



中认信通
CHINA CERTIFICATION ICT CO., LTD (DONGGUAN)



SAR TEST REPORT

Applicant: Fujian Newland Auto-ID Tech Co., Ltd.

Address: Newland Science & Technology Park No.1 Rujiang West Rd., Mawei district, Fuzhou, Fujian, China

FCC ID: SL9NLS-WD5

Product Name: WD5 Industrial Smartwatch

Standard(s): 47 CFR Part 2(2.1093)

The above device has been tested and found compliant with the requirement of the relative standards by China Certification ICT Co., Ltd (Dongguan)

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SAR TEST RESULTS SUMMARY

Operation Frequency Bands	Highest Reported 1g SAR(W/kg)		Highest Reported 10g SAR(W/kg)	
	Face Up (Gap 10mm)	Limits (W/kg)	Limb Worn (Gap 0mm)	Limits (W/kg)
WLAN 2.4G	0.26	1.6	0.15	4.0
WLAN 5.2G	0.75		0.11	
WLAN 5.3G	0.79		0.18	
WLAN 5.6G	0.76		0.12	
WLAN 5.8G	0.66		0.10	
Maximum Simultaneous Transmission SAR				
Items	Face Up (Gap 10mm)	Limits (W/kg)	Limb Worn (Gap 0mm)	Limits (W/kg)
Sum SAR(W/kg)	1.54	1.6	0.34	4.0
SPLSR	N/A	N/A	N/A	0.04
EUT Received Date:	2024/11/12			
Test Date:	2024/12/12			
Test Result:	Pass			

Test Facility

The Test site used by China Certification ICT Co., Ltd (Dongguan) to collect test data is located on the No. 113, Pingkang Road, Dalang Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 442868, the FCC Designation No. : CN1314.

Declarations

China Certification ICT Co., Ltd (Dongguan) is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol “▲”. Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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Each test item follows the test standard(s) without deviation.

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	2403Z39468E-20	Original Report	2025/02/12

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	WD5 Industrial Smartwatch
EUT Model:	NLS-WD5
Multiple Models:	WD5, NLS-NW20, NW20
Device Type:	Portable
Exposure Category:	Population / Uncontrolled
Antenna Type(s):	Internal Antenna
Operation modes:	WLAN, Bluetooth and NFC
Frequency Band:	WLAN 2.4G : 2412 MHz-2462 MHz WLAN 5.2G : 5150 MHz-5250 MHz WLAN 5.3G : 5250 MHz-5350 MHz WLAN 5.6G : 5470 MHz-5725 MHz WLAN 5.8G : 5725 MHz-5850 MHz Bluetooth/BLE : 2402 MHz-2480 MHz NFC:13.56MHz
Rated Input Voltage:	DC 3.85 V from Rechargeable Battery
Sample Number:	2UC5-1
Normal Operation:	Face Up and Limb Worn
Note: The multiple models are electrically identical with the test model. Please refer to the declaration letter for more detail, which was provided by manufacturer.	

1.2 Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance with FCC 47 CFR § 2.1093, IEEE 1528-2013, the following FCC Published RF exposure 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 248227 D01 802.11 Wi-Fi SAR v02r02

TCB Workshop April 2019: RF Exposure Procedures

1.3 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)	1.60	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 may be 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 limit 1.6W/kg for 1g Head(Face Up) SAR and limit 4.0W/kg for 10g Extremity(Limb Worn) SAR applied to the EUT.

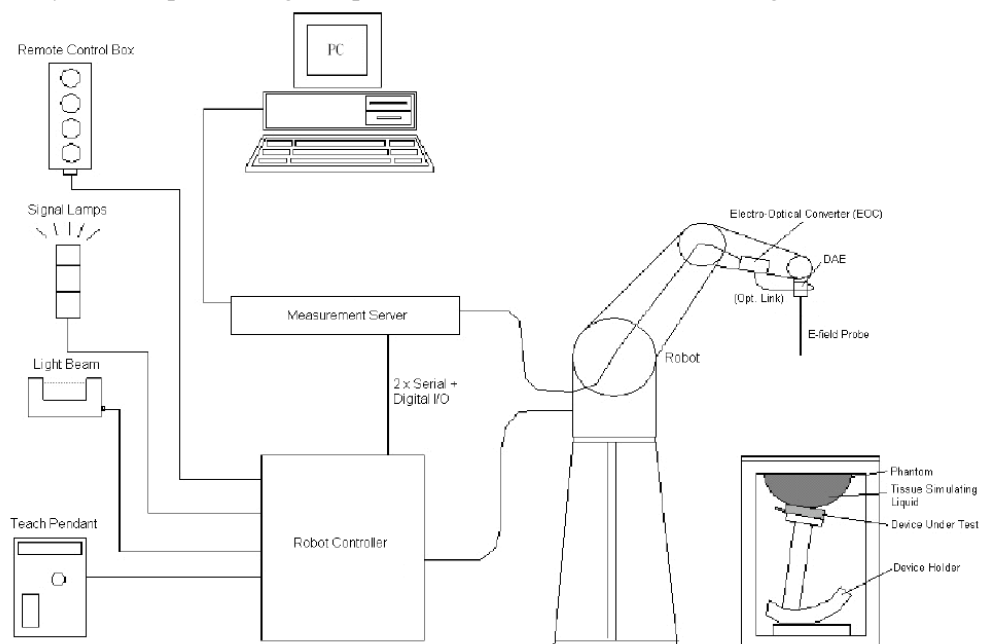
2. SAR MEASUREMENT SYSTEM

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 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 400MHz Intel ULV Celeron, 128MB chip-disk and 128MB 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 evaluation of field measurements and surface detection, controls robot movements and handles safety operation. 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 point out, and therefore only devices provided by SPEAG can be connected. 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

Calibration Frequency Points for EX3DV4 E-Field Probes SN: 7329 Calibrated: 2024/3/27

Calibration Frequency Point(MHz)	Frequency Range(MHz)		Conversion Factor		
	From	To	X	Y	Z
750 Head	650	810	8.79	10.07	9.05
900 Head	810	1000	8.42	9.50	8.93
1750 Head	1650	1810	7.56	8.56	7.71
1900 Head	1810	2000	7.37	8.32	7.54
2300 Head	2200	2399	7.21	8.13	7.41
2450 Head	2399	2500	7.05	7.92	7.22
2600 Head	2500	2700	6.91	7.77	7.08
5250 Head	5140	5360	4.96	5.61	5.16
5600 Head	5490	5675	4.38	4.98	4.56
5750 Head	5675	5860	4.54	5.16	4.70

SAM Twin Phantom

The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region, where shell thickness increases to 6 mm). The phantom has three measurement areas:

- _ Left Head
- _ Right Head
- _ Flat phantom

The phantom table for the DASY systems based on the robots have the size of 100 x 50 x 85 cm (L x W x H). For easy dislocation these tables have fork lift cut outs at the bottom.

The bottom plate contains three pairs of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. Only one device holder is necessary if two phantoms are used (e.g., for different liquids)



A white cover is provided to cover the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. Free space scans of devices on top of this phantom cover are possible. Three reference marks are provided on the phantom counter. These reference marks are used to teach the absolute phantom position relative to the robot.

Robots

The DASY5 system uses the high precision industrial robot. The robot offers the same features important for our application:

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

The above mentioned robots are controlled by the Staubli CS8c robot controllers. All information regarding the use and maintenance of the robot arm and the robot controller is contained on the CDs delivered along with the robot. Paper manuals are available upon request direct from Staubli.

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 15mm 2 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 $\pm$ 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2)$ mm $\pm$ 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
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 $\leq$ 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 10mm, 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

			$\leq 3 \text{ GHz}$	$> 3 \text{ GHz}$
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 x 7 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 IEC 62209-1:2016

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>
<i>6 000</i>	<i>35,1</i>	<i>5,48</i>

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.

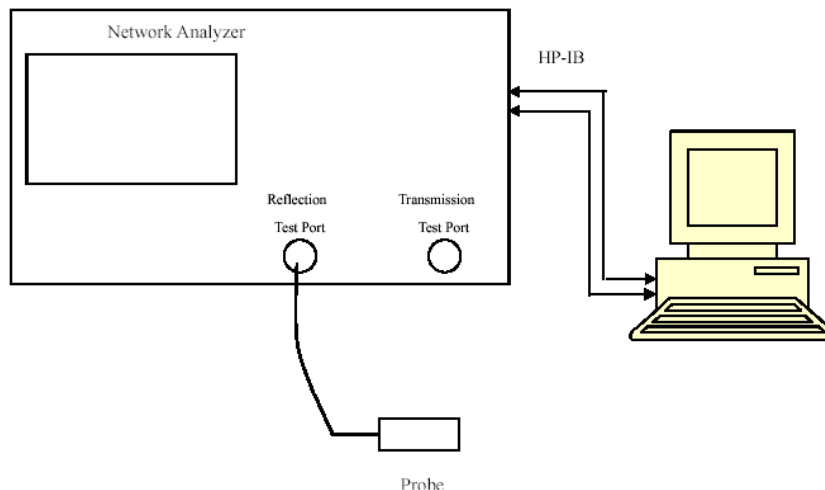
3. EQUIPMENT LIST AND CALIBRATION

3.1 Equipments List & Calibration Information

Equipment	Model	S/N	Calibration Date	Calibration Due Date
DASY5 Test Software	DASY52.10	N/A	NCR	NCR
DASY5 Measurement Server	DASY5 4.5.12	1567	NCR	NCR
Data Acquisition Electronics	DAE4	1493	2024/3/27	2025/3/26
E-Field Probe	EX3DV4	7329	2024/3/27	2025/3/26
Mounting Device	MD4HHTV5	BJPCTC0152	NCR	NCR
Twin SAM	Twin SAM V5.0	1412	NCR	NCR
Dipole, 2450 MHz	D2450V2	1102	2023/3/27	2026/3/26
Dipole,5GHz	D5GHzV2	1245	2023/8/23	2026/8/22
Simulated Tissue Liquid Head(500-9500 MHz)	HBBL600-10000V6	220420-2	Each Time	/
Network Analyzer	8753B	2828A00170	2024/10/17	2025/10/16
Dielectric assessment kit	1319	SM DAK 040 CA	NCR	NCR
MXG Vector Signal Generator	N5182B	MY51350144	2024/4/1	2025/3/31
Power Meter	ML2495A	1106009	2024/7/30	2025/7/29
USB Power Sensor	U2001H	MY50000432	2024/4/1	2025/3/31
Power Amplifier	ZHL-5W-202-S+	416402204	NCR	NCR
Power Amplifier	ZVE-6W-83+	637202210	NCR	NCR
Directional Coupler	441493	520Z	NCR	NCR
Attenuator	20dB, 100W	LN749	NCR	NCR
Attenuator	6dB, 150W	2754	NCR	NCR
Thermometer	DTM3000	3892	2024/4/1	2025/3/31
Thermohygrometer	HTC-1	N/A	2024/4/1	2025/3/31
Spectrum Analyzer	FSU26	100147	2024/4/1	2025/3/31

4. SAR MEASUREMENT SYSTEM VERIFICATION

4.1 Liquid Verification



Liquid Verification Setup Block Diagram

Liquid Verification Results

Frequency (MHz)	LiquidType	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ϵ_r	σ (S/m)	ϵ_r	σ (S/m)	$\Delta\epsilon_r$	$\Delta\sigma$ (S/m)	
2412	Simulated Tissue Liquid Head	40.353	1.737	39.28	1.77	2.73	-1.86	± 5
2437	Simulated Tissue Liquid Head	40.289	1.765	39.23	1.79	2.7	-1.4	± 5
2450	Simulated Tissue Liquid Head	39.816	1.776	39.2	1.8	1.57	-1.33	± 5
2462	Simulated Tissue Liquid Head	39.511	1.788	39.18	1.81	0.84	-1.22	± 5

*Liquid Verification above was performed on 2024/12/12.

Frequency (MHz)	LiquidType	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	37.157	4.655	36.02	4.64	3.16	0.32	± 5
5200	Simulated Tissue Liquid Head	37.055	4.721	36	4.66	2.93	1.31	± 5
5240	Simulated Tissue Liquid Head	36.851	4.778	35.96	4.7	2.48	1.66	± 5
5250	Simulated Tissue Liquid Head	36.612	4.793	35.95	4.71	1.84	1.76	± 5
5260	Simulated Tissue Liquid Head	36.481	4.798	35.94	4.72	1.51	1.65	± 5
5280	Simulated Tissue Liquid Head	36.189	4.807	35.92	4.74	0.75	1.41	± 5
5320	Simulated Tissue Liquid Head	35.989	4.853	35.88	4.78	0.3	1.53	± 5

*Liquid Verification above was performed on 2024/12/12.

Frequency (MHz)	LiquidType	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	36.408	5.077	35.65	4.97	2.13	2.15	± 5
5580	Simulated Tissue Liquid Head	36.238	5.139	35.53	5.05	1.99	1.76	± 5
5600	Simulated Tissue Liquid Head	36.149	5.146	35.5	5.07	1.83	1.5	± 5
5700	Simulated Tissue Liquid Head	35.856	5.265	35.4	5.17	1.29	1.84	± 5
5745	Simulated Tissue Liquid Head	35.701	5.333	35.36	5.22	0.96	2.16	± 5
5750	Simulated Tissue Liquid Head	35.571	5.339	35.35	5.22	0.63	2.28	± 5
5785	Simulated Tissue Liquid Head	35.329	5.397	35.32	5.26	0.03	2.6	± 5
5825	Simulated Tissue Liquid Head	35.101	5.411	35.28	5.3	-0.51	2.09	± 5

*Liquid Verification above was performed on 2024/12/12.

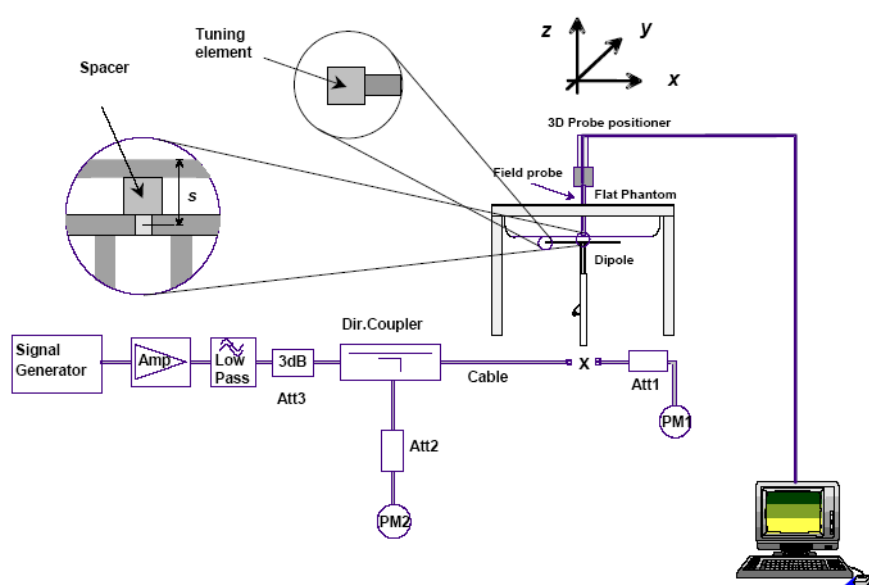
4.2 System Accuracy Verification

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 $1\,000 \text{ MHz} < f \leq 3\,000 \text{ MHz}$;
- $s = 10 \text{ mm} \pm 0,2 \text{ mm}$ for $3\,000 \text{ MHz} < f \leq 6\,000 \text{ MHz}$.

System Verification Setup Block Diagram



System Accuracy Check Results

Date	Frequency Band	Liquid Type	Input Power (mW)	Measured SAR (W/kg)		Normalized to 1W (W/kg)	Target Value (W/kg)	Delta (%)	Tolerance (%)
2024/12/12	2450 MHz	Simulated Tissue Liquid Head	100	1g	5.01	50.1	50.9	-1.57	± 10
				10g	2.28	22.8	24.1	-5.39	± 10
2024/12/12	5250 MHz	Simulated Tissue Liquid Head	100	1g	7.49	74.9	78	-3.97	± 10
				10g	2.06	20.6	22.1	-6.79	± 10
2024/12/12	5600 MHz	Simulated Tissue Liquid Head	100	1g	8.11	81.1	81	0.12	± 10
				10g	2.34	23.4	22.8	2.63	± 10
2024/12/12	5750 MHz	Simulated Tissue Liquid Head	100	1g	7.66	76.6	77.8	-1.54	± 10
				10g	2.09	20.9	21.7	-3.69	± 10

*The SAR values above are normalized to 1 Watt forward power.

4.3 SAR SYSTEM VALIDATION DATA

System Performance 2450MHz Head was performed on 2024/12/12

DUT: D2450V2; Type: 2450 MHz; Serial: 1102

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

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.776$ S/m; $\epsilon_r = 39.816$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7329; ConvF(7.05, 7.92, 7.22) @ 2450 MHz; Calibrated: 2024/3/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1493; Calibrated: 2024/3/27
- Phantom: Twin SAM; Type: Twin SAM V5.0; Serial: TP:1412
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (8x6x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 6.81 W/kg

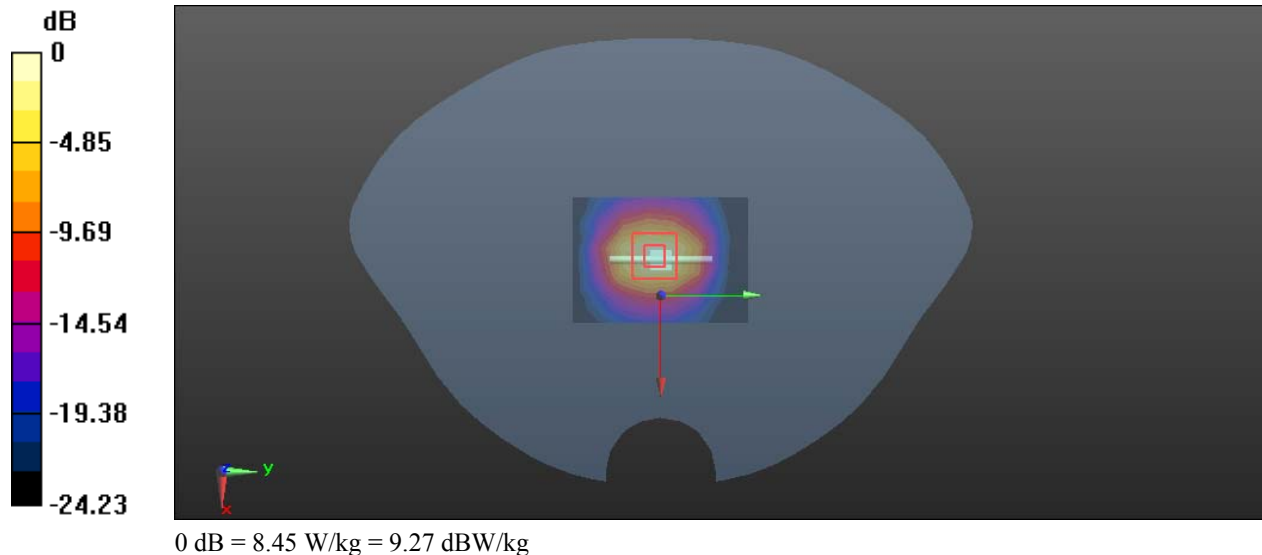
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 66.92 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 10.5 W/kg

SAR(1 g) = 5.01 W/kg; SAR(10 g) = 2.28 W/kg

Maximum value of SAR (measured) = 8.45 W/kg



System Performance 5250MHz Head was performed on 2024/12/12**DUT: D5GHzV2; Type: 5250MHz; Serial: SN:1245**

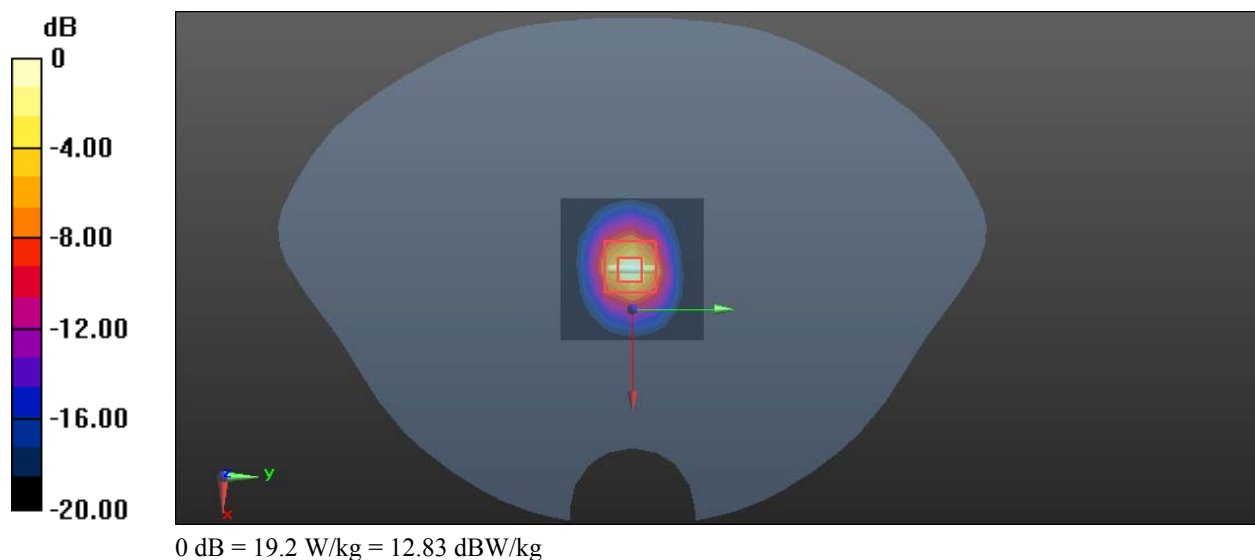
Communication System: UID 0, CW (0); Frequency: 5250 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 5250 \text{ MHz}$; $\sigma = 4.793 \text{ S/m}$; $\epsilon_r = 36.612$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7329; ConvF(4.96, 5.61, 5.16) @ 5250 MHz; Calibrated: 2024/3/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1493; Calibrated: 2024/3/27
- Phantom: Twin SAM; Type: Twin SAM V5.0; Serial: TP:1412
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (7x7x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$
Maximum value of SAR (measured) = 18.8 W/kg

Zoom Scan (8x8x12)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=2\text{mm}$
Reference Value = 41.76 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 34.2 W/kg
SAR(1 g) = 7.49 W/kg; SAR(10 g) = 2.06 W/kg
Maximum value of SAR (measured) = 19.2 W/kg



System Performance 5600MHz Head was performed on 2024/12/12**DUT: D5GHzV2; Type: 5600MHz; Serial: SN:1245**

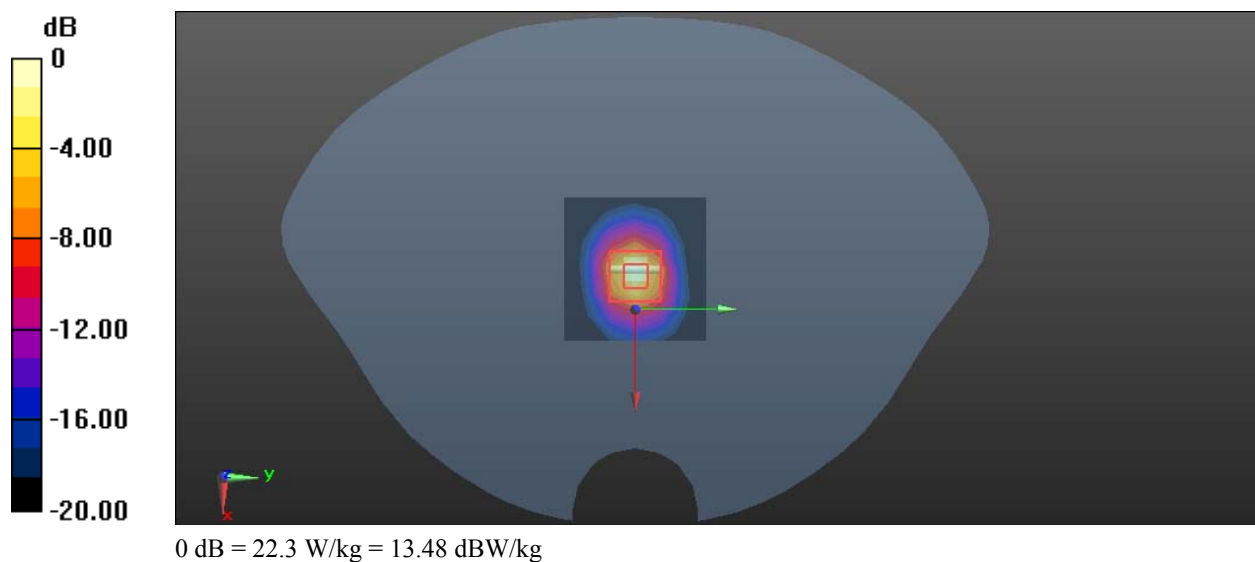
Communication System: UID 0, CW (0); Frequency: 5600 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 5600$ MHz; $\sigma = 5.146$ S/m; $\epsilon_r = 36.149$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7329; ConvF(4.38, 4.98, 4.56) @ 5600 MHz; Calibrated: 2024/3/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1493; Calibrated: 2024/3/27
- Phantom: Twin SAM; Type: Twin SAM V5.0; Serial: TP:1412
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 19.5 W/kg

Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 40.07 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 38.8 W/kg
SAR(1 g) = 8.11 W/kg; SAR(10 g) = 2.34 W/kg
Maximum value of SAR (measured) = 22.3 W/kg



System Performance 5750MHz Head was performed on 2024/12/12**DUT: D5GHzV2; Type: 5750MHz; Serial: SN:1245**

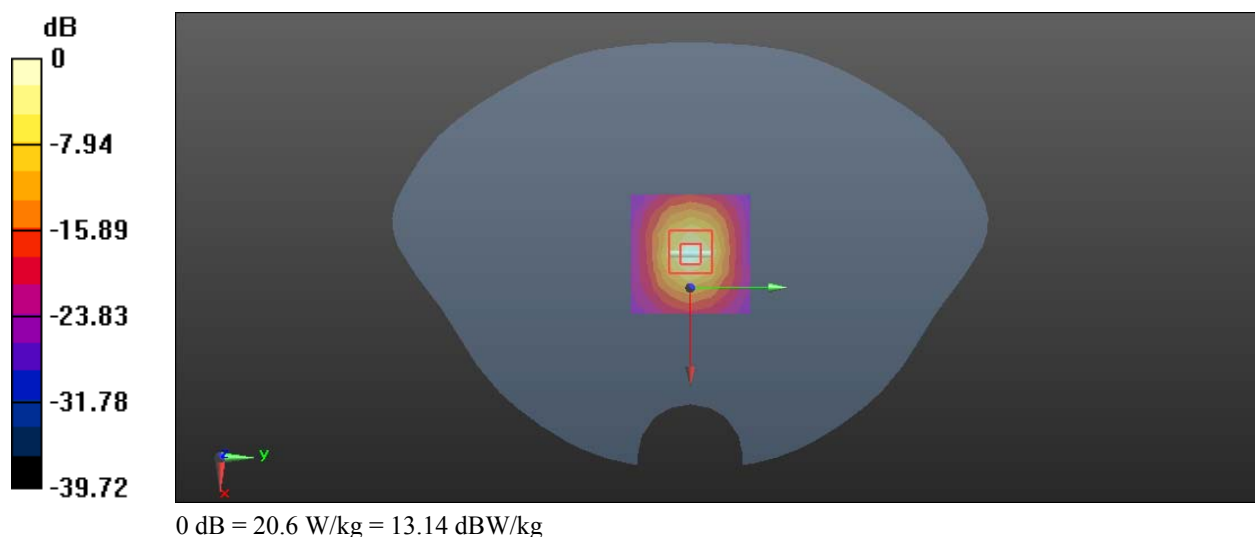
Communication System: UID 0, CW (0); Frequency: 5750 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 5750$ MHz; $\sigma = 5.339$ S/m; $\epsilon_r = 35.571$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7329; ConvF(4.54, 5.16, 4.7) @ 5750 MHz; Calibrated: 2024/3/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1493; Calibrated: 2024/3/27
- Phantom: Twin SAM; Type: Twin SAM V5.0; Serial: TP:1412
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 20.2 W/kg

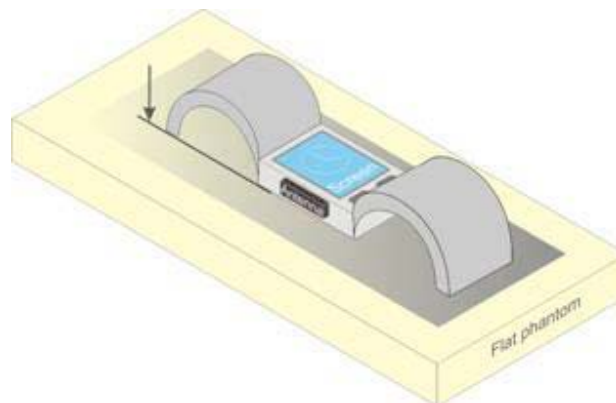
Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 39.16 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 36.5 W/kg
SAR(1 g) = 7.66 W/kg; SAR(10 g) = 2.09 W/kg
Maximum value of SAR (measured) = 20.6 W/kg



5. EUT TEST STRATEGY AND METHODOLOGY

5.1 Front-of-face and Limbs

Transmitters that are built-in within a wrist watch or similar wrist-worn devices typically operate in speaker mode for voice communication, with the device worn on the wrist and positioned next to the mouth. Next to the mouth exposure requires 1-g SAR and the wrist-worn condition requires 10-g extremity SAR. The 10-g extremity and 1-g SAR test exclusions may be applied to the wrist and face exposure conditions. When SAR evaluation is required, next to the mouth use is evaluated with the front of the device positioned at 10 mm from a flat phantom filled with head tissue-equivalent medium. The wrist bands should be strapped together to represent normal use conditions. SAR for wrist exposure is evaluated with the back of the device positioned in direct contact against a flat phantom filled with body tissue-equivalent medium. The wrist bands should be unstrapped and touching the phantom. The space introduced by the watch or wrist bands and the phantom must be representative of actual use conditions.



5.2 Test Distance for SAR Evaluation

For Face Up mode (1g Head SAR) the EUT is set 10mm away from the phantom, the test distance is 10mm; For Limb Worn mode (10g Extremity SAR) the EUT (Equipment Under Test) is set directly against the phantom, the test distance is 0mm.

5.3 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.

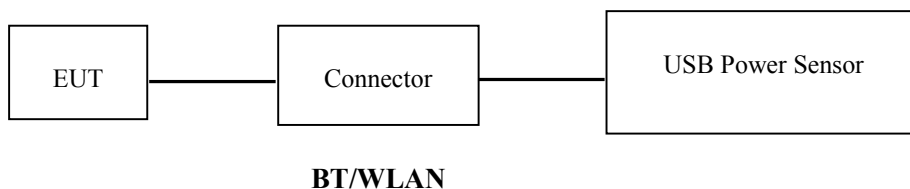
All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

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.

6. CONDUCTED OUTPUT POWER MEASUREMENT

6.1 Test Procedure

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



6.2 Maximum Target Output Power

Max Target Power(dBm)				
Mode/Band	Channel			
	Low	Middle	High	Cross
WLAN 2.4G(802.11b)Chain 0	18.6	18.6	18.6	/
WLAN 2.4G(802.11g) Chain 0	17.2	17.2	17.2	/
WLAN 2.4G(802.11n20) Chain 0	15.2	15.2	15.2	/
WLAN 2.4G(802.11ax20) Chain 0	15.6	15.6	15.6	/
WLAN 2.4G(802.11b)Chain 1	9.8	9.8	9.8	/
WLAN 2.4G(802.11g) Chain 1	16.6	16.6	16.6	/
WLAN 2.4G(802.11n 20) Chain 1	14.9	14.9	14.9	/
WLAN 2.4G(802.11ax20) Chain 1	15.4	15.4	15.4	/
WLAN 5.2G(802.11a) Chain 0	15.7	15.7	15.7	/
WLAN 5.2G(802.11n20) Chain 0	15.7	15.7	15.7	/
WLAN 5.2G(802.11n40) Chain 0	12.3	/	12.3	/
WLAN 5.2G(802.11ac80) Chain 0	/	10.1	/	/
WLAN 5.2G(802.11ax20) Chain 0	15.9	15.9	15.9	/
WLAN 5.2G(802.11ax40) Chain 0	12.5	/	12.5	/
WLAN 5.2G(802.11ax80) Chain 0	/	10.4	/	/
WLAN 5.2G(802.11a) Chain 1	15.1	15.1	15.1	/
WLAN 5.2G(802.11n20) Chain 1	15	15	15	/
WLAN 5.2G(802.11n40) Chain 1	11.5	/	11.5	/
WLAN 5.2G(802.11ac80) Chain 1	/	9.5	/	/
WLAN 5.2G(802.11ax20) Chain 1	15.5	15.5	15.5	/
WLAN 5.2G(802.11ax40) Chain 1	11.9	/	11.9	/
WLAN 5.2G(802.11ax80) Chain 1	/	9.6	/	/
WLAN 5.3G(802.11a) Chain 0	15.7	15.7	15.7	/
WLAN 5.3G(802.11n20) Chain 0	16.8	16.8	16.8	/
WLAN 5.3G(802.11n40) Chain 0	11.8	/	11.8	/
WLAN 5.3G(802.11ac80) Chain 0	/	12.7	/	/
WLAN 5.3G(802.11ax20) Chain 0	16.9	16.9	16.9	/
WLAN 5.3G(802.11ax40) Chain 0	12.2	/	12.2	/
WLAN 5.3G(802.11ax80) Chain 0	/	12.8	/	/
WLAN 5.3G(802.11a) Chain 1	14.6	14.6	14.6	/
WLAN 5.3G(802.11n20) Chain 1	14.5	14.5	14.5	/
WLAN 5.3G(802.11n40) Chain 1	10.6	/	10.6	/
WLAN 5.3G(802.11ac80) Chain 1	/	11.6	/	/
WLAN 5.3G(802.11ax20) Chain 1	15.8	15.8	15.8	/
WLAN 5.3G(802.11ax40) Chain 1	10.9	/	10.9	/
WLAN 5.3G(802.11ax80) Chain 1	/	11.7	/	/
WLAN 5.6G(802.11a) Chain 0	14.5	14.5	14.5	14.5
WLAN 5.6G(802.11n20) Chain 0	11.6	11.6	11.6	11.6

Max Target Power(dBm)				
Mode/Band	Channel			
	Low	Middle	High	Cross
WLAN 5.6G(802.11n40) Chain 0	9.2	9.2	9.2	9.2
WLAN 5.6G(802.11ac80) Chain 0	9.4	/	9.4	9.4
WLAN 5.6G(802.11ax20) Chain 0	12.7	12.7	12.7	12.7
WLAN 5.6G(802.11ax40) Chain 0	9.3	9.3	9.3	9.3
WLAN 5.6G(802.11ax80) Chain 0	9.4	/	9.4	9.4
WLAN 5.6G(802.11a) Chain 1	13	13	13	13
WLAN 5.6G(802.11n20) Chain 1	9.9	9.9	9.9	9.9
WLAN 5.6G(802.11n40) Chain 1	7.4	7.4	7.4	7.4
WLAN 5.6G(802.11ac80) Chain 1	8	/	8	8
WLAN 5.6G(802.11ax20) Chain 1	11	11	11	11
WLAN 5.6G(802.11ax40) Chain 1	7.3	7.3	7.3	7.3
WLAN 5.6G(802.11ax80) Chain 1	8.2	/	8.2	8.2
WLAN 5.8G(802.11a) Chain 0	14.6	14.6	14.6	/
WLAN 5.8G(802.11n20) Chain 0	14.7	14.7	14.7	/
WLAN 5.8G(802.11n40) Chain 0	15.8	/	15.8	/
WLAN 5.8G(802.11ac80) Chain 0	/	15	/	/
WLAN 5.8G(802.11ax20) Chain 0	14.8	14.8	14.8	/
WLAN 5.8G(802.11ax40) Chain 0	15.6	/	15.6	/
WLAN 5.8G(802.11ax80) Chain 0	/	15	/	/
WLAN 5.8G(802.11a) Chain 1	13.5	13.5	13.5	/
WLAN 5.8G(802.11n20) Chain 1	13.6	13.6	13.6	/
WLAN 5.8G(802.11n40) Chain 1	14.2	/	14.2	/
WLAN 5.8G(802.11ac80) Chain 1	/	13.5	/	/
WLAN 5.8G(802.11ax20) Chain 1	13.5	13.5	13.5	/
WLAN 5.8G(802.11ax40) Chain 1	14.1	/	14.1	/
WLAN 5.8G(802.11ax80) Chain 1	/	13.9	/	/
Bluetooth BDR	8.0	7.0	5.5	/
Bluetooth EDR	9.0	8.0	7.0	/
BLE	8.0	7.0	5.5	/

6.3 Test Results:**WLAN 2.4G:**

Mode	Antenna	Channel frequency (MHz)	Duty Cycle (%)	Conducted Average Output Power(dBm)
802.11b	Chain 0	2412	99.7	18.51
		2437		18.38
		2462		18.02
	Chain 1	2412	99.7	9.64
		2437		9.43
		2462		9.49
802.11g	Chain 0	2412	/	17.06
		2437		16.68
		2462		15.75
	Chain 1	2412	/	16.49
		2437		16.27
		2462		15.99
802.11n20	Chain 0	2412	/	15.08
		2437		14.92
		2462		14.49
	Chain 1	2412	/	14.78
		2437		14.59
		2462		14.91
802.11ax20	Chain 0	2412	/	15.53
		2437		15.26
		2462		14.81
	Chain 1	2412	/	15.23
		2437		15.04
		2462		15.24

Note★:WLAN 2.4G Duty Cycle please refer to RF Report Number: 2402Z39468E-RF-00C

WLAN 5.2G:

Mode	Antenna	Channel frequency (MHz)	Duty Cycle (%)	Conducted Average Output Power(dBm)
802.11a	Chain 0	5180	98.99	15.56
		5200		15.52
		5240		15.53
	Chain 1	5180		15.03
		5200		14.93
		5240		14.96
802.11n20	Chain 0	5180	98.81	15.4
		5200		15.57
		5240		15.61
	Chain 1	5180		14.85
		5200		14.78
		5240		14.88
802.11n40	Chain 0	5190	98.65	12.1
		5230		12.18
	Chain 1	5190		11.38
		5230		11.21
802.11ac80	Chain 0	5210	98.37	10.01
	Chain 1	5210		9.4
802.11ax20	Chain 0	5180	90.98	15.77
		5200		15.57
		5240		15.67
	Chain 1	5180		15.38
		5200		15.09
		5240		15.32
802.11ax40	Chain 0	5190	84.38	12.34
		5230		12.41
	Chain 1	5190		11.82
		5230		11.39
802.11ax80	Chain 0	5210	74.36	10.3
	Chain 1	5210		9.44

WLAN 5.3G:

Mode	Antenna	Channel frequency (MHz)	Duty Cycle (%)	Conducted Average Output Power(dBm)
802.11a	Chain 0	5260	98.99	15.53
		5280		15.55
		5320		15.35
	Chain 1	5260		14.46
		5280		14.37
		5320		14.19
802.11n20	Chain 0	5260	98.81	16.74
		5280		15.46
		5320		15.19
	Chain 1	5260		14.35
		5280		14.43
		5320		14.27
802.11n40	Chain 0	5270	98.65	11.67
		5310		11.73
	Chain 1	5270		10.51
		5310		10.46
802.11ac80	Chain 0	5290	98.37	12.57
	Chain 1	5290		11.48
802.11ax20	Chain 0	5260	90.98	16.64
		5280		16.77
		5320		16.43
	Chain 1	5260		15.65
		5280		15.64
		5320		15.19
802.11ax40	Chain 0	5270	84.38	12.11
		5310		11.85
	Chain 1	5270		10.78
		5310		10.46
802.11ax80	Chain 0	5290	74.36	12.72
	Chain 1	5290		11.56

WLAN 5.6G:

Mode	Antenna	Channel frequency (MHz)	Duty Cycle (%)	Conducted Average Output Power(dBm)
802.11a	Chain 0	5500	98.99	14.38
		5580		13.65
		5700		12.82
		5720		12.97
	Chain 1	5500		12.94
		5580		11.89
		5700		11.08
		5720		11.16
802.11n20	Chain 0	5500	98.81	11.49
		5580		10.86
		5700		10.03
		5720		10
	Chain 1	5500		9.83
		5580		8.67
		5700		7.88
		5720		7.92
802.11n40	Chain 0	5510	98.65	9.13
		5550		8.73
		5670		7.66
		5710		7.63
	Chain 1	5510		7.23
		5550		6.43
		5670		5.54
		5710		5.57
802.11ac80	Chain 0	5530	98.37	9.32
		5610		8.57
		5690		8.04
	Chain 1	5530		7.89
		5610		6.86
		5690		6.5
802.11ax20	Chain 0	5500	90.98	12.62
		5580		11.8
		5700		11.15
		5720		11.06
	Chain 1	5500		10.91
		5580		9.89
		5700		8.99
		5720		9.19

802.11ax40	Chain 0	5510	84.38	9.15
		5550		8.6
		5670		7.55
		5710		7.67
	Chain 1	5510		7.16
		5550		6.57
		5670		5.44
		5710		5.51
802.11ax80	Chain 0	5530	74.36	9.31
		5610		8.58
		5690		7.99
		5530		8.06
	Chain 1	5610		6.92
		5690		6.67

WLAN 5.8G:

Mode	Antenna	Channel frequency (MHz)	Duty Cycle (%)	Conducted Average Output Power(dBm)
802.11a	Chain 0	5745	98.99	14.29
		5785		14.34
		5825		14.5
	Chain 1	5745		12.62
		5785		12.95
		5825		13.33
802.11n20	Chain 0	5745	98.81	14.06
		5785		14.2
		5825		14.61
	Chain 1	5745		12.66
		5785		12.94
		5825		13.47
802.11n40	Chain 0	5755	98.65	15.36
		5795		15.69
	Chain 1	5755		13.67
		5795		14.04
802.11ac80	Chain 0	5775	98.37	14.95
	Chain 1	5775		13.42
802.11ax20	Chain 0	5745	90.98	14.34
		5785		14.41
		5825		14.67
	Chain 1	5745		12.96
		5785		12.97
		5825		13.33
802.11ax40	Chain 0	5755	84.38	15.16
		5795		15.44
	Chain 1	5755		13.73
		5795		14.01
802.11ax80	Chain 0	5775	74.36	14.93
	Chain 1	5775		13.77

Note ★:

1.WLAN 5G Duty Cycle please refer to RF Report Number: 2402Z39468E-RF-00D

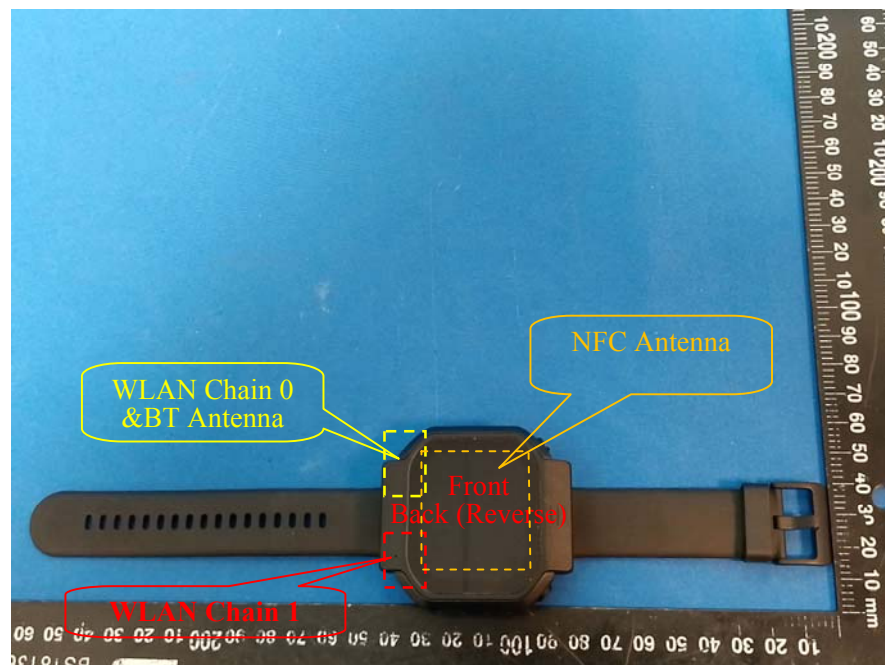
2.The system support 802.11a/n ht20/n ht40/ac vht20/vht40/vht80/ax20/ax40/ax80, the ac vht20/vht40 were reduced since the identical parameters with 802.11n ht20 and ht40.

Bluetooth:

Mode	Channel frequency (MHz)	RF Output Power(dBm)
BDR(GFSK)	2402	7.75
	2441	6.56
	2480	5.32
EDR($\pi/4$ -DQPSK)	2402	8.49
	2441	7.25
	2480	6.29
EDR(8DPSK)	2402	8.85
	2441	7.71
	2480	6.89
BLE 1M	2402	7.67
	2440	6.68
	2480	5.05
BLE 2M	2402	7.75
	2440	6.78
	2480	5.16

7. Standalone SAR test exclusion considerations

Antennas Location:



7.1 Standalone SAR test exclusion considerations

Face Up

Mode	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Distance (mm)	Calculated value	Threshold (1-g)	SAR Test Exclusion
Bluetooth	2480	9	7.94	10	1.3	3.0	YES

Limb Worn

Mode	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Distance (mm)	Calculated value	Threshold (10-g)	SAR Test Exclusion
Bluetooth	2480	9	7.94	0	2.5	7.5	YES

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.

7.2 Standalone SAR estimation:

Face Up

Mode	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Distance (mm)	Estimated 1-g (W/kg)
Bluetooth	2480	9	7.94	10	0.33

Limb Worn

Mode	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Distance (mm)	Estimated 10-g (W/kg)
Bluetooth	2480	9	7.94	0	0.13

When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

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

$[\sqrt{f(\text{GHz})} / x] \text{ W/kg}$, for test separation distances ≤ 50 mm;

where $x = 7.5$ for 1-g SAR and $x = 18.75$ for 10-g SAR.

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test Exclusion.

According to KDB 447498 D01 General RF Exposure Guidance v06, clause 4.3. General SAR test exclusion guidance:

c) For frequencies below 100 MHz, the following may be considered for SAR test exclusion (also illustrated in Appendix C):

- 1) For test separation distances > 50 mm and < 200 mm, the power threshold at the corresponding test separation distance at 100 MHz in step b) is multiplied by $[1 + \log(100/f(\text{MHz}))]$
- 2) For test separation distances ≤ 50 mm, the power threshold determined by the equation in c) 1) for 50 mm and 100 MHz is multiplied by $\frac{1}{2}$
- 3) SAR measurement procedures are not established below 100 MHz.

Measurement Result:

For NFC, the power of EUT: E Field@3m is 52.35 dBuV/m = -42.85dBm (0.0001mW)

Note: $E[\text{dB}\mu\text{V/m}] = \text{EIRP}[\text{dBm}] + 95.2$ for $d = 3$ m.

SAR test exclusion threshold for NFC(13.56MHz) separation distance $< 50\text{mm}$

$$= [474 * (1 + \log(100/f(\text{MHz})))]/2$$

$$= 443\text{mW}$$

$$> 0.0001\text{mW}$$

Conclusion:

The NFC SAR evaluation can be exempted.

Note ★: E Field please refer to RF Report Number: 2402Z39468E-RF-00E

8. SAR MEASUREMENT RESULTS

This page summarizes the results of the performed dosimetric evaluation.

8.1 SAR Test Data

Environmental Conditions

Temperature:	21.4-22.8°C
Relative Humidity:	42 %
ATM Pressure:	100.1kPa
Test Date:	2024/12/12

Testing was performed by Wen Chen, Aixlee Li, Ken Zong.

WLAN 2.4G Chain 0:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Face Up: 1g SAR (W/kg) , Limit=1.6W/kg Limb Worn: 10g SAR (W/kg) , Limit=4.0W/kg				
					Scaled Factor	Duty cycle Factor	Meas. SAR	Scaled SAR	Plot
Face Up (10mm)	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	18.38	18.6	1.052	1.003	0.246	0.26	1#
	2462	802.11b	/	/	/	/	/	/	/
Limb Worn (0 mm)	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	18.38	18.6	1.052	1.003	0.14	0.15	2#
	2462	802.11b	/	/	/	/	/	/	/

The data above was performed on 2024/12/12.

Note:

1. When the SAR value is less than half of the limit, testing for other channels are 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. According KDB 248227 D01, for SAR testing of 2.4 WIFI 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)".

2.4 GHz 802.11g/n OFDM SAR Test Exclusion Requirements

Mode	Target Output Power (dBm)	Target Output Power (mW)	Reported SAR(W/kg)	Adjusted SAR(W/kg)	Limit(W/kg)	SAR Test Exclusion
802.11b(DSSS)	18.6	72.44	0.26	/	/	/
802.11g(OFDM)	17.2	52.48	/	0.19	1.2	Yes
802.11n20(OFDM)	15.2	33.11	/	0.12	1.2	Yes
802.11ax20(OFDMA)	15.6	36.31	/	0.13	1.2	Yes

Per KDB 248227 D01, When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied (see 5.3, including subclauses). SAR is not required for the following 2.4 GHz OFDM conditions.

- a) When KDB Publication 447498 D01 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.

WLAN 2.4G Chain 1:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Face Up: 1g SAR (W/kg) , Limit=1.6W/kg Limb Worn: 10g SAR (W/kg) , Limit=4.0W/kg				
					Scaled Factor	Duty cycle Factor	Meas. SAR	Scaled SAR	Plot
Face Up (10mm)	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	9.43	9.8	1.089	1.003	0.08	0.09	3#
	2462	802.11b	/	/	/	/	/	/	/
Limb Worn (0 mm)	2412	802.11b	/	/	/	/	/	/	/
	2437	802.11b	9.43	9.8	1.089	1.003	0.053	0.06	4#
	2462	802.11b	/	/	/	/	/	/	/

The data above was performed on 2024/12/12.

Note:

1. When the SAR value is less than half of the limit, testing for other channels are 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. According KDB 248227 D01, for SAR testing of 2.4 WIFI 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)".

2.4 GHz 802.11g/n OFDM and 802.11ax OFDMA SAR Test Exclusion Requirements

Mode	Target Output Power (dBm)	Target Output Power (mW)	Reported SAR(W/kg)	Adjusted SAR(W/kg)	Limit(W/kg)	SAR Test Exclusion
802.11b(DSSS)	9.8	9.55	0.09	/	/	/
802.11g(OFDM)	16.6	45.71	/	0.43	1.2	Yes
802.11n20(OFDM)	14.9	30.90	/	0.29	1.2	Yes
802.11ax20(OFDMA)	15.4	34.67	/	0.33	1.2	Yes

Per KDB 248227 D01, When SAR measurement is required for 2.4 GHz 802.11g/n/ax configurations, the measurement and test reduction procedures for OFDM(OFDMA) are applied (see 5.3, including subclauses). SAR is not required for the following 2.4 GHz OFDM(OFDMA) conditions.

- a) When KDB Publication 447498 D01 SAR test exclusion applies to the OFDM(OFDMA) configuration.
- b) When the highest *reported* SAR for DSSS is adjusted by the ratio of OFDM(OFDMA) to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

WLAN 5.2G Chain 0:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Face Up: 1g SAR (W/kg) , Limit=1.6W/kg Limb Worn: 10g SAR (W/kg) , Limit=4.0W/kg				
					Scaled Factor	Duty cycle Factor	Meas. SAR	Scaled SAR	Plot
Face Up (10mm)	5180	802.11ax20	/	/	/	/	/	/	/
	5200	802.11ax20	15.57	15.9	1.079	1.099	0.635	0.75	5#
	5240	802.11ax20	/	/	/	/	/	/	/
Limb Worn (0 mm)	5180	802.11ax20	/	/	/	/	/	/	/
	5200	802.11ax20	15.57	15.9	1.079	1.099	0.072	0.09	6#
	5240	802.11ax20	/	/	/	/	/	/	/

The data above was performed on 2024/12/12.

WLAN 5.2G Chain 1:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Face Up: 1g SAR (W/kg) , Limit=1.6W/kg Limb Worn: 10g SAR (W/kg) , Limit=4.0W/kg				
					Scaled Factor	Duty cycle Factor	Meas. SAR	Scaled SAR	Plot
Face Up (10mm)	5180	802.11ax20	/	/	/	/	/	/	/
	5200	802.11ax20	15.09	15.5	1.099	1.099	0.439	0.53	7#
	5240	802.11ax20	/	/	/	/	/	/	/
Limb Worn (0 mm)	5180	802.11ax20	/	/	/	/	/	/	/
	5200	802.11ax20	15.09	15.5	1.099	1.099	0.094	0.11	8#
	5240	802.11ax20	/	/	/	/	/	/	/

The data above was performed on 2024/12/12.

Note:

1. When the SAR value is less than half of the limit, testing for other channels are 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 802.11ax20 mode power is the largest among 802.11a/n/ac/ax, 802.11 ax20 mode as initial test configuration is selected to test.
4. According KDB 248227 D01, for SAR testing of 5G WIFI 802.11ax20 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)".

WLAN 5.3G Chain 0:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Face Up: 1g SAR (W/kg) , Limit=1.6W/kg Limb Worn: 10g SAR (W/kg) , Limit=4.0W/kg				
					Scaled Factor	Duty cycle Factor	Meas. SAR	Scaled SAR	Plot
Face Up (10mm)	5260	802.11ax20	/	/	/	/	/	/	/
	5280	802.11ax20	16.77	16.9	1.03	1.099	0.661	0.75	9#
	5320	802.11ax20	/	/	/	/	/	/	/
Limb Worn (0 mm)	5260	802.11ax20	/	/	/	/	/	/	/
	5280	802.11ax20	16.77	16.9	1.03	1.099	0.156	0.18	10#
	5320	802.11ax20	/	/	/	/	/	/	/

The data above was performed on 2024/12/12.

WLAN 5.3G Chain 1:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Face Up: 1g SAR (W/kg) , Limit=1.6W/kg Limb Worn: 10g SAR (W/kg) , Limit=4.0W/kg				
					Scaled Factor	Duty cycle Factor	Meas. SAR	Scaled SAR	Plot
Face Up (10mm)	5260	802.11ax20	/	/	/	/	/	/	/
	5280	802.11ax20	15.64	15.8	1.038	1.099	0.696	0.79	11#
	5320	802.11ax20	/	/	/	/	/	/	/
Limb Worn (0 mm)	5260	802.11ax20	/	/	/	/	/	/	/
	5280	802.11ax20	15.64	15.8	1.038	1.099	0.14	0.16	12#
	5320	802.11ax20	/	/	/	/	/	/	/

The data above was performed on 2024/12/12.

Note:

1. When the SAR value is less than half of the limit, testing for other channels are 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 802.11ax20 mode power is the largest among 802.11a/n/ac/ax, 802.11 ax20 mode as initial test configuration is selected to test.
4. According KDB 248227 D01, for SAR testing of 5G WIFI 802.11ax20 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)".

WLAN 5.6G Chain 0:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Face Up: 1g SAR (W/kg) , Limit=1.6W/kg Limb Worn: 10g SAR (W/kg) , Limit=4.0W/kg				
					Scaled Factor	Duty cycle Factor	Meas. SAR	Scaled SAR	Plot
Face Up (10mm)	5500	802.11a	/	/	/	/	/	/	/
	5580	802.11a	13.65	14.5	1.216	1.01	0.543	0.67	13#
	5700	802.11a	/	/	/	/	/	/	/
	5720	802.11a	/	/	/	/	/	/	/
Limb Worn (0 mm)	5500	802.11a	/	/	/	/	/	/	/
	5580	802.11a	13.65	14.5	1.216	1.01	0.094	0.12	14#
	5700	802.11a	/	/	/	/	/	/	/
	5720	802.11a	/	/	/	/	/	/	/

The data above was performed on 2024/12/12.

WLAN 5.6G Chain 1:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Face Up: 1g SAR (W/kg) , Limit=1.6W/kg Limb Worn: 10g SAR (W/kg) , Limit=4.0W/kg				
					Scaled Factor	Duty cycle Factor	Meas. SAR	Scaled SAR	Plot
Face Up (10mm)	5500	802.11a	/	/	/	/	/	/	/
	5580	802.11a	11.89	13	1.291	1.01	0.584	0.76	15#
	5700	802.11a	/	/	/	/	/	/	/
	5720	802.11a	/	/	/	/	/	/	/
Limb Worn (0 mm)	5500	802.11a	/	/	/	/	/	/	/
	5580	802.11a	11.89	13	1.291	1.01	0.083	0.11	16#
	5700	802.11a	/	/	/	/	/	/	/
	5720	802.11a	/	/	/	/	/	/	/

The data above was performed on 2024/12/12.

Note:

1. When the SAR value is less than half of the limit, testing for other channels are 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 802.11a mode power is the largest among 802.11a/n/ac/ax, 802.11 a mode as initial test configuration is selected to test.
4. According KDB 248227 D01, for SAR testing of 5G WIFI 802.11a 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)".

WLAN 5.8G Chain 0:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Face Up: 1g SAR (W/kg) , Limit=1.6W/kg Limb Worn: 10g SAR (W/kg) , Limit=4.0W/kg				
					Scaled Factor	Duty cycle Factor	Meas. SAR	Scaled SAR	Plot
Face Up (10mm)	5745	802.11n40	/	/	/	/	/	/	/
	5785	802.11n40	15.69	15.8	1.026	1.014	0.595	0.62	17#
	5825	802.11n40	/	/	/	/	/	/	/
Limb Worn (0 mm)	5745	802.11n40	/	/	/	/	/	/	/
	5785	802.11n40	15.69	15.8	1.026	1.014	0.094	0.10	18#
	5825	802.11n40	/	/	/	/	/	/	/

The data above was performed on 2024/12/12.

WLAN 5.8G Chain 1:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	Face Up: 1g SAR (W/kg) , Limit=1.6W/kg Limb Worn: 10g SAR (W/kg) , Limit=4.0W/kg				
					Scaled Factor	Duty cycle Factor	Meas. SAR	Scaled SAR	Plot
Face Up (10mm)	5745	802.11n40	/	/	/	/	/	/	/
	5785	802.11n40	14.04	14.2	1.038	1.014	0.624	0.66	19#
	5825	802.11n40	/	/	/	/	/	/	/
Limb Worn (0 mm)	5745	802.11n40	/	/	/	/	/	/	/
	5785	802.11n40	14.04	14.2	1.038	1.014	0.093	0.10	20#
	5825	802.11n40	/	/	/	/	/	/	/

The data above was performed on 2024/12/12.

Note:

1. When the SAR value is less than half of the limit, testing for other channels are 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 802.11n40 mode power is the largest among 802.11a/n/ac/ax, 802.11 n40 mode as initial test configuration is selected to test.
4. According KDB 248227 D01, for SAR testing of 5G WIFI 802.11n40 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)".

9. 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 .

Note: The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.

The Highest Measured SAR Configuration in Each Frequency Band

Head (Face Up)

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

Limb Worn

SAR probe calibration point	Frequency Band	Freq.(MHz)	EUT Position	Meas. SAR (W/kg)		Largest toSmallestSAR 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.

10. 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

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

11. SAR SIMULTANEOUS TRANSMISSION DESCRIPTION

Simultaneous Transmission:

Description of Simultaneous Transmit Capabilities		
Transmitter Combination	Simultaneous?	Hotspot?
WLAN 2.4G Chain 0 + WLAN 2.4G Chain 1+NFC	√	×
WLAN 5G Chain 0 + WLAN 5G Chain 1+NFC	√	×
WLAN Chain 1 + Bluetooth+NFC	√	×
WLAN 2.4G Chain 0 + WLAN 5G Chain 1+NFC	×	×
WLAN 5G Chain 0 + WLAN 2.4G Chain 1+NFC	×	×

Simultaneous SAR test exclusion considerations:

Face Up Mode:

Mode(SAR1+SAR2)	Position	Reported SAR(W/kg)		Σ SAR < 1.6W/kg
		SAR1	SAR2	
WLAN 2.4G Chain 0 + WLAN 2.4G Chain 1	Face Up	0.26	0.09	0.35
WLAN 5G Chain 0 + WLAN 5G Chain 1	Face Up	0.75	0.79	1.54
WLAN Chain 1 + Bluetooth	Face Up	0.79	0.33	1.12

Conclusion:

Sum of SAR: Σ SAR $\leq$ 1.6 W/kg therefore simultaneous transmission SAR with Volume Scans is **not required**.

Limb Worn Mode:

Mode(SAR1+SAR2)	Position	Reported SAR(W/kg)		Σ SAR < 4.0W/kg
		SAR1	SAR2	
WLAN 2.4G Chain 0 + WLAN 2.4G Chain 1	Limb Worn	0.15	0.06	0.21
WLAN 5G Chain 0 + WLAN 5G Chain 1	Limb Worn	0.18	0.16	0.34
WLAN Chain 1 + Bluetooth	Limb Worn	0.16	0.13	0.29

Note: For the EIRP of NFC is 0.0001mW, per KDB447498 D01 clause 4.3, the estimated SAR is so lower, so the NFC almost have no influence on the results of simultaneous transmission.

Conclusion:

Sum of SAR: Σ SAR $\leq$ 4.0 W/kg therefore simultaneous transmission SAR with Volume Scans is **not required**.

12. 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	6.55	N	1	1	1	6.3	6.3
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
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
Post-processing	2.0	R	$\sqrt{3}$	1	1	1.2	1.2
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
Phantom and set-up							
Phantom uncertainty (shape and thickness tolerances)	4.0	R	$\sqrt{3}$	1	1	2.3	2.3
Liquid conductivity target)	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2
Liquid conductivity meas.)	2.5	N	1	0.64	0.43	1.6	1.1
Liquid permittivity target)	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4
Liquid permittivity meas.)	2.5	N	1	0.6	0.49	1.5	1.2
Combined standard uncertainty		RSS				12.2	12.0
Expanded uncertainty 95 % confidence interval)						24.1	23.7

Measurement uncertainty evaluation for IEC62209-1 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	6.55	N	1	1	1	6.3	6.3
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
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
Probe positioning with respect to phantom shell	6.7	R	$\sqrt{3}$	1	1	3.9	3.9
Probe positioner mech. Restrictions	0.8	R	$\sqrt{3}$	1	1	0.5	0.5
RF ambient conditions– reflections	1.0	R	$\sqrt{3}$	1	1	0.6	0.6
Post-processing	2.0	R	$\sqrt{3}$	1	1	1.2	1.2
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
Phantom and set-up							
Phantom uncertainty (shape and thickness tolerances)	4.0	R	$\sqrt{3}$	1	1	2.3	2.3
Liquid conductivity target)	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2
Liquid conductivity meas.)	2.5	N	1	0.64	0.43	1.6	1.1
Liquid permittivity target)	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4
Liquid permittivity meas.)	2.5	N	1	0.6	0.49	1.5	1.2
Combined standard uncertainty		RSS				12.2	12.0
Expanded uncertainty 95 % confidence interval)						24.0	23.6

APPENDIX B EUT TEST POSITION PHOTOS

Please Refer to the Attachment.

APPENDIX C CALIBRATION CERTIFICATES

Please Refer to the Attachment.

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