



TEST REPORT

Applicant Name: Shenzhen Jumper Technology Co.,Ltd.
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Report Number: 2504V12497E-SAA
FCC ID: 2AQAA-P1

Test Standard (s)

FCC 47 CFR part 2.1093

Sample Description

Product Type: Laptop
Model No.: P1
Multiple Model(s) No.: N/A
Trade Mark: N/A
Serial Number: 372C-1
Date Received: 2025-08-05
Date of Test: 2025-08-09 - 2025-09-29
Issue Date: 2025-09-30

Test Result:	The EUT complied with the standards above.
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Prepared and Checked By:

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SAR Engineer

Approved By:

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Mode		Max. Reported SAR Level(s) (W/kg)	Limit (W/kg)
Bluetooth	1g Body SAR	0.02	1.6
2.4G Wi-Fi	1g Body SAR	0.50	
5.2G Wi-Fi	1g Body SAR	0.79	
5.3G Wi-Fi	1g Body SAR	0.75	
5.6G Wi-Fi	1g Body SAR	0.52	
5.8G Wi-Fi	1g Body SAR	0.78	
Simultaneous	1g Body SAR	1.57	
Applicable Standards	FCC 47 CFR part 2.1093 Radiation exposure evaluation: portable devices		
	RF Exposure Procedures: TCB Workshop April 2019		
	IEEE1528:2013 IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques		
	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)		
	KDB procedures KDB 447498 D01 General RF Exposure Guidance v06 KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04 KDB 865664 D02 RF Exposure Reporting v01r02 KDB 616217 D04 SAR for laptop and tablets v01r02 KDB 248227 D01 802.11 Wi-Fi SAR v02r02		
Note: This wireless device has been shown to be capable of compliance for localized specific absorption rate (SAR) for General Population/Uncontrolled Exposure limits specified in FCC 47 CFR part 2.1093 and has been tested in accordance with the measurement procedures specified in IEEE 1528-2013 and RF exposure KDB procedures.			
The results and statements contained in this report pertain only to the device(s) evaluated.			
Unless otherwise stated there are no any additions to, deviations, or exclusions from the method.			

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	2504V12497E-SAA	Original Report	2025-09-30

EUT DESCRIPTION

This report has been prepared on behalf of **Shenzhen Jumper Technology Co.,Ltd.** and their product **Laptop**, Model: **P1**, FCC ID: **2AQAA-P1** or the EUT (Equipment under Test) as referred to in the rest of this report.

Technical Specification

HVIN:	P1
FVIN:	24H2
Device Type:	Portable
Exposure Category:	Population / Uncontrolled
Antenna Type(s):	Internal antenna
Operation Modes:	2.4G WLAN, 5G WLAN, Bluetooth and BLE
Operation Frequency:	WIFI 2.4G:2412-2462MHz(TX/RX) WIFI 5.2G:5150-5250MHz(TX/RX) WIFI 5.3G:5250-5350MHz(TX/RX) WIFI 5.6G:5470-5725 MHz(TX/RX) WIFI 5.8G:5725-5850MHz(TX/RX) Bluetooth:2402-2480MHz(TX/RX) BLE:2402-2480MHz(TX/RX)
Rated Input Voltage:	DC 7.6 V from battery
Dimensions (L*W*H):	380mm (L) *252mm (W) *42mm (H)
Serial Number:	372C-1
Normal Operation:	Body Supported

REFERENCE, STANDARDS, AND GUIDELINES

FCC:

The Report and Order requires routine SAR evaluation prior to equipment authorization of portable transmitter devices, including portable telephones. For consumer products, the applicable limit is 1.6 mW/g as recommended by the ISS-102 for an uncontrolled environment. According to the Safety Code 6 Health Canada's Radiofrequency Exposure Guidelines, the device should be evaluated at maximum output power (radiated from the antenna) under "worst-case" conditions for normal or intended use, incorporating normal antenna operating positions, device peak performance frequencies and positions for maximum RF energy coupling.

This report describes the methodology and results of experiments performed on wireless data terminal. The objective was to determine if there is RF radiation and if radiation is found, what is the extent of radiation with respect to safety limits. SAR (Specific Absorption Rate) is the measure of RF exposure determined by the amount of RF energy absorbed by human body (or its parts) – to determine how the RF energy couples to the body or head which is a primary health concern for body worn devices. The limit below which the exposure to RF is considered safe by regulatory bodies in North America is 1.6 mW/g average over 1 gram of tissue mass.

SAR Limits

FCC Limit

EXPOSURE LIMITS	SAR (W/kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / Controlled Exposure Environment)
Spatial Average (averaged over the whole body)	0.08	0.4
Spatial Peak (averaged over any 1 g of tissue)	1.6	8.0
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)	4.0	20.0

Population/Uncontrolled Environments are defined as locations where there is the exposure of individual who have no knowledge or control of their exposure.

Occupational/Controlled Environments are defined as locations where there is exposure that maybe incurred by people who are aware of the potential for exposure (i.e. as a result of employment or occupation).

General Population/Uncontrolled environments Spatial Peak(averaged over any 1 g of tissue) limit 1.6 W/kg applied to the EUT.

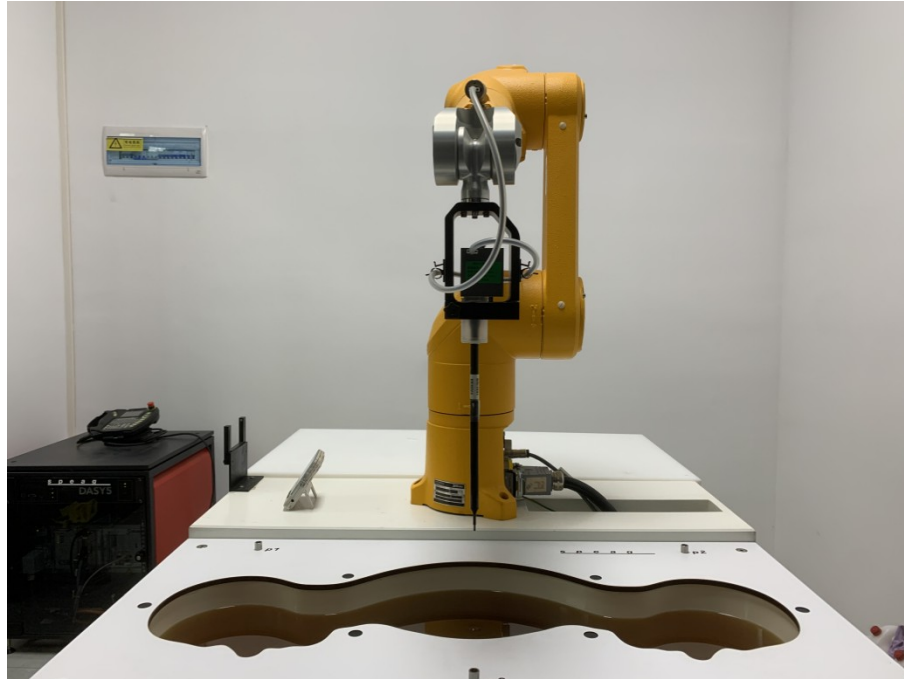
FACILITIES

The test site used by Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the Floor 1, KuMaKe Building, Dongzhou Community, Guangming Street, Guangming District, Shenzhen, Guangdong, China.

Accredited by American Association for Laboratory Accreditation (A2LA).The Certificate Number is 4297.01.

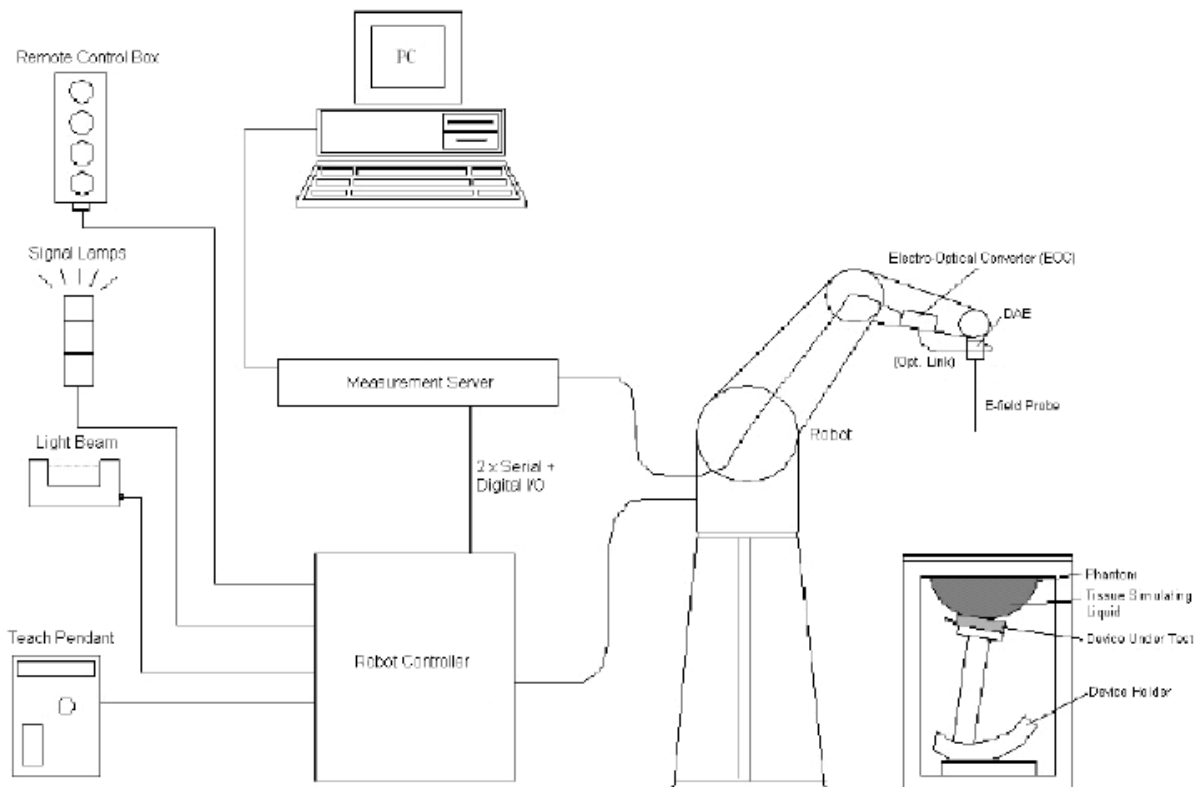
DESCRIPTION OF TEST SYSTEM

These measurements were performed with the automated near-field scanning system DASY5 from Schmid & Partner Engineering AG (SPEAG) which is the Fifth generation of the system shown in the figure hereinafter:



DASY5 System Description

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



- A standard high precision 6-axis robot (Staubli TX=RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal application, 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.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Win7 professional operating system and the DASY52 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

DASY5 Measurement Server

The DASY5 measurement server is based on a PC/104 CPU board with a 400 MHz Intel ULV Celeron, 128 MB chip-disk and 128 MB RAM. The necessary circuits for communication with the DAE4 (or DAE3) electronics box, as well as the 16-bit AD converter system for optical detection and digital I/O interface are contained on the DASY5 I/O board, which is directly connected to the PC/104 bus of the CPU board.

The measurement server performs all real-time data evaluations of field measurements and surface detection, controls robot movements, and handles safety operations. The PC operating system cannot interfere with these time-critical processes. All connections are supervised by a watchdog, and disconnection of any of the cables to the measurement server will automatically disarm the robot and disable all program- controlled robot movements. Furthermore, the measurement server is equipped with an expansion port, which is reserved for future applications. Please note that this expansion port does not have a standardized pinout, and therefore only devices provided by SPEAG can be connected. Connection of devices from any other supplier could seriously damage the measurement server.

Data Acquisition Electronics

The data acquisition electronics (DAE4) consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter 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.

The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

The input impedance of both the DAE4 as well as of the DAE3 box is 200M Ω ; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

EX3DV4 E-Field Probes

Frequency	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 μ W/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μ W/g)
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%.
Compatibility	DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI

SAM Twin Phantom

The SAM Twin Phantom (shown in front of DASY5) is a fiberglass shell phantom with shell thickness 2 mm, except in the ear region where the thickness is increased to 6 mm.

When the phantom is mounted inside allocated slot of the DASY5 platform, phantom reference points can be taught directly in the DASY5 V5.2 software. When the DASY5 platform is used to mount the

Phantom, some of the phantom teaching points cannot be reached by the robot in DASY5 V5.2. A special tool called P1a-P2aX-Former is provided to transform two of the three points, P1 and P2, to reachable locations. To use these new teaching points, a revised phantom configuration file is required. In addition to our standard broadband liquids, the phantom can be used with the following tissue simulating liquids:

Sugar-water-based liquids can be left permanently in the phantom. Always cover the liquid when the system is not in use to prevent changes in liquid parameters due to water evaporation. DGBE-based liquids should be used with care. As DGBE is a softener for most plastics, the liquid should be taken out of the phantom, and the phantom should be dried when the system is not in use (desirable at least once a week).

Do not use other organic solvents without previously testing the solvent resistivity of the phantom. Approximately 25 liters of liquid is required to fill the SAM Twin phantom.

Calibration Frequency Points for EX3DV4 E-Field Probes SN: 3701 Calibrated: 2024/10/17

Calibration Frequency Point (MHz)	Frequency Range (MHz)		Conversion Factor		
	From	To	X	Y	Z
750 Head	650	850	9.47	9.47	9.47
900 Head	850	1000	9.06	9.06	9.06
1750 Head	1650	1850	8	8	8
1900 Head	1850	2000	7.65	7.65	7.65
2300 Head	2200	2400	7.45	7.45	7.45
2450 Head	2400	2550	7.2	7.2	7.2
2600 Head	2550	2700	7.06	7.06	7.06
5250 Head	5140	5360	5.36	5.36	5.36
5600 Head	5490	5700	4.75	4.75	4.75
5750 Head	5700	5860	4.87	4.87	4.87

SAR Scan Procedures**Step 1: Power Reference Measurement**

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. The minimum distance of probe sensors to surface is 1.4 mm. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

Step 2: Area Scans

Area scans are defined prior to the measurement process being executed with a user defined variable spacing between each measurement point (integral) allowing low uncertainty measurements to be conducted. Scans defined for FCC applications utilize a 15mm² step integral, with 1.5mm interpolation used to locate the peak SAR area used for zoom scan assessments.

Where the system identifies multiple SAR peaks (which are within 25% of peak value) the system will provide the user with the option of assessing each peak location individually for zoom scan averaging.

Area Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 mm ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2)$ mm ± 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.	

Step 3: Zoom Scan (Cube Scan Averaging)

The averaging zoom scan volume utilized in the DASY5 software is in the shape of a cube and the side dimension of a 1 g or 10 g mass is dependent on the density of the liquid representing the simulated tissue. A density of 1000 kg/m³ is used to represent the head and body tissue density and not the phantom liquid density, in order to be consistent with the definition of the liquid dielectric properties, i.e. the side length of the 1g cube is 5mm, with the side length of the 10g cube is 21.5mm.

Zoom Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

Maximum zoom scan spatial resolution: $\Delta x_{\text{Zoom}}, \Delta y_{\text{Zoom}}$			$\leq 2 \text{ GHz}: \leq 8 \text{ mm}$ $2 - 3 \text{ GHz}: \leq 5 \text{ mm}^*$	$3 - 4 \text{ GHz}: \leq 5 \text{ mm}^*$ $4 - 6 \text{ GHz}: \leq 4 \text{ mm}^*$
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{\text{Zoom}}(n)$		$\leq 5 \text{ mm}$	$3 - 4 \text{ GHz}: \leq 4 \text{ mm}$ $4 - 5 \text{ GHz}: \leq 3 \text{ mm}$ $5 - 6 \text{ GHz}: \leq 2 \text{ mm}$
	graded grid	$\Delta z_{\text{Zoom}}(1)$: between 1 st two points closest to phantom surface	$\leq 4 \text{ mm}$	$3 - 4 \text{ GHz}: \leq 3 \text{ mm}$ $4 - 5 \text{ GHz}: \leq 2.5 \text{ mm}$ $5 - 6 \text{ GHz}: \leq 2 \text{ mm}$
		$\Delta z_{\text{Zoom}}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{\text{Zoom}}(n-1) \text{ mm}$	
Minimum zoom scan volume	x, y, z		$\geq 30 \text{ mm}$	$3 - 4 \text{ GHz}: \geq 28 \text{ mm}$ $4 - 5 \text{ GHz}: \geq 25 \text{ mm}$ $5 - 6 \text{ GHz}: \geq 22 \text{ mm}$
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details.				
* When zoom scan is required and the <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> procedures of KDB Publication 447498 is $\leq 1.4 \text{ W/kg}$, $\leq 8 \text{ mm}$, $\leq 7 \text{ mm}$ and $\leq 5 \text{ mm}$ zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

Step 4: Power Drift Measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

When the cube intersects with the surface of the phantom, it is oriented so that 3 vertices touch the surface of the shell or the center of a face is tangent to the surface. The face of the cube closest to the surface is modified in order to conform to the tangent surface.

The zoom scan integer steps can be user defined so as to reduce uncertainty, but normal practice for typical test applications (including FCC) utilize a physical step of 7 x7 x 7 (5mmx5mmx5mm) providing a volume of 30 mm in the X & Y & Z axis.

Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEEE1528:2013

Recommended Tissue Dielectric Parameters for Head liquid

Table A.3 – Dielectric properties of the head tissue-equivalent liquid

Frequency MHz	Relative permittivity ϵ_r	Conductivity (σ) S/m
300	45,3	0,87
450	43,5	0,87
<i>750</i>	<i>41,9</i>	<i>0,89</i>
835	41,5	0,90
900	41,5	0,97
1 450	40,5	1,20
<i>1 500</i>	<i>40,4</i>	<i>1,23</i>
<i>1 640</i>	<i>40,2</i>	<i>1,31</i>
<i>1 750</i>	<i>40,1</i>	<i>1,37</i>
1 800	40,0	1,40
1 900	40,0	1,40
2 000	40,0	1,40
<i>2 100</i>	<i>39,8</i>	<i>1,49</i>
<i>2 300</i>	<i>39,5</i>	<i>1,67</i>
2 450	39,2	1,80
<i>2 600</i>	<i>39,0</i>	<i>1,96</i>
3 000	38,5	2,40
<i>3 500</i>	<i>37,9</i>	<i>2,91</i>
<i>4 000</i>	<i>37,4</i>	<i>3,43</i>
<i>4 500</i>	<i>36,8</i>	<i>3,94</i>
<i>5 000</i>	<i>36,2</i>	<i>4,45</i>
<i>5 200</i>	<i>36,0</i>	<i>4,66</i>
<i>5 400</i>	<i>35,8</i>	<i>4,86</i>
<i>5 600</i>	<i>35,5</i>	<i>5,07</i>
<i>5 800</i>	<i>35,3</i>	<i>5,27</i>
6 000	35,1	5,48

NOTE For convenience, permittivity and conductivity values at those frequencies which are not part of the original data provided by Drossos et al. [33] or the extension to 5 800 MHz are provided (i.e. the values shown *in italics*). These values were linearly interpolated between the values in this table that are immediately above and below these values, except the values at 6 000 MHz that were linearly extrapolated from the values at 3 000 MHz and 5 800 MHz.

EQUIPMENT LIST AND CALIBRATION

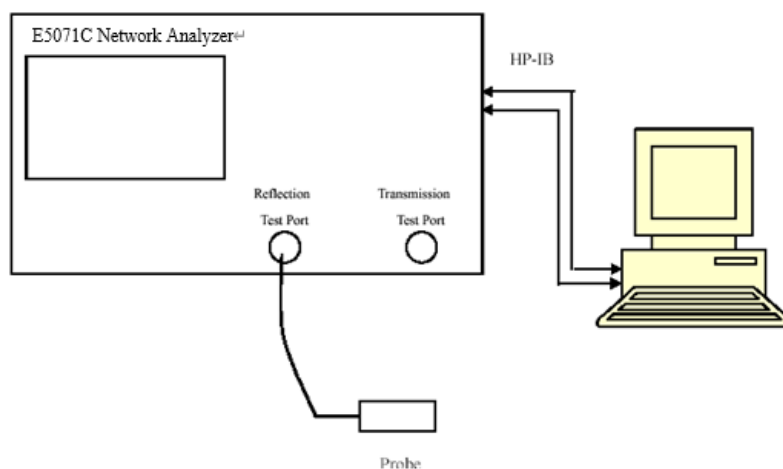
Equipment's List & Calibration Information

Equipment	Model	S/N	Calibration Date	Calibration Due Date
DASY5 Test Software	DASY52 52.10.4	N/A	NCR	NCR
DASY5 Measurement Server	DASY5 6.0.31	N/A	NCR	NCR
Data Acquisition Electronics	DAE4	1562	2024/12/31	2025/12/30
E-Field Probe	EX3DV4	3701	2024/10/17	2025/10/16
Mounting Device	MD4HHTV5	SD 000 H01 KA	NCR	NCR
SAM Twin Phantom	SAM-Twin V5.0	1744	NCR	NCR
Dipole,2450MHz	D2450V2	751	2023/09/26	2026/09/25
Dipole,5GHz	D5GHzV2	1301	2023/02/16	2026/02/15
Simulated Tissue Liquid Head(500-9500MHz)	HBBL600-10000V6	220406-1	Each Time	/
Network Analyzer	E5071B	MY42403851	2024/10/08	2025/10/07
Dielectric Assessment Kit	DAK-3.5	1320	NCR	NCR
Signal Generator	N5183A	MY47420360	2024/09/02	2025/09/01
Signal Generator	N5183A	MY47420360	2025/08/28	2026/08/27
Power Sensor	E9301A	MY55270006	2024/10/08	2025/10/07
Linear Power Amplifier (1 – 6GHz)	AS0860-40/45	1060913	2024/10/08	2025/10/07
Directional Coupler	4226-20	3315	2024/10/08	2025/10/07
6dB Attenuator	WA59-6-33	A329	NCR	NCR
Spectrum Analyzer	FSV40	101949	2024/10/08	2025/10/07
Thermometer	DTM3000	N/A	2024/10/10	2025/10/09
Temperature & Humidity Meter	10316377	N/A	2024/10/10	2025/10/09

NCR: No Calibration Required.

SAR MEASUREMENT SYSTEM VERIFICATION

Liquid Verification



Liquid Verification Setup Block Diagram

Liquid Verification Results

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ' (S/m)	ϵ_r	σ' (S/m)	$\Delta\epsilon_r$	$\Delta\sigma'$ (S/m)	
2402	Simulated Tissue Liquid Head	40.786	1.796	39.26	1.75	3.89	2.63	± 5
2412	Simulated Tissue Liquid Head	40.775	1.789	39.25	1.76	3.89	1.65	± 5
2437	Simulated Tissue Liquid Head	40.731	1.829	39.22	1.79	3.85	2.18	± 5
2441	Simulated Tissue Liquid Head	40.615	1.834	39.21	1.79	3.58	2.46	± 5
2450	Simulated Tissue Liquid Head	40.651	1.849	39.20	1.80	3.7	2.72	± 5
2462	Simulated Tissue Liquid Head	40.463	1.842	39.18	1.81	3.27	1.77	± 5
2480	Simulated Tissue Liquid Head	40.362	1.845	39.16	1.83	3.07	0.82	± 5

*Liquid Verification above was performed on 2025/08/09

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ' (S/m)	ϵ_r	σ' (S/m)	$\Delta\epsilon_r$	$\Delta\sigma'$ (S/m)	
5180	Simulated Tissue Liquid Head	36.912	4.631	36.01	4.63	2.5	0.02	±5
5200	Simulated Tissue Liquid Head	37.249	4.766	36.00	4.66	3.47	2.27	±5
5240	Simulated Tissue Liquid Head	36.924	4.595	35.94	4.70	2.74	-2.23	±5
5250	Simulated Tissue Liquid Head	36.933	4.558	35.93	4.71	2.79	-3.23	±5
5260	Simulated Tissue Liquid Head	37.054	4.58	35.92	4.72	3.16	-2.97	±5
5300	Simulated Tissue Liquid Head	37.272	4.614	35.87	4.76	3.91	-3.07	±5
5320	Simulated Tissue Liquid Head	37.134	4.755	35.85	4.78	3.58	-0.52	±5

*Liquid Verification above was performed on 2025/09/28

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ' (S/m)	ϵ_r	σ' (S/m)	$\Delta\epsilon_r$	$\Delta\sigma'$ (S/m)	
5500	Simulated Tissue Liquid Head	36.916	5.06	35.64	4.96	3.58	2.02	±5
5580	Simulated Tissue Liquid Head	36.542	4.961	35.55	5.04	2.79	-1.57	±5
5600	Simulated Tissue Liquid Head	36.426	5.046	35.50	5.07	2.61	-0.47	±5
5700	Simulated Tissue Liquid Head	36.443	5.102	35.41	5.17	2.92	-1.32	±5
5745	Simulated Tissue Liquid Head	36.472	5.121	35.36	5.21	3.14	-1.71	±5
5750	Simulated Tissue Liquid Head	36.724	5.124	35.36	5.22	3.86	-1.84	±5
5785	Simulated Tissue Liquid Head	36.374	5.315	35.32	5.25	2.98	1.24	±5
5825	Simulated Tissue Liquid Head	36.409	5.361	35.27	5.30	3.23	1.15	±5

*Liquid Verification above was performed on 2025/09/29

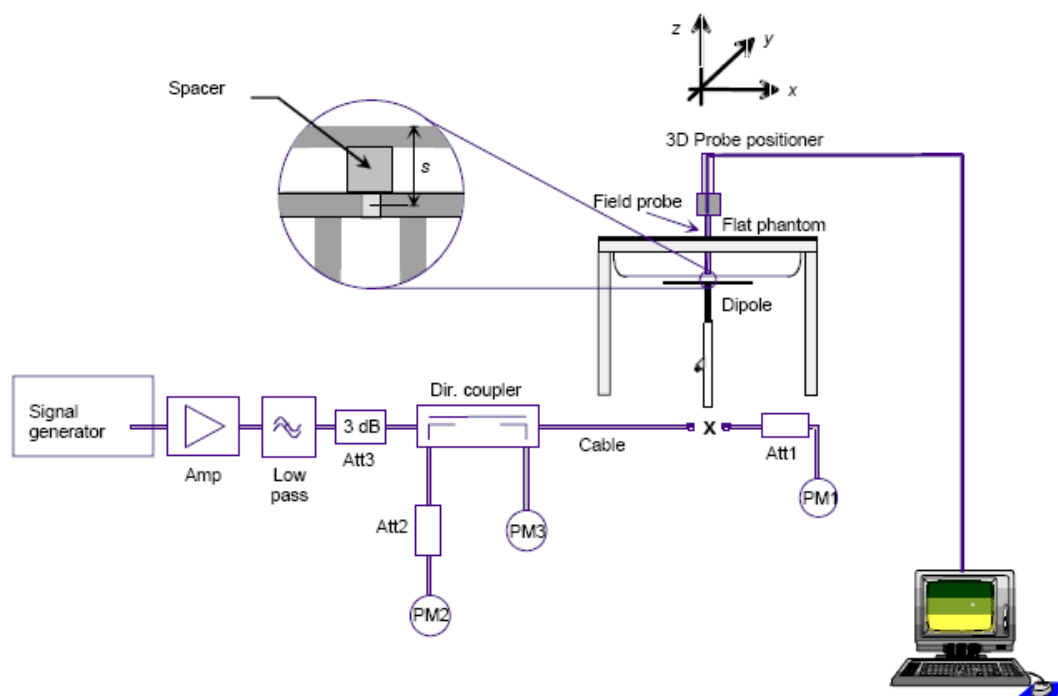
System Accuracy Verification

Prior to the assessment, the system validation kit was used to test whether the system was operating within its specifications of $\pm 10\%$. The validation results are tabulated below. And also the corresponding SAR plot is attached as well in the SAR plots files.

The spacing distances in the **System Verification Setup Block Diagram** is given by the following:

- $s = 15 \text{ mm} \pm 0,2 \text{ mm}$ for $300 \text{ MHz} \leq f \leq 1\,000 \text{ MHz}$;
- $s = 10 \text{ mm} \pm 0,2 \text{ mm}$ for $1\,000 \text{ MHz} < f \leq 6\,000 \text{ MHz}$;

System Verification Setup Block Diagram



System Accuracy Check Results

Date	Frequency Band (MHz)	Liquid Type	Liquid Temperature (°C)	Input Power (mW)	Measured SAR (W/kg)	Normalized to 1W (W/kg)	Target Value (W/Kg)	Delta (%)	Tolerance (%)
2025/08/09	2450	Head	21.2 ~ 21.7	100	1g 5.26	52.6	53.1	-0.942	± 10
2025/09/28	5250	Head	21.5 ~ 21.8	100	1g 8.22	82.2	77.7	5.792	± 10
2025/09/29	5600	Head	21.4 ~ 21.8	100	1g 8.53	85.3	81.6	4.534	± 10
2025/09/29	5750	Head	21.4 ~ 21.8	100	1g 7.97	79.7	78.0	2.179	± 10

Note:

All the SAR values are normalized to 1Watt forward power.

SAR SYSTEM VALIDATION DATA

System Performance 2450 MHz Head

DUT: Dipole 2450MHz; Type: D2450V2; Serial: 751

Communication System: CW (0); Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.849$ S/m; $\epsilon_r = 40.651$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3701; ConvF(7.2, 7.2, 7.2) @2450 MHz; Calibrated: 2024/10/17
- Sensor-Surface: 1.4mm (Mechanical Surface Detection);
- Electronics: DAE4 Sn1562; Calibrated: 2024/12/31
- Phantom: Twin SAM; Type: QD000P40CD; Serial: 1744
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (10x11x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 11.1 W/kg

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

Reference Value = 29.5 V/m; Power Drift = -0.04 dB

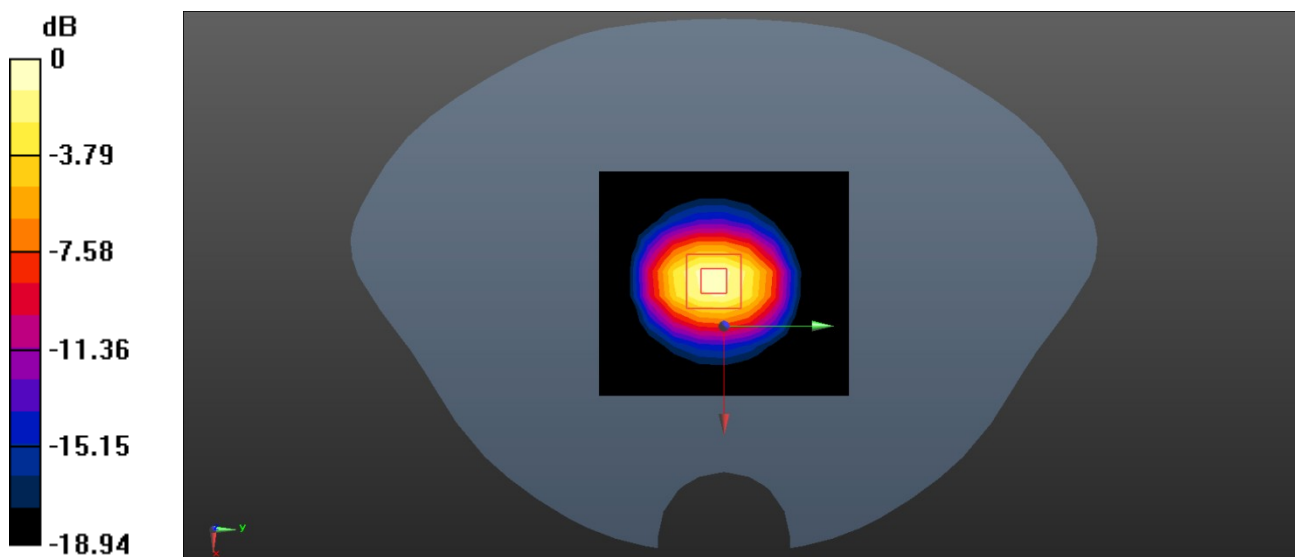
Peak SAR (extrapolated) = 13.1 W/kg

SAR(1 g) = 5.26 W/kg; SAR(10 g) = 2.53 W/kg

Smallest distance from peaks to all points 3 dB below = 9.2 mm

Ratio of SAR at M2 to SAR at M1 = 54.2%

Maximum value of SAR (measured) = 9.81 W/kg



0 dB = 9.81 W/kg = 9.92 dBW/kg

System Performance 5250 MHz Head**DUT: Dipole 5GHz; Type: D5GHzV2; Serial: 1301**

Communication System: CW (0); Frequency: 5250 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5250$ MHz; $\sigma = 4.558$ S/m; $\epsilon_r = 36.933$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3701; ConvF(5.36, 5.36, 5.36) @5250 MHz; Calibrated: 2024/10/17
- Sensor-Surface: 1.4mm (Mechanical Surface Detection);
- Electronics: DAE4 Sn1562; Calibrated: 2024/12/31
- Phantom: Twin SAM; Type: QD000P40CD; Serial: 1744
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (11x11x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 11.5 W/kg

Zoom Scan (8x8x15) /Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 77.7 V/m; Power Drift = 0.11 dB

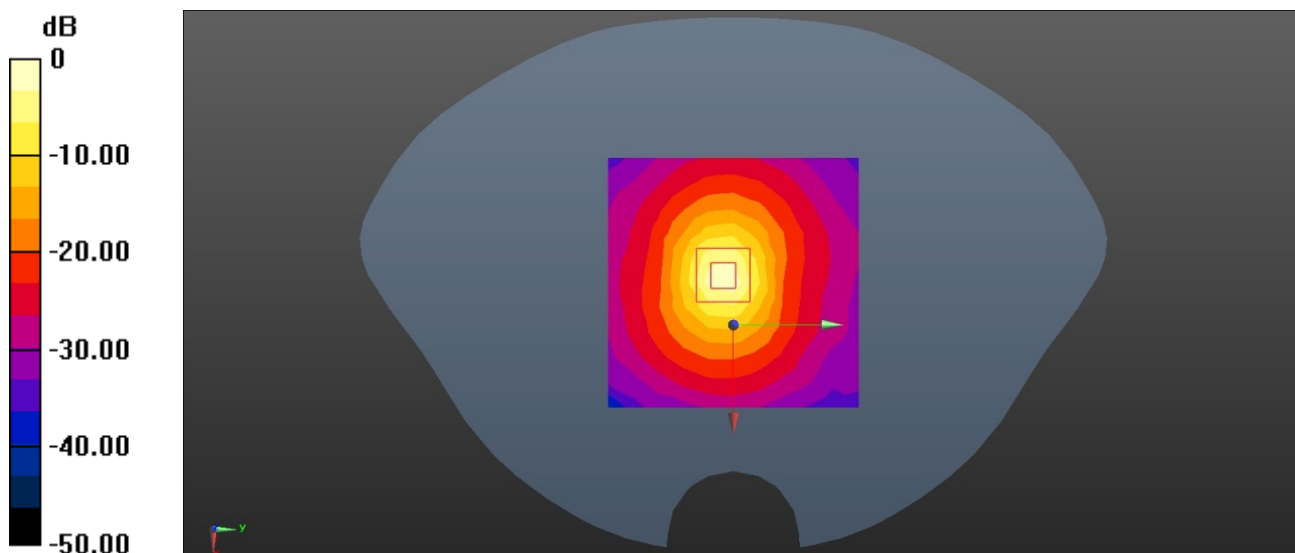
Peak SAR (extrapolated) = 30.8 W/kg

SAR(1 g) = 8.22 W/kg; SAR(10 g) = 2.22 W/kg

Smallest distance from peaks to all points 3 dB below = 7.9 mm

Ratio of SAR at M2 to SAR at M1 = 65.2%

Maximum value of SAR (measured) = 20.4 W/kg



0 dB = 20.4 W/kg = 13.10 dBW/kg

System Performance 5600 MHz Head**DUT: Dipole 5GHz; Type: D5GHzV2; Serial: 1301**

Communication System: CW (0); Frequency: 5600 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5600$ MHz; $\sigma = 5.046$ S/m; $\epsilon_r = 36.421$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3701; ConvF(4.75, 4.75, 4.75) @ 5600 MHz; Calibrated: 2024/10/17
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1562; Calibrated: 2024/12/31
- Phantom: Twin SAM; Type: QD000P40CD; Serial: 1744
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 22.9 W/kg

Zoom Scan (8x8x15) /Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 55.2 V/m; Power Drift = 0.08 dB

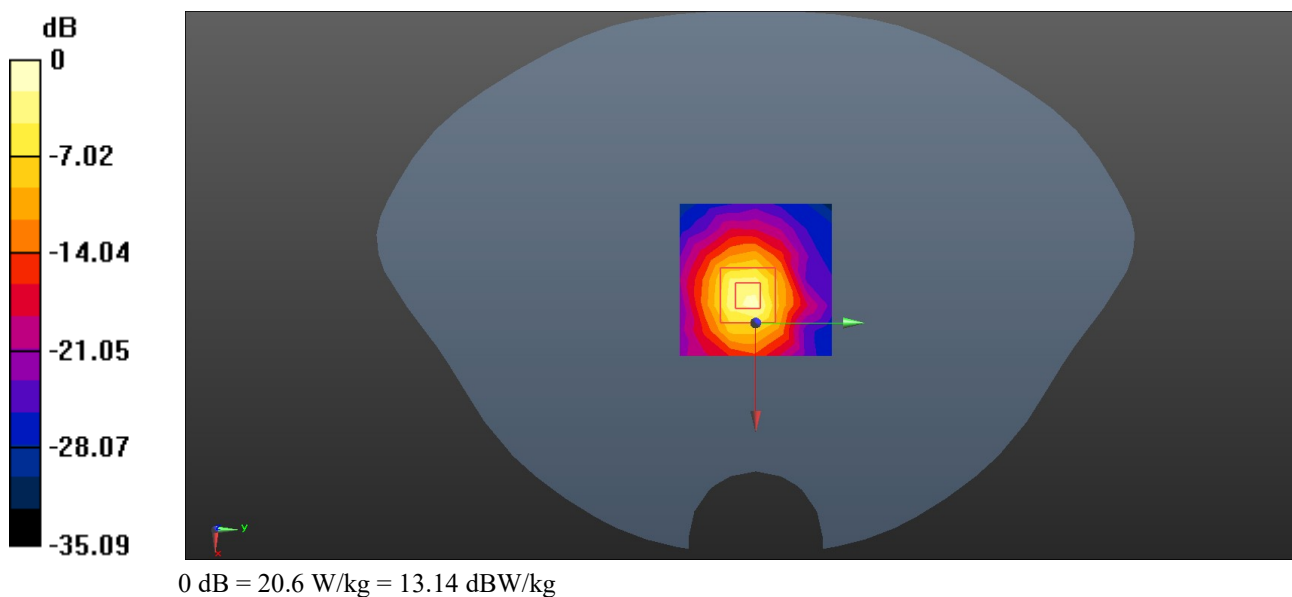
Peak SAR (extrapolated) = 30.6 W/kg

SAR(1 g) = 8.53 W/kg; SAR(10 g) = 2.22 W/kg

Smallest distance from peaks to all points 3 dB below = 5.9 mm

Ratio of SAR at M2 to SAR at M1 = 82.4%

Maximum value of SAR (measured) = 20.6 W/kg



System Performance 5750 MHz Head**DUT: Dipole 5GHz; Type: D5GHzV2; Serial: 1301**

Communication System: UID 0, CW (0); Frequency: 5750 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5750$ MHz; $\sigma = 5.124$ S/m; $\epsilon_r = 36.724$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3701; ConvF(4.87, 4.87, 4.87) @ 5750 MHz; Calibrated: 2024/10/17
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1562; Calibrated: 2024/12/31
- Phantom: Twin SAM; Type: QD000P40CD; Serial: 1744
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 13.5 W/kg

Zoom Scan (8x8x15)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 56.9 V/m; Power Drift = 0.11 dB

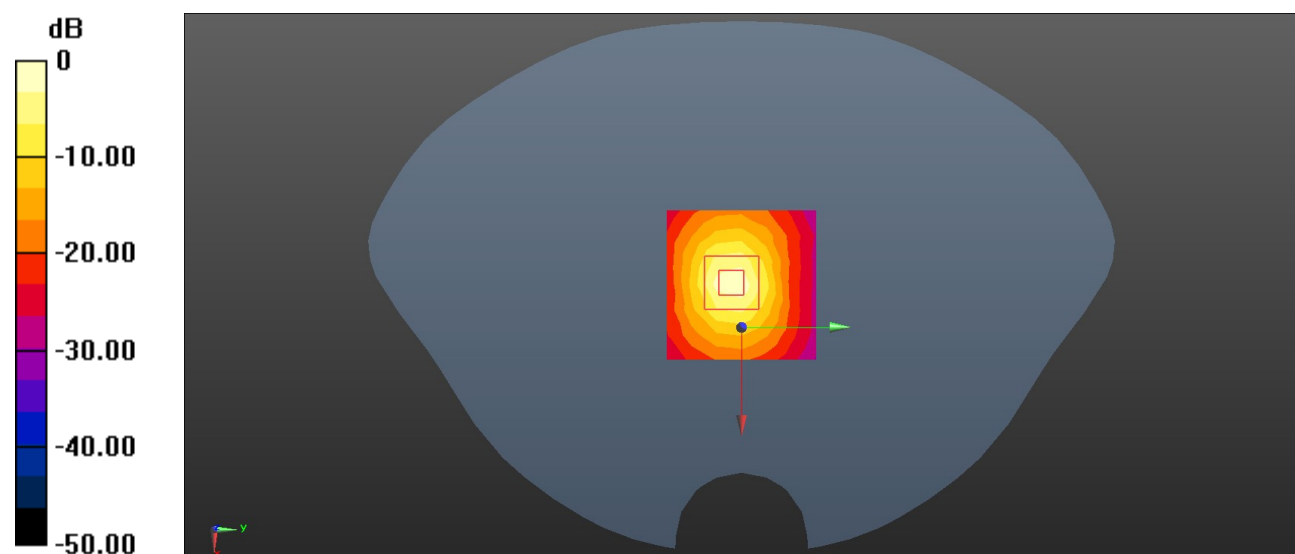
Peak SAR (extrapolated) = 31.9 W/kg

SAR(1 g) = 7.97 W/kg; SAR(10 g) = 2.33 W/kg

Smallest distance from peaks to all points 3 dB below = 7.9 mm

Ratio of SAR at M2 to SAR at M1 = 64.2%

Maximum value of SAR (measured) = 15.7 W/kg



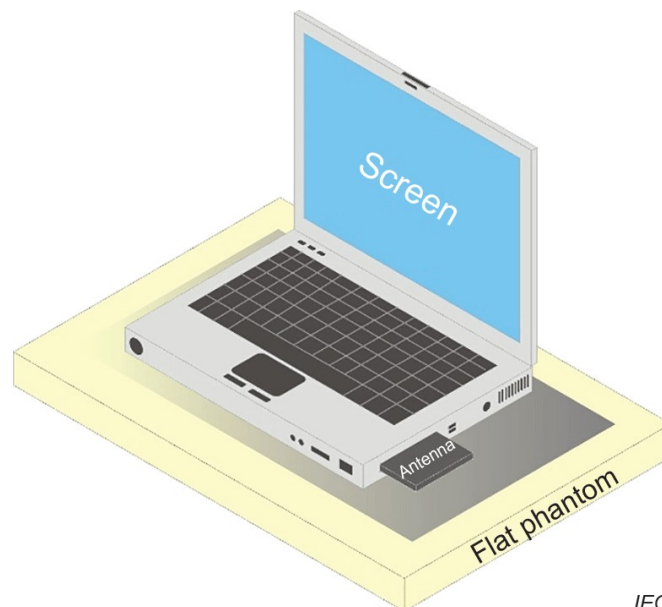
0 dB = 15.7 W/kg = 11.96 dBW/kg

EUT TEST STRATEGY AND METHODOLOGY

Test positions for body-worn and other configurations

Body-worn operating configurations should be tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in normal use configurations. Devices with a headset output should be tested with a headset connected to the device. When multiple accessories that do not contain metallic components are supplied with the device, the device may be tested with only the accessory that dictates the closest spacing to the body. When multiple accessories that contain metallic components are supplied with the device, the device must be tested with each accessory that contains a unique metallic component. If multiple accessories share an identical metallic component (e.g., the same metallic belt-clip used with different holsters with no other metallic components), only the accessory that dictates the closest spacing to the body must be tested.

Body-worn accessories may not always be supplied or available as options for some devices that are intended to be authorized for body-worn use. A separation distance of 1.5 cm between the back of the device and a flat phantom is recommended for testing body-worn SAR compliance under such circumstances. Other separation distances may be used, but they should not exceed 2.5 cm. In these cases, the device may use body-worn accessories that provide a separation distance greater than that tested for the device provided however that the accessory contains no metallic components.



Test Distance for SAR Evaluation

In this case the EUT (Equipment Under Test) is set 0mm away from the phantom, the test distance is 0mm for body.

SAR Evaluation Procedure

The evaluation was performed with the following procedure:

Step 1: Measurement of the SAR value at a fixed location above the ear point or central position was used as a reference value for assessing the power drop. The SAR at this point is measured at the start of the test and then again at the end of the testing.

Step 2: The SAR distribution at the exposed side of the head was measured at a distance of 4 mm from the inner surface of the shell. The area covered the entire dimension of the head or radiating structures of the EUT, the horizontal grid spacing was 15 mm x 15 mm, and the SAR distribution was determined by integrated grid of 1.5mm x 1.5mm. Based on these data, the area of the maximum absorption was determined by spline interpolation. The first Area Scan covers the entire dimension of the EUT to ensure that the hotspot was correctly identified.

Step 3: Around this point, a volume of 30 mm x 30 mm x 30 mm was assessed by measuring 7x 7 x 7 points. On the basis of this data set, the spatial peak SAR value was evaluated under the following procedure:

- 1) The data at the surface were extrapolated, since the center of the dipoles is 1.2 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.3 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.

- 2) The maximum interpolated value was searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed by the 3D-Spline interpolation algorithm. The 3D-Spline is composed of three one dimensional splines with the "Not a knot"-condition (in x, y and z-directions). The volume was integrated with the trapezoidal-algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the averages.

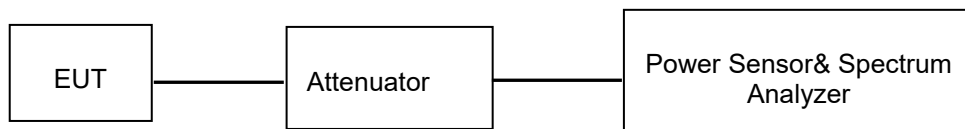
All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

Step 4: Re-measurement of the SAR value at the same location as in Step 1. If the value changed by more than 5%, the evaluation was repeated.

CONDUCTED OUTPUT POWER MEASUREMENT

Test Procedure

The RF output of the transmitter was connected to the input port of the Power Sensor& Spectrum Analyzer through Connector.



WLAN & Bluetooth

Test Configuration

EUT Exercise Software For 2.4G WLAN

Exercise Software [#]		AX Series MP ToolKit		
Mode	Data rate	Power Level [#]		
		Low Channel	Middle Channel	High Channel
802.11b	1Mbps	16	16	16
802.11g	6Mbps	16	16	16
802.11n20	MCS0	16	16	16
802.11n40	MCS0	16	16	16
802.11ax20	MCS0	16	16	16
802.11ax40	MCS0	16	16	16

Note 1: The worst-case data rates are determined to be as follows for each mode based upon investigation by measuring the power and PSD across all data rates bandwidths, and modulations.

Note 2: The 802.11b/g mode only support the SISO mode, the 802.11n/ax mode can support the SISO and MIMO mode. The MIMO mode was the worst case which was tested in this report.

Note 3: The 802.11ax mode only support full RU.

Note 4: The two antenna ports have the same power level.

EUT Exercise Software For 5G WLAN

Exercise Software [#]		AX Series MP ToolKit			
5150-5250 MHz Band					
Mode	Test Channels	Test Frequency (MHz)	Data rate	Power Level [#]	
				ANT 1 (Chain 0)	ANT 2 (Chain 1)
802.11a	Low	5180	6Mbps	16	16
	Middle	5200	6Mbps	16	16
	High	5240	6Mbps	16	16
802.11ac20	Low	5180	MCS0	16	16
	Middle	5200	MCS0	16	16
	High	5240	MCS0	16	16
802.11ac40	Low	5190	MCS0	16	16
	High	5230	MCS0	16	16
802.11ac80	Middle	5210	MCS0	16	16
802.11ax20	Low	5180	MCS0	16	16
	Middle	5200	MCS0	16	16
	High	5240	MCS0	16	16
802.11ax40	Low	5190	MCS0	16	16
	High	5230	MCS0	16	16
802.11ax80	Middle	5210	MCS0	16	16

5250-5350 MHz Band					
Mode	Test Channels	Test Frequency (MHz)	Data rate	Power Level [#]	
				ANT 1 (Chain 0)	ANT 2 (Chain 1)
802.11a	Low	5260	6Mbps	16	16
	Middle	5280	6Mbps	16	16
	High	5320	6Mbps	16	16
802.11ac20	Low	5260	MCS0	16	16
	Middle	5280	MCS0	16	16
	High	5320	MCS0	16	16
802.11ac40	Low	5270	MCS0	16	16
	High	5310	MCS0	16	16
802.11ac80	Middle	5290	MCS0	16	16
802.11ax20	Low	5260	MCS0	16	16
	Middle	5280	MCS0	16	16
	High	5320	MCS0	16	16
802.11ax40	Low	5270	MCS0	16	16
	High	5310	MCS0	16	16
802.11ax80	Middle	5290	MCS0	16	16

5470-5725 MHz Band

Mode	Test Channels	Test Frequency (MHz)	Data rate	Power Level [#]	
				ANT 1 (Chain 0)	ANT 2 (Chain 1)
802.11a	Low	5500	6Mbps	16	16
	Middle	5580	6Mbps	16	16
	High	5700	6Mbps	16	16
	Cross	5720	6Mbps	16	16
802.11ac20	Low	5500	MCS0	16	16
	Middle	5580	MCS0	16	16
	High	5700	MCS0	16	16
	Cross	5720	MCS0	16	16
802.11ac40	Low	5510	MCS0	16	16
	Middle	5550	MCS0	16	16
	High	5670	MCS0	16	16
	Cross	5710	MCS0	16	16
802.11ac80	Low	5530	MCS0	16	16
	High	5610	MCS0	16	16
	Cross	5690	MCS0	16	16
802.11ax20	Low	5500	MCS0	16	16
	Middle	5580	MCS0	16	16
	High	5700	MCS0	16	16
	Cross	5720	MCS0	16	16
802.11ax40	Low	5510	MCS0	16	16
	Middle	5550	MCS0	16	16
	High	5670	MCS0	16	16
	Cross	5710	MCS0	16	16
802.11ax80	Low	5530	MCS0	16	16
	High	5610	MCS0	16	16
	Cross	5690	MCS0	16	16

5725-5850 MHz Band

Mode	Test Channels	Test Frequency (MHz)	Data rate	Power Level [#]	
				ANT 1 (Chain 0)	ANT 2 (Chain 1)
802.11a	Low	5745	6Mbps	16	16
	Middle	5785	6Mbps	16	16
	High	5825	6Mbps	16	16
802.11ac20	Low	5745	MCS0	16	16
	Middle	5785	MCS0	16	16
	High	5825	MCS0	16	16
802.11ac40	Low	5755	MCS0	16	16
	High	5795	MCS0	16	16
802.11ac80	Middle	5775	MCS0	16	16
802.11ax20	Low	5745	MCS0	16	16
	Middle	5785	MCS0	16	16
	High	5825	MCS0	16	16
802.11ax40	Low	5755	MCS0	16	16
	High	5795	MCS0	16	16
802.11ax80	Middle	5775	MCS0	16	16

Note 1: The worst-case data rates are determined to be as follows for each mode based upon investigation by measuring the power and PSD across all data rates bandwidths, and modulations.

Note 2: The 802.11a mode only supports the SISO mode, the 802.11n/ac/ax mode can support the SISO and MIMO mode. The MIMO mode was the worst case which was tested in this report.

Note 3: The 802.11ax mode only support full RU.

EUT Exercise Software For Bluetooth

Exercise Software[#]	AX Series MP ToolKit& RTLBTAPP
Power Level[#]	default

Maximum Target Output Power**ANT0:**

Max Target Power(dBm)			
Mode/Band	Channel		
	Low	Middle	High
2.4G WLAN	15.0	15.0	15.0
5.2G WLAN 802.11a/ac/n	13.0	13.0	13.0
5.2G WLAN 802.11ax	11.5	11.5	11.5
5.3G WLAN 802.11a/ac/n	12.0	12.0	12.0
5.3G WLAN 802.11ax	10.0	10.0	10.0
5.8G WLAN 802.11a/ac/n	13.0	13.0	13.0
5.8G WLAN 802.11ax	11.0	11.0	11.0
Bluetooth BDR	4.5	4.5	4.5
Bluetooth EDR	7.0	7.0	7.0
BLE	4.5	4.5	4.5

Max Target Power(dBm)				
Mode/Band	Channel			
	Low	Middle	High	Cross
WIFI 5.6G 802.11a/ac/n	13.0	13.0	13.0	13.0
WIFI 5.6G 802.11ax	9.5	9.5	9.5	9.5

ANT1:

Max Target Power(dBm)			
Mode/Band	Channel		
	Low	Middle	High
2.4G WLAN	15.0	15.0	15.0
5.2G WLAN 802.11a/ac/n	12.0	12.0	12.0
5.2G WLAN 802.11ax	11.0	11.0	11.0
5.3G WLAN 802.11a/ac/n	11.0	11.0	11.0
5.3G WLAN 802.11ax	9.5	9.5	9.5
5.8G WLAN 802.11a/ac/n	11.0	11.0	11.0
5.8G WLAN 802.11ax	9.0	9.0	9.0

Max Target Power(dBm)				
Mode/Band	Channel			
	Low	Middle	High	Cross
WIFI 5.6G 802.11a/ac/n	13.0	13.0	13.0	13.0
WIFI 5.6G 802.11ax	9.5	9.5	9.5	9.5

2.4G WLAN ANT0:

Mode	Channel frequency (MHz)	Data Rate	Duty cycle (%)	Average Output Power (dBm)
802.11b	2412	1M	99.25	14.67
	2437			14.86
	2462			14.31
802.11g	2412	6M	/	13.96
	2437			13.92
	2462			13.54
802.11n20	2412	MCS0	/	13.94
	2437			13.97
	2462			13.60
802.11ax20	2412	MCS0	/	14.04
	2437			14.08
	2462			13.67
802.11n40	2422	MCS0	/	14.20
	2437			13.99
	2452			13.90
802.11ax40	2422	MCS0	/	14.21
	2437			14.20
	2452			13.81

2.4G WLAN ANT1:

Mode	Channel frequency (MHz)	Data Rate	Duty cycle (%)	Average Output Power (dBm)
802.11b	2412	1M	99.25	14.69
	2437			14.42
	2462			14.60
802.11g	2412	6M	/	14.60
	2437			14.67
	2462			14.33
802.11n20	2412	MCS0	/	14.33
	2437			14.30
	2462			13.94
802.11ax20	2412	MCS0	/	14.54
	2437			14.29
	2462			13.91
802.11n40	2422	MCS0	/	13.86
	2437			13.85
	2452			13.67
802.11ax40	2422	MCS0	/	14.01
	2437			13.92
	2452			13.77

Note: The duty cycle plots, please refer to the radio report: 2501V12497E-RFA#.

5.2G WLAN ANT0:

Mode	Channel frequency (MHz)	Data Rate	Duty cycle (%)	Average Output Power (dBm)
802.11a	5180	6M	92.92	12.21
	5200			11.98
	5240			11.52
802.11ac20	5180	MCS0	/	12.07
	5200			12.00
	5240			11.61
802.1n20	5180	MCS0	/	12.04
	5200			11.99
	5240			11.63
802.11ax20	5180	MCS0	/	11.05
	5200			10.72
	5240			9.86
802.11ac40	5190	MCS0	/	12.18
	5230			11.62
802.1n40	5190	MCS0	/	12.19
	5230			11.65
802.1ax40	5190	MCS0	/	10.93
	5230			10.20
802.11ac80	5210	MCS0	/	11.82
802.11ax80	5210	MCS0	/	10.83

5.2G WLAN ANT1:

Mode	Channel frequency (MHz)	Data Rate	Duty cycle (%)	Average Output Power (dBm)
802.11a	5180	6M	92.92	11.38
	5200			11.14
	5240			10.83
802.11ac20	5180	MCS0	/	11.30
	5200			11.21
	5240			10.73
802.1n20	5180	MCS0	/	11.26
	5200			11.13
	5240			10.80
802.11ax20	5180	MCS0	/	10.32
	5200			10.01
	5240			9.25
802.11ac40	5190	MCS0	/	11.36
	5230			10.89
802.1n40	5190	MCS0	/	11.34
	5230			10.89
802.1ax40	5190	MCS0	/	10.42
	5230			9.67
802.11ac80	5210	MCS0	/	10.95
802.11ax80	5210	MCS0	/	10.07

5.3G WLAN ANT0:

Mode	Channel frequency (MHz)	Data Rate	Duty cycle (%)	Average Output Power (dBm)
802.11a	5260	6M	92.92	11.41
	5280			11.50
	5320			11.33
802.11ac20	5260	MCS0	/	11.37
	5280			11.37
	5320			11.17
802.1n20	5260	MCS0	/	11.31
	5280			11.44
	5320			11.20
802.11ax20	5260	MCS0	/	9.69
	5280			9.26
	5320			8.64
802.11ac40	5270	MCS0	/	11.48
	5310			11.27
802.1n40	5270	MCS0	/	11.44
	5310			11.16
802.1ax40	5270	MCS0	/	9.74
	5310			8.96
802.11ac80	5290	MCS0	/	11.31
802.11ax80	5290	MCS0	/	9.53

5.3G WLAN ANT1:

Mode	Channel frequency (MHz)	Data Rate	Duty cycle (%)	Average Output Power (dBm)
802.11a	5260	6M	92.92	10.61
	5280			10.89
	5320			10.42
802.11ac20	5260	MCS0	/	10.70
	5280			10.70
	5320			10.32
802.1n20	5260	MCS0	/	10.78
	5280			10.79
	5320			10.46
802.11ax20	5260	MCS0	/	8.96
	5280			8.89
	5320			8.13
802.11ac40	5270	MCS0	/	10.82
	5310			10.60
802.1n40	5270	MCS0	/	10.82
	5310			10.50
802.1ax40	5270	MCS0	/	9.25
	5310			8.37
802.11ac80	5290	MCS0	/	10.69
802.11ax80	5290	MCS0	/	8.96

5.6G WLAN ANT0:

Mode	Channel frequency (MHz)	Data Rate	Duty cycle (%)	Average Output Power (dBm)
802.11a	5500	6M	92.92	12.54
	5580			12.77
	5700			12.52
	5720			11.15
802.11ac20	5500	MCS0	/	12.25
	5580			12.45
	5700			12.00
	5720			11.06
802.1n20	5500	MCS0	/	12.17
	5580			12.54
	5700			11.99
	5720			11.11
802.11ax20	5500	MCS0	/	8.44
	5580			8.67
	5700			9.12
	5720			8.38
802.11ac40	5510	MCS0	/	12.23
	5550			12.60
	5670			11.72
	5710			11.79
802.1n40	5510	MCS0	/	12.33
	5550			12.53
	5670			11.78
	5710			11.77
802.1ax40	5510	MCS0	/	8.38
	5550			8.71
	5670			8.68
	5710			9.14
802.11ac80	5530	MCS0	/	12.61
	5610			12.19
	5690			11.93
802.11ax80	5530	MCS0	/	8.57
	5610			8.71
	5690			8.81

5.6G WLAN ANT1:

Mode	Channel frequency (MHz)	Data Rate	Duty cycle (%)	Average Output Power (dBm)
802.11a	5500	6M	92.92	12.13
	5580			12.61
	5700			11.44
	5720			10.42
802.11ac20	5500	MCS0	/	11.88
	5580			12.56
	5700			11.23
	5720			10.19
802.1n20	5500	MCS0	/	11.88
	5580			12.51
	5700			11.17
	5720			10.21
802.11ax20	5500	MCS0	/	7.52
	5580			8.38
	5700			8.66
	5720			7.55
802.11ac40	5510	MCS0	/	12.06
	5550			12.26
	5670			11.76
	5710			10.91
802.1n40	5510	MCS0	/	12.04
	5550			12.16
	5670			11.74
	5710			10.99
802.1ax40	5510	MCS0	/	7.65
	5550			7.95
	5670			8.98
	5710			8.37
802.11ac80	5530	MCS0	/	12.13
	5610			12.29
	5690			11.45
802.11ax80	5530	MCS0	/	7.84
	5610			8.67
	5690			8.62

5.8G WLAN ANT0:

Mode	Channel frequency (MHz)	Data Rate	Duty cycle (%)	Average Output Power (dBm)
802.11a	5745	6M	92.92	12.65
	5785			12.93
	5825			12.84
802.11ac20	5745	MCS0	/	12.43
	5785			12.69
	5825			12.81
802.1n20	5745	MCS0	/	12.42
	5785			12.74
	5825			12.84
802.11ax20	5745	MCS0	/	10.03
	5785			10.48
	5825			10.55
802.11ac40	5755	MCS0	/	12.69
	5795			12.78
802.1n40	5755	MCS0	/	12.71
	5795			12.88
802.1ax40	5755	MCS0	/	10.33
	5795			10.60
802.11ac80	5775	MCS0	/	12.76
802.11ax80	5775	MCS0	/	10.56

5.8G WLAN ANT1:

Mode	Channel frequency (MHz)	Data Rate	Duty cycle (%)	Average Output Power (dBm)
802.11a	5745	6M	92.92	10.62
	5785			10.81
	5825			10.76
802.11ac20	5745	MCS0	/	10.61
	5785			10.66
	5825			10.62
802.1n20	5745	MCS0	/	10.55
	5785			10.61
	5825			10.65
802.11ax20	5745	MCS0	/	8.02
	5785			8.42
	5825			8.20
802.11ac40	5755	MCS0	/	10.75
	5795			10.74
802.1n40	5755	MCS0	/	10.63
	5795			10.78
802.1ax40	5755	MCS0	/	8.25
	5795			8.48
802.11ac80	5775	MCS0	/	10.65
802.11ax80	5775	MCS0	/	8.31

Note: The duty cycle plots, please refer to the radio report: 2501V12497E-RFD#

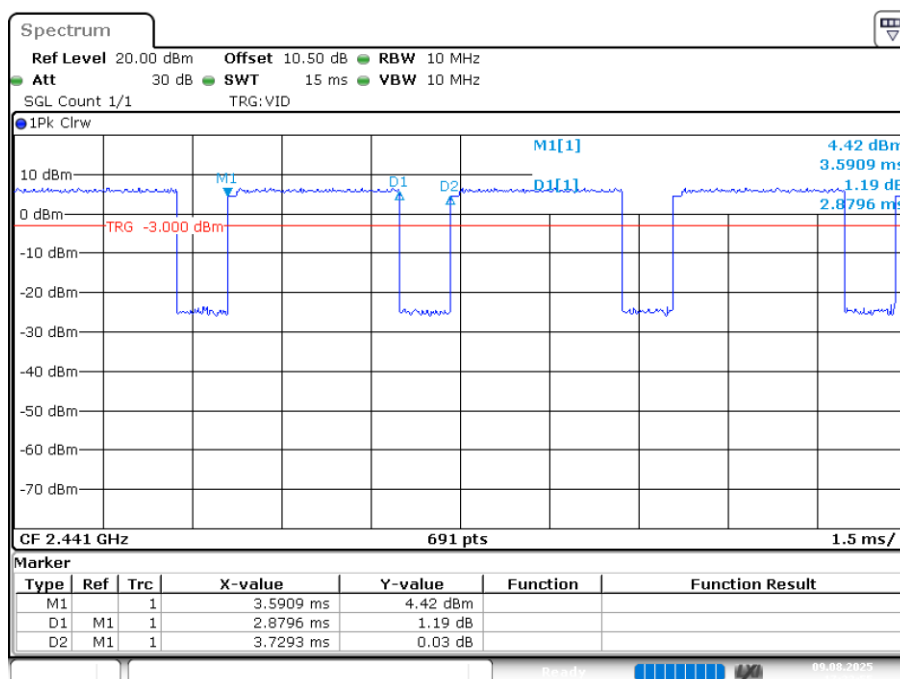
Bluetooth ANT0:

Mode	Channel frequency (MHz)	Peak Output Power (dBm)
GFSK	2402	3.55
	2441	3.26
	2480	4.10
$\pi/4$ -DQPSK	2402	5.67
	2441	5.20
	2480	6.11
8DPSK	2402	6.19
	2441	5.88
	2480	6.70
BLE 1M	2402	4.19
	2440	3.39
	2480	4.29
BLE 2M	2402	4.05
	2440	3.67
	2480	4.44

Duty cycle for Bluetooth:

Mode	Test Frequency (MHz)	Ton (ms)	Ton+Toff (ms)	Duty Cycle (%)
8DPSK	2441	2.88	3.73	77.4

$$\text{Duty Cycle} = \text{Ton}/(\text{Ton}+\text{Toff}) \times 100\%$$

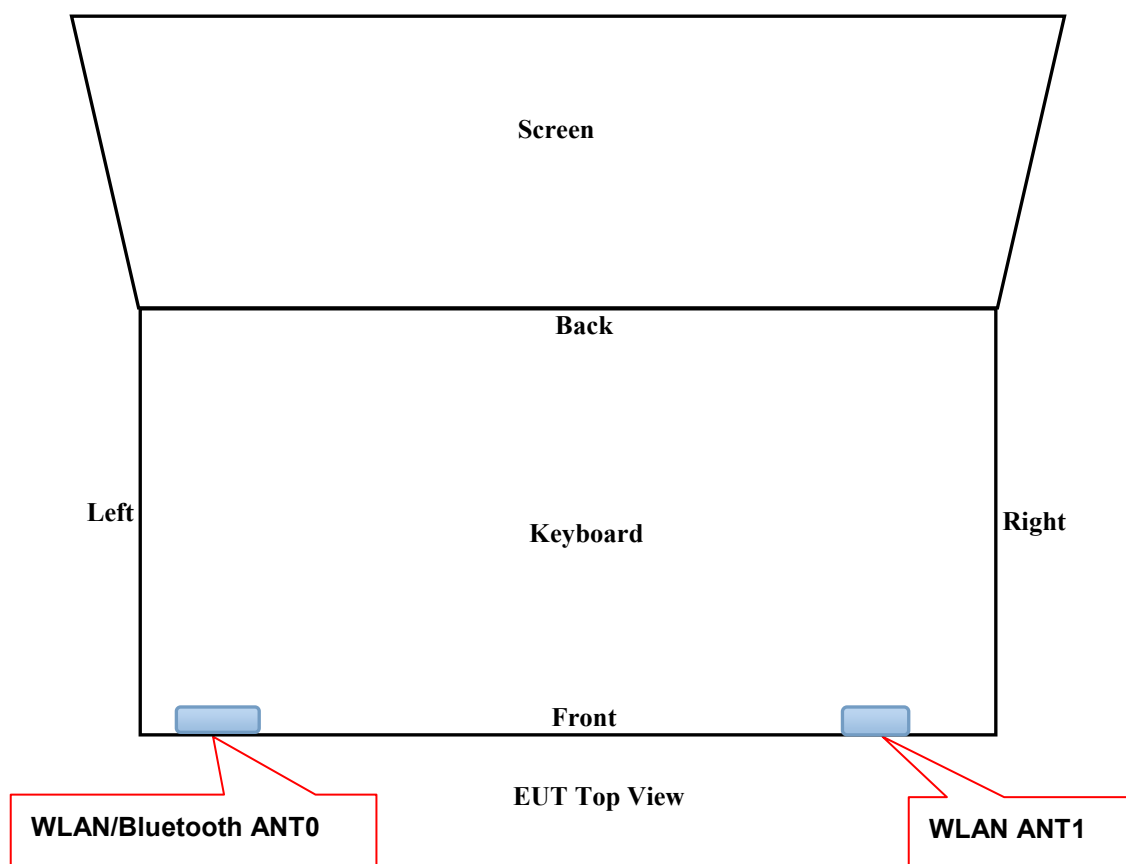


ProjectNo.:2501V12497E-SA Tester:Jack Yang

Date: 9.AUG.2025 17:33:56

STANDALONE SAR TEST EXCLUSION CONSIDERATIONS

Antennas Location:



Antenna Distance To Edge

Antenna Distance To Edge(mm)						
Antenna	Front	Back	Left	Right	Top	Bottom
ANT0	< 5	248	24	332	< 5	10
ANT1	< 5	248	296	60	< 5	10

Standalone SAR test exclusion considerations for Body:**ANT0**

Mode	Frequency (MHz)	RF Output Power (dBm)	RF Output Power (dBm)	Distance (mm)	Calculated value	Threshold (1-g)	SAR Test Exclusion
Bluetooth	2480	7.0	5.01	<5	1.6	3	YES [#]
2.4G WLAN	2462	15.0	31.62	<5	9.9	3	NO
5.2G WLAN	5240	13.0	19.95	<5	9.1	3	NO
5.3G WLAN	5320	12.0	15.85	<5	7.3	3	NO
5.6G WLAN	5700	13.0	19.95	<5	9.5	3	NO
5.8G WLAN	5825	13.0	19.95	<5	9.6	3	NO

Note[#]: Since Bluetooth has undergone SAR testing, subsequent related evaluations of Bluetooth can directly use the reported SAR values.

ANT1

Mode	Frequency (MHz)	RF Output Power (dBm)	RF Output Power (dBm)	Distance (mm)	Calculated value	Threshold (1-g)	SAR Test Exclusion
2.4G WLAN	2462	15.0	31.62	<5	9.9	3	NO
5.2G WLAN	5240	12.0	15.85	<5	7.3	3	NO
5.3G WLAN	5320	11.0	12.59	<5	5.8	3	NO
5.6G WLAN	5700	13.0	19.95	<5	9.5	3	NO
5.8G WLAN	5825	11.0	12.59	<5	6.1	3	NO

NOTE:

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot$

$[\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

1. $f(\text{GHz})$ is the RF channel transmit frequency in GHz.
2. Power and distance are rounded to the nearest mW and mm before calculation.
3. The result is rounded to one decimal place for comparison.
4. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test Exclusion.

SAR test exclusion for the EUT edge considerations Result

ANT	Band	Front	Back	Left	Right	Top	Bottom
ANT0	Bluetooth	Required	Exclusion	Required	Exclusion	Required	Required
	2.4G WLAN	Required	Exclusion	Required	Exclusion	Required	Required
	5.2G WLAN	Required	Exclusion	Required	Exclusion	Required	Required
	5.3G WLAN	Required	Exclusion	Required	Exclusion	Required	Required
	5.6G WLAN	Required	Exclusion	Required	Exclusion	Required	Required
	5.8G WLAN	Required	Exclusion	Required	Exclusion	Required	Required
ANT1	2.4G WLAN	Required	Exclusion	Exclusion	Exclusion	Required	Required
	5.2G WLAN	Required	Exclusion	Exclusion	Exclusion	Required	Required
	5.3G WLAN	Required	Exclusion	Exclusion	Exclusion	Required	Required
	5.6G WLAN	Required	Exclusion	Exclusion	Exclusion	Required	Required
	5.8G WLAN	Required	Exclusion	Exclusion	Exclusion	Required	Required

Note:

Required: The distance to Edge is less than 25mm, testing is required.
Exclusion: The distance to Edge is more than 25 mm, testing is not required.

SAR MEASUREMENT RESULTS

This page summarizes the results of the performed dosimetry evaluation.

Test Results:

Ambient Temperature:	22.2-22.5 °C	22.5-22.6 °C	22.2-23.1 °C
Relative Humidity:	46-58 %	49-52 %	52-59 %
ATM Pressure:	101.3 kPa	101.5 kPa	101.5 kPa
Test Date:	2025/08/09	2025/09/28	2025/09/29

For ANT0:

Bluetooth:

EUT Position	Frequency (MHz)	Test Mode	Power Drift (dB)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)				
						Scaled Factor	Duty Factor	Meas. SAR	Scaled SAR	Plot
Body Front (0mm)	2402	8DPSK	/	/	/	/	/	/	/	/
	2441	8DPSK	0.03	5.88	7.0	1.294	1.292	0.0054	0.01	/
	2480	8DPSK	/	/	/	/	/	/	/	/
Body Left (0mm)	2402	8DPSK	/	/	/	/	/	/	/	/
	2441	8DPSK	-0.02	5.88	7.0	1.294	1.292	<0.001	<0.01	/
	2480	8DPSK	/	/	/	/	/	/	/	/
Body Top (0mm)	2402	8DPSK	0	6.19	7.0	1.205	1.292	0.015	0.02	1#
	2441	8DPSK	0.10	5.88	7.0	1.294	1.292	0.01	0.02	/
	2480	8DPSK	-0.02	6.70	7.0	1.072	1.292	0.00968	0.01	/
Body Bottom (0mm)	2402	8DPSK	/	/	/	/	/	/	/	/
	2441	8DPSK	-0.06	5.88	7.0	1.294	1.292	0.00283	0.01	/
	2480	8DPSK	/	/	/	/	/	/	/	/

2.4G Wi-Fi:

EUT Position	Frequency (MHz)	Test Mode	Power Drift (dB)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)				
						Scaled Factor	Duty Factor	Meas. SAR	Scaled SAR	Plot
Body Front (0mm)	2412	802.11b	/	/	/	/	/	/	/	/
	2437	802.11b	-0.11	14.86	15.0	1.033	1.008	0.017	0.02	/
	2462	802.11b	/	/	/	/	/	/	/	/
Body Left (0mm)	2412	802.11b	/	/	/	/	/	/	/	/
	2437	802.11b	-0.14	14.86	15.0	1.033	1.008	<0.001	<0.01	/
	2462	802.11b	/	/	/	/	/	/	/	/
Body Top (0mm)	2412	802.11b	-0.17	14.67	15.0	1.079	1.008	0.062	0.07	2#
	2437	802.11b	0.09	14.86	15.0	1.033	1.008	0.036	0.04	/
	2462	802.11b	0.03	14.31	15.0	1.172	1.008	0.049	0.02	/
Body Bottom (0mm)	2412	802.11b	/	/	/	/	/	/	/	/
	2437	802.11b	-0.17	14.86	15.0	1.033	1.008	0.015	0.01	/
	2462	802.11b	/	/	/	/	/	/	/	/

2.4GHz 802.11g/n OFDM SAR Test Exclusion Consideration:

Modulation Mode	P_{avg} (dBm)	P_{avg} (mW)	Reported SAR (W/Kg)	Adjusted SAR (W/kg)	Limit (W/Kg)	SAR Test Exclusion
802.11b(DSSS)	15.0	31.62	0.07	/	/	/
802.11g(OFDM)	15.0	31.62	/	0.07	1.2	Yes
802.11n(OFDM)	15.0	31.62	/	0.07	1.2	Yes
802.11ax(OFDMA)	15.0	31.62	/	0.07	1.2	Yes

Note:

According to section 5.2.2 of KDB 248227 D01, 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, SAR is not required for 2.4 GHz OFDM conditions.

5.2G Wi-Fi:

EUT Position	Frequency (MHz)	Test Mode	Power Drift (dB)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)				
						Scaled Factor	Duty Factor	Meas. SAR	Scaled SAR	Plot
Body Front (0mm)	5180	802.11a	/	/	/	/	/	/	/	/
	5200	802.11a	-0.02	11.98	13.0	1.265	1.076	0.024	0.03	/
	5240	802.11a	/	/	/	/	/	/	/	/
Body Left (0mm)	5180	802.11a	/	/	/	/	/	/	/	/
	5200	802.11a	-0.05	11.98	13.0	1.265	1.076	<0.001	<0.01	/
	5240	802.11a	/	/	/	/	/	/	/	/
Body Top (0mm)	5180	802.11a	-0.08	12.21	13.0	1.199	1.076	0.606	0.78	3#
	5200	802.11a	0.11	11.98	13.0	1.265	1.076	0.551	0.75	/
	5240	802.11a	-0.16	11.52	13.0	1.406	1.076	0.364	0.18	/
Body Bottom (0mm)	5180	802.11a	/	/	/	/	/	/	/	/
	5200	802.11a	0.11	11.98	13.0	1.265	1.076	0.047	0.02	/
	5240	802.11a	/	/	/	/	/	/	/	/

5.3G Wi-Fi:

EUT Position	Frequency (MHz)	Test Mode	Power Drift (dB)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)				
						Scaled Factor	Duty Factor	Meas. SAR	Scaled SAR	Plot
Body Front (0mm)	5260	802.11a	/	/	/	/	/	/	/	/
	5300	802.11a	-0.05	11.50	12.0	1.122	1.076	0.00263	0.01	/
	5320	802.11a	/	/	/	/	/	/	/	/
Body Left (0mm)	5260	802.11a	/	/	/	/	/	/	/	/
	5300	802.11a	-0.18	11.50	12.0	1.122	1.076	<0.001	<0.01	/
	5320	802.11a	/	/	/	/	/	/	/	/
Body Top (0mm)	5260	802.11a	-0.11	11.41	12.0	1.146	1.076	0.227	0.28	4#
	5300	802.11a	-0.07	11.50	12.0	1.122	1.076	0.189	0.23	/
	5320	802.11a	-0.03	11.33	12.0	1.167	1.076	0.213	0.11	/
Body Bottom (0mm)	5260	802.11a	/	/	/	/	/	/	/	/
	5300	802.11a	-0.16	11.50	12.0	1.122	1.076	0.014	0.01	/
	5320	802.11a	/	/	/	/	/	/	/	/

5.6G Wi-Fi:

EUT Position	Frequency (MHz)	Test Mode	Power Drift (dB)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)				
						Scaled Factor	Duty Factor	Meas. SAR	Scaled SAR	Plot
Body Front (0mm)	5500	802.11a	/	/	/	/	/	/	/	/
	5580	802.11a	-0.08	12.77	13.0	1.054	1.076	0.00662	0.01	/
	5700	802.11a	/	/	/	/	/	/	/	/
Body Left (0mm)	5500	802.11a	/	/	/	/	/	/	/	/
	5580	802.11a	-0.15	12.77	13.0	1.054	1.076	<0.001	<0.01	/
	5700	802.11a	/	/	/	/	/	/	/	/
Body Top (0mm)	5500	802.11a	-0.11	12.54	13.0	1.112	1.076	0.325	0.39	/
	5580	802.11a	-0.07	12.77	13.0	1.054	1.076	0.405	0.46	5#
	5700	802.11a	-0.13	12.52	13.0	1.117	1.076	0.373	0.19	/
Body Bottom (0mm)	5500	802.11a	/	/	/	/	/	/	/	/
	5580	802.11a	0.03	12.77	13.0	1.054	1.076	0.00559	0.01	/
	5700	802.11a	/	/	/	/	/	/	/	/

5.8G Wi-Fi:

EUT Position	Frequency (MHz)	Test Mode	Power Drift (dB)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)				
						Scaled Factor	Duty Factor	Meas. SAR	Scaled SAR	Plot
Body Front (0mm)	5745	802.11a	/	/	/	/	/	/	/	/
	5785	802.11a	-0.17	12.93	13.0	1.016	1.076	0.063	0.07	/
	5825	802.11a	/	/	/	/	/	/	/	/
Body Left (0mm)	5745	802.11a	/	/	/	/	/	/	/	/
	5785	802.11a	0.09	12.93	13.0	1.016	1.076	<0.001	<0.01	/
	5825	802.11a	/	/	/	/	/	/	/	/
Body Top (0mm)	5745	802.11a	-0.09	12.65	13.0	1.084	1.076	0.437	0.51	6#
	5785	802.11a	-0.02	12.93	13.0	1.016	1.076	0.393	0.43	/
	5825	802.11a	0.06	12.84	13.0	1.038	1.076	0.375	0.19	/
Body Bottom (0mm)	5745	802.11a	/	/	/	/	/	/	/	/
	5785	802.11a	0.02	12.93	13.0	1.016	1.076	0.013	0.01	/
	5825	802.11a	/	/	/	/	/	/	/	/

ANT1:**2.4G Wi-Fi:**

EUT Position	Frequency (MHz)	Test Mode	Power Drift (dB)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)				
						Scaled Factor	Duty Factor	Meas. SAR	Scaled SAR	Plot
Body Front (0mm)	2412	802.11b	/	/	/	/	/	/	/	/
	2437	802.11b	-0.01	14.42	15.0	1.143	1.008	0.217	0.25	/
	2462	802.11b	/	/	/	/	/	/	/	/
Body Top (0mm)	2412	802.11b	0.12	14.69	15.0	1.074	1.008	0.387	0.42	/
	2437	802.11b	0.13	14.42	15.0	1.143	1.008	0.43	0.50	7#
	2462	802.11b	-0.09	14.60	15.0	1.096	1.008	0.447	0.49	/
Body Bottom (0mm)	2412	802.11b	/	/	/	/	/	/	/	/
	2437	802.11b	0.05	14.42	15.0	1.143	1.008	0.152	0.18	/
	2462	802.11b	/	/	/	/	/	/	/	/

2.4GHz 802.11g/n OFDM SAR Test Exclusion Consideration:

Modulation Mode	P _{ava} (dBm)	P _{ava} (mW)	Reported SAR (W/Kg)	Adjusted SAR (W/kg)	Limit (W/Kg)	SAR Test Exclusion
802.11b(DSSS)	15.0	31.62	0.50	/	/	/
802.11g(OFDM)	15.0	31.62	/	0.50	1.2	Yes
802.11n(OFDM)	15.0	31.62	/	0.50	1.2	Yes
802.11ax(OFDMA)	15.0	31.62	/	0.50	1.2	Yes

Note:

According to section 5.2.2 of KDB 248227 D01, 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, SAR is not required for 2.4 GHz OFDM conditions.

5.2G Wi-Fi:

EUT Position	Frequency (MHz)	Test Mode	Power Drift (dB)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)				
						Scaled Factor	Duty Factor	Meas. SAR	Scaled SAR	Plot
Body Front (0mm)	5180	802.11a	/	/	/	/	/	/	/	/
	5200	802.11a	0.11	11.14	12.0	1.219	1.076	0.18	0.24	/
	5240	802.11a	/	/	/	/	/	/	/	/
Body Top (0mm)	5180	802.11a	-0.03	11.38	12.0	1.153	1.076	0.537	0.67	/
	5200	802.11a	0.10	11.14	12.0	1.219	1.076	0.604	0.79	8#
	5240	802.11a	-0.13	10.83	12.0	1.309	1.076	0.451	0.64	/
Body Bottom (0mm)	5180	802.11a	/	/	/	/	/	/	/	/
	5200	802.11a	0.18	11.14	12.0	1.219	1.076	0.058	0.08	/
	5240	802.11a	/	/	/	/	/	/	/	/

5.3G Wi-Fi:

EUT Position	Frequency (MHz)	Test Mode	Power Drift (dB)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)				
						Scaled Factor	Duty Factor	Meas. SAR	Scaled SAR	Plot
Body Front (0mm)	5260	802.11a	/	/	/	/	/	/	/	/
	5300	802.11a	-0.14	10.89	11.0	1.026	1.076	0.164	0.18	/
	5320	802.11a	/	/	/	/	/	/	/	/
Body Top (0mm)	5260	802.11a	0.19	10.61	11.0	1.094	1.076	0.64	0.75	9#
	5300	802.11a	0.02	10.89	11.0	1.026	1.076	0.542	0.60	/
	5320	802.11a	-0.17	10.42	11.0	1.143	1.076	0.597	0.73	/
Body Bottom (0mm)	5260	802.11a	/	/	/	/	/	/	/	/
	5300	802.11a	-0.06	10.89	11.0	1.026	1.076	0.045	0.05	/
	5320	802.11a	/	/	/	/	/	/	/	/

5.6G Wi-Fi:

EUT Position	Frequency (MHz)	Test Mode	Power Drift (dB)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)				
						Scaled Factor	Duty Factor	Meas. SAR	Scaled SAR	Plot
Body Front (0mm)	5500	802.11a	/	/	/	/	/	/	/	/
	5580	802.11a	0.12	12.61	13.0	1.094	1.076	0.067	0.08	/
	5700	802.11a	/	/	/	/	/	/	/	/
Body Top (0mm)	5500	802.11a	0.03	12.13	13.0	1.222	1.076	0.297	0.39	/
	5580	802.11a	-0.15	12.61	13.0	1.094	1.076	0.363	0.43	/
	5700	802.11a	-0.12	11.44	13.0	1.432	1.076	0.338	0.52	10#
Body Bottom (0mm)	5500	802.11a	/	/	/	/	/	/	/	/
	5580	802.11a	0.07	12.61	13.0	1.094	1.076	0.092	0.11	/
	5700	802.11a	/	/	/	/	/	/	/	/

5.8G Wi-Fi:

EUT Position	Frequency (MHz)	Test Mode	Power Drift (dB)	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/kg)				
						Scaled Factor	Duty Factor	Meas. SAR	Scaled SAR	Plot
Body Front (0mm)	5745	802.11a	/	/	/	/	/	/	/	/
	5785	802.11a		10.81	11.0	1.045	1.076	0.238	0.27	/
	5825	802.11a	/	/	/	/	/	/	/	/
Body Top (0mm)	5745	802.11a	0.12	10.62	11.0	1.091	1.076	0.478	0.56	/
	5785	802.11a	0.04	10.81	11.0	1.045	1.076	0.62	0.70	/
	5825	802.11a	0.15	10.76	11.0	1.057	1.076	0.687	0.78	11#
Body Bottom (0mm)	5745	802.11a	/	/	/	/	/	/	/	/
	5785	802.11a	0.06	10.81	11.0	1.045	1.076	0.076	0.09	/
	5825	802.11a	/	/	/	/	/	/	/	/

Note:

1. When the SAR value is less than half of the limit, testing for low and high channel is optional.
2. When SAR or MPE is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance.
3. For SAR testing of Bluetooth and 802.11 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)"

SAR Measurement Variability

In accordance with published RF Exposure KDB procedure 865664 D01 SAR measurement 100 MHz to 6 GHz v01. 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

- 1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.
- 2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
- 3) Perform a second repeated measurement only 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 ($\sim 10\%$ from the 1-g SAR limit).
- 4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .

The Highest Measured SAR Configuration in Each Frequency Band

Body

SAR probe calibration point)	Frequency Band	Freq.(MHz)	EUT Position	Meas. SAR (W/kg)		Largest to Smallest SAR Ratio
				Original	Repeated	
/	/	/	/	/	/	/

Note:

1. Second Repeated Measurement is not required since the ratio of the largest to smallest SAR for the original and first repeated measurement is not > 1.20 .
2. The measured SAR results **do not** have to be scaled to the maximum tune-up tolerance to determine if repeated measurements are required.
3. SAR measurement variability must be assessed for each frequency band, which is determined by the **SAR probe calibration point and tissue-equivalent medium** used for the device measurements.

SAR DUT HOLDER PERTURBATIONS

In accordance with TCB workshop October 2016:

1) SAR perturbation due to test device holders, depending on antenna locations, buttons locations on phones or device, form factor (e.g. dongles etc.), the measured SAR could be influenced by the relative positions of the test device and its holder

2) SAR measurement standards have included protocols to evaluate this with a flat phantom, with and without the device holder

3) When the highest reported SAR of an antenna is > 1.2 W/kg, holder perturbation verification is required for each antenna, using the highest SAR configuration among all applicable frequency bands in the same exact device and holder positions used for head and body SAR measurements; i.e. same device/button locations in the holder

Per IEEE 1528: 2013/Annex E/E.4.1.1: Device holder perturbation tolerance for a specific test device: Type B
When it is unknown if a device holder perturbs the fields of a test device, the SAR uncertainty shall be assessed with a flat phantom (see Clause 5) by comparing the SAR with and without the device holder according to the following tests:

The SAR tolerance for device holder disturbance is computed using Equation (E.21) and entered in the corresponding row of the appropriate uncertainty table with an assumed rectangular probability distribution and $\nu_i = \infty$ degrees of freedom:

$$SAR_{\text{tolerance}} [\%] = 100 \times \left(\frac{SAR_{\text{w/holder}} - SAR_{\text{w/o holder}}}{SAR_{\text{w/o holder}}} \right) \quad (\text{E.21})$$

The Highest Measured SAR Configuration among all applicable Frequency Band

Body

Frequency Band	Freq.(MHz)	EUT Position	Meas. SAR (W/kg)		The Device holder perturbation uncertainty
			With holder	Without holder	
/	/	/	/	/	/

SAR SIMULTANEOUS TRANSMISSION DESCRIPTION

Simultaneous Transmission:

Description of Simultaneous Transmit Capabilities		
Transmitter Combination	Simultaneous?	Hotspot?
WLAN ANT0+ WLAN ANT1	√	×
Bluetooth ANT0 + WLAN ANT1	√	×

Simultaneous SAR test exclusion considerations:

Mode(SAR1+SAR2)	Position	Reported SAR(W/kg)		ΣSAR < 1.6W/kg
		SAR1	SAR2	
WLAN ANT0+ WLAN ANT1	Body	0.78	0.79	1.57
Bluetooth ANT0 + WLAN ANT1	Body	0.02	0.79	0.81

Conclusion:

Sum of SAR: ΣSAR ≤1.6 W/kg therefore simultaneous transmission SAR with Volume Scans is not required.

SAR PLOTS

Please Refer to the Attachment.

APPENDIX A MEASUREMENT UNCERTAINTY

The uncertainty budget has been determined for the measurement system and is given in the following Table.

Measurement uncertainty evaluation for IEEE1528-2013 SAR test

Source of uncertainty	Tolerance/ Uncertainty ± %	Probability distribution	Divisor	ci (1 g)	ci (10 g)	Standard Uncertainty ± %, (1 g)	Standard Uncertainty ± %, (10 g)
Measurement system							
Probe calibration	7.5	N	1	1	1	7.5	7.5
Axial Isotropy	4.7	R	$\sqrt{3}$	1	1	2.7	2.7
Hemispherical Isotropy	9.6	R	$\sqrt{3}$	0	0	0.0	0.0
Boundary effect	1.0	R	$\sqrt{3}$	1	1	0.6	0.6
Linearity	4.7	R	$\sqrt{3}$	1	1	2.7	2.7
Detection limits	1.0	R	$\sqrt{3}$	1	1	0.6	0.6
Modulation response	4.0	R	$\sqrt{3}$	1	1	2.3	2.3
Readout electronics	0.3	N	1	1	1	0.3	0.3
Response time	0.0	R	$\sqrt{3}$	1	1	0.0	0.0
Integration time	0.0	R	$\sqrt{3}$	1	1	0.0	0.0
RF ambient conditions – noise	1.0	R	$\sqrt{3}$	1	1	0.6	0.6
RF ambient conditions—reflections	1.0	R	$\sqrt{3}$	1	1	0.6	0.6
Probe positioner mech. Restrictions	0.8	R	$\sqrt{3}$	1	1	0.5	0.5
Probe positioning with respect to phantom shell	6.7	R	$\sqrt{3}$	1	1	3.9	3.9
Extrapolation, interpolation, and integrations algorithms for max. SAR evaluation	3.9	R	$\sqrt{3}$	1	1	2.3	2.3
Test sample related							
Test sample positioning	2.8	N	1	1	1	2.8	2.8
Device holder uncertainty	6.3	N	1	1	1	6.3	6.3
Drift of output power	5.0	R	$\sqrt{3}$	1	1	2.9	2.9
SAR scaling	2.0	R	$\sqrt{3}$	1	1	1.2	1.2
Phantom and tissue parameters							
Phantom uncertainty (shape and thickness tolerances)	4.0	R	$\sqrt{3}$	1	1	2.3	2.3
Uncertainty in SAR correction for deviations in permittivity and conductivity	1.9	N	1	1	0.84	1.9	1.6
Liquid conductivity measurement	5.5	N	1	0.78	0.71	4.3	3.9
Liquid permittivity measurement	2.9	N	1	0.23	0.26	0.7	0.8
Liquid conductivity—temperature uncertainty	1.7	R	$\sqrt{3}$	0.78	0.71	0.8	0.7
Liquid permittivity—temperature uncertainty	2.7	R	$\sqrt{3}$	0.23	0.26	0.4	0.4
Combined standard uncertainty		RSS				12.2	12.0
Expanded uncertainty 95 % confidence interval)						24.3	23.9

APPENDIX B EUT TEST POSITION PHOTOS

Please Refer to the Attachment.

APPENDIX C CALIBRATION CERTIFICATES

Please Refer to the Attachment.

***** END OF REPORT *****