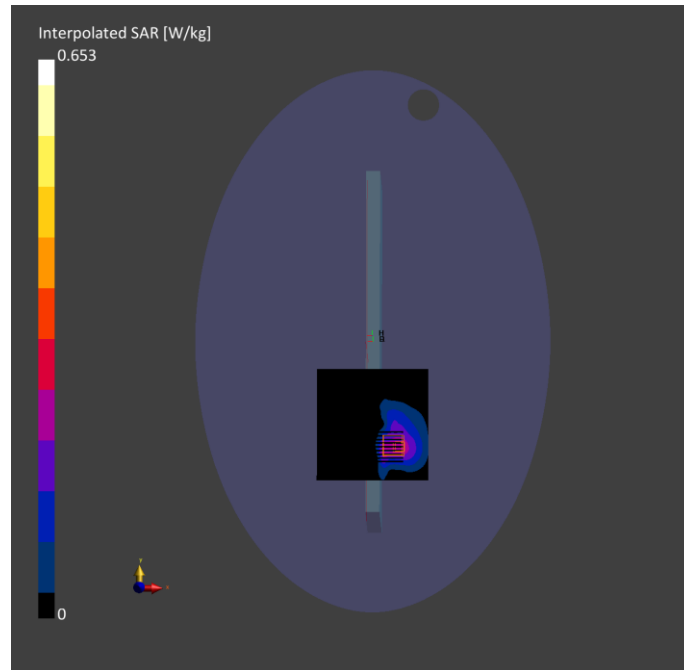
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000, 2023-04-26	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

### Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	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

### Measurement Results

	Area Scan	Zoom Scan
Date	2023-04-26	2023-04-26
psSAR1g [W/kg]	0.196	0.197
psSAR10g [W/kg]	0.088	0.086
Power Drift [dB]	-0.03	0.08
M2/M1 [%]		54.1
Dist 3dB Peak [mm]		18.7



## Meas.17 Limbs Plane with Top Edge 0mm on 165 Channel in IEEE802.11a Mode with Antenna Main

### Device under Test Properties

Model, Manufacturer	Dimensions [mm]	DUT Type
Legion 9 16IRX8	272.0 x 368.0 x 15.0	Laptop

### 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	EDGE, TOP, 0.00	WLAN, N	WLAN, 10062-CAD	5825.0, 165	5.0	5.31	34.7	22.7	21.4

### Hardware Setup

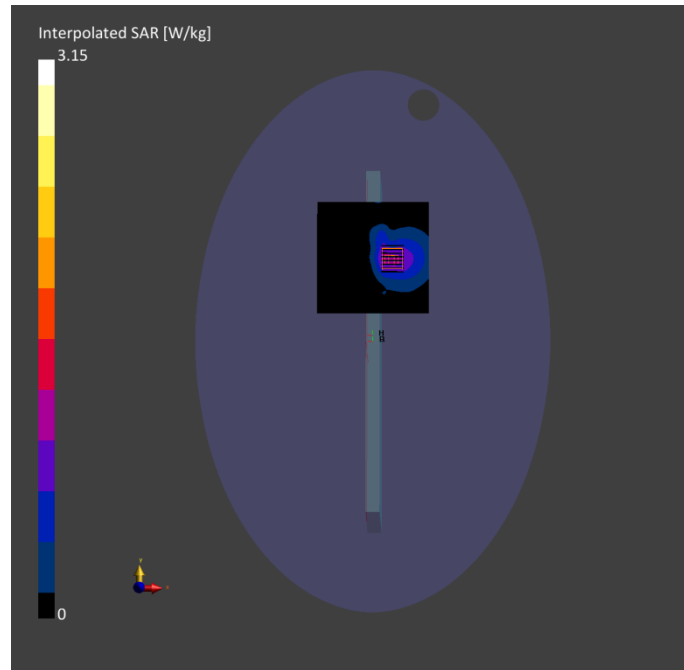
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000, 2023-04-27	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

### Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	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

### Measurement Results

	Area Scan	Zoom Scan
Date	2023-04-27	2023-04-27
psSAR1g [W/kg]	0.887	0.887
psSAR10g [W/kg]	0.393	0.373
Power Drift [dB]	0.02	-0.13
M2/M1 [%]		49.1
Dist 3dB Peak [mm]		> 12.0





**Meas.18 Limbs Plane with Top Edge 0mm on 157 Channel in IEEE802.11a Mode with Antenna Auxiliary**

**Device under Test Properties**

Model, Manufacturer	Dimensions [mm]	DUT Type
Legion 9 16IRX8	272.0 x 368.0 x 15.0	Laptop

**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	EDGE, TOP, 0.00	WLAN, N	WLAN, 10062-CAD	5785.0, 157	5.0	5.24	35.2	22.7	21.4

**Hardware Setup**

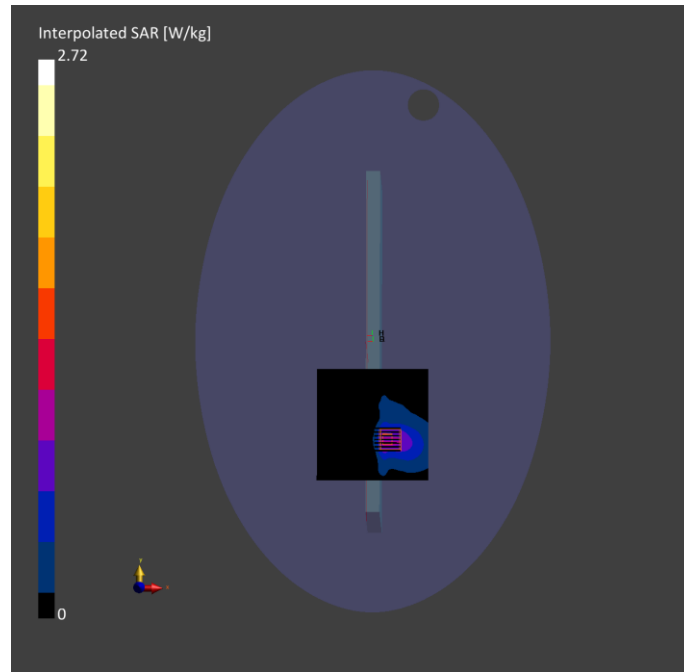
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000, 2023-04-27	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

**Scan Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	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

**Measurement Results**

	Area Scan	Zoom Scan
Date	2023-04-27	2023-04-27
psSAR1g [W/kg]	0.791	0.776
psSAR10g [W/kg]	0.339	0.337
Power Drift [dB]	0.02	-0.07
M2/M1 [%]		50.8
Dist 3dB Peak [mm]		7.2



## Meas.19 Body Plane with Bottom Side 0mm on 31 Channel in IEEE802.11be320 Mode with Antenna Main

### Device under Test Properties

Model, Manufacturer	Dimensions [mm]	DUT Type
Legion 9 16IRX8	368.0 x 272.0 x 15.0	Laptop

### 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	BOTTOM, 0.00	Custo, m Band	CW, 0--	6105.0, 31	5.55	5.59	35.0	22.1	21.1

### Hardware Setup

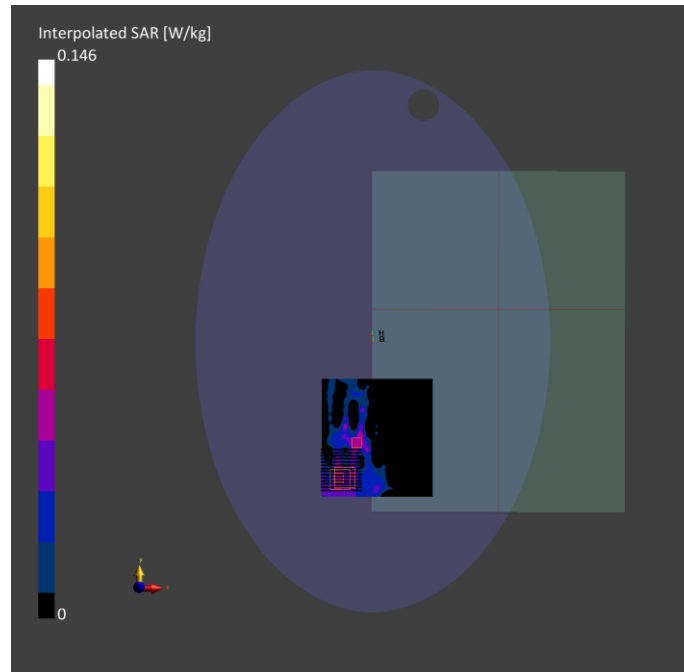
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000, 2023-04-21	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

### Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	119.0 x 119.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	8.5 x 8.5	3.4 x 3.4 x 1.4
Sensor Surface [mm]	3.0	1.4

### Measurement Results

	Area Scan	Zoom Scan
Date	2023-04-21	2023-04-21
psSAR1g [W/kg]	0.031	0.024
psSAR10g [W/kg]	0.013	0.012
Power Drift [dB]	-0.01	-0.04
M2/M1 [%]		67.8
Dist 3dB Peak [mm]		> 11.0



## Meas.20 Body Plane with Bottom Side 0mm on 31 Channel in IEEE802.11be320 Mode with Antenna Auxiliary

### Device under Test Properties

Model, Manufacturer	Dimensions [mm]	DUT Type
Legion 9 16IRX8	368.0 x 272.0 x 15.0	Laptop

### 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	BOTTOM, 0.00	Custo	CW, 0--	6105.0, 31	5.55	5.59	35.0	22.1	21.1

### Hardware Setup

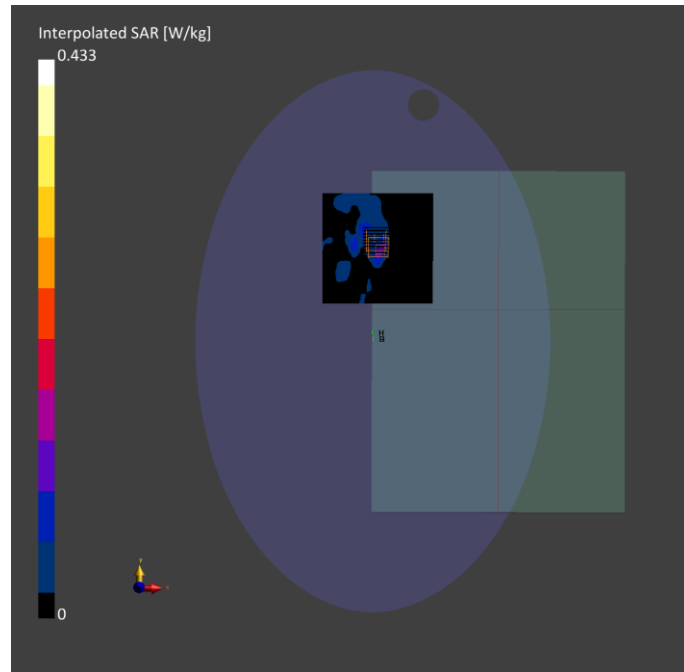
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000, 2023-04-21	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

### Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	119.0 x 119.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	8.5 x 8.5	3.4 x 3.4 x 1.4
Sensor Surface [mm]	3.0	1.4

### Measurement Results

	Area Scan	Zoom Scan
Date	2023-04-21	2023-04-21
psSAR1g [W/kg]	0.093	0.070
psSAR10g [W/kg]	0.033	0.029
Power Drift [dB]	-0.08	-0.01
M2/M1 [%]		46.5
Dist 3dB Peak [mm]		3.4



**Meas.21 Limbs Plane with Top Edge 0mm on 95 Channel in IEEE802.11be320 Mode with Antenna Main**

**Device under Test Properties**

Model, Manufacturer	Dimensions [mm]	DUT Type
Legion 9 16IRX8	272.0 x 368.0 x 15.0	Laptop

**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	EDGE, TOP, 0.00	CUSTOM	CW, 0--	6425.0, 95	5.55	5.95	34.3	22.1	21.1

**Hardware Setup**

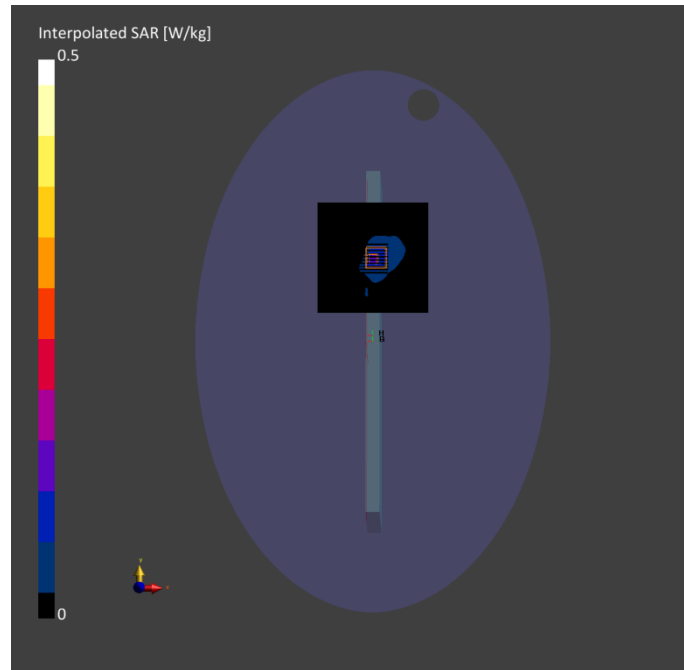
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000, 2023-04-21	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

**Scan Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	119.0 x 119.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	8.5 x 8.5	3.4 x 3.4 x 1.4
Sensor Surface [mm]	3.0	1.4

**Measurement Results**

	Area Scan	Zoom Scan
Date	2023-04-21	2023-04-21
psSAR1g [W/kg]	0.108	0.113
psSAR10g [W/kg]	0.042	0.045
Power Drift [dB]	0.01	0.04
M2/M1 [%]		56.6
Dist 3dB Peak [mm]		8.2





**Meas.22 Limbs Plane with Top Edge 0mm on 31 Channel in IEEE802.11be320 Mode with Antenna Auxiliary**

**Device under Test Properties**

Model, Manufacturer	Dimensions [mm]	DUT Type
Legion 9 16IRX8	272.0 x 368.0 x 15.0	Laptop

**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	EDGE, TOP, 0.00	CUSTOM	CW, 0--	6105.0, 31	5.55	5.59	35.0	22.1	21.1

**Hardware Setup**

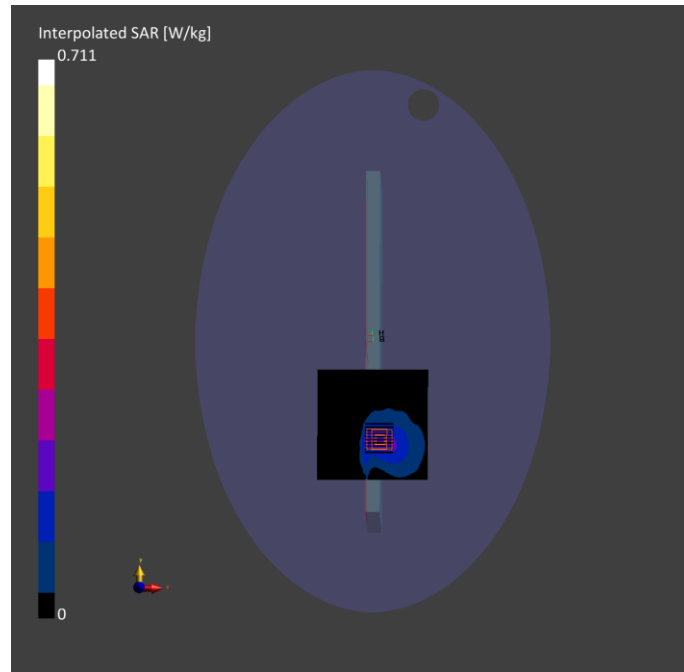
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2159	HBBL-600-10000, 2023-04-21	EX3DV4 - SN7607, 2022-07-04	DAE4 Sn878, 2022-06-13

**Scan Setup**

	Area Scan	Zoom Scan
Grid Extents [mm]	119.0 x 119.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	8.5 x 8.5	3.4 x 3.4 x 1.4
Sensor Surface [mm]	3.0	1.4

**Measurement Results**

	Area Scan	Zoom Scan
Date	2023-04-21	2023-04-21
psSAR1g [W/kg]	0.177	0.189
psSAR10g [W/kg]	0.079	0.084
Power Drift [dB]	-0.05	-0.02
M2/M1 [%]		57.2
Dist 3dB Peak [mm]		> 11.0



## **ANNEX D EUT EXTERNAL PHOTOS**

Please refer the document “BL-SZ2340324-AW.pdf”.

## **ANNEX E SAR TEST SETUP PHOTOS**

Please refer the document “BL-SZ2340324-AS-1.pdf”.

## **ANNEX F CALIBRATION REPORT**

Please refer the document “BL-SZ2340324-AC-1.pdf”.

## **ANNEX G TUNE-UP PROCEDURE**

Please refer the document “BL-SZ2340324-AT-1.pdf”.

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