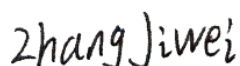


TEST REPORT

Applicant: Realtek Semiconductor Corp.
Address: No. 2, Innovation Road II, Hsinchu Science Park,
Hsinchu 300, Taiwan
Equipment Type: 11ax RTL8852BE Combo module
Model Name: RTL8852BE
Brand Name: N/A
FCC ID: TX2-RTL8852BE
Test Standard: FCC 47 CFR Part 2.1093
(refer to section 3.1)
Maximum SAR: Body 2.4GHz(1 g): 1.17 W/kg
Body 5GHz(1 g): 1.18 W/kg
Limbs 2.4GHz(10 g): 1.25 W/kg
Limbs 5GHz(10 g): 1.21 W/kg
Sample Arrival Date: Nov. 03, 2023
Test Date: Dec. 01, 2023 - Dec. 04, 2023
Date of Issue: Dec. 25, 2023

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Zhang Jiwei**Checked by:** Xu Rui**Approved by:** Tolan Tu
(Testing Director)

Revision History

Version	Issue Date	Revisions
<u>Rev. 01</u>	<u>Dec. 25, 2023</u>	<u>Initial Issue</u>

TABLE OF CONTENTS

1	GENERAL INFORMATION.....	4
1.1	Test Laboratory	4
1.2	Test Location	4
1.3	Test Environment Condition.....	4
2	PRODUCT INFORMATION	5
2.1	Applicant Information	5
2.2	Manufacturer Information.....	5
2.3	General Description for Equipment under Test (EUT).....	5
2.4	Ancillary Equipment.....	6
2.5	Technical Information	7
3	SUMMARY OF TEST RESULT	8
3.1	Test Standards	8
3.2	Device Category and SAR Limit	9
3.3	Test Result Summary	10
3.4	Test Uncertainty	12
4	MEASUREMENT SYSTEM	13
4.1	Specific Absorption Rate (SAR) Definition	13
4.2	DASY SAR System	14
5	SYSTEM VERIFICATION	21
5.1	Purpose of System Check	21
5.2	System Check Setup	21
6	TEST POSITION CONFIGURATIONS	22
6.1	Laptop Exposure Condition.....	22
6.2	Tablet Exposure Condition.....	23

7	MEASUREMENT PROCEDURE	24
7.1	Measurement Process Diagram	24
7.2	SAR Scan General Requirement	25
7.3	Measurement Procedure	26
7.4	Area & Zoom Scan Procedure	26
8	CONDUCTED RF OUPUT POWER	27
8.1	WIFI.....	27
8.2	Bluetooth	51
9	TEST EXCLUSION CONSIDERATION	52
9.1	EUT Antenna Location Sketch.....	52
9.2	SAR Test Consideration Table	54
10	TEST RESULT	61
10.1	Bluetooth (Aux. Antenna).....	62
10.2	WIFI 2.4GHz.....	63
10.3	WIFI 5GHz.....	65
11	SAR Measurement Variability	69
12	SIMULTANEOUS TRANSMISSION.....	70
12.1	Simultaneous Transmission Mode Considerations	70
12.2	Sum SAR of Simultaneous Transmission	71
13	TEST EQUIPMENTS LIST	83
ANNEX A	SIMULATING LIQUID VERIFICATION RESULT	84
ANNEX B	SYSTEM CHECK RESULT	85
ANNEX C	TEST DATA.....	90
ANNEX D	EUT EXTERNAL PHOTOS.....	108
ANNEX E	SAR TEST SETUP PHOTOS	108
ANNEX F	CALIBRATION REPORT	108
ANNEX G	TUNE-UP PROCEDURE.....	108

1 GENERAL INFORMATION

1.1 Test Laboratory

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

1.2 Test Location

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

1.3 Test Environment Condition

Ambient Temperature	18°C to 25°C
Ambient Relative Humidity	30% to 70%

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Realtek Semiconductor Corp.
Address	No. 2, Innovation Road II, Hsinchu Science Park, Hsinchu 300, Taiwan

2.2 Manufacturer Information

Manufacturer	Realtek Semiconductor Corp.
Address	No. 2, Innovation Road II, Hsinchu Science Park, Hsinchu 300, Taiwan

2.3 General Description for Equipment under Test (EUT)

EUT Name	11ax RTL8852BE Combo module
Model Name Under Test	RTL8852BE
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	IdeaPad 5 2-in-1 14AHP9
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
Main Antenna	AYP6Y-100467	AWAN	PIFA	1.69	3.15	2.42	2.38	3.04
Auxiliary Antenna	AYP6Y-100468		PIFA	2.22	2.68	2.16	3.21	3.66
Main Antenna	3.N201.0261	South Star	PIFA	1.89	2.42	2.48	2.96	3.17
Auxiliary Antenna	3.N201.0262		PIFA	2.29	2.37	2.61	2.22	3.08

2.4 Ancillary Equipment

Note: Not applicable.

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 and 802.11ax(HE20/40) 5G WIFI 802.11a, 802.11n(HT20/40), 802.11ac(VHT20/40/80) and 802.11ax(HE20/40/80), U-NII-1/2A/2C/3
-----------------------------------	--

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

Operating Mode	2.4G WLAN; 5G 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
	802.11a	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
	Bluetooth	2402 MHz ~ 2480 MHz
Antenna Type	WLAN: PIFA Antenna Bluetooth: PIFA Antenna	
Hotspot Function	N/A	
Exposure Category	General Population/Uncontrolled exposure	
Product Type	Portable Device	
EUT Type	☒ Production unit	☐ Identical prototype

3 SUMMARY OF TEST RESULT

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 2.1093	Radiofrequency radiation exposure evaluation: portable devices
2	ANSI C95.1-1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
3	KDB 447498 D04 v01	447498 D04 Interim General RF Exposure Guidance v01
4	KDB 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	SISO-Aux.	1.17	1.18
	2.4G WLAN	SISO-Main	1.14	
U-NII-2A	5.3G WLAN	SISO-Aux.	0.97	
	5.3G WLAN	SISO-Main	1.06	
U-NII-2C	5.6G WLAN	SISO-Aux.	1.18	
	5.6G WLAN	SISO-Main	0.93	
U-NII-3	5.8G WLAN	SISO-Aux.	1.17	
	5.8G WLAN	SISO-Main	0.68	
DSSS	Bluetooth	Aux.	0.41	
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	SISO-Aux.	1.25	1.25
	2.4G WLAN	SISO-Main	0.96	
U-NII-2A	5.3G WLAN	SISO-Aux.	0.92	
	5.3G WLAN	SISO-Main	1.07	
U-NII-2C	5.6G WLAN	SISO-Aux.	1.21	
	5.6G WLAN	SISO-Main	1.00	
U-NII-3	5.8G WLAN	SISO-Aux.	1.01	
	5.8G WLAN	SISO-Main	0.80	
DSSS	Bluetooth	Aux.	0.55	
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	2.01	0.01
NII	2.51	0.02
DSSS	2.51	0.02
Limit (W/Kg)	1.60	0.04
Verdict	Pass	Pass

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

3.3.4 Highest Simultaneous Transmission SAR Values (10 g Value)

Equipment Class	Maximum Report SAR (W/kg)	SPLSR
	Limbs (0mm)	
	1g SAR	
DTS	2.20	/
NII	2.76	/
DSSS	2.76	/
Limit (W/Kg)	4.00	/
Verdict	Pass	Pass

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

3.4 Test Uncertainty

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

The maximum 1 g SAR for the EUT in this report is 1.18 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 1.25 W/kg, which is lower than 3.75 W/kg, so the extensive SAR measurement uncertainty analysis is not required in this report.

4 MEASUREMENT SYSTEM

4.1 Specific Absorption Rate (SAR) Definition

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

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

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

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

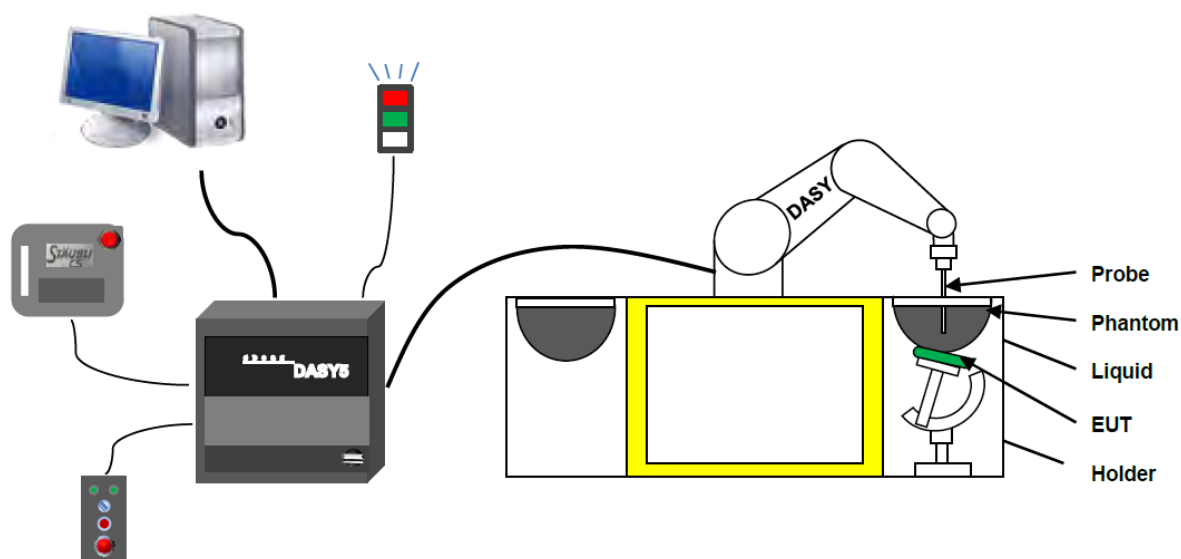
$$SAR = \frac{\sigma E^2}{\rho}$$

Where: σ is the conductivity of the tissue,

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

4.2 DASY SAR System

4.2.1 DASY SAR System Diagram



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

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

4.2.2 Robot

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



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

4.2.3 E-Field Probe

The probe is specially designed and calibrated for use in liquids with high permittivities for the measurements the Specific Dosimetric E-Field Probe EX3DV4-SN: 7510 with following specifications is used.

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



E-Field Probe Calibration Process

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

4.2.4 Data Acquisition Electronics

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



- Input Impedance: 200MΩ
- The Inputs: Symmetrical and Floating
- Common Mode Rejection: Above 80dB

4.2.5 Phantoms

Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with the latest draft of the standard IEC 62209 Part II and all known tissue simulating liquids. ELI4 has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points.



• Flat phantom

Photo of Phantom SN1012



Serial Number	Shell Thickness (mm)	Major ellipse axis (mm)	Minor axis (mm)
SN 1012 ELI4	2.0 ± 0.2	600	500

4.2.6 Device Holder

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



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

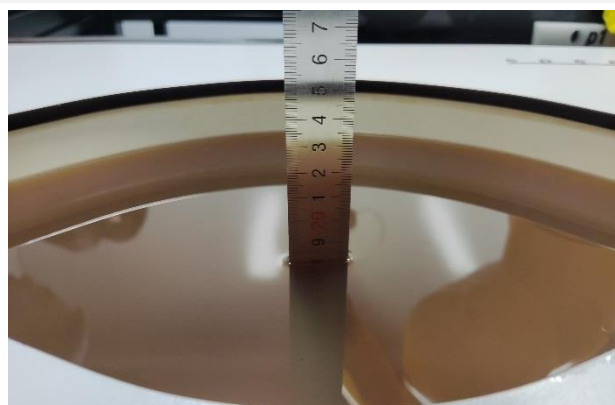
4.2.7 Simulating Liquid

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

Head Liquid Depth



Body Liquid Depth



The following table gives the recipes for tissue simulating liquid.

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

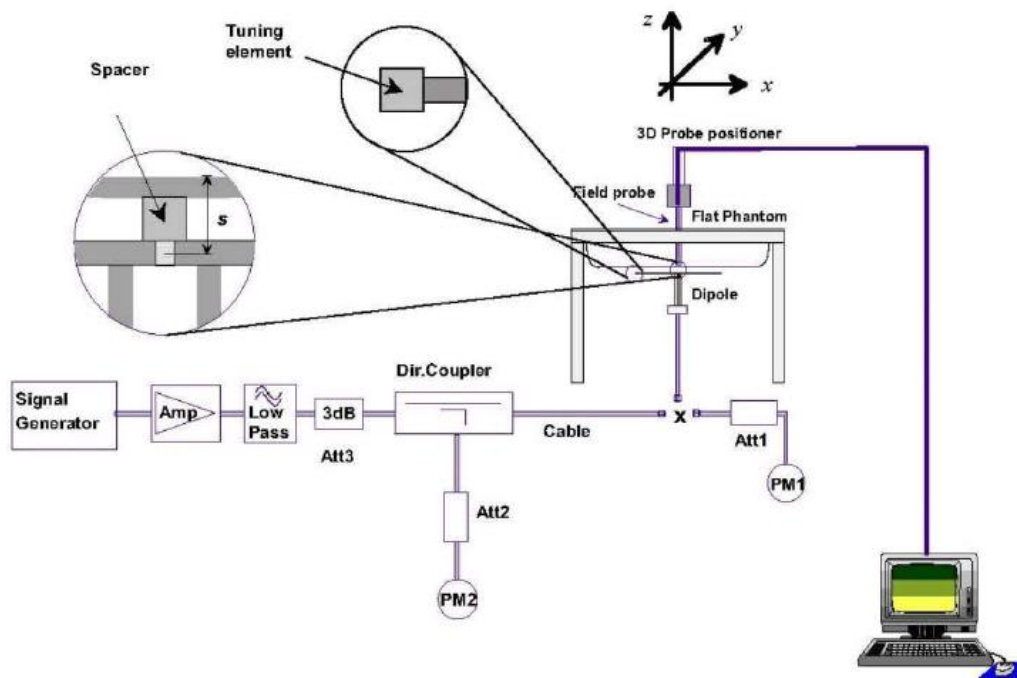
5 SYSTEM VERIFICATION

5.1 Purpose of System Check

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

5.2 System Check Setup

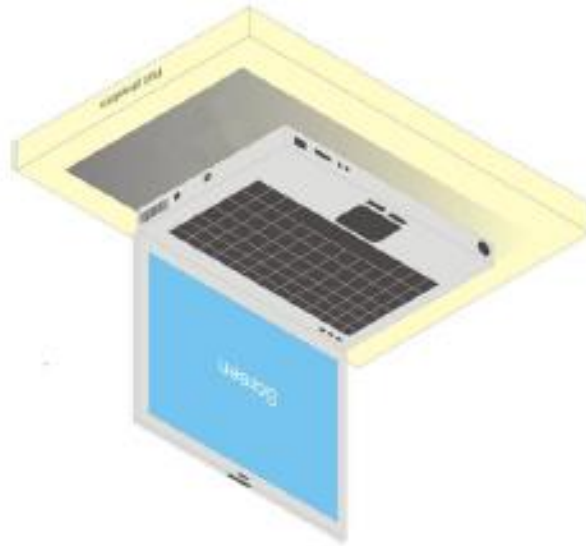
In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder.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



6 TEST POSITION CONFIGURATIONS

6.1 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.



6.2 Tablet Exposure Condition

This DUT was tested in two different positions. They are back side and top edge in these positions, the surface of DUT is touching with phantom 0mm.

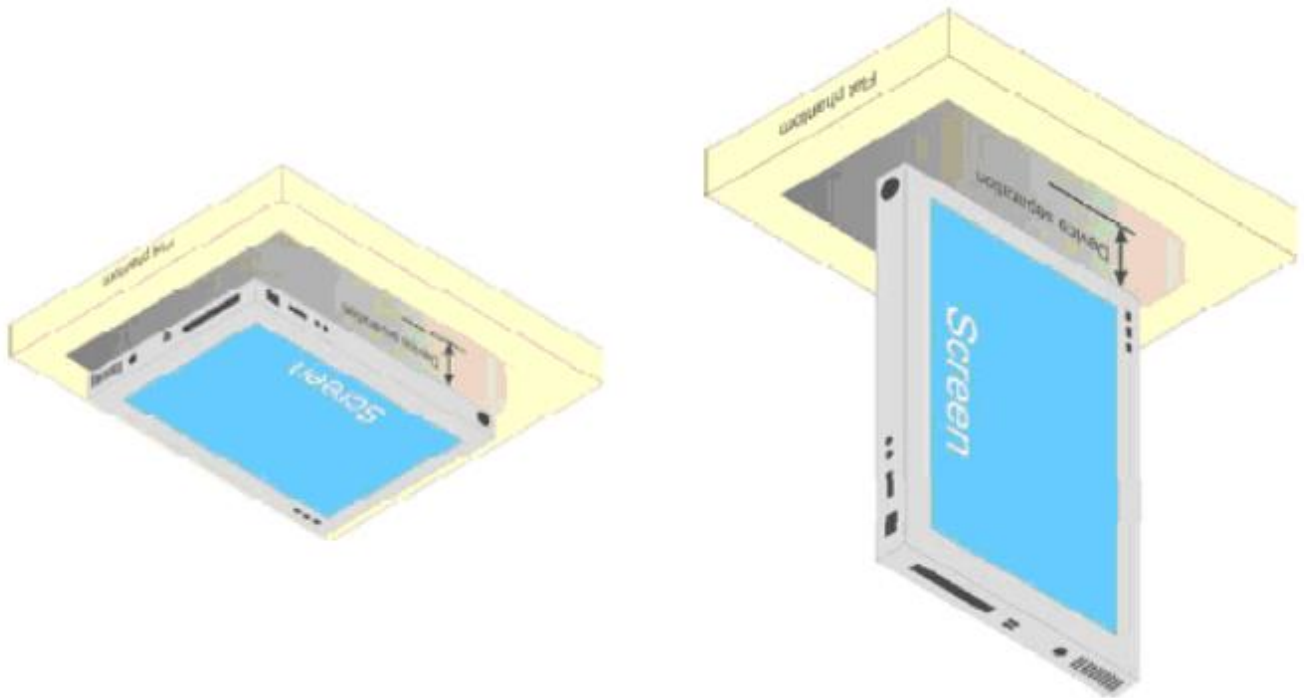
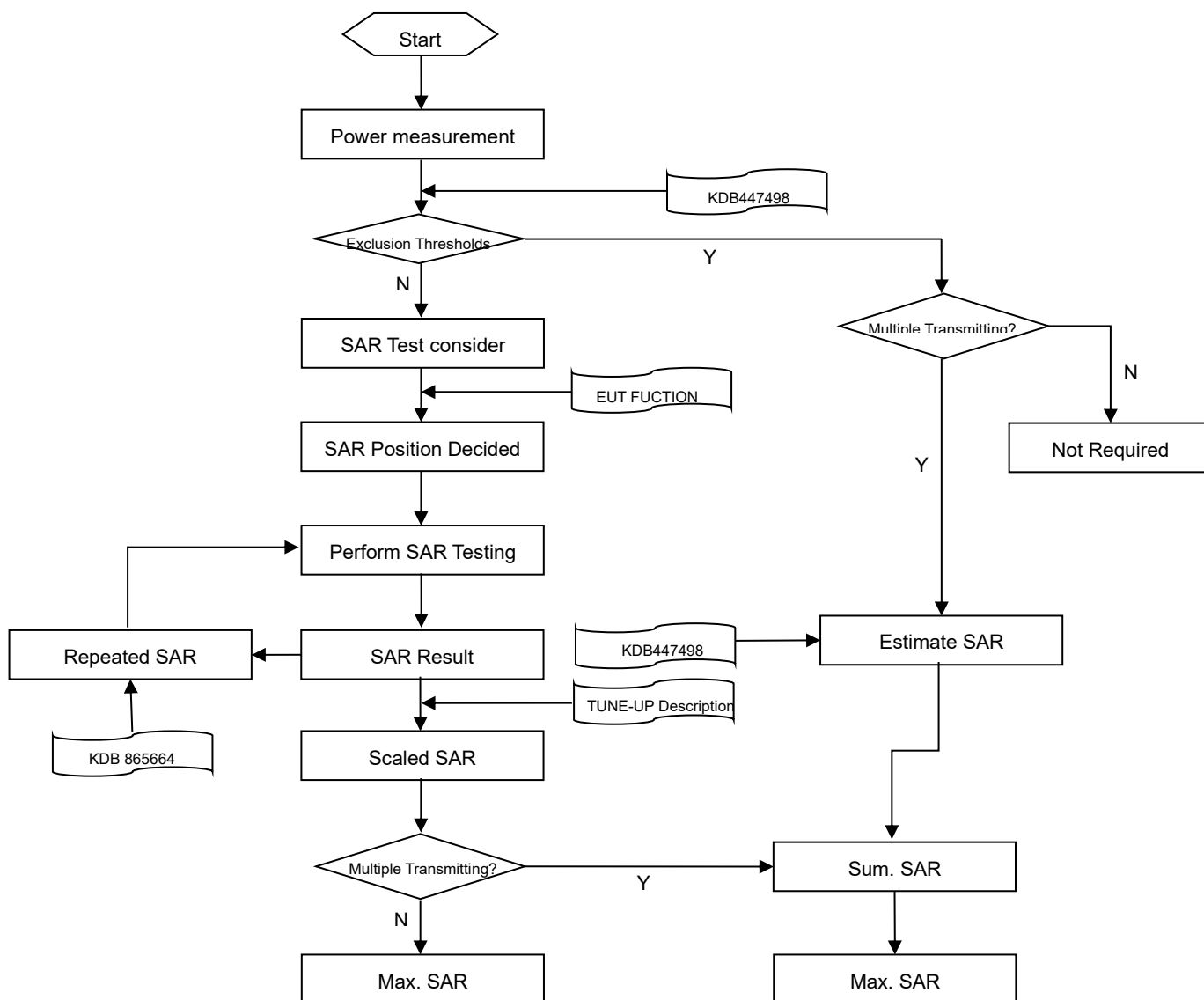


Fig Illustration for Lap-touching Position

7 MEASUREMENT PROCEDURE

7.1 Measurement Process Diagram



7.2 SAR Scan General Requirement

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

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

Note:

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

7.3 Measurement Procedure

The following steps are used for each test position

- a. Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface
- b. Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible power drift.
- c. Measurement of the SAR distribution with a grid of 8 to 16mm * 8 to 16 mm and a constant distance to the inner surface of the phantom. Since the sensors cannot directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With these values the area of the maximum SAR is calculated by an interpolation scheme.
- d. Around this point, a cube of 30 * 30 * 30 mm or 32 * 32 * 32 mm is assessed by measuring 5 or 8 * 5 or 8*4 or 5 mm. With these data, the peak spatial-average SAR value can be calculated.

7.4 Area & Zoom Scan Procedure

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

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

8 CONDUCTED RF OUPUT POWER

8.1 WIFI

8.1.1 2.4G WIFI (SISO-Main Antenna) (Laptop)

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Limit (dBm)	SAR Test Require.
2.4 (2.4~2.4835)	802.11b	1	2412	15.99	16.50	Yes
		6	2437	16.33	16.50	Yes
		11	2462	16.22	16.50	Yes
		12	2467	14.93	16.50	No
		13	2472	11.42	12.00	No
	802.11g	1	2412	15.35	16.00	No
		6	2437	15.63	16.00	No
		11	2462	15.46	16.00	No
		12	2467	12.13	13.00	No
		13	2472	11.17	12.00	No
	VHT20	1	2412	15.03	16.00	No
		6	2437	15.30	16.00	No
		11	2462	15.19	16.00	No
		12	2467	12.08	13.00	No
		13	2472	11.30	12.00	No
	VHT40	3	2422	14.01	14.50	No
		6	2437	15.55	16.00	No
		9	2452	13.91	14.50	No
		10	2457	11.41	12.00	No
		11	2462	10.08	11.00	No
	802.11ax(HE20) (SU)	1	2412	15.41	16.00	No
		6	2437	15.23	16.00	No
		11	2462	15.06	16.00	No
		12	2467	12.48	13.00	No
		13	2472	11.45	12.00	No
	802.11ax(HE40) (SU)	3	2422	14.39	16.00	No
		6	2437	15.60	16.00	No
		9	2452	14.34	16.00	No
		10	2457	11.31	12.00	No
		11	2462	10.55	11.00	No
	802.11ax(HE20) (RU26)	1	2412	15.42	16.00	No
		6	2437	15.67	16.00	No
		11	2462	15.55	16.00	No

		12	2467	13.47	14.00	No
		13	2472	8.14	9.00	No
	802.11ax(HE20) (RU52)	1	2412	15.45	16.00	No
		6	2437	15.58	16.00	No
		11	2462	15.59	16.00	No
		12	2467	12.47	13.00	No
		13	2472	8.63	9.00	No
	802.11ax(HE20) (RU106)	1	2412	15.44	16.00	No
		6	2437	15.45	16.00	No
		11	2462	15.79	16.00	No
		12	2467	15.49	16.00	No
		13	2472	11.25	12.00	No

Note: According KDB 248227 D01 SAR is not required for the following 2.4 GHz OFDM conditions. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

Adjusted SAR = Report SAR * (max power (OFDM)/ max power (DSSS)) = 1.136 * (39.81mW/44.67mW) = 1.012 W/Kg, so the 2.4G OFDM SAR test is not required.

8.1.2 2.4G WIFI (SISO-Aux. Antenna) (Laptop)

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	16.23	16.50	Yes
		6	2437	16.11	16.50	Yes
		11	2462	16.08	16.50	Yes
		12	2467	15.06	16.50	No
		13	2472	11.37	12.00	No
	802.11g	1	2412	15.23	16.00	No
		6	2437	15.71	16.00	No
		11	2462	15.19	16.00	No
		12	2467	12.01	13.00	No
		13	2472	11.58	12.00	No
	VHT20	1	2412	15.27	16.00	No
		6	2437	15.57	16.00	No
		11	2462	15.34	16.00	No
		12	2467	12.65	13.00	No
		13	2472	11.42	12.00	No
	VHT40	3	2422	14.37	15.00	No
		6	2437	15.19	16.00	No
		9	2452	14.48	15.00	No
		10	2457	11.50	12.00	No
		11	2462	10.33	11.00	No
	802.11ax(HE20) (SU)	1	2412	15.32	16.00	No
		6	2437	15.56	16.00	No
		11	2462	15.42	16.00	No
		12	2467	12.32	13.00	No
		13	2472	11.14	12.00	No
	802.11ax(HE40) (SU)	3	2422	14.38	16.00	No
		6	2437	15.49	16.00	No
		9	2452	14.60	16.00	No
		10	2457	11.55	12.00	No
		11	2462	10.51	11.00	No
	802.11ax(HE20) (RU26)	1	2412	15.36	16.00	No
		6	2437	15.67	16.00	No
		11	2462	15.80	16.00	No
		12	2467	13.81	14.00	No
		13	2472	8.00	9.00	No
	802.11ax(HE20)	1	2412	15.59	16.00	No

	(RU52)	6	2437	15.42	16.00	No
		11	2462	15.81	16.00	No
		12	2467	12.41	13.00	No
		13	2472	8.55	9.00	No
	802.11ax(HE20) (RU106)	1	2412	15.63	16.00	No
		6	2437	15.67	16.00	No
		11	2462	15.42	16.00	No
		12	2467	15.79	16.00	No
		13	2472	11.69	12.00	No

Note: According KDB 248227 D01 SAR is not required for the following 2.4 GHz OFDM conditions. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

Adjusted SAR = Report SAR * (max power (OFDM)/ max power (DSSS)) = 0.849 * (39.81mW/44.67mW) = 0.757 W/Kg, so the 2.4G OFDM SAR test is not required.

8.1.3 5G WIFI (SISO-Main Antenna) (Laptop)

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Limit (dBm)	SAR Test Require.
5.2 (5.15~5.25)	802.11a	36	5180	15.24	15.50	No
		40	5200	15.03	15.50	No
		48	5240	14.99	15.50	No
	802.11n(HT20)	36	5180	15.09	15.50	No
		40	5200	15.18	15.50	No
		48	5240	15.18	15.50	No
	802.11n(HT40)	38	5190	15.26	15.50	No
		46	5230	14.72	15.50	No
	802.11ac(VHT20)	36	5180	15.35	15.50	No
		40	5200	15.36	15.50	No
		48	5240	14.91	15.50	No
	802.11ac(VHT40)	38	5190	15.13	15.50	No
		46	5230	14.93	15.50	No
	802.11ac(VHT80)	42	5210	14.36	15.50	No
	802.11ax(HE20) (SU)	36	5180	15.26	15.50	No
		40	5200	14.82	15.50	No
		48	5240	14.96	15.50	No
	802.11ax(HE40) (SU)	38	5190	15.20	15.50	No
		46	5230	15.18	15.50	No
	802.11ax(HE80) (SU)	42	5210	14.66	15.50	No
	802.11ax(HE20) (RU26)	36	5180	9.04	10.00	No
		40	5200	10.00	11.00	No
		48	5240	9.71	10.00	No
	802.11ax(HE20) (RU52)	36	5180	10.83	11.00	No
		40	5200	11.68	12.00	No
		48	5240	11.03	12.00	No
	802.11ax(HE20) (RU106)	36	5180	13.56	14.00	No
		40	5200	13.48	14.00	No
		48	5240	13.32	14.00	No
5.3 (5.25~5.35)	802.11a	52	5260	15.10	15.50	No
		60	5300	15.04	15.50	No
		64	5320	14.97	15.50	No
	802.11n(HT20)	52	5260	14.99	15.50	No
		60	5300	14.61	15.50	No
		64	5320	14.98	15.50	No
	802.11n(HT40)	54	5270	14.75	15.50	No
		62	5310	14.93	15.50	No
	802.11ac(VHT20)	52	5260	14.99	15.50	No
		60	5300	14.97	15.50	No

		64	5320	15.14	15.50	No
	802.11ac(VHT40)	54	5270	15.00	15.50	No
		62	5310	14.73	15.50	No
	802.11ac(VHT80)	58	5290	15.23	15.50	Yes
	802.11ax(HE20) (SU)	52	5260	14.77	15.50	No
		60	5300	15.10	15.50	No
		64	5320	15.07	15.50	No
	802.11ax(HE40) (SU)	54	5270	15.19	15.50	No
		62	5310	14.95	15.50	No
	802.11ax(HE80) (SU)	58	5290	14.77	15.50	No
	802.11ax(HE20) (RU26)	52	5260	9.14	10.00	No
		60	5300	10.23	11.00	No
		64	5320	8.94	9.00	No
	802.11ax(HE20) (RU52)	52	5260	10.85	11.00	No
		60	5300	12.04	13.00	No
		64	5320	10.78	11.00	No
	802.11ax(HE20) (RU106)	52	5260	13.34	14.00	No
		60	5300	13.62	14.00	No
		64	5320	13.71	14.00	No
5.6 (5.47~5.725)	802.11a	100	5500	14.49	15.00	No
		116	5580	14.30	15.00	No
		140	5700	14.70	15.00	No
		144	5720	14.36	15.00	No
	802.11n(HT20)	100	5500	14.66	15.00	No
		116	5580	14.53	15.00	No
		140	5700	14.63	15.00	No
		144	5720	14.58	15.00	No
	802.11n(HT40)	102	5510	13.37	15.00	No
		110	5550	14.24	15.00	No
		134	5670	14.57	15.00	No
		142	5710	14.59	15.00	No
	802.11ac(VHT20)	100	5500	14.44	15.00	No
		116	5580	14.09	15.00	No
		140	5700	14.54	15.00	No
		144	5720	14.39	15.00	No
	802.11ac(VHT40)	102	5510	13.44	15.00	No
		110	5550	14.61	15.00	No
		134	5670	14.59	15.00	No
		142	5710	14.50	15.00	No
	802.11ac(VHT80)	106	5530	14.50	15.00	Yes
		122	5610	14.55	15.00	Yes
		138	5690	14.61	15.00	Yes

	802.11ax(HE20) (SU)	100	5500	14.72	15.00	No
		116	5580	14.04	15.00	No
		140	5700	14.65	15.00	No
		144	5720	14.31	15.00	No
	802.11ax(HE40) (SU)	102	5510	13.97	15.00	No
		110	5550	14.53	15.00	No
		134	5670	14.46	15.00	No
		142	5710	14.16	15.00	No
	802.11ax(HE80) (SU)	106	5530	14.16	15.00	No
		122	5610	14.39	15.00	No
		138	5690	14.40	15.00	No
	802.11ax(HE20) (RU26)	100	5500	9.32	10.00	No
		116	5580	10.57	11.00	No
		140	5700	9.16	10.00	No
		144	5720	9.23	10.00	No
		144	5720	8.88	10.00	No
	802.11ax(HE20) (RU52)	100	5500	10.85	11.00	No
		116	5580	11.45	12.00	No
		140	5700	10.40	11.00	No
		144	5720	9.95	10.00	No
		144	5720	12.60	13.00	No
	802.11ax(HE20) (RU106)	100	5500	13.05	14.00	No
		116	5580	12.94	13.00	No
		140	5700	13.06	14.00	No
		144	5720	10.33	11.00	No
		144	5720	13.08	14.00	No
5.8 (5.725~5.85)	802.11a	149	5745	15.33	16.00	No
		157	5785	15.51	16.00	No
		165	5825	15.27	16.00	No
	802.11n(HT20)	149	5745	15.48	16.00	No
		157	5785	15.39	16.00	No
		165	5825	15.39	16.00	No
	802.11n(HT40)	151	5755	15.59	16.00	No
		159	5795	15.64	16.00	No
	802.11ac(VHT20)	149	5745	15.33	16.00	No
		157	5785	15.52	16.00	No
		165	5825	15.48	16.00	No
	802.11ac(VHT40)	151	5755	15.49	16.00	No
		159	5795	15.33	16.00	No
	802.11ac(VHT80)	155	5775	15.36	16.00	Yes
	802.11ax(HE20) (SU)	149	5745	15.60	16.00	No
		157	5785	15.30	16.00	No
		165	5825	15.27	16.00	No

	802.11ax(HE40) (SU)	151	5755	15.47	16.00	No
		159	5795	15.29	16.00	No
	802.11ax(HE80) (SU)	155	5775	15.68	16.00	No
	802.11ax(HE20) (RU26)	149	5745	15.29	16.00	No
		157	5785	15.69	16.00	No
		165	5825	15.40	16.00	No
	802.11ax(HE20) (RU52)	149	5745	15.53	16.00	No
		157	5785	15.58	16.00	No
		165	5825	15.52	16.00	No
	802.11ax(HE20) (RU106)	149	5745	15.64	16.00	No
		157	5785	15.31	16.00	No
		165	5825	15.64	16.00	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 ≤ 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.

8.1.4 5G WIFI (SISO-Aux. Antenna) (Laptop)

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Limit (dBm)	SAR Test Require.
5.2 (5.15~5.25)	802.11a	36	5180	15.59	16.00	No
		40	5200	15.39	16.00	No
		48	5240	15.58	16.00	No
	802.11n(HT20)	36	5180	15.70	16.00	No
		40	5200	15.66	16.00	No
		48	5240	15.25	16.00	No
	802.11n(HT40)	38	5190	15.53	16.00	No
		46	5230	15.11	16.00	No
	802.11ac(VHT20)	36	5180	15.38	16.00	No
		40	5200	15.63	16.00	No
		48	5240	15.60	16.00	No
	802.11ac(VHT40)	38	5190	15.50	16.00	No
		46	5230	15.23	16.00	No
	802.11ac(VHT80)	42	5210	15.14	16.00	No
	802.11ax(HE20) (SU)	36	5180	15.34	16.00	No
		40	5200	15.38	16.00	No
		48	5240	15.21	16.00	No
	802.11ax(HE40) (SU)	38	5190	15.70	16.00	No
		46	5230	15.19	16.00	No
	802.11ax(HE80) (SU)	42	5210	14.86	16.00	No
	802.11ax(HE20) (RU26)	36	5180	9.33	10.00	No
		40	5200	10.28	11.00	No
		48	5240	9.22	10.00	No
	802.11ax(HE20) (RU52)	36	5180	11.41	12.00	No
		40	5200	12.05	13.00	No
		48	5240	11.42	12.00	No
	802.11ax(HE20) (RU106)	36	5180	13.50	14.00	No
		40	5200	12.99	14.00	No
		48	5240	13.33	15.00	No
5.3 (5.25~5.35)	802.11a	52	5260	15.52	16.00	No
		60	5300	15.56	16.00	No
		64	5320	15.61	16.00	No
	802.11n(HT20)	52	5260	15.42	16.00	No
		60	5300	15.48	16.00	No
		64	5320	15.28	16.00	No
	802.11n(HT40)	54	5270	15.71	16.00	No
		62	5310	15.37	16.00	No
	802.11ac(VHT20)	52	5260	15.26	16.00	No
		60	5300	15.53	16.00	No

		64	5320	15.33	16.00	No
	802.11ac(VHT40)	54	5270	15.49	16.00	No
		62	5310	15.50	16.00	No
	802.11ac(VHT80)	58	5290	15.54	16.00	Yes
	802.11ax(HE20) (SU)	52	5260	15.46	16.00	No
		60	5300	15.16	16.00	No
		64	5320	15.23	16.00	No
	802.11ax(HE40) (SU)	54	5270	15.72	16.00	No
		62	5310	15.39	16.00	No
	802.11ax(HE80) (SU)	58	5290	15.49	16.00	No
	802.11ax(HE20) (RU26)	52	5260	9.33	10.00	No
		60	5300	9.71	10.00	No
		64	5320	9.49	10.00	No
	802.11ax(HE20) (RU52)	52	5260	12.30	13.00	No
		60	5300	12.52	13.00	No
		64	5320	11.12	12.00	No
	802.11ax(HE20) (RU106)	52	5260	13.29	14.00	No
		60	5300	13.58	14.00	No
		64	5320	13.18	14.00	No
5.6 (5.47~5.725)	802.11a	100	5500	15.58	16.00	No
		116	5580	15.50	16.00	No
		140	5700	15.37	16.00	No
		144	5720	15.15	16.00	No
	802.11n(HT20)	100	5500	15.56	16.00	No
		116	5580	15.71	16.00	No
		140	5700	15.62	16.00	No
		144	5720	15.75	16.00	No
	802.11n(HT40)	102	5510	14.64	16.00	No
		110	5550	15.59	16.00	No
		134	5670	15.55	16.00	No
		142	5710	15.38	16.00	No
	802.11ac(VHT20)	100	5500	15.53	16.00	No
		116	5580	15.51	16.00	No
		140	5700	15.45	16.00	No
		144	5720	15.42	16.00	No
	802.11ac(VHT40)	102	5510	14.94	16.00	No
		110	5550	15.67	16.00	No
		134	5670	15.51	16.00	No
		142	5710	15.52	16.00	No
	802.11ac(VHT80)	106	5530	14.77	16.00	Yes
		122	5610	15.19	16.00	Yes
		138	5690	15.39	16.00	Yes

	802.11ax(HE20) (SU)	100	5500	15.37	16.00	No
		116	5580	15.43	16.00	No
		140	5700	15.39	16.00	No
		144	5720	15.30	16.00	No
	802.11ax(HE40) (SU)	102	5510	15.30	16.00	No
		110	5550	15.81	16.00	No
		134	5670	15.51	16.00	No
		142	5710	15.77	16.00	No
	802.11ax(HE80) (SU)	106	5530	14.94	16.00	No
		122	5610	15.26	16.00	No
		138	5690	15.36	16.00	No
	802.11ax(HE20) (RU26)	100	5500	9.13	10.00	No
		116	5580	9.99	10.00	No
		140	5700	9.37	10.00	No
		144	5720	10.65	11.00	No
		144	5720	10.71	11.00	No
	802.11ax(HE20) (RU52)	100	5500	11.54	12.00	No
		116	5580	10.94	11.00	No
		140	5700	10.32	11.00	No
		144	5720	11.88	12.00	No
		144	5720	11.75	12.00	No
	802.11ax(HE20) (RU106)	100	5500	13.19	14.00	No
		116	5580	13.35	14.00	No
		140	5700	13.36	14.00	No
		144	5720	11.39	12.00	No
		144	5720	12.56	13.00	No
5.8 (5.725~5.85)	802.11a	149	5745	15.53	16.00	No
		157	5785	15.47	16.00	No
		165	5825	15.32	16.00	No
	802.11n(HT20)	149	5745	15.20	16.00	No
		157	5785	15.36	16.00	No
		165	5825	15.43	16.00	No
	802.11n(HT40)	151	5755	15.29	16.00	No
		159	5795	15.43	16.00	No
	802.11ac(VHT20)	149	5745	15.07	16.00	No
		157	5785	15.30	16.00	No
		165	5825	15.18	16.00	No
	802.11ac(VHT40)	151	5755	15.45	16.00	No
		159	5795	15.42	16.00	No
	802.11ac(VHT80)	155	5775	15.54	16.00	Yes
	802.11ax(HE20) (SU)	149	5745	15.75	16.00	No
		157	5785	15.59	16.00	No
		165	5825	15.64	16.00	No

	802.11ax(HE40) (SU)	151	5755	15.75	16.00	No
		159	5795	15.75	16.00	No
	802.11ax(HE80) (SU)	155	5775	15.51	16.00	No
	802.11ax(HE20) (RU26)	149	5745	15.63	16.00	No
		157	5785	15.65	16.00	No
		165	5825	15.59	16.00	No
	802.11ax(HE20) (RU52)	149	5745	15.63	16.00	No
		157	5785	15.48	16.00	No
		165	5825	15.35	16.00	No
	802.11ax(HE20) (RU106)	149	5745	15.54	16.00	No
		157	5785	15.65	16.00	No
		165	5825	15.65	16.00	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 ≤ 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 2.4G WIFI (SISO-Main Antenna) (Tablet)

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	11.42	12.00	Yes
		6	2437	11.65	12.00	Yes
		11	2462	11.37	12.00	Yes
		12	2467	11.38	12.00	No
		13	2472	11.42	12.00	No
	802.11g	1	2412	11.20	12.00	No
		6	2437	11.43	12.00	No
		11	2462	11.47	12.00	No
		12	2467	10.14	12.00	No
		13	2472	11.17	12.00	No
	VHT20	1	2412	10.86	12.00	No
		6	2437	10.98	12.00	No
		11	2462	11.32	12.00	No
		12	2467	10.06	12.00	No
		13	2472	11.30	12.00	No
	VHT40	3	2422	10.71	12.00	No
		6	2437	11.59	12.00	No
		9	2452	11.24	12.00	No
		10	2457	11.41	12.00	No
		11	2462	10.08	11.00	No
	802.11ax(HE20) (SU)	1	2412	11.34	12.00	No
		6	2437	11.01	12.00	No
		11	2462	10.99	12.00	No
		12	2467	10.41	12.00	No
		13	2472	11.45	12.00	No
	802.11ax(HE40) (SU)	3	2422	11.72	12.00	No
		6	2437	11.47	12.00	No
		9	2452	11.39	12.00	No
		10	2457	11.31	12.00	No
		11	2462	10.55	11.00	No
	802.11ax(HE20) (RU26)	1	2412	11.21	12.00	No
		6	2437	11.51	12.00	No
		11	2462	11.79	12.00	No
		12	2467	11.40	12.00	No
		13	2472	8.14	9.00	No
	802.11ax(HE20)	1	2412	11.44	12.00	No

	(RU52)	6	2437	11.32	12.00	No
		11	2462	11.79	12.00	No
		12	2467	10.48	12.00	No
		13	2472	8.63	9.00	No
	802.11ax(HE20) (RU106)	1	2412	11.55	12.00	No
		6	2437	11.37	12.00	No
		11	2462	11.57	12.00	No
		12	2467	11.56	12.00	No
		13	2472	11.25	12.00	No

Note: According KDB 248227 D01 SAR is not required for the following 2.4 GHz OFDM conditions. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

Adjusted SAR = Report SAR * (max power (OFDM)/ max power (DSSS)) = 0.847 * (15.85mW/15.85mW) = 0.847 W/Kg, so the 2.4G OFDM SAR test is not required.

8.1.6 2.4G WIFI (SISO-Aux. Antenna) (Tablet)

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	11.89	12.00	Yes
		6	2437	11.84	12.00	Yes
		11	2462	11.87	12.00	Yes
		12	2467	11.41	12.00	No
		13	2472	11.37	12.00	No
	802.11g	1	2412	11.33	12.00	No
		6	2437	11.80	12.00	No
		11	2462	11.12	12.00	No
		12	2467	11.01	12.00	No
		13	2472	11.58	12.00	No
	VHT20	1	2412	11.11	12.00	No
		6	2437	11.46	12.00	No
		11	2462	11.19	12.00	No
		12	2467	10.68	12.00	No
		13	2472	11.42	12.00	No
	VHT40	3	2422	11.52	12.00	No
		6	2437	11.14	12.00	No
		9	2452	11.63	12.00	No
		10	2457	11.50	12.00	No
		11	2462	10.33	11.00	No
	802.11ax(HE20) (SU)	1	2412	11.28	12.00	No
		6	2437	11.40	12.00	No
		11	2462	11.50	12.00	No
		12	2467	10.16	12.00	No
		13	2472	11.14	12.00	No
	802.11ax(HE40) (SU)	3	2422	11.87	12.00	No
		6	2437	11.31	12.00	No
		9	2452	11.48	12.00	No
		10	2457	11.55	12.00	No
		11	2462	10.51	11.00	No
	802.11ax(HE20) (RU26)	1	2412	11.66	12.00	No
		6	2437	11.75	12.00	No
		11	2462	11.78	12.00	No
		12	2467	11.85	12.00	No
		13	2472	8.14	9.00	No
	802.11ax(HE20)	1	2412	11.33	12.00	No

	(RU52)	6	2437	11.71	12.00	No
		11	2462	11.55	12.00	No
		12	2467	11.70	12.00	No
		13	2472	8.00	9.00	No
	802.11ax(HE20) (RU106)	1	2412	11.68	12.00	No
		6	2437	11.51	12.00	No
		11	2462	11.94	12.00	No
		12	2467	10.42	12.00	No
		13	2472	8.55	12.00	No

Note: According KDB 248227 D01 SAR is not required for the following 2.4 GHz OFDM conditions. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

Adjusted SAR = Report SAR * (max power (OFDM)/ max power (DSSS)) = 1.051 * (15.85mW/15.85mW) = 1.051 W/Kg, so the 2.4G OFDM SAR test is not required.

8.1.7 5G WIFI (SISO-Main Antenna) (Tablet)

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Limit (dBm)	SAR Test Require.
5.2 (5.15~5.25)	802.11a	36	5180	10.28	10.50	No
		40	5200	10.15	10.50	No
		48	5240	9.90	10.50	No
	802.11n(HT20)	36	5180	10.27	10.50	No
		40	5200	9.88	10.50	No
		48	5240	9.88	10.50	No
	802.11n(HT40)	38	5190	10.37	10.50	No
		46	5230	9.88	10.50	No
	802.11ac(VHT20)	36	5180	10.29	10.50	No
		40	5200	10.31	10.50	No
		48	5240	9.87	10.50	No
	802.11ac(VHT40)	38	5190	10.18	10.50	No
		46	5230	10.02	10.50	No
	802.11ac(VHT80)	42	5210	9.68	10.50	No
	802.11ax(HE20) (SU)	36	5180	10.22	10.50	No
		40	5200	9.86	10.50	No
		48	5240	9.90	10.50	No
	802.11ax(HE40) (SU)	38	5190	10.20	10.50	No
		46	5230	10.20	10.50	No
	802.11ax(HE80) (SU)	42	5210	9.98	10.50	No
	802.11ax(HE20) (RU26)	36	5180	9.04	10.00	No
		40	5200	10.00	10.50	No
		48	5240	9.71	10.00	No
	802.11ax(HE20) (RU52)	36	5180	9.36	10.50	No
		40	5200	9.42	10.50	No
		48	5240	9.39	10.50	No
	802.11ax(HE20) (RU106)	36	5180	10.04	10.50	No
		40	5200	9.65	10.50	No
		48	5240	9.89	10.50	No
5.3 (5.25~5.35)	802.11a	52	5260	10.06	10.50	No
		60	5300	9.87	10.50	No
		64	5320	9.99	10.50	No
	802.11n(HT20)	52	5260	9.77	10.50	No
		60	5300	9.52	10.50	No
		64	5320	9.75	10.50	No
	802.11n(HT40)	54	5270	9.84	10.50	No
		62	5310	9.73	10.50	No
	802.11ac(VHT20)	52	5260	9.78	10.50	No
		60	5300	9.88	10.50	No

		64	5320	10.37	10.50	No
	802.11ac(VHT40)	54	5270	10.01	10.50	No
		62	5310	9.48	10.50	No
	802.11ac(VHT80)	58	5290	10.22	10.50	Yes
	802.11ax(HE20) (SU)	52	5260	9.83	10.50	No
		60	5300	9.85	10.50	No
		64	5320	10.13	10.50	No
	802.11ax(HE40) (SU)	54	5270	10.17	10.50	No
		62	5310	9.97	10.50	No
	802.11ax(HE80) (SU)	58	5290	9.87	10.50	No
	802.11ax(HE20) (RU26)	52	5260	9.14	10.00	No
		60	5300	10.23	10.50	No
		64	5320	8.94	9.00	No
	802.11ax(HE20) (RU52)	52	5260	9.23	10.50	No
		60	5300	9.97	10.50	No
		64	5320	9.18	10.50	No
	802.11ax(HE20) (RU106)	52	5260	9.82	10.50	No
		60	5300	10.11	10.50	No
		64	5320	10.12	10.50	No
5.6 (5.47~5.725)	802.11a	100	5500	9.93	10.50	No
		116	5580	9.84	10.50	No
		140	5700	10.40	10.50	No
		144	5720	9.64	10.50	No
	802.11n(HT20)	100	5500	10.07	10.50	No
		116	5580	10.04	10.50	No
		140	5700	10.13	10.50	No
		144	5720	9.88	10.50	No
	802.11n(HT40)	102	5510	9.87	10.50	No
		110	5550	9.52	10.50	No
		134	5670	10.03	10.50	No
		142	5710	10.00	10.50	No
	802.11ac(VHT20)	100	5500	9.69	10.50	No
		116	5580	9.80	10.50	No
		140	5700	10.04	10.50	No
		144	5720	9.83	10.50	No
	802.11ac(VHT40)	102	5510	9.83	10.50	No
		110	5550	9.96	10.50	No
		134	5670	10.07	10.50	No
		142	5710	10.10	10.50	No
	802.11ac(VHT80)	106	5530	10.36	10.50	Yes
		122	5610	9.95	10.50	Yes
		138	5690	10.16	10.50	Yes

	802.11ax(HE20) (SU)	100	5500	10.28	10.50	No
		116	5580	9.75	10.50	No
		140	5700	10.25	10.50	No
		144	5720	9.84	10.50	No
	802.11ax(HE40) (SU)	102	5510	9.51	10.50	No
		110	5550	9.81	10.50	No
		134	5670	9.82	10.50	No
		142	5710	9.68	10.50	No
	802.11ax(HE80) (SU)	106	5530	10.25	10.50	No
		122	5610	9.79	10.50	No
		138	5690	9.71	10.50	No
	802.11ax(HE20) (RU26)	100	5500	9.32	10.00	No
		116	5580	9.57	10.50	No
		140	5700	9.16	10.00	No
		144	5720	9.23	10.00	No
		144	5720	8.88	10.00	No
	802.11ax(HE20) (RU52)	100	5500	9.26	10.50	No
		116	5580	9.90	10.50	No
		140	5700	10.40	10.50	No
		144	5720	9.95	10.00	No
		144	5720	10.04	10.50	No
	802.11ax(HE20) (RU106)	100	5500	10.06	10.50	No
		116	5580	9.77	10.50	No
		140	5700	9.94	10.50	No
		144	5720	9.23	10.50	No
		144	5720	10.01	10.50	No
5.8 (5.725~5.85)	802.11a	149	5745	9.86	10.50	No
		157	5785	9.77	10.50	No
		165	5825	9.63	10.50	No
	802.11n(HT20)	149	5745	9.97	10.50	No
		157	5785	10.06	10.50	No
		165	5825	9.86	10.50	No
	802.11n(HT40)	151	5755	10.04	10.50	No
		159	5795	9.99	10.50	No
	802.11ac(VHT20)	149	5745	9.79	10.50	No
		157	5785	9.99	10.50	No
		165	5825	9.95	10.50	No
	802.11ac(VHT40)	151	5755	9.68	10.50	No
		159	5795	9.78	10.50	No
	802.11ac(VHT80)	155	5775	10.35	10.50	Yes
	802.11ax(HE20) (SU)	149	5745	9.92	10.50	No
		157	5785	9.77	10.50	No
		165	5825	9.59	10.50	No

	802.11ax(HE40) (SU)	151	5755	9.82	10.50	No
		159	5795	9.65	10.50	No
	802.11ax(HE80) (SU)	155	5775	10.06	10.50	No
	802.11ax(HE20) (RU26)	149	5745	9.83	10.50	No
		157	5785	10.19	10.50	No
		165	5825	9.84	10.50	No
	802.11ax(HE20) (RU52)	149	5745	9.84	10.50	No
		157	5785	10.10	10.50	No
		165	5825	10.11	10.50	No
	802.11ax(HE20) (RU106)	149	5745	10.10	10.50	No
		157	5785	9.82	10.50	No
		165	5825	9.99	10.50	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 ≤ 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.

8.1.8 5G WIFI (SISO-Aux. Antenna) (Tablet)

Band (GHz)	Mode	Channel	Freq. (MHz)	Average Power (dBm)	Tune-up Limit (dBm)	SAR Test Require.
5.2 (5.15~5.25)	802.11a	36	5180	10.16	10.50	No
		40	5200	9.91	10.50	No
		48	5240	10.14	10.50	No
	802.11n(HT20)	36	5180	10.16	10.50	No
		40	5200	9.71	10.50	No
		48	5240	10.12	10.50	No
	802.11n(HT40)	38	5190	10.14	10.50	No
		46	5230	10.22	10.50	No
	802.11ac(VHT20)	36	5180	9.71	10.50	No
		40	5200	10.14	10.50	No
		48	5240	9.52	10.50	No
	802.11ac(VHT40)	38	5190	9.84	10.50	No
		46	5230	9.87	10.50	No
	802.11ac(VHT80)	42	5210	10.18	10.50	No
	802.11ax(HE20) (SU)	36	5180	9.89	10.50	No
		40	5200	9.72	10.50	No
		48	5240	10.06	10.50	No
	802.11ax(HE40) (SU)	38	5190	9.56	10.50	No
		46	5230	10.00	10.50	No
	802.11ax(HE80) (SU)	42	5210	9.73	10.50	No
	802.11ax(HE20) (RU26)	36	5180	9.03	10.00	No
		40	5200	9.82	10.50	No
		48	5240	9.69	10.00	No
	802.11ax(HE20) (RU52)	36	5180	9.79	10.50	No
		40	5200	10.00	10.50	No
		48	5240	9.91	10.50	No
	802.11ax(HE20) (RU106)	36	5180	10.17	10.50	No
		40	5200	9.82	10.50	No
		48	5240	9.94	10.50	No
5.3 (5.25~5.35)	802.11a	52	5260	10.21	10.50	No
		60	5300	9.77	10.50	No
		64	5320	10.01	10.50	No
	802.11n(HT20)	52	5260	9.98	10.50	No
		60	5300	9.86	10.50	No
		64	5320	9.80	10.50	No
	802.11n(HT40)	54	5270	10.17	10.50	No
		62	5310	9.56	10.50	No
	802.11ac(VHT20)	52	5260	9.53	10.50	No
		60	5300	10.14	10.50	No

		64	5320	9.80	10.50	No
	802.11ac(VHT40)	54	5270	9.81	10.50	No
		62	5310	9.99	10.50	No
	802.11ac(VHT80)	58	5290	9.86	10.50	Yes
	802.11ax(HE20) (SU)	52	5260	9.90	10.50	No
		60	5300	9.50	10.50	No
		64	5320	9.66	10.50	No
	802.11ax(HE40) (SU)	54	5270	10.23	10.50	No
		62	5310	9.90	10.50	No
	802.11ax(HE80) (SU)	58	5290	9.97	10.50	No
	802.11ax(HE20) (RU26)	52	5260	9.33	10.00	No
		60	5300	9.71	10.00	No
		64	5320	9.49	10.00	No
	802.11ax(HE20) (RU52)	52	5260	10.24	10.50	No
		60	5300	10.26	10.50	No
		64	5320	9.50	10.50	No
	802.11ax(HE20) (RU106)	52	5260	9.70	10.50	No
		60	5300	10.21	10.50	No
		64	5320	9.75	10.50	No
5.6 (5.47~5.725)	802.11a	100	5500	9.98	10.50	No
		116	5580	9.76	10.50	No
		140	5700	9.74	10.50	No
		144	5720	9.61	10.50	No
	802.11n(HT20)	100	5500	10.05	10.50	No
		116	5580	9.87	10.50	No
		140	5700	10.11	10.50	No
		144	5720	10.41	10.50	No
	802.11n(HT40)	102	5510	10.17	10.50	No
		110	5550	9.82	10.50	No
		134	5670	9.95	10.50	No
		142	5710	9.79	10.50	No
	802.11ac(VHT20)	100	5500	9.82	10.50	No
		116	5580	10.03	10.50	No
		140	5700	9.74	10.50	No
		144	5720	9.89	10.50	No
	802.11ac(VHT40)	102	5510	10.12	10.50	No
		110	5550	10.20	10.50	No
		134	5670	10.01	10.50	No
		142	5710	9.94	10.50	No
	802.11ac(VHT80)	106	5530	10.41	10.50	Yes
		122	5610	10.12	10.50	Yes
		138	5690	10.01	10.50	Yes

	802.11ax(HE20) (SU)	100	5500	9.80	10.50	No
		116	5580	9.91	10.50	No
		140	5700	9.78	10.50	No
		144	5720	9.72	10.50	No
	802.11ax(HE40) (SU)	102	5510	9.58	10.50	No
		110	5550	10.15	10.50	No
		134	5670	9.92	10.50	No
		142	5710	10.04	10.50	No
	802.11ax(HE80) (SU)	106	5530	9.75	10.50	No
		122	5610	9.44	10.50	No
		138	5690	9.86	10.50	No
	802.11ax(HE20) (RU26)	100	5500	9.13	10.00	No
		116	5580	8.99	10.00	No
		140	5700	9.37	10.00	No
		144	5720	9.65	10.50	No
		144	5720	9.71	10.50	No
	802.11ax(HE20) (RU52)	100	5500	9.97	10.50	No
		116	5580	9.32	10.50	No
		140	5700	10.32	10.50	No
		144	5720	10.40	10.50	No
		144	5720	10.13	10.50	No
	802.11ax(HE20) (RU106)	100	5500	10.15	10.50	No
		116	5580	10.03	10.50	No
		140	5700	10.47	10.50	No
		144	5720	9.74	10.50	No
		144	5720	9.91	10.50	No
5.8 (5.725~5.85)	802.11a	149	5745	10.09	10.50	No
		157	5785	9.99	10.50	No
		165	5825	9.68	10.50	No
	802.11n(HT20)	149	5745	9.59	10.50	No
		157	5785	9.75	10.50	No
		165	5825	9.88	10.50	No
	802.11n(HT40)	151	5755	9.73	10.50	No
		159	5795	9.90	10.50	No
	802.11ac(VHT20)	149	5745	9.63	10.50	No
		157	5785	10.01	10.50	No
		165	5825	9.58	10.50	No
	802.11ac(VHT40)	151	5755	9.79	10.50	No
		159	5795	9.92	10.50	No
	802.11ac(VHT80)	155	5775	10.38	10.50	Yes
	802.11ax(HE20) (SU)	149	5745	10.00	10.50	No
		157	5785	10.06	10.50	No
		165	5825	10.14	10.50	No

	802.11ax(HE40) (SU)	151	5755	9.94	10.50	No
		159	5795	10.14	10.50	No
	802.11ax(HE80) (SU)	155	5775	9.82	10.50	No
	802.11ax(HE20) (RU26)	149	5745	10.08	10.50	No
		157	5785	9.94	10.50	No
		165	5825	10.03	10.50	No
	802.11ax(HE20) (RU52)	149	5745	9.91	10.50	No
		157	5785	10.14	10.50	No
		165	5825	9.61	10.50	No
	802.11ax(HE20) (RU106)	149	5745	9.88	10.50	No
		157	5785	10.04	10.50	No
		165	5825	10.01	10.50	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 ≤ 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.

8.2 Bluetooth

8.2.1 Bluetooth (Aux. Antenna)

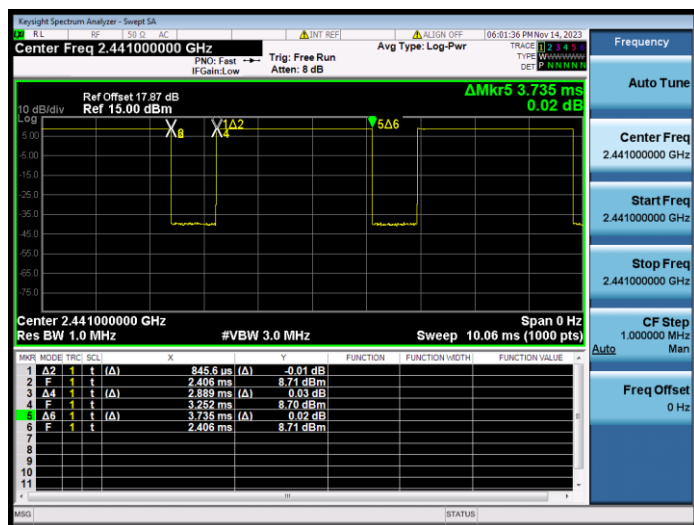
Mode	GFSK			$\pi/4$ -DQPSK		
Channel	0	39	78	0	39	78
Frequency (MHz)	2402	2441	2480	2402	2441	2480
Average Power (dBm)	7.37	7.44	7.41	7.32	7.13	7.19
Tune-Up Limit (dBm)	8.00	8.00	8.00	8.00	8.00	8.00
SAR Test Require	Yes	Yes	Yes	No	No	No
Mode	8-DPSK			/		
Channel	0	39	78	/	/	/
Frequency (MHz)	2402	2441	2480	/	/	/
Average Power (dBm)	7.20	7.36	7.36	/	/	/
Tune-Up Limit (dBm)	8.00	8.00	8.00	/	/	/
SAR Test Require	No	No	No	/	/	/
Mode	BLE-1Mbps			BLE-2Mbps		
Channel	0	19	39	1	19	38
Frequency (MHz)	2402	2440	2480	2404	2440	2478
Average Power (dBm)	7.34	7.41	6.89	7.07	7.51	6.96
Tune-Up Limit (dBm)	8.00	8.00	8.00	8.00	8.00	8.00
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 77.36% 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

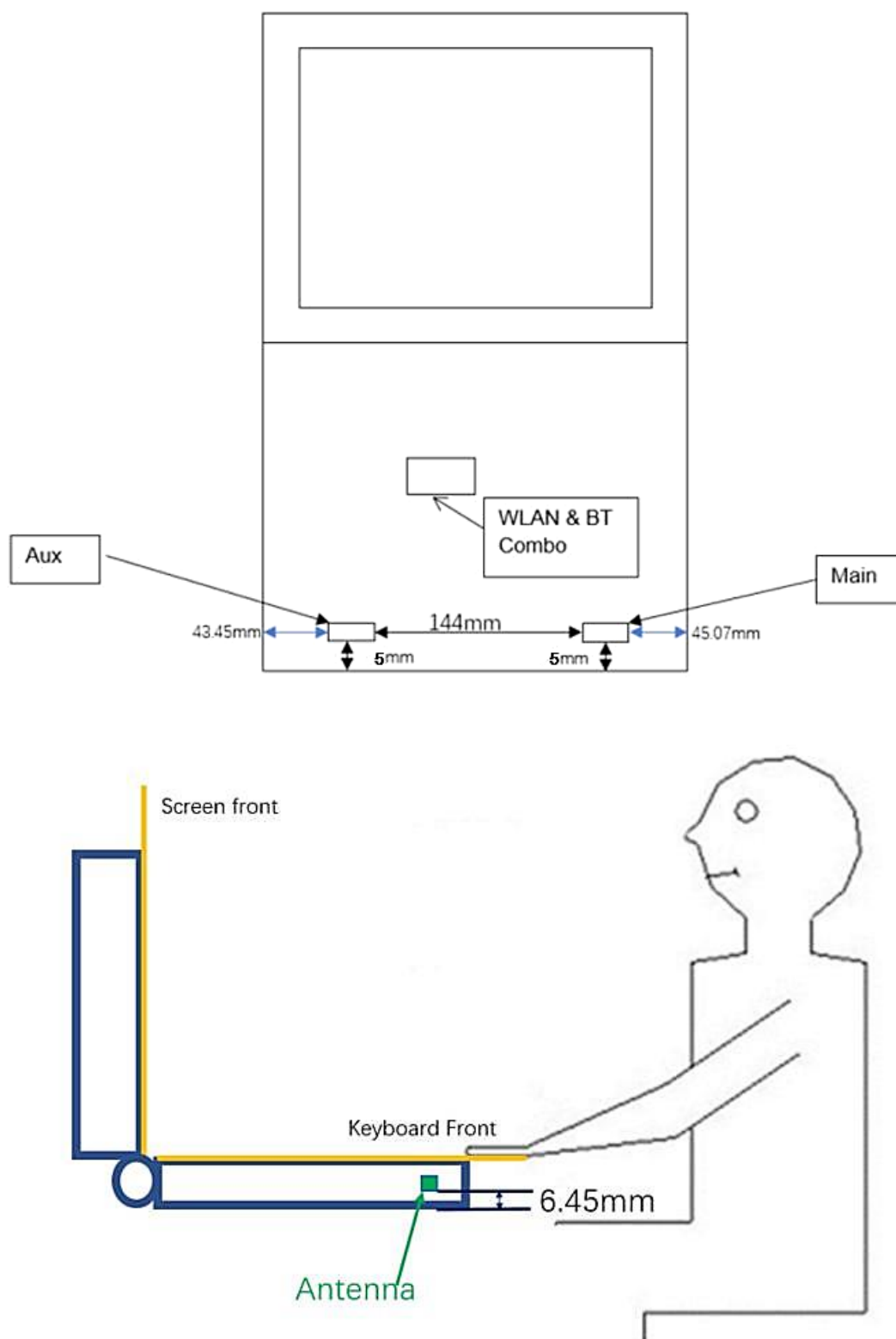
Bluetooth-GFSK



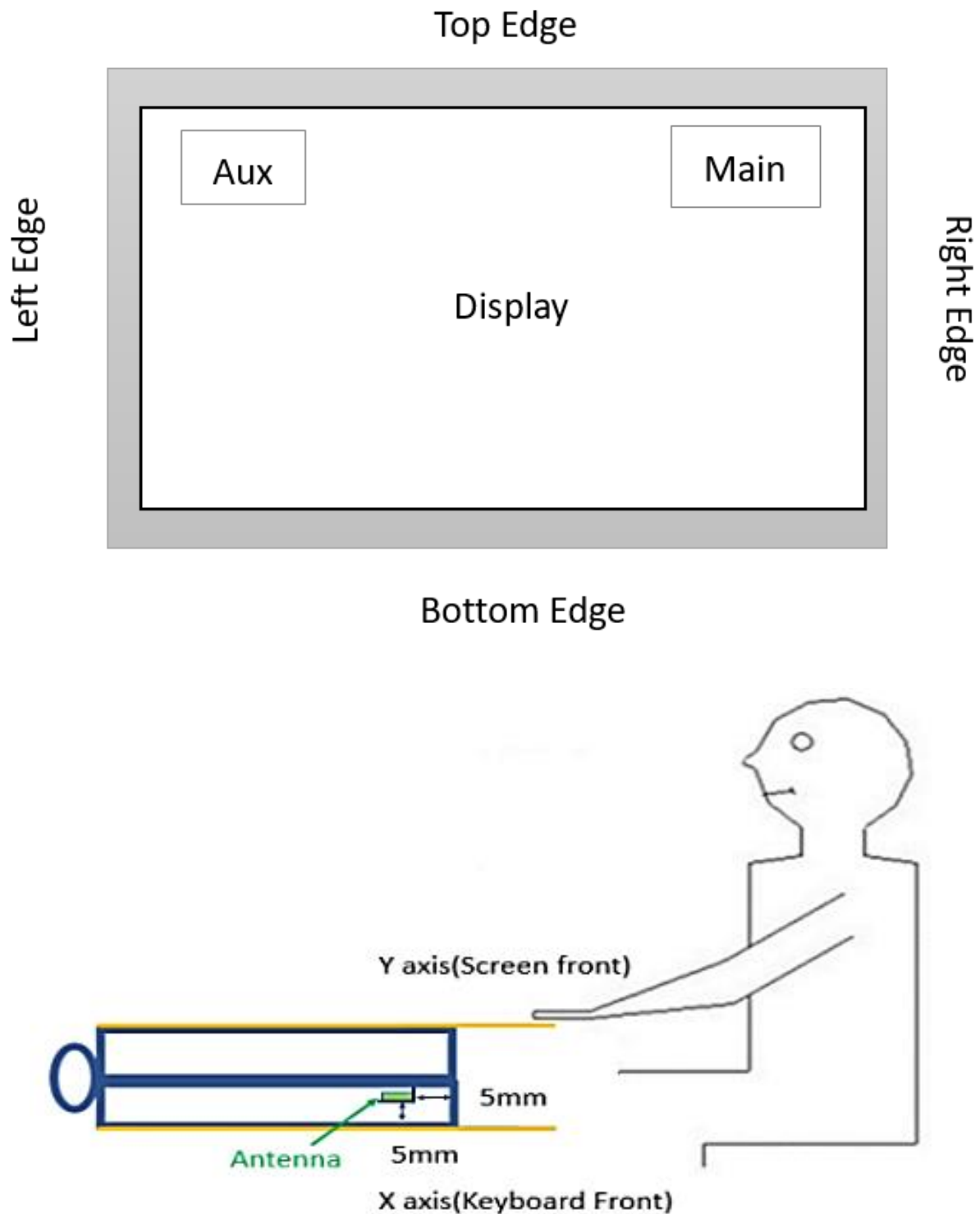
9 TEST EXCLUSION CONSIDERATION

9.1 EUT Antenna Location Sketch

9.1.1 NB Mode SAR dimensioned photo:



9.1.2 Tablet Mode SAR dimensioned photo:



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

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 ≤ 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 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
Back Side	Body
Left Edge	Body
Right Edge	Body
Top Edge	Body
Bottom Edge	Body

SISO-Main Antenna Body RF exposure scenarios

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)	6.45			
	Max. Peak Power (dBm)	16.50	15.50	15.00	16.00
	Max. Peak Power (mW)	44.67	35.48	31.62	39.81
	Exclusion Threshold (mW)	4.44	2.50	2.37	2.33
	SAR Test Required	Yes	Yes	Yes	Yes
Back Side	Distance to User (mm)	5.00			
	Max. Peak Power (dBm)	12.00	10.50	10.50	10.50
	Max. Peak Power (mW)	15.85	11.22	11.22	11.22
	Exclusion Threshold (mW)	2.73	1.47	1.39	1.37
	SAR Test Required	Yes	Yes	Yes	Yes
Left Edge	Distance to User (mm)	187.45			
	Max. Peak Power (dBm)	12.00	10.50	10.50	10.50
	Max. Peak Power (mW)	15.85	11.22	11.22	11.22
	Exclusion Threshold (mW)	2704.93	2675.76	2673.10	2672.35
	SAR Test Required	No	No	No	No
Right Edge	Distance to User (mm)	45.07			
	Max. Peak Power (dBm)	12.00	10.50	10.50	10.50
	Max. Peak Power (mW)	15.85	11.22	11.22	11.22
	Exclusion Threshold (mW)	179.50	139.89	136.73	135.85
	SAR Test Required	No	No	No	No
Top Edge	Distance to User (mm)	5.00			
	Max. Peak Power (dBm)	12.00	10.50	10.50	10.50
	Max. Peak Power (mW)	15.85	11.22	11.22	11.22
	Exclusion Threshold (mW)	2.73	1.47	1.39	1.37
	SAR Test Required	Yes	Yes	Yes	Yes
Bottom Edge	Distance to User (mm)	212.00			
	Max. Peak Power (dBm)	12.00	10.50	10.50	10.50
	Max. Peak Power (mW)	15.85	11.22	11.22	11.22
	Exclusion Threshold (mW)	3418.88	3452.37	3455.47	3456.34
	SAR Test Required	No	No	No	No

SISO-Aux. Antenna Body RF exposure scenarios

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)	6.45				
	Max. Peak Power (dBm)	8.00	16.50	16.00	16.00	16.00
	Max. Peak Power (mW)	6.31	44.67	39.81	39.81	39.81
	Exclusion Threshold (mW)	4.41	4.44	2.50	2.37	2.33
	SAR Test Required	Yes	Yes	Yes	Yes	Yes
Back Side	Distance to User (mm)	5.00				
	Max. Peak Power (dBm)	8.00	12.00	10.50	10.50	10.50
	Max. Peak Power (mW)	6.31	15.85	11.22	11.22	11.22
	Exclusion Threshold (mW)	2.72	2.73	1.47	1.39	1.37
	SAR Test Required	Yes	Yes	Yes	Yes	Yes
Left Edge	Distance to User (mm)	43.45				
	Max. Peak Power (dBm)	8.00	12.00	10.50	10.50	10.50
	Max. Peak Power (mW)	6.31	15.85	11.22	11.22	11.22
	Exclusion Threshold (mW)	167.02	167.42	129.68	126.68	125.84
	SAR Test Required	No	No	No	No	No
Right Edge	Distance to User (mm)	189.07				
	Max. Peak Power (dBm)	8.00	12.00	10.50	10.50	10.50
	Max. Peak Power (mW)	6.31	15.85	11.22	11.22	11.22
	Exclusion Threshold (mW)	2749.35	2749.60	2723.86	2721.51	2720.85
	SAR Test Required	No	No	No	No	No
Top Edge	Distance to User (mm)	5.00				
	Max. Peak Power (dBm)	8.00	12.00	10.50	10.50	10.50
	Max. Peak Power (mW)	6.31	15.85	11.22	11.22	11.22
	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)	212.00				
	Max. Peak Power (dBm)	8.00	12.00	10.50	10.50	10.50
	Max. Peak Power (mW)	6.31	15.85	11.22	11.22	11.22
	Exclusion Threshold (mW)	3419.20	3418.88	3452.37	3455.47	3456.34
	SAR Test Required	No	No	No	No	No

RF exposure Position	RF exposure scenarios
Front Edge of Keyboard	Limbs
Back Edge of Keyboard	Limbs
Left Edge of Keyboard	Limbs
Right Edge of Keyboard	Limbs
Palm rest Side of Keyboard	Limbs

SISO-Main Antenna Limbs RF exposure scenarios

Test Position Configurations	Mode	WLAN 2.4GHz	U-NII-2A	U-NII-2C	U-NII-3
Calculated Frequency(MHz)		2462	5320	5710	5825
Front Edge of Keyboard	Distance to User (mm)	5.00			
	Max. Peak Power (dBm)	16.50	15.50	15.00	16.00
	Max. Peak Power (mW)	44.67	35.48	31.62	39.81
	Exclusion Threshold (mW)	2.73	1.47	1.39	1.37
	SAR Test Required	Yes	Yes	Yes	Yes
Back Edge of Keyboard	Distance to User (mm)	212.00			
	Max. Peak Power (dBm)	16.50	15.50	15.00	16.00
	Max. Peak Power (mW)	44.67	35.48	31.62	39.81
	Exclusion Threshold (mW)	3418.88	3452.37	3455.47	3456.34
	SAR Test Required	No	No	No	No
Left Edge of Keyboard	Distance to User (mm)	187.45			
	Max. Peak Power (dBm)	16.50	15.50	15.00	16.00
	Max. Peak Power (mW)	44.67	35.48	31.62	39.81
	Exclusion Threshold (mW)	2704.93	2675.76	2673.10	2672.35
	SAR Test Required	No	No	No	No
Right Edge of Keyboard	Distance to User (mm)	45.07			
	Max. Peak Power (dBm)	16.50	15.50	15.00	16.00
	Max. Peak Power (mW)	44.67	35.48	31.62	39.81
	Exclusion Threshold (mW)	179.50	139.89	136.73	135.85
	SAR Test Required	No	No	No	No
Palm rest Side of Keyboard	Distance to User (mm)	5.00			
	Max. Peak Power (dBm)	16.50	15.50	15.00	16.00
	Max. Peak Power (mW)	44.67	35.48	31.62	39.81
	Exclusion Threshold (mW)	2.73	1.47	1.39	1.37
	SAR Test Required	Yes	Yes	Yes	Yes

SISO-Aux. Antenna Limbs RF exposure scenarios

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
Front Edge of Keyboard	Distance to User (mm)	5.00				
	Max. Peak Power (dBm)	8.00	16.50	16.00	16.00	16.00
	Max. Peak Power (mW)	6.31	44.67	39.81	39.81	39.81
	Exclusion Threshold (mW)	2.72	2.73	1.47	1.39	1.37
	SAR Test Required	Yes	Yes	Yes	Yes	Yes
Back Edge of Keyboard	Distance to User (mm)	212.00				
	Max. Peak Power (dBm)	8.00	16.50	16.00	16.00	16.00
	Max. Peak Power (mW)	6.31	44.67	39.81	39.81	39.81
	Exclusion Threshold (mW)	3419.20	3418.88	3452.37	3455.47	3456.34
	SAR Test Required	No	No	No	No	No
Left Edge of Keyboard	Distance to User (mm)	43.45				
	Max. Peak Power (dBm)	8.00	16.50	16.00	16.00	16.00
	Max. Peak Power (mW)	6.31	44.67	39.81	39.81	39.81
	Exclusion Threshold (mW)	167.02	167.42	129.68	126.68	125.84
	SAR Test Required	No	No	No	No	No
Right Edge of Keyboard	Distance to User (mm)	189.07				
	Max. Peak Power (dBm)	8.00	16.50	16.00	16.00	16.00
	Max. Peak Power (mW)	6.31	44.67	39.81	39.81	39.81
	Exclusion Threshold (mW)	2749.35	2749.60	2723.86	2721.51	2720.85
	SAR Test Required	No	No	No	No	No
Palm rest Side of Keyboard	Distance to User (mm)	5.00				
	Max. Peak Power (dBm)	8.00	16.50	16.00	16.00	16.00
	Max. Peak Power (mW)	6.31	44.67	39.81	39.81	39.81
	Exclusion Threshold (mW)	2.72	2.73	1.47	1.39	1.37
	SAR Test Required	Yes	Yes	Yes	Yes	Yes

Note:

1. Maximum power is the source-based time-average power and represents the maximum RF output power including tune-up tolerance among production units
2. Per KDB 447498 D04, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
3. Per KDB 447498 D04, standalone SAR test exclusion threshold is applied; If the distance of the antenna to the user is < 5mm, 5mm is used to determine SAR exclusion threshold
4. Per KDB 447498 D04, for separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive), the threshold 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 ≤ 1.2 W/kg.
7. Per KDB 248227 D01 SAR is not required for the following U-NII-1 and U-NII-2A bands conditions.
 - a. When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, each band is tested independently for SAR.
 - b. When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, each band is tested independently for SAR.
8. For Limbs SAR, SAR test exemption considered by applying a factor of 2.5 to the applicable power level thresholds.

10 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. 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:
 - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
 - ≤ 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
 - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8 W/kg

10.1 Bluetooth (Aux. Antenna)

10.1.1 Bluetooth Body SAR

Mode	Antenna Manufactu rer	Test State	Antenna	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.
Body																
DH5	AWAN	Laptop	Aux.	Bottom Side	0	39	2441	0.02	0.145	7.44	8.00	1.138	77.36	1.293	0.213	/
		Tablet	Aux.	Back Side	0	39	2441	-0.08	0.231	7.44	8.00	1.138	77.36	1.293	0.340	/
				Top Edge	0	39	2441	0.03	0.021	7.44	8.00	1.138	77.36	1.293	0.031	/
	South Star	Laptop	Aux.	Bottom Side	0	39	2441	0.17	0.160	7.44	8.00	1.138	77.36	1.293	0.235	/
		Tablet	Aux.	Back Side	0	39	2441	-0.09	0.279	7.44	8.00	1.138	77.36	1.293	0.411	1#
				Top Edge	0	39	2441	0.05	0.026	7.44	8.00	1.138	77.36	1.293	0.038	/
				Back Side	0	0	2402	-0.15	0.224	7.37	8.00	1.156	77.36	1.293	0.335	/
				Back Side	0	78	2480	0.16	0.258	7.41	8.00	1.146	77.36	1.293	0.382	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.																

10.1.2 Bluetooth Limbs SAR

Mode	Antenna Manufact urer	Test State	Antenna	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	10g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	10g Scaled SAR (W/kg)	Meas. No.
Limbs																
DH5	AWAN	Laptop	Aux.	Front Edge of Keyboard	0	39	2441	0.17	0.030	7.44	8.00	1.138	77.36	1.293	0.044	/
				Palm rest Side of Keyboard	0	39	2441	-0.10	0.320	7.44	8.00	1.138	77.36	1.293	0.471	/
	South Star	Laptop	Aux.	Front Edge of Keyboard	0	39	2441	-0.17	0.034	7.44	8.00	1.138	77.36	1.293	0.050	/
				Palm rest Side of Keyboard	0	39	2441	0.04	0.376	7.44	8.00	1.138	77.36	1.293	0.553	2#
					0	0	2402	0.03	0.305	7.37	8.00	1.156	77.36	1.293	0.456	/
					0	78	2480	-0.05	0.328	7.41	8.00	1.146	77.36	1.293	0.486	/
					Note: Refer to ANNEX C for the detailed test data for each test configuration.											

10.2WIFI 2.4GHz

10.2.1 WIFI 2.4GHz Body SAR

Mode	Antenna Manufa cturer	Test State	Antenna	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.
Body																
802.11b	AWAN	Laptop	Aux.	Bottom Side	0	1	2412	0.02	0.541	16.23	16.50	1.064	99.60	1.004	0.578	/
		Tablet		Back Side	0	1	2412	0.05	0.772	11.89	12.00	1.026	99.60	1.004	0.795	/
				Top Edge	0	1	2412	0.08	0.206	11.89	12.00	1.026	99.60	1.004	0.212	/
	South Star	Laptop	Aux.	Bottom Side	0	1	2412	-0.01	0.750	16.23	16.50	1.064	99.60	1.004	0.801	/
				Bottom Side	0	6	2437	-0.18	0.773	16.11	16.50	1.094	99.60	1.004	0.849	/
				Bottom Side	0	11	2462	0.13	0.732	16.08	16.50	1.102	99.60	1.004	0.810	/
		Tablet		Back Side	0	1	2412	0.00	1.020	11.89	12.00	1.026	99.60	1.004	1.051	/
				Top Edge	0	1	2412	-0.13	0.195	11.89	12.00	1.026	99.60	1.004	0.201	/
				Back Side	0	6	2437	-0.19	1.120	11.84	12.00	1.038	99.60	1.004	1.167	3#
				Back Side	0	11	2462	-0.02	0.835	11.87	12.00	1.030	99.60	1.004	0.863	
	AWAN	Laptop	Main	Bottom Side	0	6	2437	0.12	0.980	16.33	16.50	1.040	99.60	1.004	1.023	/
				Bottom Side	0	1	2412	-0.19	0.805	15.99	16.50	1.125	99.60	1.004	0.909	/
				Bottom Side	0	11	2462	0.12	1.060	16.22	16.50	1.067	99.60	1.004	1.136	4#
		Tablet		Back Side	0	6	2437	0.18	0.778	11.65	12.00	1.084	99.60	1.004	0.847	/
				Top Edge	0	6	2437	0.02	0.226	11.65	12.00	1.084	99.60	1.004	0.246	/
				Back Side	0	1	2412	0.14	0.734	11.42	12.00	1.143	99.60	1.004	0.842	/
				Back Side	0	11	2462	-0.14	0.719	11.37	12.00	1.156	99.60	1.004	0.834	
	South Star	Laptop	Main	Bottom Side	0	6	2437	-0.18	0.368	16.33	16.50	1.040	99.60	1.004	0.384	/
		Tablet		Back Side	0	6	2437	0.11	0.535	11.65	12.00	1.084	99.60	1.004	0.582	/
				Top Edge	0	6	2437	-0.03	0.174	11.65	12.00	1.084	99.60	1.004	0.189	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.																

10.2.2 WIFI 2.4GHz Limbs SAR

Mode	Antenna Manufa cturer	Test State	Antenna	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	10g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	10g Scaled SAR (W/kg)	Meas. No.
Limbs																
802.11b	AWAN	Laptop	Aux.	Front Edge of Keyboard	0	1	2412	0.09	0.243	16.23	16.50	1.064	99.60	1.004	0.260	/
				Palm rest Side of Keyboard	0	1	2412	-0.19	0.856	16.23	16.50	1.064	99.60	1.004	0.914	/
	South Star	Laptop	Aux.	Front Edge of Keyboard	0	1	2412	0.14	0.259	16.23	16.50	1.064	99.60	1.004	0.277	/
				Palm rest Side of Keyboard	0	1	2412	-0.15	1.170	16.23	16.50	1.064	99.60	1.004	1.250	5#
					0	6	2437	-0.09	1.030	16.11	16.50	1.094	99.60	1.004	1.131	/
					0	11	2462	0.17	0.964	16.08	16.50	1.102	99.60	1.004	1.067	/
	AWAN	Laptop	Main	Front Edge of Keyboard	0	6	2437	0.11	0.246	16.33	16.50	1.040	99.60	1.004	0.257	/
				Palm rest Side of Keyboard	0	6	2437	-0.17	0.914	16.33	16.50	1.040	99.60	1.004	0.954	6#
					0	1	2412	-0.13	0.842	15.99	16.50	1.125	99.60	1.004	0.951	/
					0	11	2462	0.15	0.846	16.22	16.50	1.067	99.60	1.004	0.906	/
	South Star	Laptop	Main	Front Edge of Keyboard	0	6	2437	0.10	0.218	16.33	16.50	1.040	99.60	1.004	0.228	/
				Palm rest Side of Keyboard	0	6	2437	0.17	0.796	16.33	16.50	1.040	99.60	1.004	0.831	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.																

10.3WIFI 5GHz

10.3.1 WIFI 5GHz Body SAR

Mode	Antenna Manufa cturer	Test State	Anten na	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.
Body-U-NII-2A																
802.11 ac80	AWAN	Laptop	Aux.	Bottom Side	0	58	5290	0.13	0.654	15.54	16.00	1.112	91.09	1.098	0.799	/
		Tablet		Back Side	0	58	5290	-0.04	0.759	9.86	10.50	1.159	91.09	1.098	0.966	7#
				Top Edge	0	58	5290	0.17	0.284	9.86	10.50	1.159	91.09	1.098	0.361	/
	South Star	Laptop	Aux.	Bottom Side	0	58	5290	-0.19	0.512	15.92	16.00	1.019	91.09	1.098	0.573	/
		Tablet		Back Side	0	58	5290	-0.08	0.569	9.86	10.50	1.159	91.09	1.098	0.724	/
				Top Edge	0	58	5290	-0.17	0.263	9.86	10.50	1.159	91.09	1.098	0.335	/
	AWAN	Laptop	Main	Bottom Side	0	58	5290	-0.19	0.630	15.23	15.50	1.064	91.09	1.098	0.736	/
		Tablet		Back Side	0	58	5290	0.06	0.628	10.22	10.50	1.067	91.09	1.098	0.736	/
				Top Edge	0	58	5290	0.18	0.297	10.22	10.50	1.067	91.09	1.098	0.348	/
	South Star	Laptop	Main	Bottom Side	0	58	5290	0.10	0.905	15.23	15.50	1.064	91.09	1.098	1.057	8#
		Tablet		Back Side	0	58	5290	0.11	0.658	10.22	10.50	1.067	91.09	1.098	0.771	/
				Top Edge	0	58	5290	0.03	0.364	10.22	10.50	1.067	91.09	1.098	0.426	/
Body-U-NII-2C																
802.11 ac80	AWAN	Laptop	Aux.	Bottom Side	0	138	5690	-0.11	0.575	15.39	16.00	1.151	91.09	1.098	0.727	/
		Tablet		Back Side	0	106	5530	0.02	1.050	10.41	10.50	1.021	91.09	1.098	1.177	11#
				Top Edge	0	106	5530	0.07	0.235	10.41	10.50	1.021	91.09	1.098	0.263	/
				Back Side	0	122	5610	0.19	0.830	10.12	10.50	1.091	91.09	1.098	0.994	/
				Back Side	0	138	5690	-0.01	0.954	10.01	10.50	1.119	91.09	1.098	1.172	/
	South Star	Laptop	Aux.	Bottom Side	0	138	5690	0.09	0.917	15.39	16.00	1.151	91.09	1.098	1.159	/
				Bottom Side	0	106	5530	-0.11	0.756	14.77	16.00	1.327	91.09	1.098	1.102	/
				Bottom Side	0	122	5610	0.03	0.830	15.19	16.00	1.205	91.09	1.098	1.098	/
		Tablet		Back Side	0	106	5530	0.03	0.798	10.41	10.50	1.021	91.09	1.098	0.895	/
				Top Edge	0	106	5530	0.17	0.205	10.41	10.50	1.021	91.09	1.098	0.230	/
				Back Side	0	122	5610	-0.10	0.835	10.12	10.50	1.091	91.09	1.098	1.000	/
				Back Side	0	138	5690	0.17	0.791	10.01	10.50	1.119	91.09	1.098	0.972	/
	AWAN	Laptop	Main	Bottom Side	0	138	5690	-0.04	0.506	14.61	15.00	1.094	91.09	1.098	0.608	/
		Tablet		Back Side	0	106	5530	-0.02	0.796	10.36	10.50	1.033	91.09	1.098	0.903	/
				Top Edge	0	106	5530	-0.14	0.312	10.36	10.50	1.033	91.09	1.098	0.354	/
				Back Side	0	122	5610	0.06	0.719	9.95	10.50	1.135	91.09	1.098	0.896	/
				Back Side	0	138	5690	-0.02	0.685	10.16	10.50	1.081	91.09	1.098	0.813	/
	South Star	Laptop	Main	Bottom Side	0	138	5690	0.10	0.680	14.61	15.00	1.094	91.09	1.098	0.817	/
				Bottom Side	0	106	5530	0.08	0.752	14.50	15.00	1.122	91.09	1.098	0.926	12#
				Bottom Side	0	122	5610	0.00	0.756	14.55	15.00	1.109	91.09	1.098	0.921	/
		Tablet		Back Side	0	106	5530	0.18	0.813	10.36	10.50	1.033	91.09	1.098	0.922	/
				Top Edge	0	106	5530	-0.14	0.340	10.36	10.50	1.033	91.09	1.098	0.386	/

				Back Side	0	122	5610	0.00	0.724	9.95	10.50	1.135	91.09	1.098	0.902	/
				Back Side	0	138	5690	0.16	0.683	10.16	10.50	1.081	91.09	1.098	0.811	/
Body-U-NII-3																
802.11a c80	AWAN	Laptop	Aux.	Bottom Side	0	155	5775	0.06	0.562	15.54	16.00	1.112	91.09	1.098	0.686	/
		Tablet		Back Side	0	155	5775	0.06	1.040	10.38	10.50	1.028	91.09	1.098	1.174	15#
				Top Edge	0	155	5775	0.14	0.244	10.38	10.50	1.028	91.09	1.098	0.275	/
	South Star	Laptop	Aux.	Bottom Side	0	155	5775	-0.07	0.551	15.54	16.00	1.112	91.09	1.098	0.673	/
		Tablet		Back Side	0	155	5775	0.04	0.629	10.38	10.50	1.028	91.09	1.098	0.710	/
				Top Edge	0	155	5775	0.15	0.185	10.38	10.50	1.028	91.09	1.098	0.209	/
	AWAN	Laptop	Main	Bottom Side	0	155	5775	0.19	0.429	15.36	16.00	1.159	91.09	1.098	0.546	/
		Tablet		Back Side	0	155	5775	0.03	0.571	10.35	10.50	1.035	91.09	1.098	0.649	/
				Top Edge	0	155	5775	-0.02	0.214	10.35	10.50	1.035	91.09	1.098	0.243	/
	South Star	Laptop	Main	Bottom Side	0	155	5775	0.00	0.530	15.36	16.00	1.159	91.09	1.098	0.674	/
		Tablet		Back Side	0	155	5775	0.03	0.599	10.35	10.50	1.035	91.09	1.098	0.681	16#
				Top Edge	0	155	5775	0.04	0.265	10.35	10.50	1.035	91.09	1.098	0.301	/
Note: Refer to ANNEX C for the detailed test data for each test configuration.																

10.3.2 WIFI 5GHz Limbs SAR

Mode	Antenna Manufac turer	Test State	Anten na	Position	Dist. (mm)	Ch.	Freq. (MHz)	Power Drift (dB)	10g Meas SAR (W/kg)	Meas. Power (dBm)	Max. tune-up power (dBm)	Scaling Factor	Duty cycle (%)	Duty cycle Factor	10g Scaled SAR (W/kg)	Meas. No.
Limbs-U-NII-2A																
802.11 ac80	AWAN	Laptop	Aux.	Front Edge of Keyboard	0	58	5290	0.00	0.271	15.54	16.00	1.112	91.09	1.098	0.331	/
				Palm rest Side of Keyboard	0	58	5290	-0.06	0.752	15.54	16.00	1.112	91.09	1.098	0.918	9#
	South Star	Laptop	Aux.	Front Edge of Keyboard	0	58	5290	0.05	0.240	15.54	16.00	1.112	91.09	1.098	0.293	/
				Palm rest Side of Keyboard	0	58	5290	-0.14	0.674	15.54	16.00	1.112	91.09	1.098	0.823	/
	AWAN	Laptop	Main	Front Edge of Keyboard	0	58	5290	0.13	0.317	15.46	15.50	1.009	91.09	1.098	0.351	/
				Palm rest Side of Keyboard	0	58	5290	-0.19	0.810	15.46	15.50	1.009	91.09	1.098	0.897	/
	South Star	Laptop	Main	Front Edge of Keyboard	0	58	5290	0.03	0.368	15.46	15.50	1.009	91.09	1.098	0.408	/
				Palm rest Side of Keyboard	0	58	5290	0.02	0.968	15.46	15.50	1.009	91.09	1.098	1.072	10#
Limbs-U-NII-2C																
802.11 ac80	AWAN	Laptop	Aux.	Front Edge of Keyboard	0	138	5690	0.02	0.264	15.39	16.00	1.151	91.09	1.098	0.334	/
				Palm rest Side of Keyboard	0	138	5690	0.06	0.956	15.39	16.00	1.151	91.09	1.098	1.208	13#
					0	106	5530	-0.18	0.740	14.77	16.00	1.327	91.09	1.098	1.078	/
					0	122	5610	-0.05	0.829	15.19	16.00	1.205	91.09	1.098	1.097	/
	South Star	Laptop	Aux.	Front Edge of Keyboard	0	138	5690	0.19	0.231	15.39	16.00	1.151	91.09	1.098	0.292	/
				Palm rest Side of Keyboard	0	138	5690	0.11	0.746	15.39	16.00	1.151	91.09	1.098	0.943	/
	AWAN	Laptop	Main	Front Edge of Keyboard	0	138	5690	0.01	0.320	14.61	15.00	1.094	91.09	1.098	0.384	/
				Palm rest Side of Keyboard	0	138	5690	0.10	0.708	14.61	15.00	1.094	91.09	1.098	0.850	/
	South Star	Laptop	Main	Front Edge of Keyboard	0	138	5690	-0.06	0.355	14.61	15.00	1.094	91.09	1.098	0.426	/
				Palm rest Side of Keyboard	0	138	5690	0.02	0.830	14.61	15.00	1.094	91.09	1.098	0.997	14#
					0	106	5530	0.18	0.746	14.50	15.00	1.122	91.09	1.098	0.919	/
					0	122	5610	0.03	0.781	14.55	15.00	1.109	91.09	1.098	0.951	/
Limbs-U-NII-3																
802.11	AWAN	Laptop	Aux.	Front Edge of	0	155	5775	0.01	0.268	15.54	16.00	1.112	91.09	1.098	0.327	/

ac80				Keyboard												
				Palm rest Side of Keyboard	0	155	5775	-0.05	0.827	15.54	16.00	1.112	91.09	1.098	1.010	17#
	South Star	Laptop	Aux.	Front Edge of Keyboard	0	155	5775	0.13	0.234	15.54	16.00	1.112	91.09	1.098	0.286	/
				Palm rest Side of Keyboard	0	155	5775	0.18	0.715	15.54	16.00	1.112	91.09	1.098	0.873	/
	AWAN	Laptop	Main	Front Edge of Keyboard	0	155	5775	-0.01	0.260	15.36	16.00	1.159	91.09	1.098	0.331	/
				Palm rest Side of Keyboard	0	155	5775	0.17	0.614	15.36	16.00	1.159	91.09	1.098	0.781	/
	South Star	Laptop	Main	Front Edge of Keyboard	0	155	5775	-0.10	0.261	15.36	16.00	1.159	91.09	1.098	0.332	/
				Palm rest Side of Keyboard	0	155	5775	0.05	0.630	15.36	16.00	1.159	91.09	1.098	0.802	18#

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

11 SAR Measurement Variability

According to KDB 865664 D01, SAR measurement variability was assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. Alternatively, if the highest measured SAR for both head and body tissue-equivalent media are ≤ 1.45 W/kg and the ratio of these highest SAR values, i.e., largest divided by smallest value, is ≤ 1.10 , the highest SAR configuration for either head or body tissue-equivalent medium may be used to perform the repeated measurement. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR repeated measurement procedure:

1. When the highest measured SAR is < 0.80 W/kg, repeated measurement is not required.
2. When the highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
3. If the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 , or when the original or repeated measurement is ≥ 1.45 W/kg, perform a second repeated measurement.
4. If the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 , and the original, first or second repeated measurement is ≥ 1.5 W/kg, perform a third repeated measurement.

Frequency Band (MHz)	Wireless Band	Antenna manufacturer	Test Mode	Antenna	RF Exposure Conditions	Test Position	Highest Measured SAR (W/kg)	Repeated SAR (Yes/No)	Highest Measured SAR (W/kg)	Largest to Smallest SAR Ratio
2437	802.11b	South Star	Tablet	Aux.	Body	Back Side	1.120	Yes	1.080	1.04
2462	802.11b	AWAN	Laptop	Main	Body	Bottom Side	1.060	Yes	1.010	1.05
5290	802.11ac80	South Star	Laptop	Main	Body	Bottom Side	0.905	Yes	0.896	1.01
5530	802.11ac80	AWAN	Tablet	Aux.	Body	Back Side	1.050	Yes	1.030	1.02
5530	802.11ac80	South Star	Tablet	Main	Body	Back Side	0.813	Yes	0.807	1.01
5775	802.11ac80	AWAN	Tablet	Aux.	Body	Back Side	1.040	Yes	1.010	1.03

Note 1: The ratio of largest to smallest SAR for the original and first repeated measurements is < 1.20 , the second repeated measurement is not required.

Note 2: For product specific 10g SAR, the highest measured 10g SAR is $1.17 < 2.00$ W/kg, repeated measurement is not required.

12 SIMULTANEOUS TRANSMISSION

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

According KDB 447498 D04, simultaneous transmission:

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

12.1 Simultaneous Transmission Mode Considerations

No.	Simultaneous Tx Combination	Body&Limbs
1	Bluetooth + WLAN 2.4GHz (Antenna Main)	Yes
2	WLAN 2.4GHz (Antenna Auxiliary) + WLAN 2.4GHz (Antenna Main)	Yes
3	WLAN 5GHz (Antenna Auxiliary) + WLAN 5GHz (Antenna Main)	Yes
4	Bluetooth + WLAN 5GHz (Antenna Auxiliary)	Yes
5	Bluetooth + WLAN 5GHz (Antenna Main)	Yes
6	Bluetooth + WLAN 5GHz (Antenna Auxiliary) + WLAN 5GHz (Antenna Main)	Yes

Note:

1. 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.
2. WLAN 2.4GHz and Bluetooth will not be transmitting from the Antenna Auxiliary at same time.
3. The simultaneous transmission combinations of the more antennas contain combinations of less antennas, so only the worst simultaneous transmission combinations is shown in this report.

12.2 Sum SAR of Simultaneous Transmission

12.2.1 Body Simultaneous Transmission SAR Evaluation for WLAN Antenna with Bluetooth

Test Mode	Position	Simultaneous Mode	Mode	Max. 1g SAR	1g Sum SAR	SPLSR	SPLSR	Limit 1g (W/Kg)
				(W/kg)	(W/kg)	(Yes/No)	Num.	
Body (0 mm)								
Laptop	Bottom Side	2.4 G WLAN (Auxiliary Antenna) + 2.4 G WLAN (Main Antenna)	2.4 G WLAN (Auxiliary Antenna)	0.849	1.985	Yes	1#	1.6
			2.4 G WLAN (Main Antenna)	1.136				
		2.4 G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	2.4 G WLAN (Main Antenna)	1.136	1.371	No	/	
			Bluetooth (Auxiliary Antenna)	0.235				
		5.3G WLAN (Auxiliary Antenna) + 5.3G WLAN (Main Antenna)	5.3G WLAN (Auxiliary Antenna)	0.799	1.856	No ^{Note:1}	/	
			5.3G WLAN (Main Antenna)	1.057				
		5.3G WLAN (Auxiliary Antenna) + Bluetooth (Auxiliary Antenna)	5.3G WLAN (Auxiliary Antenna)	0.799	1.034	No	/	
			Bluetooth (Auxiliary Antenna)	0.235				
		5.3G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.3G WLAN (Main Antenna)	1.057	1.292	No	/	
			Bluetooth (Auxiliary Antenna)	0.235				
		5.3G WLAN (Auxiliary Antenna) + 5.3G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.3G WLAN (Auxiliary Antenna)	0.799	2.091	Yes	2#	
			5.3G WLAN (Main Antenna)	1.057				
			Bluetooth (Auxiliary Antenna)	0.235				
		5.6G WLAN (Auxiliary Antenna) + 5.6G WLAN (Main Antenna)	5.6G WLAN (Auxiliary Antenna)	1.159	2.085	No ^{Note:1}	/	
			5.6G WLAN (Main Antenna)	0.926				
		5.6G WLAN (Auxiliary Antenna) + Bluetooth (Auxiliary Antenna)	5.6G WLAN (Auxiliary Antenna)	1.159	1.394	No	/	
			Bluetooth (Auxiliary Antenna)	0.235				
		5.6G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.6G WLAN (Main Antenna)	0.926	1.161	No	/	
			Bluetooth (Auxiliary Antenna)	0.235				
		5.6G WLAN (Auxiliary Antenna) + 5.6G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.6G WLAN (Auxiliary Antenna)	1.159	2.320	Yes	3#	
			5.6G WLAN (Main Antenna)	0.926				
			Bluetooth (Auxiliary Antenna)	0.235				
		5.8G WLAN (Auxiliary Antenna) + 5.8G WLAN (Main Antenna)	5.8G WLAN (Auxiliary Antenna)	0.686	1.360	No	/	
			5.8G WLAN (Main Antenna)	0.674				
		5.8G WLAN (Auxiliary Antenna) + Bluetooth (Auxiliary Antenna)	5.8G WLAN (Auxiliary Antenna)	0.686	0.921	No	/	
			Bluetooth (Auxiliary Antenna)	0.235				
		5.8G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.8G WLAN (Main Antenna)	0.674	0.909	No	/	
			Bluetooth (Auxiliary Antenna)	0.235				
		5.8G WLAN (Auxiliary Antenna) + 5.8G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.8G WLAN (Auxiliary Antenna)	0.686	1.595	No	/	
			5.8G WLAN (Main Antenna)	0.674				
Bluetooth (Auxiliary Antenna)	0.235							
Tablet	Back Side	2.4 G WLAN (Auxiliary Antenna) + 2.4 G WLAN (Main Antenna)	2.4 G WLAN (Auxiliary Antenna)	1.167	2.014	Yes	4#	
			2.4 G WLAN (Main Antenna)	0.847				
		2.4 G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	2.4 G WLAN (Main Antenna)	0.847	1.258	No	/	
			Bluetooth (Auxiliary Antenna)	0.411				
			5.3G WLAN (Auxiliary Antenna)	0.966	1.737	No ^{Note:1}	/	

		5.3G WLAN (Auxiliary Antenna) + 5.3G WLAN (Main Antenna)	5.3G WLAN (Main Antenna)	0.771			
		5.3G WLAN (Auxiliary Antenna) + Bluetooth (Auxiliary Antenna)	5.3G WLAN (Auxiliary Antenna)	0.966	1.377	No	/
			Bluetooth (Auxiliary Antenna)	0.411			
		5.3G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.3G WLAN (Main Antenna)	0.771	1.182	No	/
			Bluetooth (Auxiliary Antenna)	0.411			
		5.3G WLAN (Auxiliary Antenna) + 5.3G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.3G WLAN (Auxiliary Antenna)	0.966	2.148	Yes	5#
			5.3G WLAN (Main Antenna)	0.771			
			Bluetooth (Auxiliary Antenna)	0.411			
		5.6G WLAN (Auxiliary Antenna) + 5.6G WLAN (Main Antenna)	5.6G WLAN (Auxiliary Antenna)	1.177	2.099	No ^{Note:1}	/
			5.6G WLAN (Main Antenna)	0.922			
		5.6G WLAN (Auxiliary Antenna) + Bluetooth (Auxiliary Antenna)	5.6G WLAN (Auxiliary Antenna)	1.177	1.588	No	/
			Bluetooth (Auxiliary Antenna)	0.411			
		5.6G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.6G WLAN (Main Antenna)	0.922	1.333	No	/
			Bluetooth (Auxiliary Antenna)	0.411			
		5.6G WLAN (Auxiliary Antenna) + 5.6G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.6G WLAN (Auxiliary Antenna)	1.177	2.510	Yes	6#
			5.6G WLAN (Main Antenna)	0.922			
			Bluetooth (Auxiliary Antenna)	0.411			
		5.8G WLAN (Auxiliary Antenna) + 5.8G WLAN (Main Antenna)	5.8G WLAN (Auxiliary Antenna)	1.174	1.855	No ^{Note:1}	/
			5.8G WLAN (Main Antenna)	0.681			
		5.8G WLAN (Auxiliary Antenna) + Bluetooth (Auxiliary Antenna)	5.8G WLAN (Auxiliary Antenna)	1.174	1.585	No	/
			Bluetooth (Auxiliary Antenna)	0.411			
		5.8G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.8G WLAN (Main Antenna)	0.681	1.092	No	/
			Bluetooth (Auxiliary Antenna)	0.411			
		5.8G WLAN (Auxiliary Antenna) + 5.8G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.8G WLAN (Auxiliary Antenna)	1.174	2.266	Yes	7#
			5.8G WLAN (Main Antenna)	0.681			
			Bluetooth (Auxiliary Antenna)	0.411			
Tablet	Top Edge	2.4 G WLAN (Auxiliary Antenna) + 2.4 G WLAN (Main Antenna)	2.4 G WLAN (Auxiliary Antenna)	0.212	0.458	No	/
			2.4 G WLAN (Main Antenna)	0.246			
		2.4 G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	2.4 G WLAN (Main Antenna)	0.246	0.284	No	/
			Bluetooth (Auxiliary Antenna)	0.038			
		5.3G WLAN (Auxiliary Antenna) + 5.3G WLAN (Main Antenna)	5.3G WLAN (Auxiliary Antenna)	0.361	0.787	No	/
			5.3G WLAN (Main Antenna)	0.426			
		5.3G WLAN (Auxiliary Antenna) + Bluetooth (Auxiliary Antenna)	5.3G WLAN (Auxiliary Antenna)	0.361	0.399	No	/
			Bluetooth (Auxiliary Antenna)	0.038			
		5.3G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.3G WLAN (Main Antenna)	0.426	0.464	No	/
			Bluetooth (Auxiliary Antenna)	0.038			
		5.3G WLAN (Auxiliary Antenna) + 5.3G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.3G WLAN (Auxiliary Antenna)	0.361	0.825	No	/
			5.3G WLAN (Main Antenna)	0.426			
			Bluetooth (Auxiliary Antenna)	0.038			
		5.6G WLAN (Auxiliary Antenna) + 5.6G WLAN (Main Antenna)	5.6G WLAN (Auxiliary Antenna)	0.263	0.649	No	/
			5.6G WLAN (Main Antenna)	0.386			
			5.6G WLAN (Auxiliary Antenna)	0.263	0.301	No	/

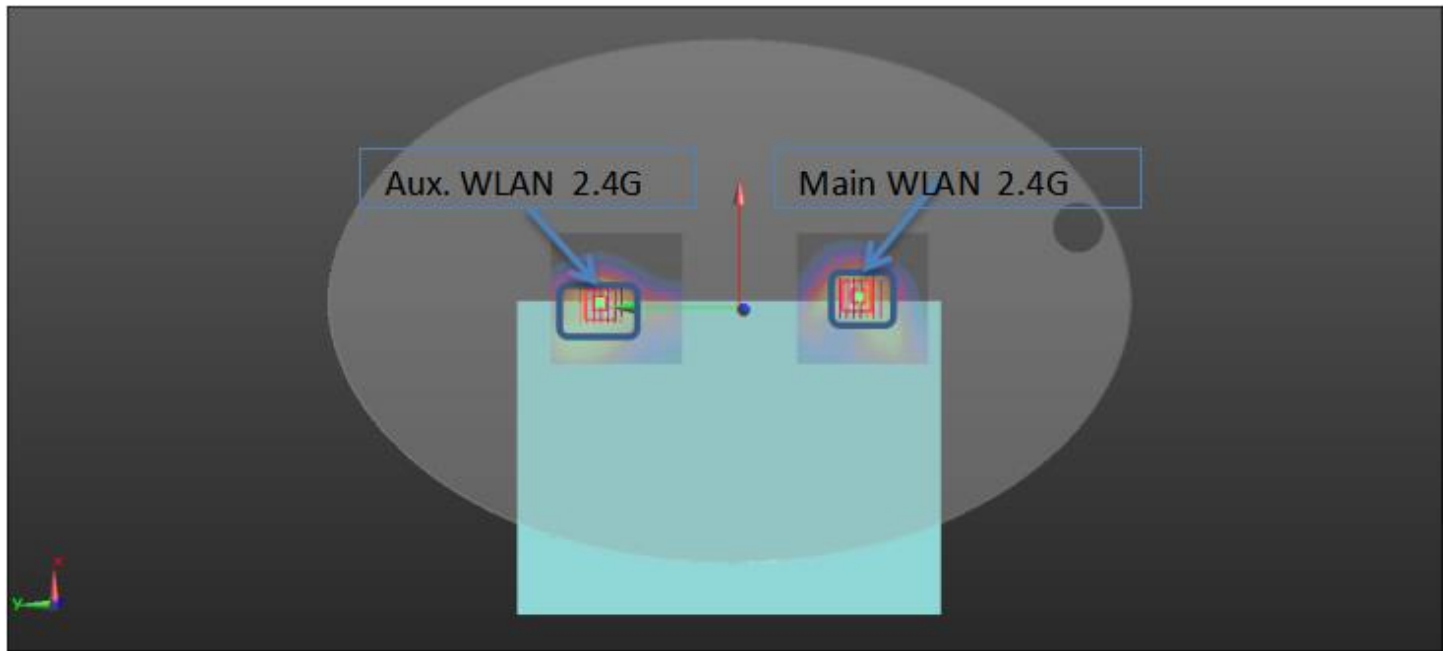
		5.6G WLAN (Auxiliary Antenna) + Bluetooth (Auxiliary Antenna)	Bluetooth (Auxiliary Antenna)	0.038	0.424	No	/
		5.6G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.6G WLAN (Main Antenna)	0.386			
			Bluetooth (Auxiliary Antenna)	0.038	0.687	No	/
		5.6G WLAN (Auxiliary Antenna) + 5.6G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.6G WLAN (Auxiliary Antenna)	0.263			
			5.6G WLAN (Main Antenna)	0.386			
			Bluetooth (Auxiliary Antenna)	0.038			
		5.8G WLAN (Auxiliary Antenna) + 5.8G WLAN (Main Antenna)	5.8G WLAN (Auxiliary Antenna)	0.275	0.576	No	/
			5.8G WLAN (Main Antenna)	0.301			
		5.8G WLAN (Auxiliary Antenna) + Bluetooth (Auxiliary Antenna)	5.8G WLAN (Auxiliary Antenna)	0.275	0.313	No	/
			Bluetooth (Auxiliary Antenna)	0.038			
		5.8G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.8G WLAN (Main Antenna)	0.301	0.339	No	/
			Bluetooth (Auxiliary Antenna)	0.038			
		5.8G WLAN (Auxiliary Antenna) + 5.8G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.8G WLAN (Auxiliary Antenna)	0.275	0.614	No	/
			5.8G WLAN (Main Antenna)	0.301			
			Bluetooth (Auxiliary Antenna)	0.038			

Note:

- 1: The simultaneous transmission combinations of the more antennas contain combinations of less antennas, so only the worst SPLSR simultaneous transmission combinations is shown in this report.
- 2: The highest Summed 1g SAR is 2.510 W/Kg > 1.6 W/kg, so Simultaneous Transmission SAR test exclusion is determined by the SAR to peak location separation ratio.
- 3: The SPLSR is 0.02 < 0.04, so Simultaneous Transmission SAR test is not required.

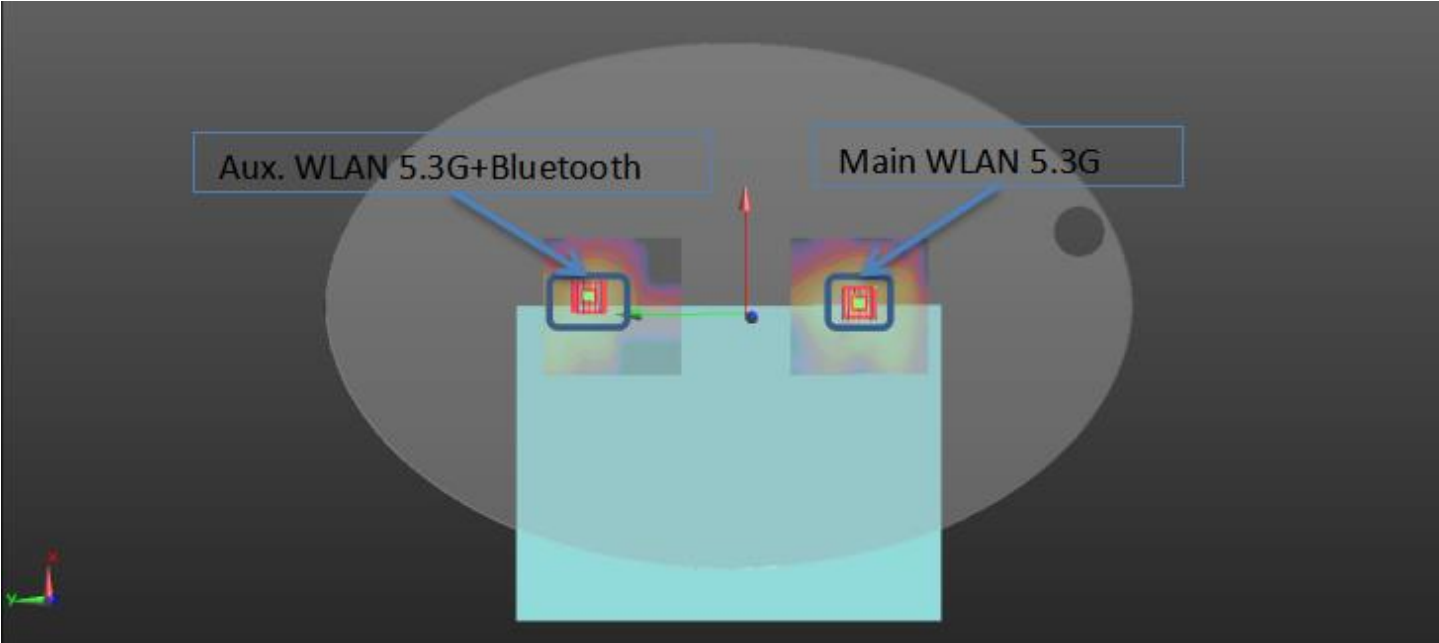
SPLSR Analysis 1#

Test Mode	Position	Antenna	Reported 1g Max. SAR (W/kg)	Coordinates (m)			3D Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR Test (Yes/No)
				X	Y	Z				
Laptop	Bottom Side	Aux. WLAN 2.4G	0.849	-0.0004	0.0950	-0.177	189.60	1.99	0.01	No
		Main WLAN 2.4G	1.136	0.0032	-0.0946	-0.177				



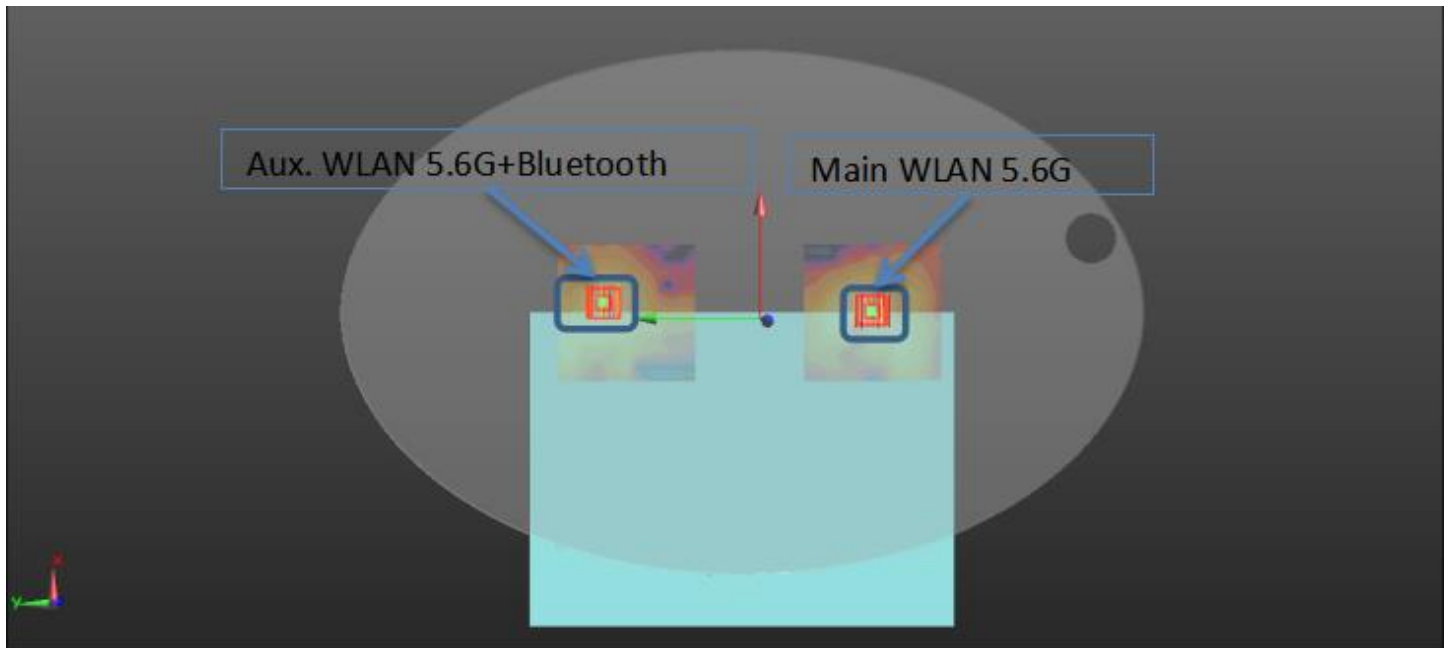
SPLSR Analysis 2#

Test Mode	Position	Antenna	Reported 1g Max. SAR (W/kg)	Coordinates (m)			3D Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR Test (Yes/No)
				X	Y	Z				
Laptop	Bottom Side	Aux. WLAN 5.3G+Bluetooth	1.034	0.008	0.103	-0.178	197.10	2.09	0.02	No
		Main WLAN 5.3G	1.057	0.002	-0.094	-0.179				



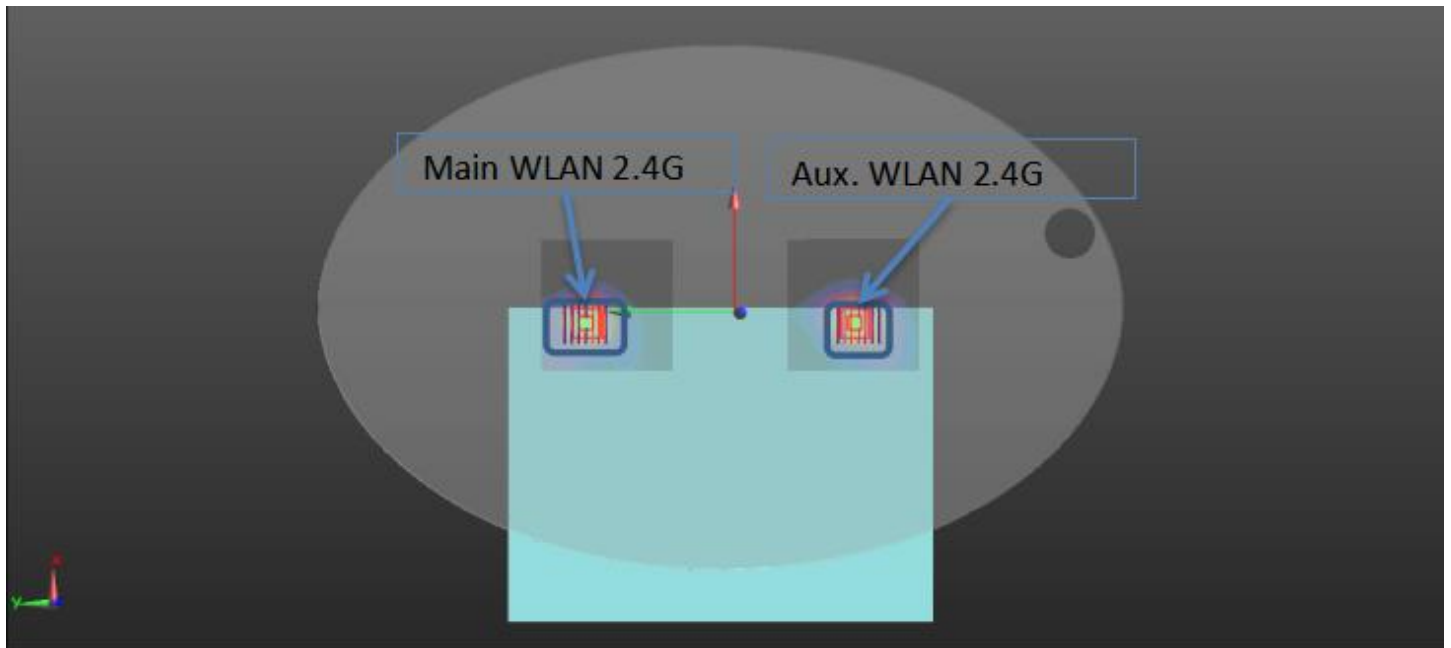
SPLSR Analysis 3#

Test Mode	Position	Antenna	Reported 1g Max. SAR (W/kg)	Coordinates (m)			3D Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR Test (Yes/No)
				X	Y	Z				
Laptop	Bottom Side	Aux. WLAN 5.6G+Bluetooth	1.394	0.008	0.103	-0.178	201.30	2.32	0.02	No
		Main WLAN 5.6G	0.926	-0.003	-0.098	-0.179				



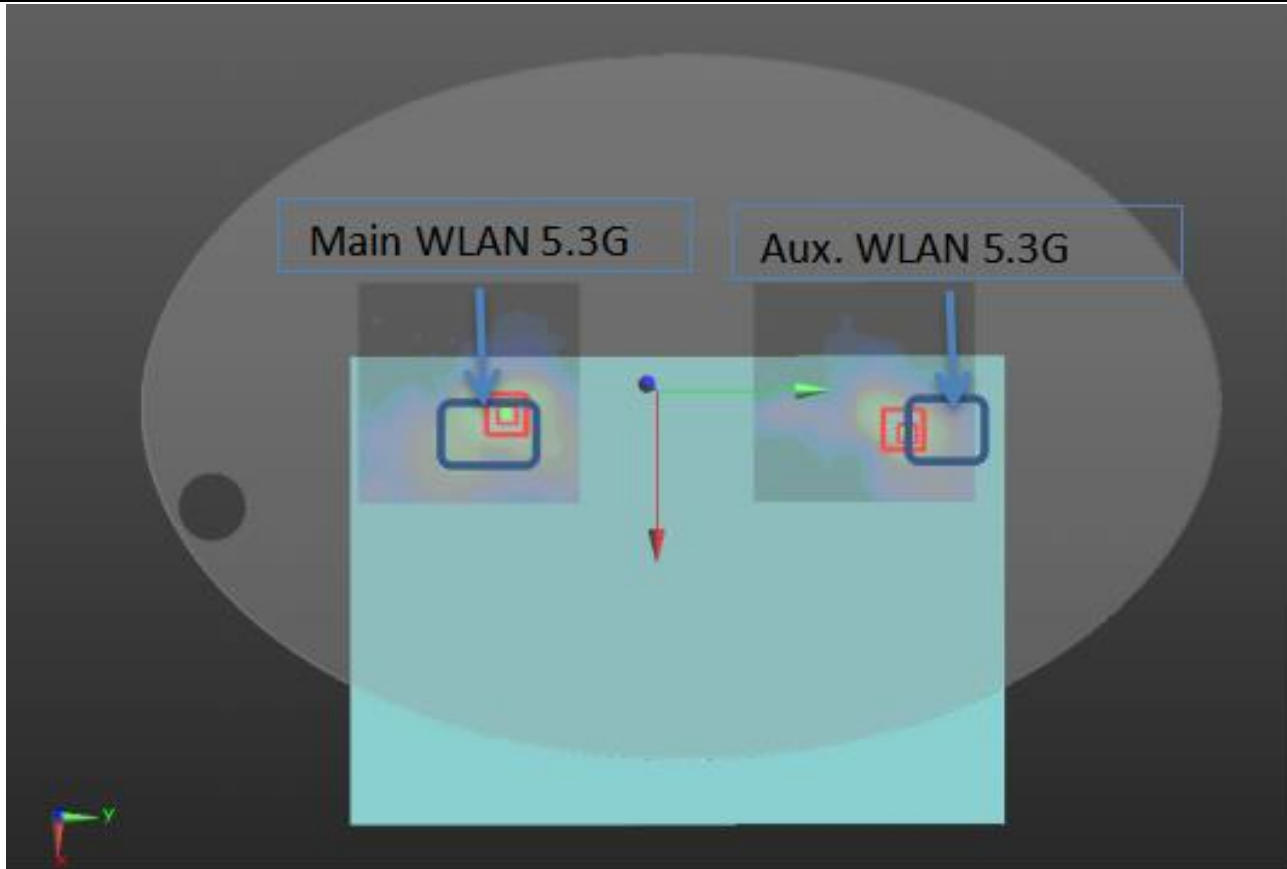
SPLSR Analysis 4#

Test Mode	Position	Antenna	Reported 1g Max. SAR (W/kg)	Coordinates (m)			3D Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR Test (Yes/No)
				X	Y	Z				
Tablet	Back Side	Aux. WLAN 2.4G	1.167	-0.0112	-0.0994	-0.177	199.20	2.01	0.01	No
		Main WLAN 2.4G	0.847	-0.0112	0.0998	-0.177				



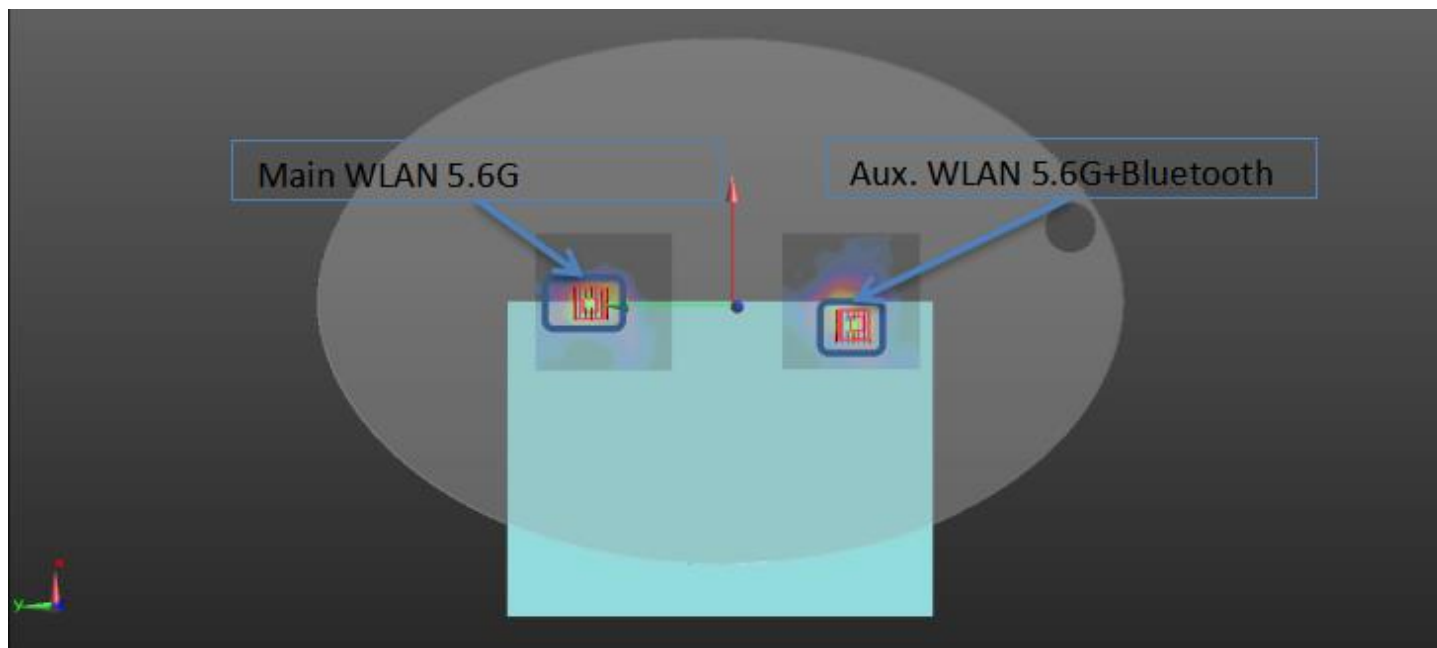
SPLSR Analysis 5#

Test Mode	Position	Antenna	Reported 1g Max. SAR (W/kg)	Coordinates (m)			3D Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR Test (Yes/No)
				X	Y	Z				
Tablet	Back Side	Aux. WLAN 5.3G+Bluetooth	1.377	-0.022	-0.099	-0.178	194.40	2.15	0.02	No
		Main WLAN 5.3G	0.771	-0.009	0.095	-0.178				



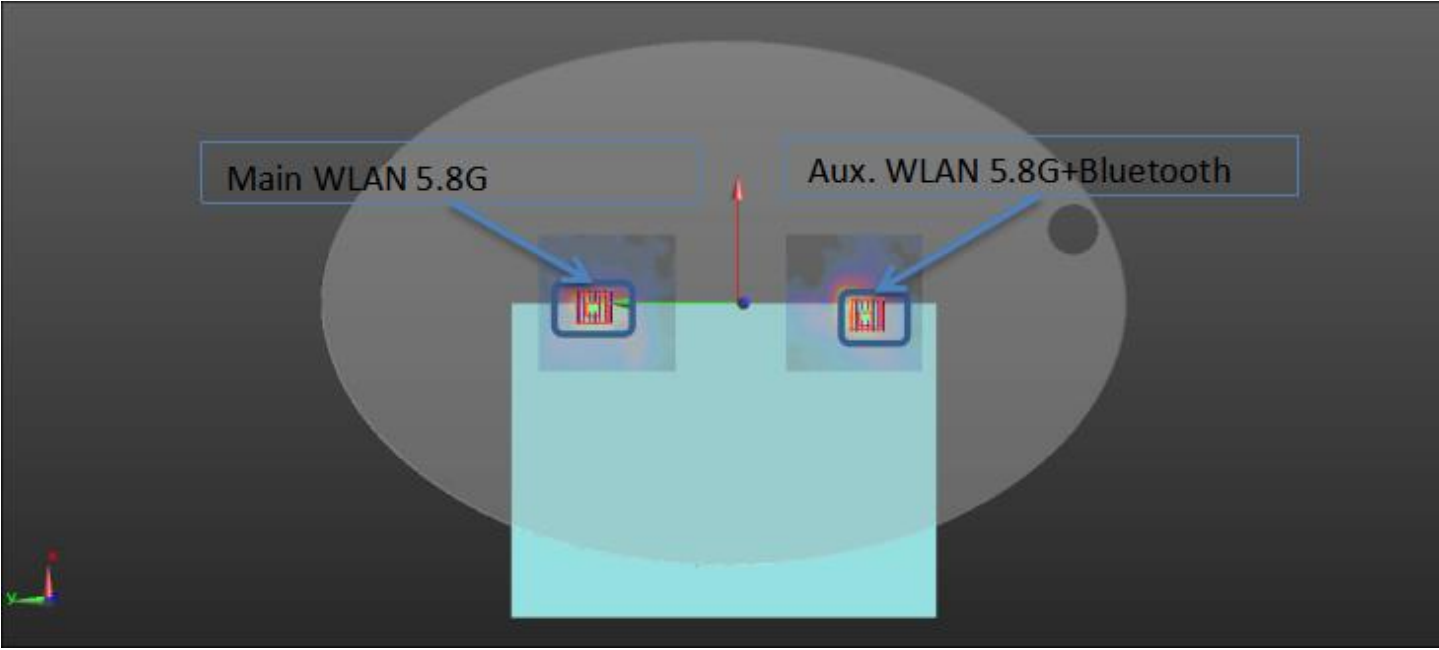
SPLSR Analysis 6#

Test Mode	Position	Antenna	Reported 1g Max. SAR (W/kg)	Coordinates (m)			3D Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR Test (Yes/No)
				X	Y	Z				
Tablet	Back Side	Aux. WLAN 5.6G+Bluetooth	1.588	-0.018	-0.100	-0.178	195.70	2.51	0.02	No
		Main WLAN 5.6G	0.922	-0.001	0.095	-0.178				



SPLSR Analysis 7#

Test Mode	Position	Antenna	Reported 1g Max. SAR (W/kg)	Coordinates (m)			3D Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR Test (Yes/No)
				X	Y	Z				
Tablet	Back Side	Aux. WLAN 5.8G+Bluetooth	1.585	-0.013	-0.104	-0.179	199.30	2.27	0.02	No
		Main WLAN 5.8G	0.681	-0.003	0.095	-0.179				



12.2.2 Limbs Simultaneous Transmission SAR Evaluation for WLAN Antenna with Bluetooth

Test Mode	Position	Simultaneous Mode	Mode	Max. 10g SAR	10g Sum SAR	SPLSR	SPLSR	Limit 10g
				(W/kg)	(W/kg)	(Yes/No)	Num.	(W/Kg)
Limbs (0 mm)								
Laptop	Front Edge of Keyboard	2.4 G WLAN (Auxiliary Antenna) + 2.4 G WLAN (Main Antenna)	2.4 G WLAN (Auxiliary Antenna)	0.277	0.534	No	/	4
			2.4 G WLAN (Main Antenna)	0.257				
		2.4 G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	2.4 G WLAN (Main Antenna)	0.257	0.307	No	/	
			Bluetooth (Auxiliary Antenna)	0.050				
		5.3G WLAN (Auxiliary Antenna) + 5.3G WLAN (Main Antenna)	5.3G WLAN (Auxiliary Antenna)	0.331	0.739	No	/	
			5.3G WLAN (Main Antenna)	0.408				
		5.3G WLAN (Auxiliary Antenna) + Bluetooth (Auxiliary Antenna)	5.3G WLAN (Auxiliary Antenna)	0.331	0.381	No	/	
			Bluetooth (Auxiliary Antenna)	0.050				
		5.3G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.3G WLAN (Main Antenna)	0.408	0.458	No	/	
			Bluetooth (Auxiliary Antenna)	0.050				
		5.3G WLAN (Auxiliary Antenna) + 5.3G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.3G WLAN (Auxiliary Antenna)	0.331	0.789	No	/	
			5.3G WLAN (Main Antenna)	0.408				
			Bluetooth (Auxiliary Antenna)	0.050				
		5.6G WLAN (Auxiliary Antenna) + 5.6G WLAN (Main Antenna)	5.6G WLAN (Auxiliary Antenna)	0.334	0.760	No	/	
			5.6G WLAN (Main Antenna)	0.426				
		5.6G WLAN (Auxiliary Antenna) + Bluetooth (Auxiliary Antenna)	5.6G WLAN (Auxiliary Antenna)	0.334	0.384	No	/	
			Bluetooth (Auxiliary Antenna)	0.050				
		5.6G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.6G WLAN (Main Antenna)	0.426	0.476	No	/	
			Bluetooth (Auxiliary Antenna)	0.050				
		5.6G WLAN (Auxiliary Antenna) + 5.6G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.6G WLAN (Auxiliary Antenna)	0.334	0.810	No	/	
			5.6G WLAN (Main Antenna)	0.426				
			Bluetooth (Auxiliary Antenna)	0.050				
		5.8G WLAN (Auxiliary Antenna) + 5.8G WLAN (Main Antenna)	5.8G WLAN (Auxiliary Antenna)	0.327	0.659	No	/	
			5.8G WLAN (Main Antenna)	0.332				
		5.8G WLAN (Auxiliary Antenna) + Bluetooth (Auxiliary Antenna)	5.8G WLAN (Auxiliary Antenna)	0.327	0.377	No	/	
			Bluetooth (Auxiliary Antenna)	0.050				
		5.8G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.8G WLAN (Main Antenna)	0.332	0.382	No	/	
			Bluetooth (Auxiliary Antenna)	0.050				
		5.8G WLAN (Auxiliary Antenna) + 5.8G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.8G WLAN (Auxiliary Antenna)	0.327	0.709	No	/	
			5.8G WLAN (Main Antenna)	0.332				
			Bluetooth (Auxiliary Antenna)	0.050				
		Laptop	Palm rest Side of Keyboard	2.4 G WLAN (Auxiliary Antenna) + 2.4 G WLAN (Main Antenna)	2.4 G WLAN (Auxiliary Antenna)	1.250	2.204	
2.4 G WLAN (Main Antenna)	0.954							
2.4 G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	2.4 G WLAN (Main Antenna)			0.954	1.507	No	/	
	Bluetooth (Auxiliary Antenna)			0.553				
5.3G WLAN (Auxiliary Antenna) + 5.3G WLAN (Main Antenna)	5.3G WLAN (Auxiliary Antenna)			0.918	1.990	No	/	
	5.3G WLAN (Main Antenna)			1.072				

		5.3G WLAN (Auxiliary Antenna) + Bluetooth (Auxiliary Antenna)	5.3G WLAN (Auxiliary Antenna)	0.918	1.471	No	/	
			Bluetooth (Auxiliary Antenna)	0.553				
		5.3G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.3G WLAN (Main Antenna)	1.072	1.625	No	/	
			Bluetooth (Auxiliary Antenna)	0.553				
		5.3G WLAN (Auxiliary Antenna) + 5.3G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.3G WLAN (Auxiliary Antenna)	0.918	2.543	No	/	
			5.3G WLAN (Main Antenna)	1.072				
			Bluetooth (Auxiliary Antenna)	0.553				
		5.6G WLAN (Auxiliary Antenna) + 5.6G WLAN (Main Antenna)	5.6G WLAN (Auxiliary Antenna)	1.208	2.205	No	/	
			5.6G WLAN (Main Antenna)	0.997				
		5.6G WLAN (Auxiliary Antenna) + Bluetooth (Auxiliary Antenna)	5.6G WLAN (Auxiliary Antenna)	1.208	1.761	No	/	
			Bluetooth (Auxiliary Antenna)	0.553				
		5.6G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.6G WLAN (Main Antenna)	0.997	1.550	No	/	
			Bluetooth (Auxiliary Antenna)	0.553				
		5.6G WLAN (Auxiliary Antenna) + 5.6G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.6G WLAN (Auxiliary Antenna)	1.208	2.758	No	/	
			5.6G WLAN (Main Antenna)	0.997				
			Bluetooth (Auxiliary Antenna)	0.553				
		5.8G WLAN (Auxiliary Antenna) + 5.8G WLAN (Main Antenna)	5.8G WLAN (Auxiliary Antenna)	1.010	1.812	No	/	
			5.8G WLAN (Main Antenna)	0.802				
		5.8G WLAN (Auxiliary Antenna) + Bluetooth (Auxiliary Antenna)	5.8G WLAN (Auxiliary Antenna)	1.010	1.563	No	/	
			Bluetooth (Auxiliary Antenna)	0.553				
		5.8G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.8G WLAN (Main Antenna)	0.802	1.355	No	/	
			Bluetooth (Auxiliary Antenna)	0.553				
		5.8G WLAN (Auxiliary Antenna) + 5.8G WLAN (Main Antenna) + Bluetooth (Auxiliary Antenna)	5.8G WLAN (Auxiliary Antenna)	1.010	2.365	No	/	
			5.8G WLAN (Main Antenna)	0.802				
			Bluetooth (Auxiliary Antenna)	0.553				

Note:

1: The highest Summed 10g SAR is 2.758 W/Kg < 4.0 W/kg, so Simultaneous Transmission SAR test is not required.

13 TEST EQUIPMENTS LIST

Description	Manufacturer	Model	Serial No./Version	Cal. Date	Cal. Due
PC	Dell	N/A	N/A	N/A	N/A
Test Software	Speag	DASY5	52.8.8.1222	N/A	N/A
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
E-Field Probe	Speag	EX3DV4	SN: 7510	2023/01/19	2024/01/19
Data Acquisition Electronicsr	Speag	DAE4	SN: 1710	2023/01/30	2024/01/30
Signal Generator	R&S	SMB100A	177746	2023/05/10	2024/05/09
Power Meter	R&S	NRVD-B2	835843/014	2023/09/05	2024/09/04
Power Sensor	R&S	NRV-Z4	100381	2023/09/05	2024/09/04
Power Sensor	R&S	NRV-Z2	100211	2023/09/05	2024/09/04
Network Analyzer	Agilent	E5071C	MY46103472	2023/11/14	2024/11/14
Thermometer	Elitech	RC-4	EF5238001628	2023/10/09	2024/10/09
Thermometer	Elitech	RC-4HC	EF7239002652	2023/11/17	2024/11/17
Power Amplifier	SATIMO	6552B	22374	N/A	N/A
Dielectric Probe Kit	Speag	DAK3.5	SN: 1312	N/A	N/A
Phantom	Speag	ELI4	SN: 1012	N/A	N/A
Attenuator	COM-MW	ZA-S1-31	1305003187	N/A	N/A
Directional coupler	AA-MCS	AAMCS-UDC	000272	N/A	N/A

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

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

ANNEX A SIMULATING LIQUID VERIFICATION RESULT

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

Date	Liquid Type	Fre. (MHz)	Temp. (°C)	Meas. Conductivity (σ) (S/m)	Meas. Permittivity (ϵ)	Target Conductivity (σ) (S/m)	Target Permittivity (ϵ)	Conductivity Tolerance (%)	Permittivity Tolerance (%)
2023.12.01	Head	2450	21.2	1.77	39.75	1.80	39.20	-1.89	1.40
2023.12.02	Head	5250	21.3	4.69	35.93	4.71	35.93	-0.38	0.00
2023.12.03	Head	5600	21.5	5.18	35.25	5.07	35.53	2.19	-0.79
2023.12.04	Head	5750	21.8	5.17	36.10	5.22	35.36	-1.02	2.10
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 (%)
2023.12.01	Head	2450	100	5.15	51.50	53.00	-2.83
2023.12.02	Head	5250	100	7.51	75.10	77.80	-3.47
2023.12.03	Head	5600	100	8.03	80.30	81.20	-1.11
2023.12.04	Head	5750	100	7.85	78.50	77.20	1.68

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 (%)
2023.12.01	Head	2450	100	2.39	23.90	24.10	-0.83
2023.12.02	Head	5250	100	2.11	21.10	22.10	-4.52
2023.12.03	Head	5600	100	2.35	23.50	23.10	1.73
2023.12.04	Head	5750	100	2.09	20.90	21.70	-3.69

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

System Performance Check Data (2450MHz)

Date: 2023.12.01

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

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.766$ S/m; $\epsilon_r = 39.748$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.1°C Liquid Temperature: 21.2°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(7.78, 7.78, 7.78); Calibrated: 2023.01.19;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2023.01.30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

CW 2450 100mW/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 5.45 W/kg

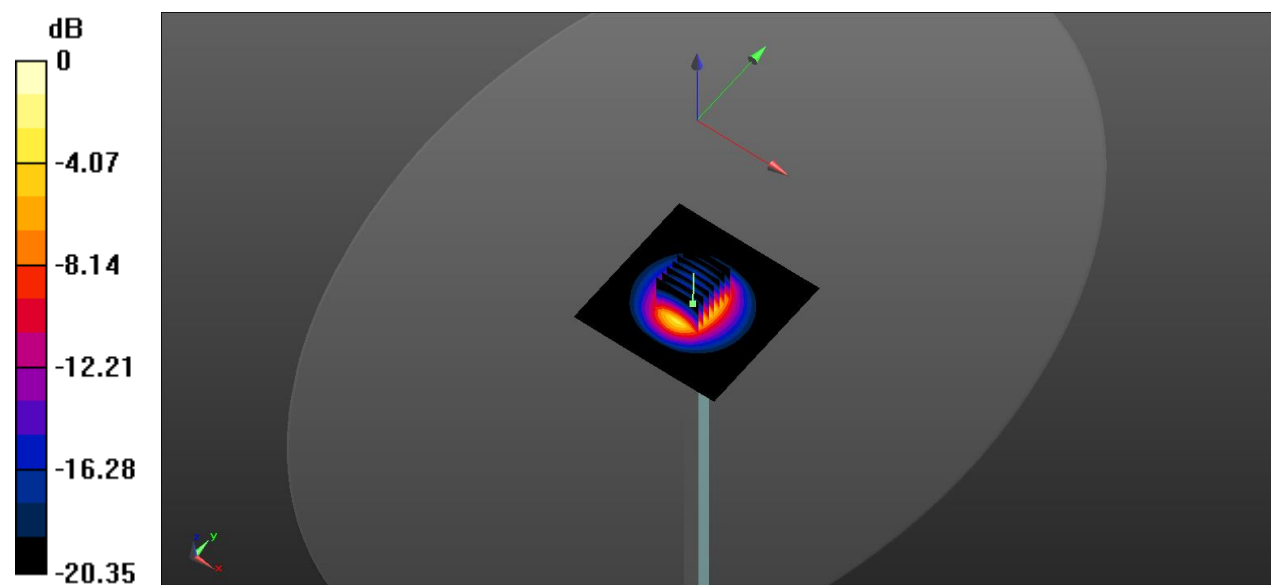
CW 2450 100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 44.71 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 10.7 W/kg

SAR(1 g) = 5.15 W/kg; SAR(10 g) = 2.39 W/kg

Maximum value of SAR (measured) = 5.24 W/kg



0 dB = 5.24 W/kg

System Performance Check Data (5250MHz)

Date: 2023.12.02

Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5250 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5250$ MHz; $\sigma = 4.692$ S/m; $\epsilon_r = 35.93$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.3°C Liquid Temperature: 21.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(5.67, 5.67, 5.67); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2023.01.30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

CW 5250 100mW/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 8.42 W/kg

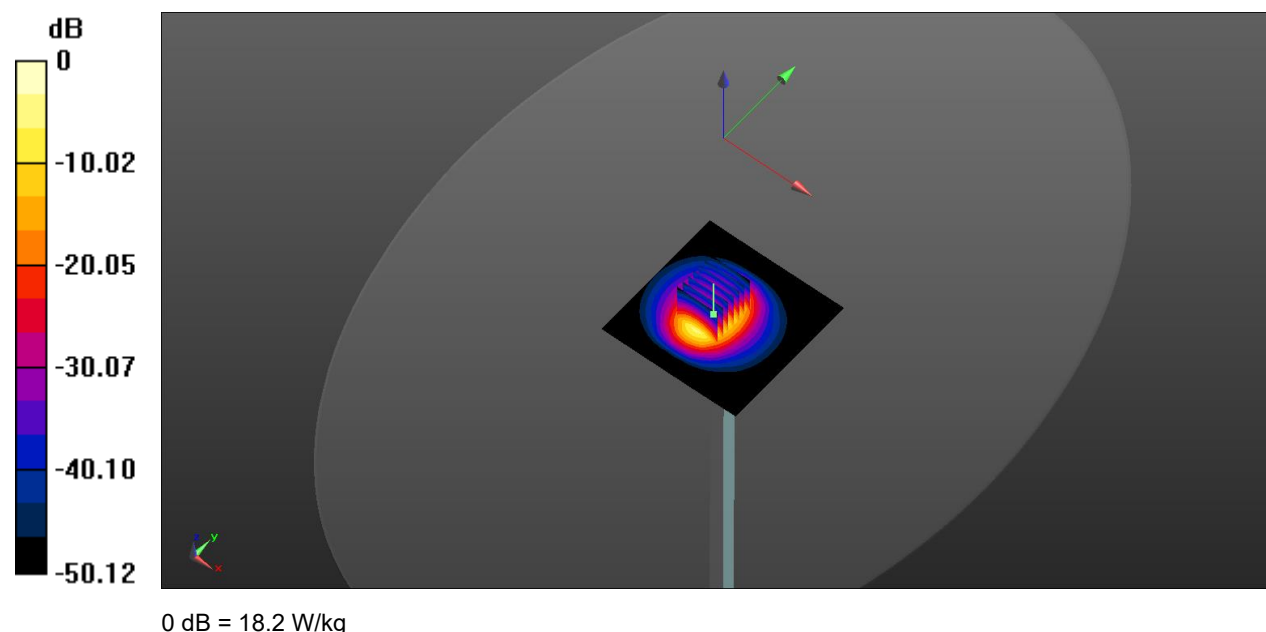
CW 5250 100mW/Zoom Scan (7x7x21)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 34.37 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 29.2 W/kg

SAR(1 g) = 7.51 W/kg; SAR(10 g) = 2.11 W/kg

Maximum value of SAR (measured) = 18.2 W/kg



System Performance Check Data (5600MHz)

Date: 2023.12.03

Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5600 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5600$ MHz; $\sigma = 5.181$ S/m; $\epsilon_r = 35.249$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.3°C Liquid Temperature: 21.5°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(4.88, 4.88, 4.88); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2023.01.30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

CW 5600 100mW /Area Scan (81x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 9.29 W/kg

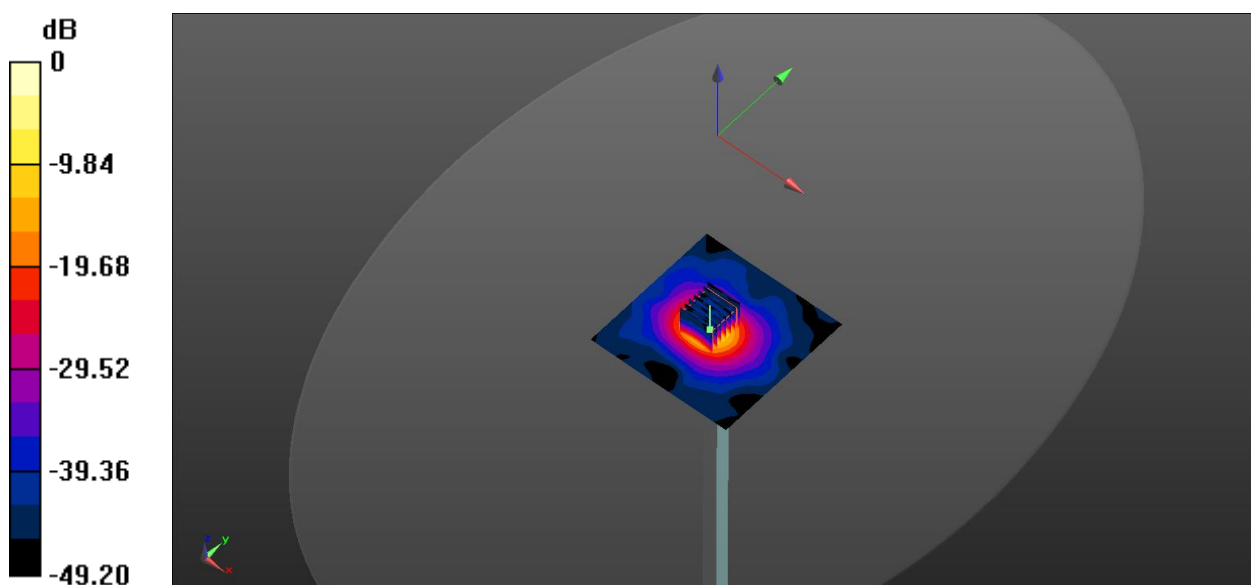
CW 5600 100mW /Zoom Scan (7x7x15)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 25.24 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 37.25 W/kg

SAR(1 g) = 8.03 W/kg; SAR(10 g) = 2.35 W/kg

Maximum value of SAR (measured) = 21.5 W/kg



0 dB = 21.5 W/kg

System Performance Check Data (5750MHz)

Date: 2023.12.04

Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5750 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5750$ MHz; $\sigma = 5.167$ S/m; $\epsilon_r = 36.103$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.2°C Liquid Temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(4.83, 4.83, 4.83); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2023.01.30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

CW 5750 100mW/Area Scan (81x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 8.32 W/kg

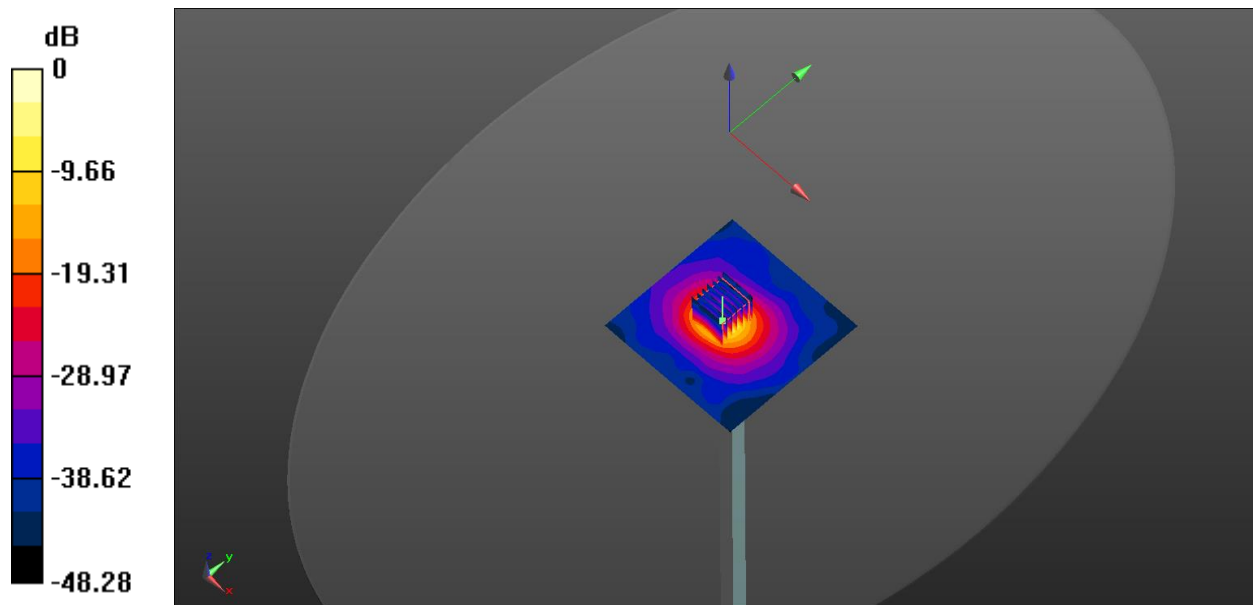
CW 5750 100mW/Zoom Scan (7x7x15)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 44.53 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 38.8 W/kg

SAR(1 g) = 7.85 W/kg; SAR(10 g) = 2.09 W/kg

Maximum value of SAR (measured) = 17.3 W/kg



0 dB = 17.3 W/kg

ANNEX C TEST DATA

Meas.1 Body Plane with Back Side 0mm on 39 Channel in Bluetooth mode with Antenna Auxiliary

Date: 2023.12.01

Communication System Band: BT; Frequency: 2441 MHz; Duty Cycle: 1:1.293

Medium parameters used (interpolated): $f = 2441$ MHz; $\sigma = 1.755$ S/m; $\epsilon_r = 39.948$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.1°C Liquid Temperature: 21.2°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(7.78, 7.78, 7.78); Calibrated: 2023.01.19;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2023.01.30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch39/Area Scan (81x81x1): Interpolated grid: $dx=1.200$ mm, $dy=1.200$ mm

Maximum value of SAR (interpolated) = 0.410 W/kg

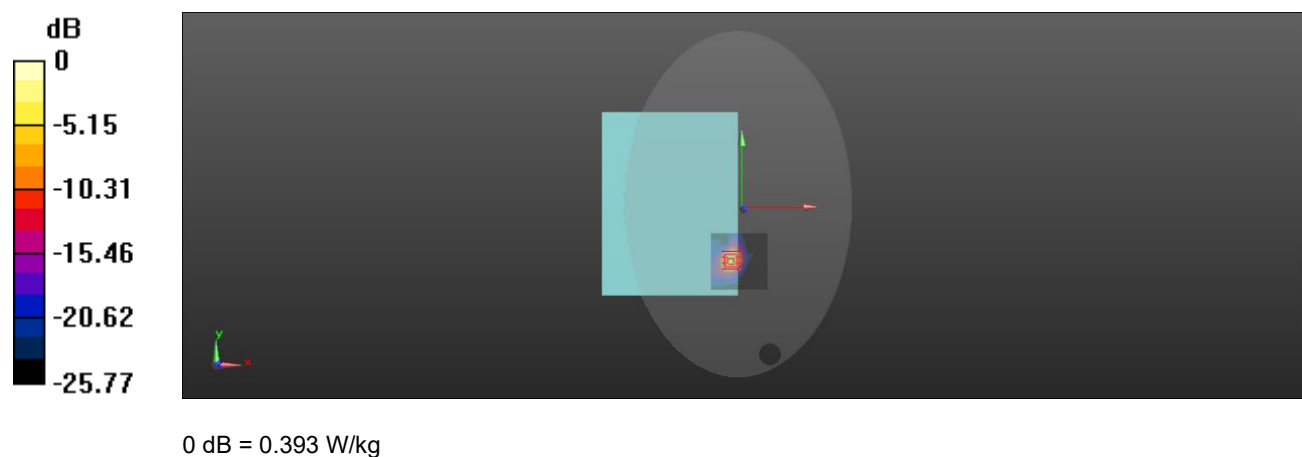
Ch39/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 0.3190 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.737 W/kg

SAR(1 g) = 0.279 W/kg; SAR(10 g) = 0.112 W/kg

Maximum value of SAR (measured) = 0.393 W/kg



Meas.2 Limbs Plane with Palm rest Side 0mm on 39 Channel in Bluetooth mode with Antenna Auxiliary

Date: 2023.12.01

Communication System Band: BT; Frequency: 2441 MHz; Duty Cycle: 1:1.293

Medium parameters used (interpolated): $f = 2441$ MHz; $\sigma = 1.755$ S/m; $\epsilon_r = 39.948$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.1°C Liquid Temperature: 21.2°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(7.78, 7.78, 7.78); Calibrated: 2023.01.19;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2023.01.30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch39/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 1.10 W/kg

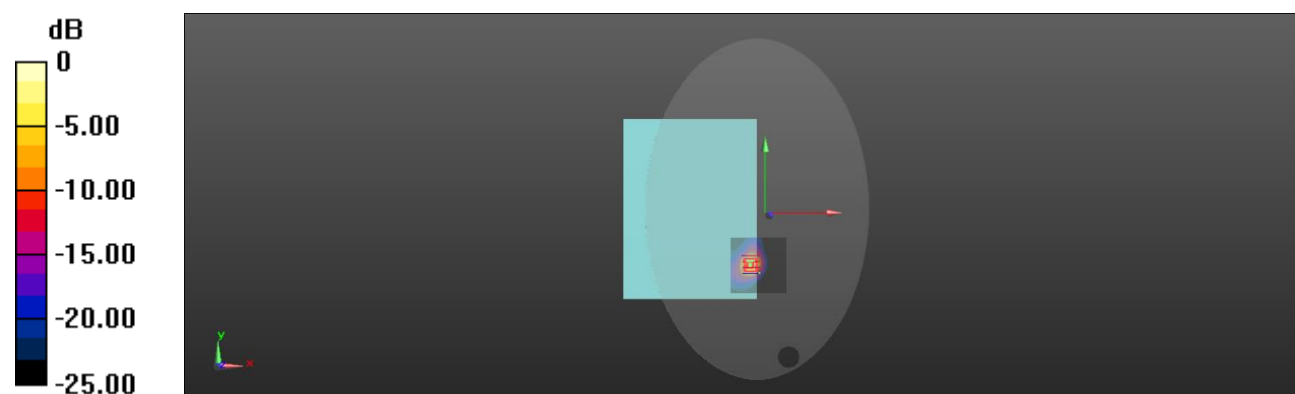
Ch39/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 0.4160 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 1.93 W/kg

SAR(1 g) = 0.892 W/kg; SAR(10 g) = 0.376 W/kg

Maximum value of SAR (measured) = 1.02 W/kg



0 dB = 1.02 W/kg

Meas.3 Body Plane with Back Side 0mm on 6 Channel in IEEE802.11b mode with Antenna Auxiliary

Date: 2023.12.01

Communication System Band: 2.4G; Frequency: 2437 MHz; Duty Cycle: 1:1.004

Medium parameters used (interpolated): $f = 2437$ MHz; $\sigma = 1.75$ S/m; $\epsilon_r = 40.028$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.1°C Liquid Temperature: 21.2°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(7.78, 7.78, 7.78); Calibrated: 2023.01.19;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2023.01.30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch6/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 1.37 W/kg

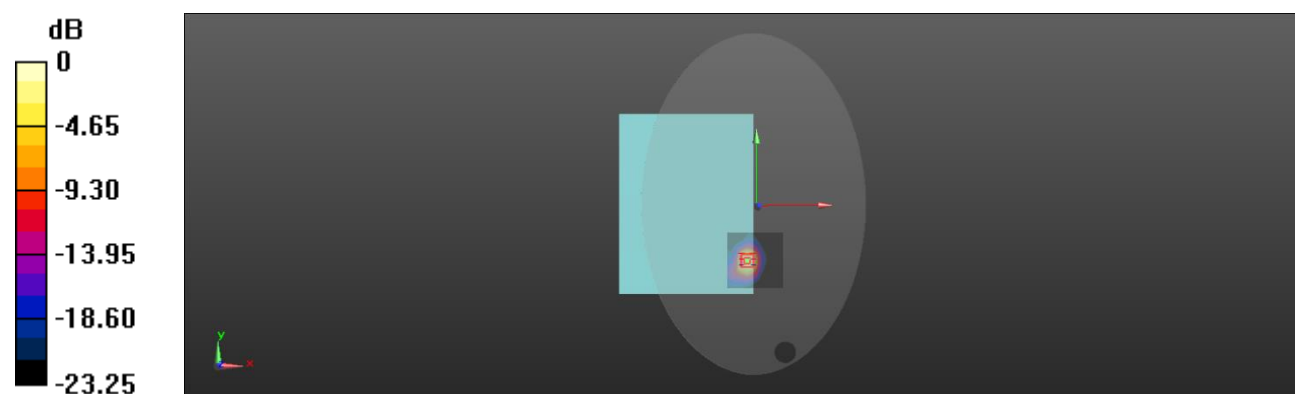
Ch6/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.096 V/m; Power Drift = -0.19 dB

Peak SAR (extrapolated) = 2.26 W/kg

SAR(1 g) = 1.12 W/kg; SAR(10 g) = 0.517 W/kg

Maximum value of SAR (measured) = 1.25 W/kg



0 dB = 1.25 W/kg

Meas.4 Body Plane with Bottom Side 0mm on 11 Channel in IEEE802.11b mode with Antenna Main

Date: 2023.12.01

Communication System Band: 2.4G; Frequency: 2462 MHz; Duty Cycle: 1:1.004

Medium parameters used (interpolated): $f = 2462$ MHz; $\sigma = 1.783$ S/m; $\epsilon_r = 39.589$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.1°C Liquid Temperature: 21.2°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(7.78, 7.78, 7.78); Calibrated: 2023.01.19;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2023.01.30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch11/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 1.18 W/kg

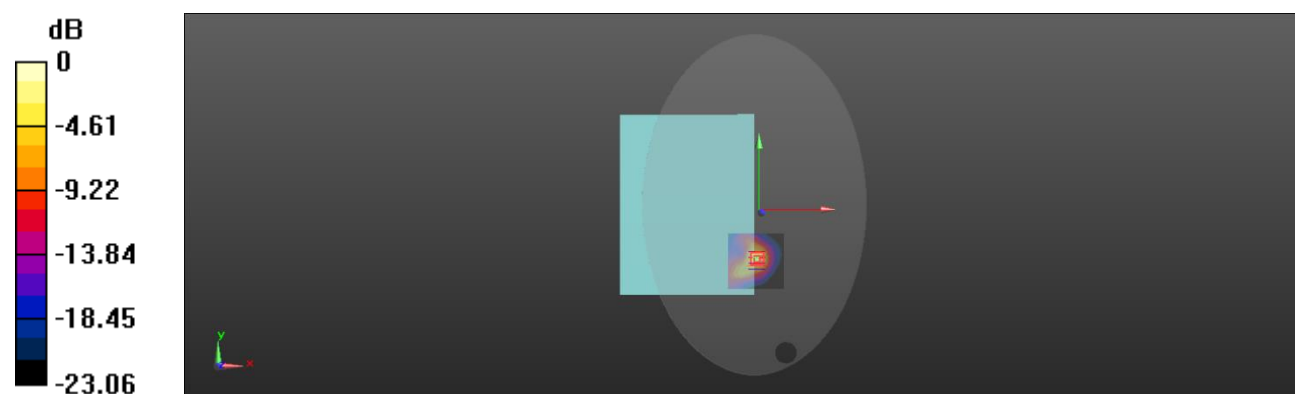
Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.959 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 2.19 W/kg

SAR(1 g) = 1.06 W/kg; SAR(10 g) = 0.478 W/kg

Maximum value of SAR (measured) = 1.23 W/kg



0 dB = 1.23 W/kg

Meas.5 Limbs Plane with Palm rest Side 0mm on 1 Channel in IEEE802.11b mode with Antenna Auxiliary

Date: 2023.12.01

Communication System Band: 2.4G; Frequency: 2412 MHz; Duty Cycle: 1:1.004

Medium parameters used (interpolated): $f = 2412$ MHz; $\sigma = 1.727$ S/m; $\epsilon_r = 40.148$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.1°C Liquid Temperature: 21.2°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(7.78, 7.78, 7.78); Calibrated: 2023.01.19;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2023.01.30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch1/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 3.01 W/kg

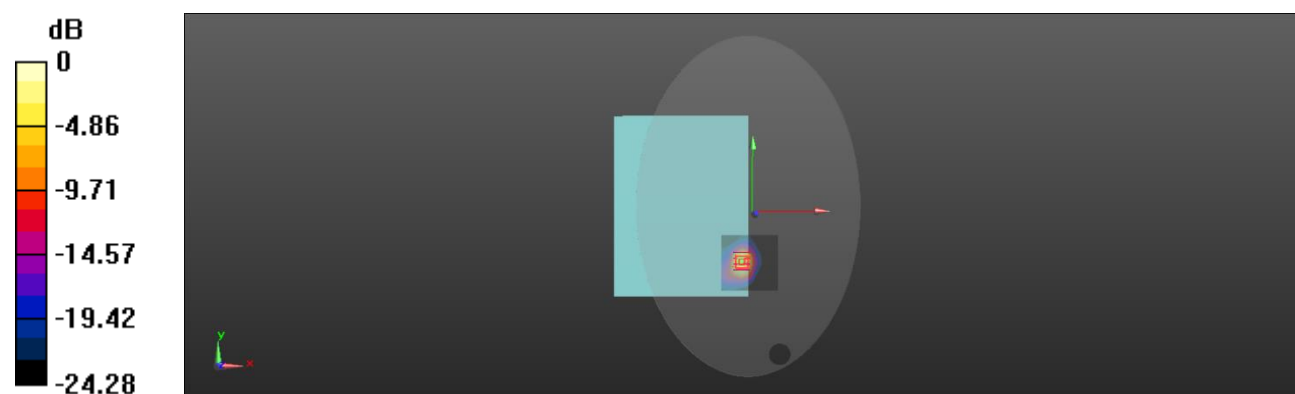
Ch1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.506 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 5.06 W/kg

SAR(1 g) = 2.52 W/kg; SAR(10 g) = 1.17 W/kg

Maximum value of SAR (measured) = 2.78 W/kg



0 dB = 2.78 W/kg

Meas.6 Limbs Plane with Palm rest Side 0mm on 6 Channel in IEEE802.11b mode with Antenna Main

Date: 2023.12.01

Communication System Band: 2.4G; Frequency: 2437 MHz; Duty Cycle: 1:1.004

Medium parameters used (interpolated): $f = 2437$ MHz; $\sigma = 1.75$ S/m; $\epsilon_r = 40.028$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.1°C Liquid Temperature: 21.2°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(7.78, 7.78, 7.78); Calibrated: 2023.01.19;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2023.01.30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch6/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 m

Maximum value of SAR (interpolated) = 2.27 W/kg

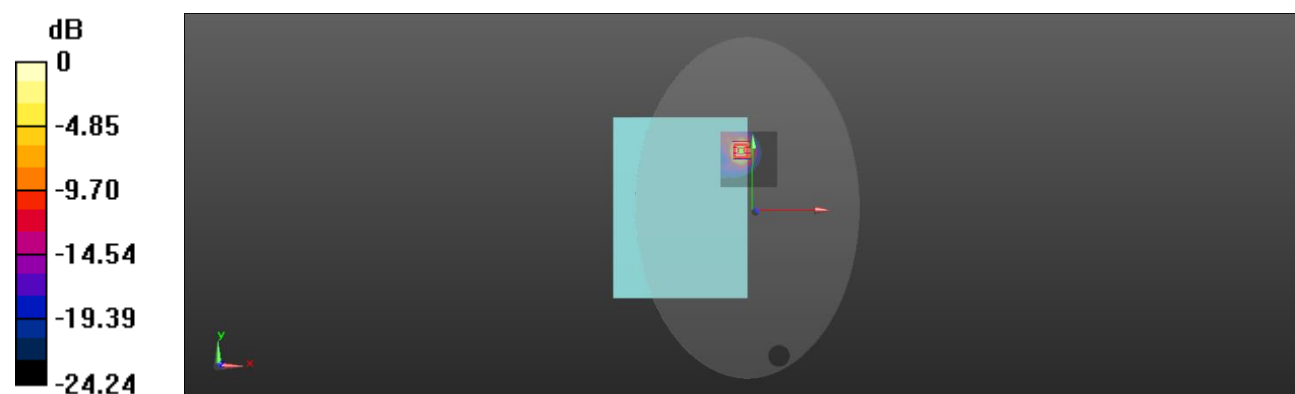
Ch6/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 0.5530 V/m; Power Drift = -0.17 dB

Peak SAR (extrapolated) = 3.72 W/kg

SAR(1 g) = 1.94 W/kg; SAR(10 g) = 0.914 W/kg

Maximum value of SAR (measured) = 2.22 W/kg



0 dB = 2.22 W/kg

Meas.7 Body Plane with Back Side 0mm on 58 Channel in IEEE802.11ac80 mode with Antenna Auxiliary

Date: 2023.12.02

Communication System Band: 5.3G; Frequency: 5290 MHz; Duty Cycle: 1:1.098

Medium parameters used (interpolated): $f = 5290$ MHz; $\sigma = 4.747$ S/m; $\epsilon_r = 35.643$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.3°C Liquid Temperature: 21.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(5.37, 5.37, 5.37); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2023.01.30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch58/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.57 W/kg

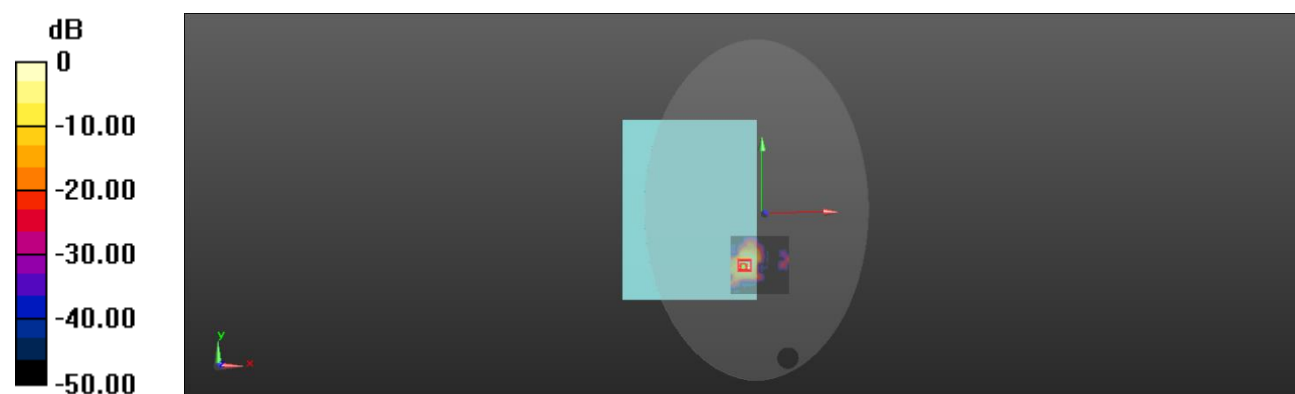
Ch58/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.5070 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 3.01 W/kg

SAR(1 g) = 0.759 W/kg; SAR(10 g) = 0.237 W/kg

Maximum value of SAR (measured) = 1.53 W/kg



0 dB = 1.53 W/kg

Meas.8 Body Plane with Bottom Side 0mm on 58 Channel in IEEE802.11ac80 mode with Antenna Main

Date: 2023.12.02

Communication System Band: 5.3G; Frequency: 5290 MHz; Duty Cycle: 1:1.098

Medium parameters used (interpolated): $f = 5290$ MHz; $\sigma = 4.747$ S/m; $\epsilon_r = 35.643$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.3°C Liquid Temperature: 21.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(5.37, 5.37, 5.37); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2023.01.30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch58/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.67 W/kg

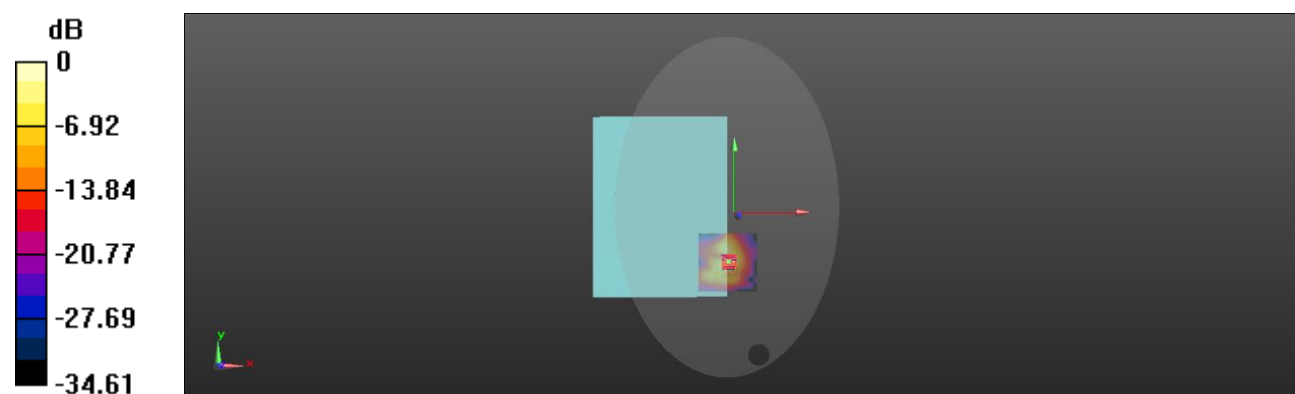
Ch58/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.149 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 3.20 W/kg

SAR(1 g) = 0.905 W/kg; SAR(10 g) = 0.297 W/kg

Maximum value of SAR (measured) = 1.74 W/kg



0 dB = 1.74 W/kg

Meas.9 Limbs Plane with Palm rest Side 0mm on 58 Channel in IEEE802.11ac80 mode with Antenna Auxiliary

Date: 2023.12.02

Communication System Band: 5.3G; Frequency: 5290 MHz; Duty Cycle: 1:1.098

Medium parameters used (interpolated): $f = 5290$ MHz; $\sigma = 4.747$ S/m; $\epsilon_r = 35.643$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.3°C Liquid Temperature: 21.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(5.37, 5.37, 5.37); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2023.01.30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch58/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 4.02 W/kg

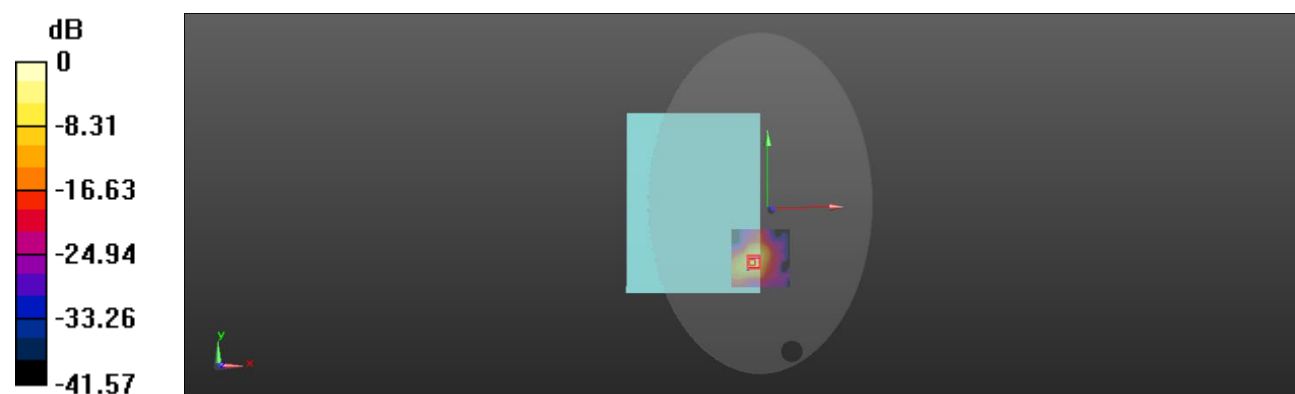
Ch58/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 9.14 W/kg

SAR(1 g) = 2.27 W/kg; SAR(10 g) = 0.752 W/kg

Maximum value of SAR (measured) = 4.69 W/kg



0 dB = 4.69 W/kg

Meas.10 Limbs Plane with Palm rest Side 0mm on 58 Channel in IEEE802.11ac80 mode with Antenna Main

Date: 2023.12.02

Communication System Band: 5.3G; Frequency: 5290 MHz; Duty Cycle: 1:1.098

Medium parameters used (interpolated): $f = 5290$ MHz; $\sigma = 4.747$ S/m; $\epsilon_r = 35.643$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.3°C Liquid Temperature: 21.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(5.37, 5.37, 5.37); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2023.01.30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch58/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 5.64 W/kg

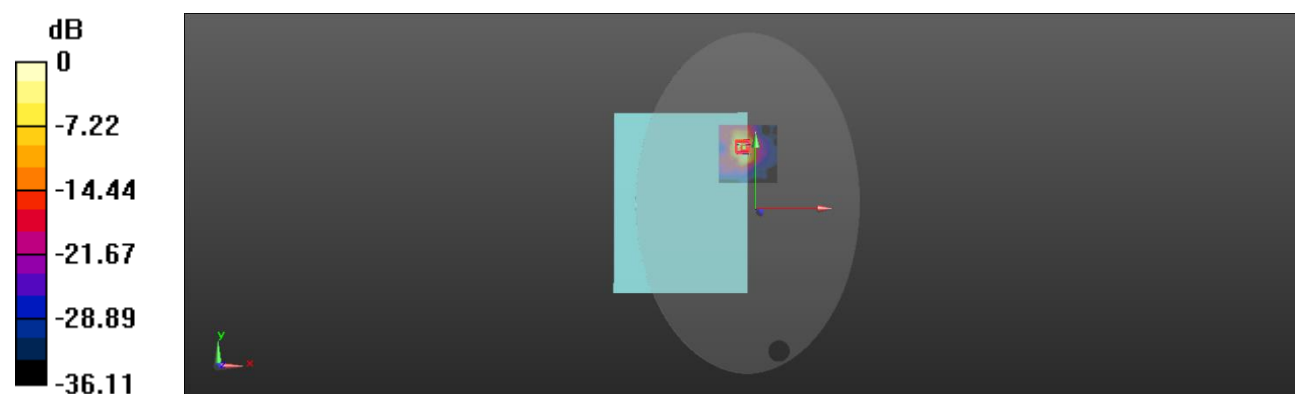
Ch58/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 11.9 W/kg

SAR(1 g) = 2.76 W/kg; SAR(10 g) = 0.968 W/kg

Maximum value of SAR (measured) = 5.96 W/kg



0 dB = 5.96 W/kg

Meas.11 Body Plane with Back Side 0mm on 106 Channel in IEEE802.11ac80 mode with Antenna Auxiliary

Date: 2023.12.03

Communication System Band: 5.6G; Frequency: 5530 MHz; Duty Cycle: 1:1.098

Medium parameters used (interpolated): $f = 5530$ MHz; $\sigma = 5.088$ S/m; $\epsilon_r = 35.895$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.3°C Liquid Temperature: 21.5°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(4.98, 4.98, 4.98); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2023.01.30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch106/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.92 W/kg

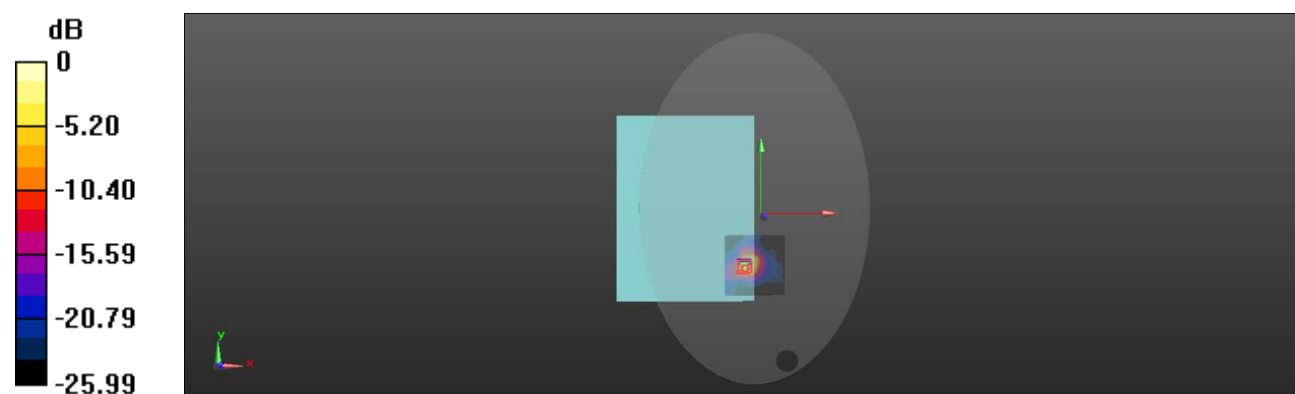
Ch106/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.8650 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 5.24 W/kg

SAR(1 g) = 1.05 W/kg; SAR(10 g) = 0.295 W/kg

Maximum value of SAR (measured) = 2.46 W/kg



0 dB = 2.46 W/kg

Meas.12 Body Plane with Bottom Side 0mm on 106 Channel in IEEE802.11ac80 mode with Antenna Main

Date: 2023.12.03

Communication System Band: 5.6G; Frequency: 5530 MHz; Duty Cycle: 1:1.098

Medium parameters used (interpolated): $f = 5530$ MHz; $\sigma = 5.088$ S/m; $\epsilon_r = 35.895$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.3°C Liquid Temperature: 21.5°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(4.98, 4.98, 4.98); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2023.01.30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch106/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.47 W/kg

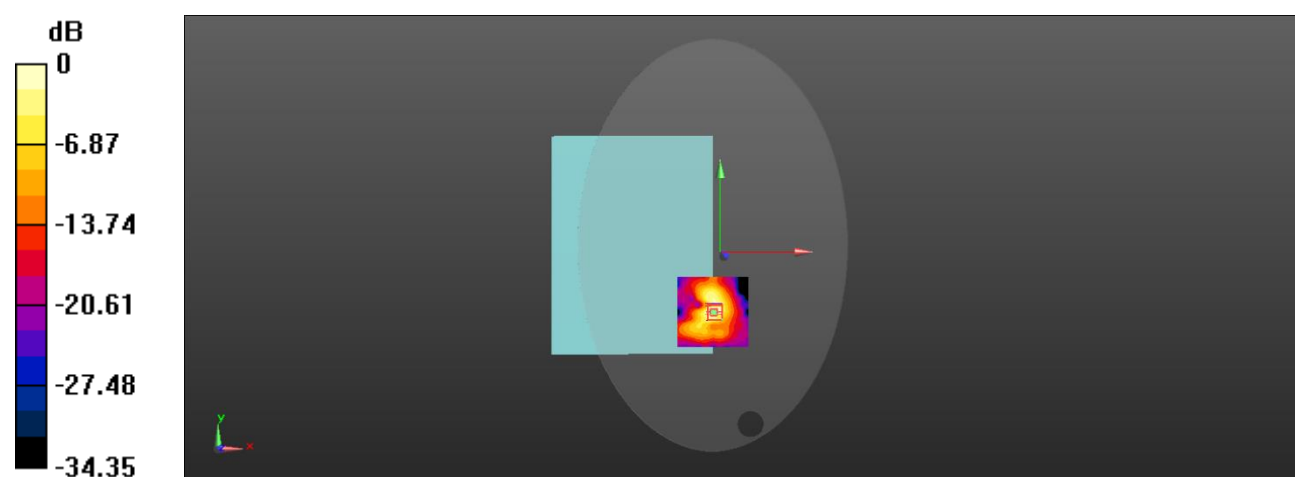
Ch106/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.505 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 2.66 W/kg

SAR(1 g) = 0.752 W/kg; SAR(10 g) = 0.260 W/kg

Maximum value of SAR (measured) = 1.35 W/kg



0 dB = 1.35 W/kg

Meas.13 Limbs Plane with Palm rest Side 0mm on 138 Channel in IEEE802.11ac80 mode with Antenna Auxiliary

Date: 2023.12.03

Communication System Band: 5.6G; Frequency: 5690 MHz; Duty Cycle: 1:1.098

Medium parameters used (interpolated): $f = 5690$ MHz; $\sigma = 5.297$ S/m; $\epsilon_r = 34.372$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.3°C Liquid Temperature: 21.5°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(4.88, 4.88, 4.88); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2023.01.30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch138/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 6.06 W/kg

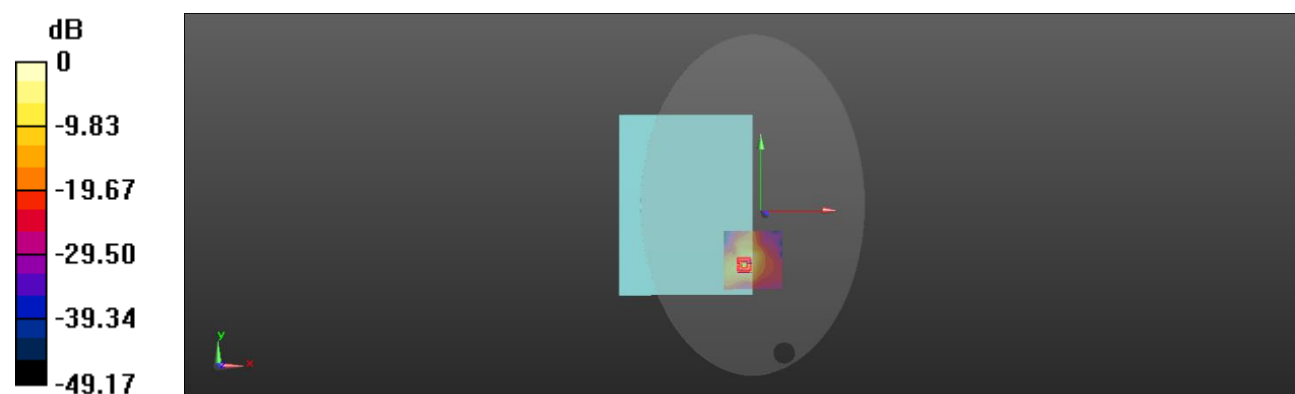
Ch138/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.8930 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 15.6 W/kg

SAR(1 g) = 3.33 W/kg; SAR(10 g) = 0.956 W/kg

Maximum value of SAR (measured) = 7.52 W/kg



0 dB = 7.52 W/kg

Meas.14 Limbs Plane with Palm rest Side 0mm on 138 Channel in IEEE802.11ac80 mode with Antenna Main

Date: 2023.12.03

Communication System Band: 5.6G; Frequency: 5690 MHz; Duty Cycle: 1:1.098

Medium parameters used (interpolated): $f = 5690$ MHz; $\sigma = 5.297$ S/m; $\epsilon_r = 34.372$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.3°C Liquid Temperature: 21.5°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(4.88, 4.88, 4.88); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2023.01.30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch138/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 5.70 W/kg

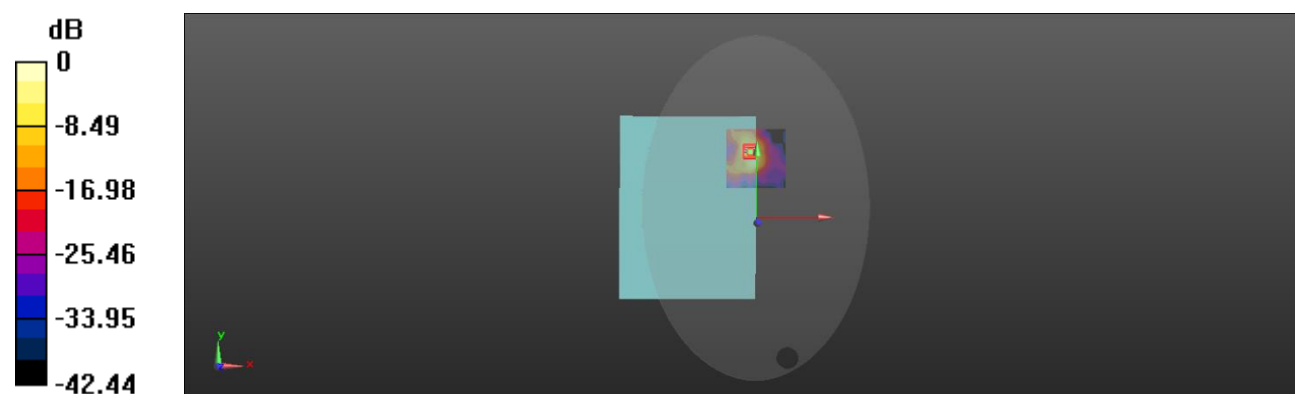
Ch138/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 12.1 W/kg

SAR(1 g) = 2.53 W/kg; SAR(10 g) = 0.830 W/kg

Maximum value of SAR (measured) = 5.35 W/kg



0 dB = 5.35 W/kg

Meas.15 Body Plane with Back Side 0mm on 155 Channel in IEEE802.11ac80 mode with Antenna Auxiliary

Date: 2023.12.04

Communication System Band: 5.8G; Frequency: 5775 MHz; Duty Cycle: 1:1.098

Medium parameters used (interpolated): $f = 5775$ MHz; $\sigma = 5.197$ S/m; $\epsilon_r = 36.031$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.2°C Liquid Temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(4.83, 4.83, 4.83); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2023.01.30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch155/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 2.22 W/kg

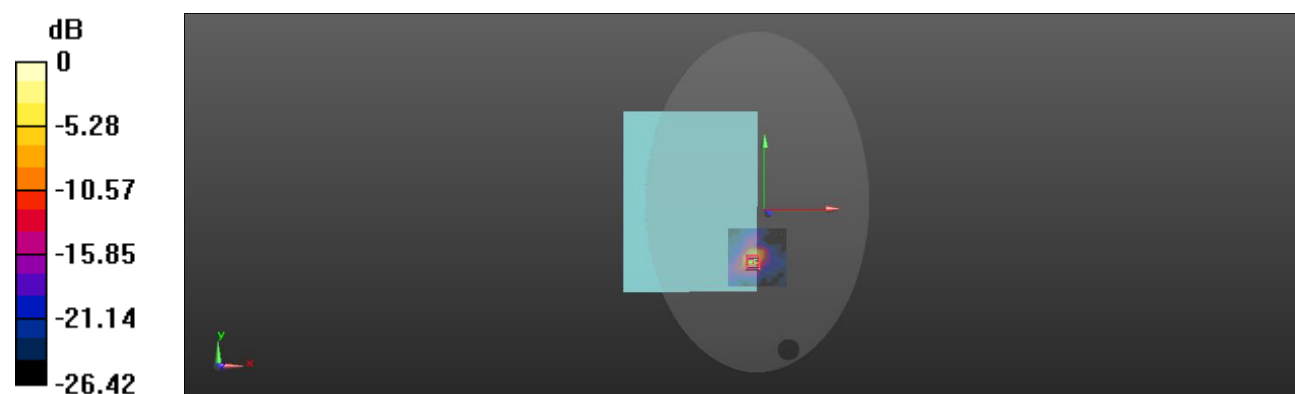
Ch155/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.6160 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 5.04 W/kg

SAR(1 g) = 1.04 W/kg; SAR(10 g) = 0.299 W/kg

Maximum value of SAR (measured) = 2.33 W/kg



0 dB = 2.33 W/kg

Meas.16 Body Plane with Back Side 0mm on 155 Channel in IEEE802.11ac80 mode with Antenna Main

Date: 2023.12.04

Communication System Band: 5.8G; Frequency: 5775 MHz; Duty Cycle: 1:1.098

Medium parameters used (interpolated): $f = 5775$ MHz; $\sigma = 5.197$ S/m; $\epsilon_r = 36.031$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.2°C Liquid Temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(4.83, 4.83, 4.83); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2023.01.30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch155/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.17 W/kg

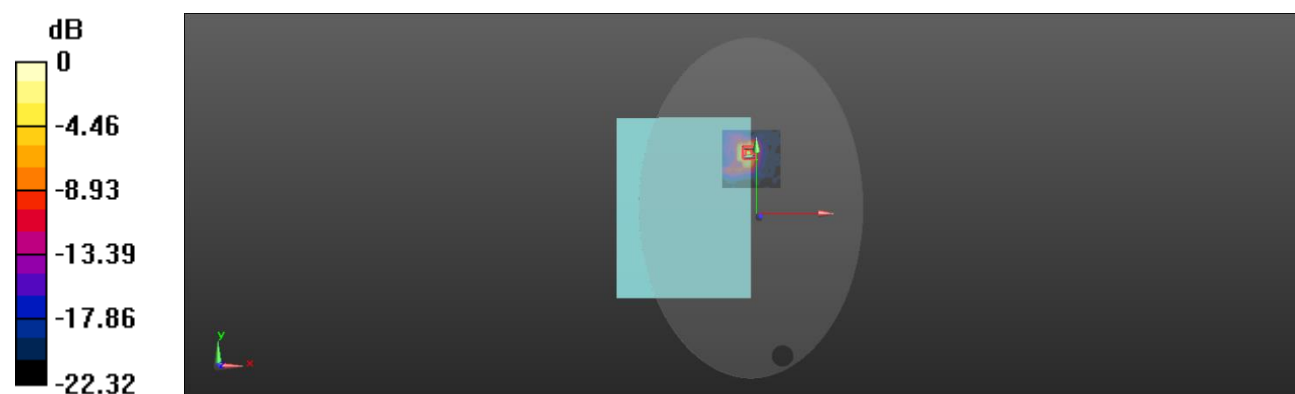
Ch155/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.3250 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 2.63 W/kg

SAR(1 g) = 0.599 W/kg; SAR(10 g) = 0.196 W/kg

Maximum value of SAR (measured) = 1.17 W/kg



0 dB = 1.17 W/kg

Meas.17 Limbs Plane with Palm rest Side 0mm on 155 Channel in IEEE802.11ac80 mode with Antenna Auxiliary

Date: 2023.12.04

Communication System Band: 5.8G; Frequency: 5775 MHz; Duty Cycle: 1:1.098

Medium parameters used (interpolated): $f = 5775$ MHz; $\sigma = 5.197$ S/m; $\epsilon_r = 36.031$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.2°C Liquid Temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(4.83, 4.83, 4.83); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2023.01.30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch155/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 5.59 W/kg

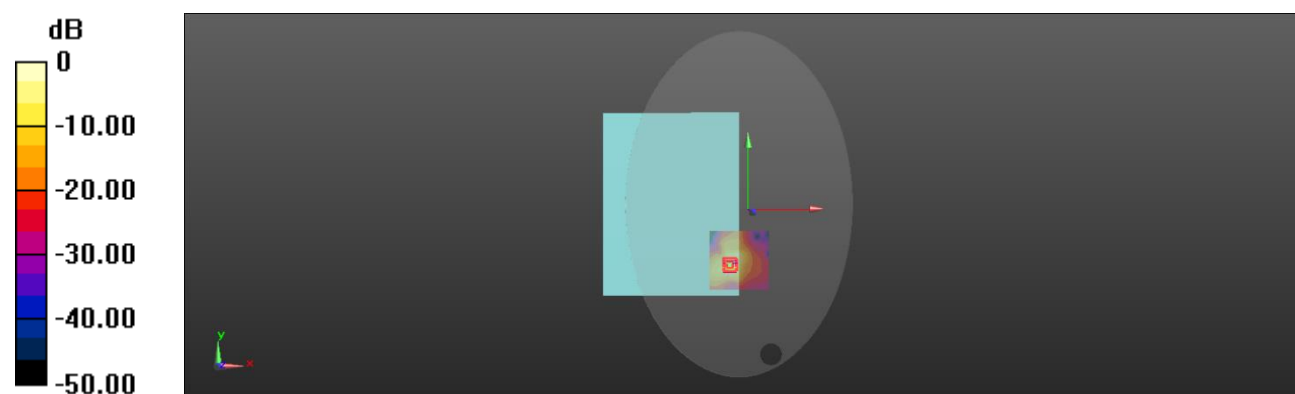
Ch155/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.6590 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 14.5 W/kg

SAR(1 g) = 3.05 W/kg; SAR(10 g) = 0.827 W/kg

Maximum value of SAR (measured) = 6.80 W/kg



0 dB = 6.80 W/kg

Meas.18 Limbs Plane with Palm rest Side 0mm on 155 Channel in IEEE802.11ac80 mode with Antenna Main

Date: 2023.12.04

Communication System Band: 5.8G; Frequency: 5775 MHz; Duty Cycle: 1:1.098

Medium parameters used (interpolated): $f = 5775$ MHz; $\sigma = 5.197$ S/m; $\epsilon_r = 36.031$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 22.2°C Liquid Temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7510; ConvF(4.83, 4.83, 4.83); Calibrated: 2023.01.19;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1710; Calibrated: 2023.01.30
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1012
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Ch155/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 4.73 W/kg

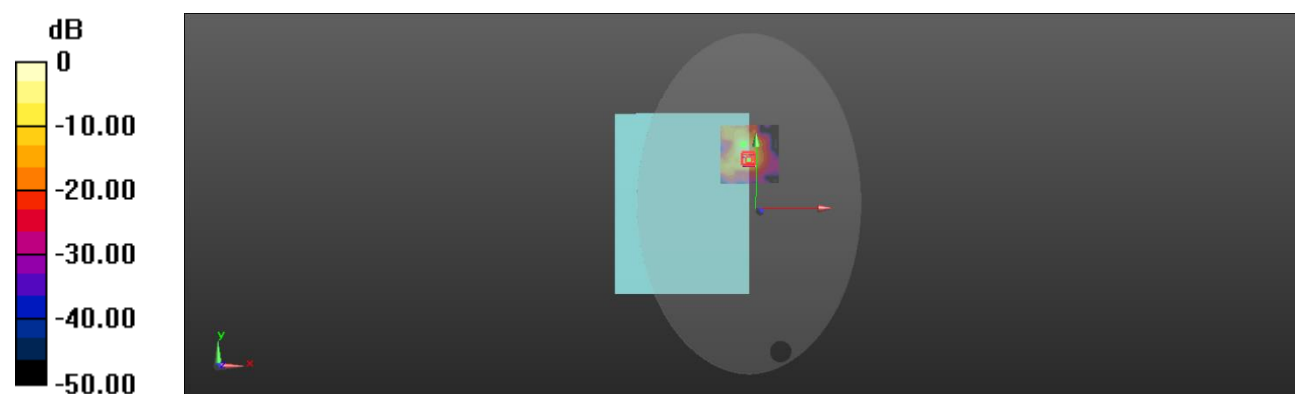
Ch155/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 0 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 9.11 W/kg

SAR(1 g) = 2 W/kg; SAR(10 g) = 0.630 W/kg

Maximum value of SAR (measured) = 4.22 W/kg



0 dB = 4.22 W/kg

ANNEX D EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ23B0223-AW.pdf”.

ANNEX E SAR TEST SETUP PHOTOS

Please refer the document “BL-SZ23B0223-AS-1.pdf”.

ANNEX F CALIBRATION REPORT

Please refer the document “BL-SZ23B0223-AC-1.pdf”.

ANNEX G TUNE-UP PROCEDURE

Please refer the document “BL-SZ23B0223-AT-5.pdf”.

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