SAR TEST REPORT

Project No.	:	JB-Z1410-B
Client	:	Murata Manufacturing Co., Ltd.
Address	:	10-1 Higashikotari 1-chome, Nagaokakyo-shi, Kyoto 617-8555 Japan
Type of Equipment	:	Communication Module
Model No.	:	Type1VY (* installed in Digital Camera 1VY012)
FCC-ID	:	VPYLB1VY
Regulation Applied	:	FCC 47 CFR 2.1093

SAR Limits :

Exposure Characteristics	SAR averaged over any 1 g of tissue
General Public Exposure	1.6 W/kg

The Highest Reported SAR :

RF Exposure Conditions	SAR		
	Wi-Fi 2.4 GHz	Wi-Fi 5 GHz	Bluetooth
Body-Worn	0.243 W/kg	0.625 W/kg	0.095 W/kg
Simultaneous Tx	0.722 W/kg		

Test Result : Complied

Sample Receipt	:	February 25, 2025	
Testing	:	November 15, 2021 - August 22, 2024	(for conducted power measurements)
		March 11, 2025 - April 10, 2025	(for SAR measurements)
Reported	:	May 21, 2025	

Reported by :

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* *This report replaces and supersedes all previous versions. Refer to Revision History on the following page.*

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TESTING CERT #3203.01

Format No.: NV1-1-01 Version 5.0

REVISION HISTORY

Project No.	Revision	Page	Description	Issued date
JB-Z1410	Original	-	-	May 9, 2025
JB-Z1410-A	1	6, 7	Corrected the Nominal and Maximum Possible Power Table.	May 15, 2025
JB-Z1410-B	2	8, 136	Revised the RF Exposure Conditions table.	May 21, 2025
		9, 136, 137	Corrected the Minimum Distance from Edges or Sides of Host Platform and the related information.	
		24	Corrected the Dielectric Parameter Measurement of Tissue Simulating Liquids table.	
		39	Corrected the Simultaneous Transmission SAR evaluation table.	
		136	Corrected the typos.	

DISCLAIMER

This report includes the information provided by the customer as below;

- Cover page : Client and product related information
- Clause 1.1 : Description of Device Under Test (DUT)
- Clause 1.2 : Antenna Placement
- Clause 1.3 : Simultaneous Transmission Conditions
- Clause 1.4 : Nominal and Maximum Possible Power (Maximum Tune-up Tolerance Limit)

* The laboratory is not responsible for results affected by the above information.

Note(s)

☒-indicates that the listed condition, standard or equipment is applicable for this report.

☐-indicates that the listed condition, standard or equipment is not applicable for this report.

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1. General Information

1.1. Description of Device Under Test (DUT)

DUT Description

	DUT
Type of Equipment	Communication Module
Model No.	Type1VY
FCC-ID	VPYLB1VY
Test Sample Condition	☐ Prototype ☐ Pre-production ☒ Mass-production
	* Not for sale: The sample is equivalent to mass-production items. * No modification by the test lab.
Serial No.	34
Rating	DC 3.3 V (VDD_3P3, VDD_FEM, SWREG_IN, VDDIO_GPIO, VDDIO_AO) * Supplied from the host.
Head/Body-Worn Accessories (supplied with the device)	n/a
Device Dimension (W x H x D)	10.25 mm x 7.5 mm x 1.15 mm
Device Category	Portable
Exposure Category	General population/ Uncontrolled environment
Note(s): * Please refer to Appendix D for Host Platform Descriptions.	

Wireless Technologies

Wireless Technologies	Frequency Bands	Operating Mode	Power Setting Mode
Wi-Fi	2.4 GHz	802.11b 802.11g 802.11n (HT20)	Low Power Mode
	5 GHz	802.11a 802.11n (HT20/HT40) 802.11ac (VHT20/VHT40/VHT80)	High Power Mode
Bluetooth	2.4 GHz	BR/EDR/LE	n/a
Note(s): * The DUT installed in the Host does not support the Wi-Fi 2.4 GHz High Power Mode and Wi-Fi 5 GHz Low power Mode operations.			

Radio Specification

		Chain 0	Chain 1
Wireless Technologies		Wi-Fi 2.4 / 5 GHz, Bluetooth	Wi-Fi 2.4 / 5 GHz
Antenna Type		Dual Monopole antenna	Dual Monopole antenna
Antenna Gain	Original Approval	+0.93 dBi (2.4 GHz) +1.04 dBi (5 GHz)	+1.98 dBi (2.4 GHz) +1.98 dBi (5 GHz)
	Class II Permissive Change (*The DUT is installed in this host.)	-4.08 dBi (2.4 GHz) -0.38 dBi (5 GHz)	-6.44 dBi (2.4 GHz) +0.10 dBi (5 GHz)
Note(s): * The antenna is of the same type and lower gain than in the original approval.			

1.2. Antenna Placement

Antenna	Minimum Distance from Edges or Sides of Host Platform (mm)						
	Front	Front-Right	Back	Left	Right	Top	Bottom
Chain 0	*1	*1	*1	*1	*1	*1	*1
Chain 1	*1	*1	*1	*1	*1	*1	*1

*1 Please refer to Appendix D.

1.3. Simultaneous Transmission Conditions

RF Exposure Conditions	No.	Capable Transmit Configurations				
		Wi-Fi 2.4 GHz		Wi-Fi 5 GHz		Bluetooth
		Chain 0	Chain 1	Chain 0	Chain 1	
Body-Worn	1	Yes	Yes	-	-	-
	2	-	-	Yes	Yes	-
	3	-	-	Yes	Yes	Yes

1.4. Nominal and Maximum Possible Power (Maximum Tune-up Tolerance Limit)

Chain 0

Wireless Technologies	Mode	Band	Frequency Band (MHz)		Channel	Data Rate /MCS	Full Power (Burst Averaged)	Ant. Gain (dBi)	Effective Radiated Power (dBm) *1
			Lower	Higher			Max. Tune-up Limit (dBm)		
Wi-Fi	802.11b	2.4 GHz	2412	2462	All	All	9.50	-4.08	3.27
	802.11g				All	All	9.50	-4.08	3.27
	802.11n (HT20)				All	All	9.50	-4.08	3.27
	802.11a	5.2 GHz	5180	5240	All	All	11.50	-0.38	8.97
		5.3 GHz	5260	5320	All	All	11.50	-0.38	8.97
		5.6 GHz	5500	5700	All	All	11.50	-0.38	8.97
		5.8 GHz	5745	5825	All	All	11.50	-0.38	8.97
	802.11n (HT20)	5.2 GHz	5180	5240	All	All	11.50	-0.38	8.97
		5.3 GHz	5260	5320	All	All	11.50	-0.38	8.97
		5.6 GHz	5500	5700	All	All	11.50	-0.38	8.97
		5.8 GHz	5745	5825	All	All	11.50	-0.38	8.97
	802.11n (HT40)	5.2 GHz	5190	5230	All	All	11.50	-0.38	8.97
		5.3 GHz	5270	5310	All	All	11.50	-0.38	8.97
		5.6 GHz	5510	5670	All	All	11.50	-0.38	8.97
		5.8 GHz	5755	5795	All	All	11.50	-0.38	8.97
	802.11ac (VHT20)	5.2 GHz	5180	5240	All	MCS 0-8	11.50	-0.38	8.97
		5.3 GHz	5260	5320	All	MCS 0-8	11.50	-0.38	8.97
		5.6 GHz	5500	5700	All	MCS 0-8	11.50	-0.38	8.97
		5.8 GHz	5745	5825	All	MCS 0-8	11.50	-0.38	8.97
	802.11ac (VHT40)	5.2 GHz	5190	5230	All	MCS 0-8	11.50	-0.38	8.97
						MCS 9	10.50	-0.38	7.97
		5.3 GHz	5270	5310	All	MCS 0-8	11.50	-0.38	8.97
						MCS 9	10.50	-0.38	7.97
		5.6 GHz	5510	5670	All	MCS 0-8	11.50	-0.38	8.97
						MCS 9	10.50	-0.38	7.97
		5.8 GHz	5755	5795	All	MCS 0-8	11.50	-0.38	8.97
						MCS 9	10.50	-0.38	7.97
	802.11ac (VHT80)	5.2 GHz	5210		All	MCS 0-8	11.50	-0.38	8.97
						MCS 9	10.50	-0.38	7.97
		5.3 GHz	5290		All	MCS 0-8	11.50	-0.38	8.97
						MCS 9	10.50	-0.38	7.97
		5.6 GHz	5530	5610	All	MCS 0-8	11.50	-0.38	8.97
						MCS 9	10.50	-0.38	7.97
		5.8 GHz	5775		All	MCS 0-8	11.50	-0.38	8.97
						MCS 9	10.50	-0.38	7.97
Bluetooth	BR	2.4 GHz	2402	2480	All	-	10.10	-4.08	3.87
	EDR				All	-	9.90	-4.08	3.67
	LE				All	-	10.10	-4.08	3.87

*1 Effective Radiated Power (dBm) = Max. Tune-up Limit (dBm) + Ant. Gain (dBi) – 2.15 dB

Chain 1

Wireless Technologies	Mode	Band	Frequency Band (MHz)		Channel	Data Rate /MCS	Full Power (Burst Averaged)	Ant. Gain (dBi)	Effective Radiated Power (dBm) *1
			Lower	Higher			Max. Tune-up Limit (dBm)		
Wi-Fi	802.11b	2.4 GHz	2412	2462	All	All	9.50	-6.44	0.91
	802.11g				All	All	9.50	-6.44	0.91
	802.11n (HT20)				All	All	9.50	-6.44	0.91
	802.11a	5.2 GHz	5180	5240	All	All	11.50	+0.10	9.45
		5.3 GHz	5260	5320	All	All	11.50	+0.10	9.45
		5.6 GHz	5500	5700	All	All	11.50	+0.10	9.45
		5.8 GHz	5745	5825	All	All	11.50	+0.10	9.45
	802.11n (HT20)	5.2 GHz	5180	5240	All	All	11.50	+0.10	9.45
		5.3 GHz	5260	5320	All	All	11.50	+0.10	9.45
		5.6 GHz	5500	5700	All	All	11.50	+0.10	9.45
		5.8 GHz	5745	5825	All	All	11.50	+0.10	9.45
	802.11n (HT40)	5.2 GHz	5190	5230	All	All	11.50	+0.10	9.45
		5.3 GHz	5270	5310	All	All	11.50	+0.10	9.45
		5.6 GHz	5510	5670	All	All	11.50	+0.10	9.45
		5.8 GHz	5755	5795	All	All	11.50	+0.10	9.45
	802.11ac (VHT20)	5.2 GHz	5180	5240	All	MCS 0-8	11.50	+0.10	9.45
		5.3 GHz	5260	5320	All	MCS 0-8	11.50	+0.10	9.45
		5.6 GHz	5500	5700	All	MCS 0-8	11.50	+0.10	9.45
		5.8 GHz	5745	5825	All	MCS 0-8	11.50	+0.10	9.45
	802.11ac (VHT40)	5.2 GHz	5190	5230	All	MCS 0-8	11.50	+0.10	9.45
						MCS 9	10.50	+0.10	8.45
		5.3 GHz	5270	5310	All	MCS 0-8	11.50	+0.10	9.45
						MCS 9	10.50	+0.10	8.45
		5.6 GHz	5510	5670	All	MCS 0-8	11.50	+0.10	9.45
						MCS 9	10.50	+0.10	8.45
		5.8 GHz	5755	5795	All	MCS 0-8	11.50	+0.10	9.45
						MCS 9	10.50	+0.10	8.45
	802.11ac (VHT80)	5.2 GHz	5210		All	MCS 0-8	11.50	+0.10	9.45
						MCS 9	10.50	+0.10	8.45
		5.3 GHz	5290		All	MCS 0-8	11.50	+0.10	9.45
						MCS 9	10.50	+0.10	8.45
		5.6 GHz	5530	5610	All	MCS 0-8	11.50	+0.10	9.45
						MCS 9	10.50	+0.10	8.45
		5.8 GHz	5775		All	MCS 0-8	11.50	+0.10	9.45
						MCS 9	10.50	+0.10	8.45

*1 Effective Radiated Power (dBm) = Max. Tune-up Limit (dBm) + Ant. Gain (dBi) – 2.15 dB

1.5. RF Exposure Conditions

Wireless Technologies	RF Exposure Conditions	User-to-Host Distance (mm)	Test Position	Host-to-Ant. Distance (mm)		SAR to be considered	Note(s)
				Chain 0	Chain 1		
Wi-Fi/ Bluetooth	Body-Worn	0	Front	*1	*1	Yes	-
			Front-Right	*1	*1	Yes	-
			Back	*1	*1	Yes	-
			Left	*1	*1	Yes	-
			Right	*1	*1	Yes	-
			Top	*1	*1	Yes	-
			Bottom	*1	*1	Yes	-

*1 Please refer to Appendix D.

1.6. RF Exposure Limits

Human Exposure	General Population/ Uncontrolled Exposure	Occupational/ Controlled Exposure
Spatial Peak SAR (Head and Trunk) averaged over any 1 g of tissue	**1.6 W/kg***	8 W/kg
Spatial Average SAR (Whole Body) averaged over the whole body	0.08 W/kg	0.4 W/kg
Spatial Peak SAR (Limbs) averaged over any 10 g of tissue	4 W/kg	20 W/kg

* The limit(s) applied in this report.

1.7. SAR Test Exclusion

☒ SAR test exclusion is applied according to KDB 447498 D01.

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

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where:

* f(GHz) is the RF channel transmit frequency in GHz
* Power and distance are rounded to the nearest mW and mm before calculation
* The result is rounded to one decimal place for comparison
* When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion

Body-Worn SAR (1-g SAR) Test Exclusion as per KDB 447498 D01 - Chain 0

Freq. Band	Freq. (MHz)	Test Position	Host-to-Ant Distance (mm)	User-to-Ant Distance (mm)	Min. Test Sep. Distance (mm)	Max. Possible Power				Exclusion Threshold	SAR Required (> 3.0)	SAR Tested
						Chain0 (dBm)	Chain1 (dBm)	Total (mW)	rounded (mW)			
Wi-Fi 2.4 GHz	2450	Front	*1	*1	*1	9.50	9.50	17.82	18	*1	No	Yes *2
	2450	Front-Right	*1	*1	*1	9.50	9.50	17.82	18	*1	No	Yes *2
	2450	Back	*1	*1	*1	9.50	9.50	17.82	18	*1	No	-
	2450	Left	*1	*1	*1	9.50	9.50	17.82	18	*1	No	Yes *2
	2450	Right	*1	*1	*1	9.50	9.50	17.82	18	*1	Yes	Yes
	2450	Top	*1	*1	*1	9.50	9.50	17.82	18	*1	No	-
	2450	Bottom	*1	*1	*1	9.50	9.50	17.82	18	*1	No	Yes *2
Wi-Fi 5 GHz	5800	Front	*1	*1	*1	11.50	11.50	28.26	28	*1	No	Yes *2
	5800	Front-Right	*1	*1	*1	11.50	11.50	28.26	28	*1	Yes	Yes
	5800	Back	*1	*1	*1	11.50	11.50	28.26	28	*1	No	-
	5800	Left	*1	*1	*1	11.50	11.50	28.26	28	*1	No	Yes *2
	5800	Right	*1	*1	*1	11.50	11.50	28.26	28	*1	Yes	Yes
	5800	Top	*1	*1	*1	11.50	11.50	28.26	28	*1	No	-
	5800	Bottom	*1	*1	*1	11.50	11.50	28.26	28	*1	Yes	Yes
Bluetooth	2450	Front	*1	*1	*1	10.10	N/A	10.23	10	*1	No	Yes *2
	2450	Front-Right	*1	*1	*1	10.10	N/A	10.23	10	*1	No	Yes *2
	2450	Back	*1	*1	*1	10.10	N/A	10.23	10	*1	No	-
	2450	Left	*1	*1	*1	10.10	N/A	10.23	10	*1	No	Yes *2
	2450	Right	*1	*1	*1	10.10	N/A	10.23	10	*1	Yes	Yes
	2450	Top	*1	*1	*1	10.10	N/A	10.23	10	*1	No	-
	2450	Bottom	*1	*1	*1	10.10	N/A	10.23	10	*1	No	Yes *2

*1 Please refer to Appendix D.

*2 Tested because its exclusion thresholds are close to 3.0, or for the simultaneous transmission analysis.

Body-Worn SAR (1-g SAR) Test Exclusion as per KDB 447498 D01 - Chain 1

Freq. Band	Freq. (MHz)	Test Position	Host-to-Ant Distance (mm)	User-to-Ant Distance (mm)	Min. Test Sep. Distance (mm)	Max. Possible Power				Exclusion Threshold	SAR Required (> 3.0)	SAR Tested
						Chain0 (dBm)	Chain1 (dBm)	Total (mW)	rounded (mW)			
Wi-Fi 2.4 GHz	2450	Front	*1	*1	*1	9.50	9.50	17.82	18	*1	No	Yes *2
	2450	Front-Right	*1	*1	*1	9.50	9.50	17.82	18	*1	Yes	Yes
	2450	Back	*1	*1	*1	9.50	9.50	17.82	18	*1	No	-
	2450	Left	*1	*1	*1	9.50	9.50	17.82	18	*1	No	Yes *2
	2450	Right	*1	*1	*1	9.50	9.50	17.82	18	*1	No	Yes *2
	2450	Top	*1	*1	*1	9.50	9.50	17.82	18	*1	No	-
	2450	Bottom	*1	*1	*1	9.50	9.50	17.82	18	*1	No	Yes *2
Wi-Fi 5 GHz	5800	Front	*1	*1	*1	11.50	11.50	28.26	28	*1	Yes	Yes
	5800	Front-Right	*1	*1	*1	11.50	11.50	28.26	28	*1	Yes	Yes
	5800	Back	*1	*1	*1	11.50	11.50	28.26	28	*1	No	-
	5800	Left	*1	*1	*1	11.50	11.50	28.26	28	*1	Yes	Yes
	5800	Right	*1	*1	*1	11.50	11.50	28.26	28	*1	No	Yes *2
	5800	Top	*1	*1	*1	11.50	11.50	28.26	28	*1	No	-
	5800	Bottom	*1	*1	*1	11.50	11.50	28.26	28	*1	Yes	Yes

*1 Please refer to Appendix D.

*2 Tested because its exclusion thresholds are close to 3.0, or for the simultaneous transmission analysis.

1.8. Test Specification, Methods and Procedures

Test Specification

☒	FCC 47 CFR 2.1093		Radiofrequency radiation exposure evaluation: portable devices

Test Methods

☒	IEEE Std 1528-2013		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 248227 D01	v02r02	SAR Guidance for IEEE 802.11 (Wi-Fi) Transmitters
☒	KDB 447498 D01	v06	Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies
☐	KDB 447498 D02	v02r01	SAR Measurement Procedures for USB Dongle Transmitters
☐	KDB 447498 D04	v01	RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices
☐	KDB 615223 D01	v01r01	802.16e/WiMax SAR Measurement Guidance
☐	KDB 616217 D04	v01r02	SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers
☐	KDB 648474 D03	v01r04	Evaluation and Approval Considerations for Handsets with Specific Wireless Charging Battery Covers
☐	KDB 648474 D04	v01r03	SAR Evaluation Considerations for Wireless Handsets
☒	KDB 865664 D01	v01r04	SAR Measurement Requirements for 100 MHz to 6 GHz
☐	KDB 941225 D01	v03r01	3G SAR Measurement Procedures
☐	KDB 941225 D05	v02r05	SAR Evaluation Considerations for LTE Devices
☐	KDB 941225 D06	v02r01	SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities
☐	KDB 941225 D07	v01r02	SAR Evaluation Procedures for UMPC Mini-Tablet Devices
☒	TCB Workshop (Oct. 2016)		RF Exposure Procedures; Bluetooth Duty Factor

Test Procedures

The SAR tests were performed according to the procedures of
Sony Global Manufacturing & Operations Corporation EMC/RF Test Laboratory,
the Document No. NV3-2 and NV3-16, available upon request.

☒ No deviation from the procedures

☐ Deviation from the procedures

☐ _____

References

[1] ICNIRP. Guidelines for limiting exposure to time-varying electric, magnetic, and electromagnetic fields (up to 300 GHz). Health Physics 74(4): 494-522, 1998.
[2] ICNIRP. Guidelines for limiting exposure to electromagnetic fields (100 kHz to 300 GHz). Health Physics 118(5): 483-524, 2020.
[3] American National Standards Institute (ANSI), "Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," ANSI/IEEE C95.1-1992.
[4] Health Canada, "Limits of Human Exposure to Radiofrequency Electromagnetic Energy in the Frequency Range from 3 kHz to 300 GHz," Safety Code 6 (2015).
[5] Health Canada, "Notice: Localized human exposure limits for radiofrequency fields in the range of 6 GHz to 300 GHz," January 2021.
[6] European Council Recommendation 1999/519/EC of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz) (Official Journal L 199 of 30 July 1999).
[7] REDCA Technical Guidance Note 20 (TGN 20), SAR Testing and Assessment Guidance, Version 6.5, October 2020.
[8] Australian Communications and Media Authority (ACMA), Radiocommunications Equipment (General) Rules 2021.
[9] Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), "Standard for Limiting Exposure to Radiofrequency Fields – 100 kHz to 300 GHz, Radiation Protection Series S-1 (Rev. 1)," February 2021.
[10] Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), RPS S-1 Advisory Note: Compliance of mobile or portable transmitting equipment (100 kHz to 300 GHz).
[11] Schmid & Partner Engineering AG (SPEAG), DASY52 System Handbook, April 2014.
[12] Schmid & Partner Engineering AG (SPEAG), DASY8 Module SAR System Handbook, October 2022.
[13] Schmid & Partner Engineering AG (SPEAG), DASY8 Module mmWave System Handbook, December 2022.
[14] Schmid & Partner Engineering AG (SPEAG), Safety Data Sheet, Doc No 772-SLAAx0yy-J, June 14, 2013.
[15] Schmid & Partner Engineering AG (SPEAG), Safety Data Sheet, Doc No 772-SLAAx1yy-I, October 18, 2013.
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[17] Schmid & Partner Engineering AG (SPEAG), Material Safety Data Sheet, Doc No 772-SLAAH502A-D, August 9, 2013.
[18] Schmid & Partner Engineering AG (SPEAG), Material Safety Data Sheet, Doc No 772-SLAAx4yy-J, August 9, 2013.
[19] Schmid & Partner Engineering AG (SPEAG), Material Safety Data Sheet, Doc No 772-SLAAHxU16B-C, June 9, 2015.

1.9. Test Facilities and Accreditation

Test Facilities

Test Facility Name	: Sony Global Manufacturing & Operations Corporation EMC/ RF Test Laboratory Main Lab.
Address	: 8-4 Shiomi Kisarazu-shi Chiba-ken, 292-0834, Japan
Shielded Room Used	: ☒ 4th Site Shielded Room 3

A2LA Accreditation

Certificate No.	: 3203.01
Expiration	: October 31, 2025

2. Test Set-up

2.1. Test Equipment and Measurement Software Lists

Table 2-1 Test Equipment List

Used	Control No.	Equipment Description	Model No.	Serial No.	Manufacturer	Cal. Int.	Last Cal.	Note(s)
☒	M5583	Robot	TX2-60L spe	F/24/0057614/A/002	Staubli	N/A	N/A *1	-
☐	W0082	Twin SAM Phantom	Twin SAM	TP-1325	SPEAG	N/A	N/A *1	-
☐	W0127	Twin SAM Phantom	Twin SAM	TP-1852	SPEAG	N/A	N/A *1	-
☒	W0119	ELI Phantom	ELI V5.0	1259	SPEAG	N/A	N/A *1	-
☒	WA0052	E-Field Probe	EX3DV4	7452	SPEAG	1Y	2025.02.13	-
☒	WA0060	E-Field Probe	EX3DV4	7372	SPEAG	1Y	2024.06.18	-
☒	W0096	Data Acquisition Electronics	DAE4	482	SPEAG	1Y	2025.01.13	-
☒	WA0026	System Validation Dipole	D2450V2	936	SPEAG	1Y	2024.06.14	-
☒	WA0028	System Validation Dipole	D5GHzV2	1183	SPEAG	1Y	2024.06.19	-
☒	W0121	Vector Reflectometer	DAKS_VNA R140	0111013	Copper Mountain Technologies	1Y	2024.08.16	-
☒	WA0029	Dielectric Probe	DAKS-3.5	1034	SPEAG	1Y	2024.08.07	-
☒	M1037	Signal Generator	N5173B	MY53270166	Agilent	1Y	2024.11.08	-
☒	M5582	Power Amp	RAMP01M22G A	00652106320	RF Lambda	N/A	N/A *1	-
☒	W0104	Power Sensor	U2021XA	MY54040006	Agilent	1Y	2024.11.08	-
☒	W0105	Power Sensor	U2021XA	MY54080005	Agilent	1Y	2024.11.08	-
☒	W0120	Directional Coupler	4226-20	-	narda	1Y	2024.11.08	-
☒	W0117	Attenuator	8493B 3 dB	MY39260857	Agilent	1Y	2024.11.08	-
☒	W0118	Attenuator	AT-110 10 dB	932968	Hirose	1Y	2024.11.08	-
☒	W0148	Attenuator	AT-103 3 dB	980711	Hirose	1Y	2024.11.08	-
☐	WC0022	RF Cable	SUCOFLEX 106	503094/6	HUBER+SUHNER	1Y	2024.11.08	-
☒	WC0017	RF Cable	SUCOFLEX 104	253269/4	HUBER+SUHNER	1Y	2024.11.08	-
☒	WC0024	RF Cable	SUCOFLEX 126E	MY1150/26E	HUBER+SUHNER	1Y	2024.11.08	-
☒	CA5069	RF Cable	SUCOFLEX 104	35533/4	HUBER+SUHNER	1Y	2024.11.08	-
☐	CA5071	RF Cable	SUCOFLEX 104	37196/4	HUBER+SUHNER	1Y	2024.05.12	-
☒	WC0021	RF Cable	SUCOFLEX 106	503095/6	HUBER+SUHNER	1Y	2024.11.08	-
☒	M3114	Thermometer	608-H2	41403750	testo	1Y	2024.11.06	-
☐	M5189	Thermometer	608-H2	41476111	testo	1Y	Under cal.	-
☐	W0113	Water Thermometer	735-1	02788580	testo	1Y	2024.11.11	-
☒	W0116	Water Thermometer	735-1	02788596	testo	1Y	2024.07.16	-

Note(s):
* The calibration is valid until the end of the expiration month.
*1 In-house verification is conducted periodically.

Table 2-2 Measurement Software List

Used	Control No.	Software Description	Model No.	Ver.	Manufacturer
☒	SW-5033	SAR/APD measurement software	DASY8 Module SAR	V16.4.0.5005	SPEAG
☒	SW-0403	Dielectric measurement software	DAK	2.6.0.5	SPEAG
☒	SW-0406	SAR/APD/IPD measurement spreadsheet	-	2.00	Main Lab.
☒	SW-5035	Power measurement software	Keysight BenchVue	2024	Keysight

2.2. Measurement System Description

<SAR Measurement System>

The DASY8 system for SAR measurements consists of the following items:

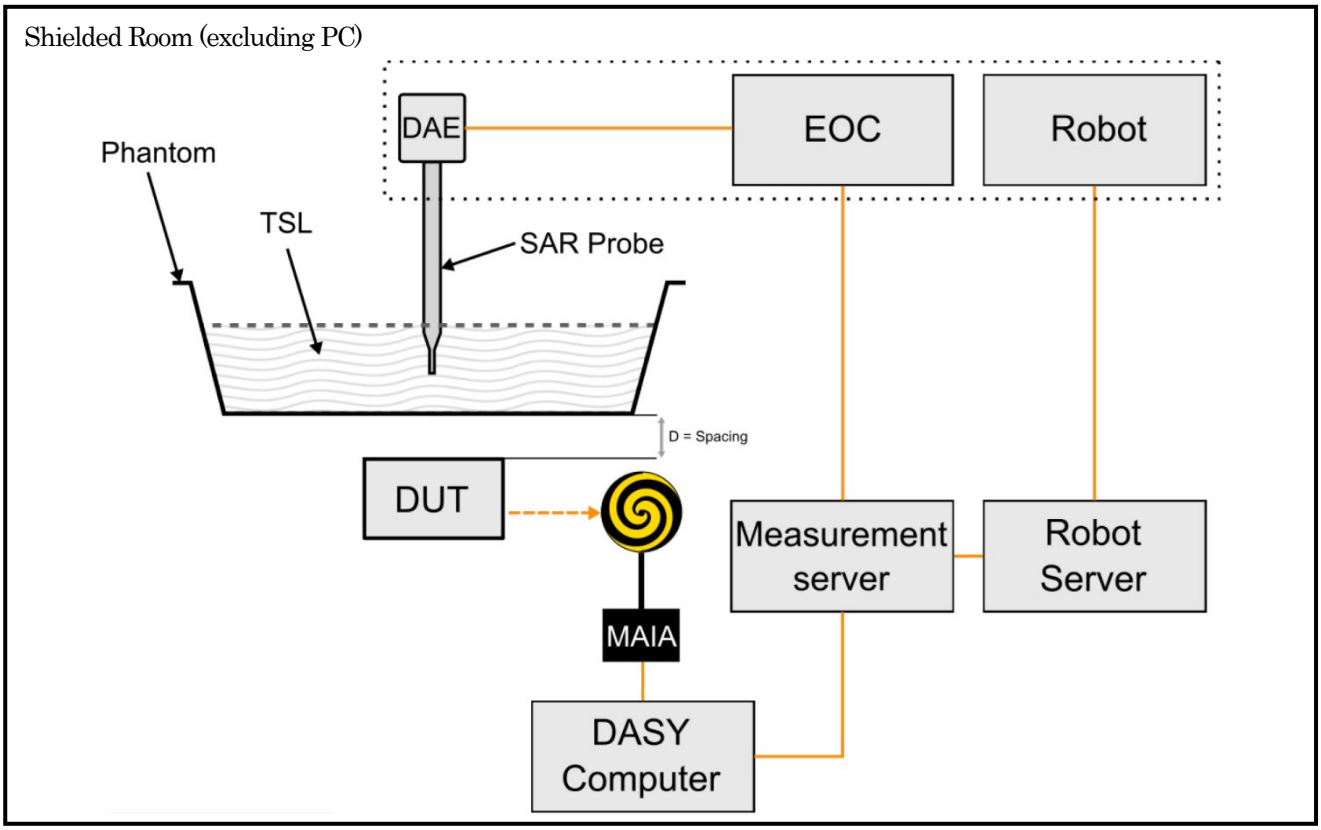


Figure 2-1 SAR Measurement System Description

- 6-axis robotic arm (Stäubli TX2-60L) for positioning the probe.
- Mounting Platform for keeping the phantoms at a fixed location relative to the robot.
- Measurement Server for handling all time-critical tasks, such as measurement data acquisition and supervision of safety features.
- EOC (Electrical to Optical Converter) for converting the optical signal from the DAE to electrical before being transmitted to the measurement server.
- LB (Light-Beam unit) for probe alignment (measurement of the exact probe length and eccentricity).
- SAR probe (EX3DV4 probes) for measuring the E-field distribution in the phantom. The SAR distribution and the psSAR (peak spatial averaged SAR) are derived from the E-field measurement.
- SAR phantom that represents a physical model with an equivalent human anatomy. A Specific Anthropomorphic Mannequin (SAM) head is usually used for handheld devices, and a Flat phantom is used for body-worn devices.
- TSL (Tissue Simulating Liquid) representing the dielectric properties of used tissue, e.g. Head Simulating Liquid, HSL.
- DAE (Data Acquisition Electronics) for reading the probe voltages and transmitting it to the DASY8 PC.
- Device Holder for positioning the DUT beneath the phantom.
- MAIA (Modulation and Interference Analyzer) for confirming the accuracy of the probe linearization parameters.
- Control PC for running the DASY8 software to define/execute the measurements.
- System validation kits for system check/validation purposes.

2.3. Measurement System Main Components

Robot (Positioner)

	Shielded Room 3
Manufacturer	Staubli SA
Model No.	TX2-60L
Number of Axis	6
Reach at Wrist	920 mm
Repeatability	+/- 0.03 mm
Nominal Load Capacity	2 kg
Maximum Load Capacity	3.7 kg
Control Unit	CS9c
Weight	52.9 kg

E-Field Probe

Manufacturer	Schmid & Partner Engineering AG (SPEAG)
Model No.	EX3DV4
Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency	4 MHz to 10 GHz Linearity: ± 0.2 dB (30 MHz to 10 GHz)
Directivity	± 0.1 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 μW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μW/g)
Dimensions	Overall length: 337 mm (Tip length: 20 mm) Tip diameter: 2.5 mm (Body diameter: 12 mm) Typical distance from probe tip to dipole centers: 1 mm

Data Acquisition Electronics (DAE)

Manufacturer	Schmid & Partner Engineering AG (SPEAG)
Model No.	DAE4
Construction	High precision 3-channel differential voltmeter for use with SPEAG's field, SAR probes. Serial optical link for communication with the DASY8 measurement server. Two-step probe touch detector for mechanical surface detection and emergency robot stop.
Measurement Range	-100 to +300 mV (16-bit resolution and two range settings: 4 mV, 400 mV)
Input Offset Voltage	< 5 μV (with auto zero)
Input Resistance	200 MΩ
Input Bias Current	< 50 fA
Battery Power	> 10 hours of operation (with two 9.6 V NiMH batteries)
Dimensions (L x W x H)	60 x 60 x 68 mm

DASY8 Measurement Server

Manufacturer	Schmid & Partner Engineering AG (SPEAG)
Model No.	DASY8 Measurement Server
Description	The DASY8 measurement server establishes the connection between the DASY8 PC and the robot.

Phantoms (Twin SAM Phantom)

Manufacturer	Schmid & Partner Engineering AG (SPEAG)
Model No.	Twin SAM
Description	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEC/IEEE 62209-1528. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot. Twin SAM V5.0 has the same shell geometry and is manufactured from the same material as Twin SAM V4.0, but has reinforced top structure.
Material	Vinylester, glass fiber reinforced (VE-GF)
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (sugar and oil based)
Shell Thickness	2 ± 0.2 mm (6 ± 0.2 mm at ear point)
Dimensions	Length: 1000 mm Width: 500 mm Height: adjustable feet
Filling Volume	Approx. 25 liters
Support	SPEAG standard-size platform slot

Phantoms (ELI Phantom)

Manufacturer	Schmid & Partner Engineering AG (SPEAG)
Model No.	ELI V5.0
Description	Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 4 MHz to 10 GHz. ELI is fully compatible with the IEC/IEC 62209-1528 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles. ELI V5.0 has the same shell geometry and is manufactured from the same material as ELI4, but has reinforced top structure.
Material	Vinylester, glass fiber reinforced (VE-GF)
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (sugar and oil based)
Shell Thickness	2.0 ± 0.2 mm (bottom plate)
Dimensions	Major axis: 600 mm Minor axis: 400 mm
Filling Volume	Approx. 30 liters
Support	SPEAG standard-size platform slot

Device Holder (Mounting Device for Hand-Held Transmitters)

Manufacturer	Schmid & Partner Engineering AG (SPEAG)
Model No.	MD4HHTV5
Description	In combination with the Twin SAM or ELI Phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat).
Material	Polyoxymethylene (POM)

Device Holder (Mounting Device Adaptor for Ultra Wide Transmitters)

Manufacturer	Schmid & Partner Engineering AG (SPEAG)
Model No.	MDA4WTV5
Description	An upgrade kit to Mounting Device to enable easy mounting of wider devices like big smart-phones, e-books, small tablets, etc. It holds devices with width up to 140mm.
Material	Polyoxymethylene (POM)

Device Holder (Mounting Device Adaptor for Laptops)

Manufacturer	Schmid & Partner Engineering AG (SPEAG)
Model No.	MDA4LAP
Description	A simple but effective and easy-to-use extension for the Mounting Device; facilitates testing of larger devices according to IEC 62209-2 (e.g., laptops, cameras, etc.); lightweight and fits easily on the upper part of the Mounting Device in place of the phone positioner. The extension is fully compatible with the Twin SAM, ELI Phantoms.
Material	Polyoxymethylene (POM), PET-G, Foam

System Validation Dipole Kits

Manufacturer	Schmid & Partner Engineering AG (SPEAG)		
Model No.	D-Series		
Construction	Symmetrical dipole with l/4 balun Enables measurement of feedpoint impedance with NWA Matched for use near flat phantoms filled with tissue simulating solutions		
Frequency	2450 MHz, 5100 to 5800 MHz, and 6500 MHz		
Return Loss	> 20 dB at specified validation position		
Power Capability	> 100 W (f < 1 GHz); > 40 W (f > 1 GHz)		
Accessories	Distance holder, tripod adaptor, tripod		
Dimensions	Product	Dipole length	Overall height
	D2450V2	52.0 mm	290.0 mm
	D5GHzV2	20.6 mm	300.0 mm

2.4. Tissue Simulating Liquids

Recipes for tissue simulating liquids manufactured by SPEAG

Ingredients (% by weight)	Frequency (MHz)					
	1900 to 3800		3500 to 5800		600 to 6000 / 10000	
Used	☐	☐	☐	☐	☒	☐
Tissue Simulating Liquids	HBBL 1900-3800 V3	MBBL 1900-3800 V3	HBBL 3500-5800 V5	MBBL 3500-5800 V5	HBBL 600-10000 V6	MBBL 600-6000 V6
Tissue Type	Head	Body	Head	Body	Head	Body
H_2O	50 – 73 %		50 – 65 %	60 – 80 %	–	
Non-ionic detergents	25 – 50 %		–	–	–	
NaCl	0 – 2 %		0 – 1.5 %	0 – 1.5 %	–	
Preventol-D7	0.05 – 0.1 %		–	–	–	
Ethanediol	–		–	–	< 5.2 %	
Sodium Petroleum Sulfonate	–		–	–	< 2.9 %	
Hexylene Glycol	–		–	–	< 2.9 %	
Alkoxylated Alcohol	–		–	–	< 2.0 %	
Mineral Oil	–		10 – 30 %	–	< 20 %	
Emulsifiers	–		8 – 25 %	20 – 40 %	–	

For the SAR measurement, the phantom must be filled with tissue simulating liquid to a depth of at least 15 cm.

HBBL600-10000 V6

Figure 2-2 Photos: Liquid Depth (at the center of the flat phantom)

2.5. SAR Measurement

Step 1: Power Reference Measurement
Before an area scan and after the zoom scan, single point SAR measurements are performed at defined locations to estimate the SAR measurement drift due to device output power variations.

Step 2: Area Scan
An area scan is performed according to the requirements in Table 2-3.

Step 3: Zoom Scan
A zoom scan is performed according to the requirements in Table 2-3.

Step 4: Power Drift Measurement
Before an area scan and after the zoom scan, single point SAR measurements are performed at defined locations to estimate the SAR measurement drift due to device output power variations.

Table 2-3 Area Scan and Zoom Scan Parameters

			DUT Transmit Frequency being Tested		
			f ≤ 3 GHz	3 GHz < f ≤ 6 GHz	6 GHz < f ≤ 8.5 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 ± 1 mm	½ δ·ln(2) ± 0.5 mm	½ δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30° ± 1°	20° ± 1°	5° ± 1° (flat phantoms only) 20° ± 1° (other phantoms)
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	≤ 60 / f mm, or half of the corresponding zoom scan length, whichever is smaller
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.		
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm	3 – 4 GHz: ≤ 5 mm 4 – 6 GHz: ≤ 4 mm	≤ 24 / f mm
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm	≤ 10 / (f - 1) mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm	≤ 12 / f mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5 ·$\Delta z_{Zoom}(n-1)$		
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm	≥ 22 mm
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium.					

2.6. Measurement Uncertainty

☒ Table 2-4 DASY8 Uncertainty Budget for SAR Tests

For SAR Testing (IEC/IEEE 62209-1528:2020; SR3; DASY8, 0.3 GHz to 3 GHz)										
Symbol	Source of Uncertainty	Uncertainty of Xi			u(Xi)	Ci		Ciu(Xi)		Vi Veff
		Xi	Prob. Dist.	Div.		1g	10g	1g	10g	
Measurement System Errors										
CF	Probe Calibration	±11.1%	N (k=2)	2	±5.6%	1	1	±5.6%	±5.6%	∞
CF_{drift}	Probe Calibration Drift	±1.7%	R	1.73	±1.0%	1	1	±1.0%	±1.0%	∞
LIN	Probe Linearity	±4.7%	R	1.73	±2.7%	1	1	±2.7%	±2.7%	∞
BBS	Broadband Signal	±3.0%	R	1.73	±1.7%	1	1	±1.7%	±1.7%	∞
ISO	Probe Isotropy	±7.6%	R	1.73	±4.4%	1	1	±4.4%	±4.4%	∞
DAE	Other Probe + Electronic	±0.7%	N	1	±0.7%	1	1	±0.7%	±0.7%	∞
AMB	RF Ambient	±1.8%	N	1	±1.8%	1	1	±1.8%	±1.8%	∞
Δ_{xyz}	Probe Positioning	±0.006mm	N	1	±0.6%	0.14	0.14	±0.1%	±0.1%	∞
DAT	Data Processing	±1.2%	N	1	±1.2%	1	1	±1.2%	±1.2%	∞
Phantom and DUT Errors										
LIQ (σ)	Conductivity (meas.)	±2.5%	N	1	±2.5%	0.78	0.71	±2.0%	±1.8%	∞
LIQ (T_c)	Conductivity (temp.)	±3.3%	R	1.73	±1.9%	0.78	0.71	±1.5%	±1.4%	∞
EPS	Phantom Permittivity	±14.0%	R	1.73	±8.1%	0	0	±0.0%	±0.0%	∞
DIS	Distance DUT - TSL	±2.0%	N	1	±2.0%	2	2	±4.0%	±4.0%	∞
D_{xyz}	Positioning Repeatability	±1.0%	N	1	±1.0%	1	1	±1.0%	±1.0%	∞
H	Device Holder	±3.6%	N	1	±3.6%	1	1	±3.6%	±3.6%	7
MOD	DUT Modulation	±2.4%	R	1.73	±1.4%	1	1	±1.4%	±1.4%	∞
TAS	Time-averaged SAR	±1.7%	R	1.73	±1.0%	1	1	±1.0%	±1.0%	∞
RF_{drift}	DUT Drift	±2.9%	N	1	±2.9%	1	1	±2.9%	±2.9%	∞
Corrections to the SAR result										
C(ε', σ)	Deviation to Target	±1.9%	N	1	±1.9%	1	0.84	±1.9%	±1.6%	∞
C(R)	SAR Scaling	±0.0%	R	1.73	±0.0%	1	1	±0.0%	±0.0%	∞
u(ΔSAR)	Combined Standard Uncertainty			RSS				±10.8%	±10.7%	574
U	Expanded Uncertainty (95% conf. interval)			k =2				±21.7%	±21.5%	-

☒ Table 2-5 DASY8 Uncertainty Budget for SAR Tests

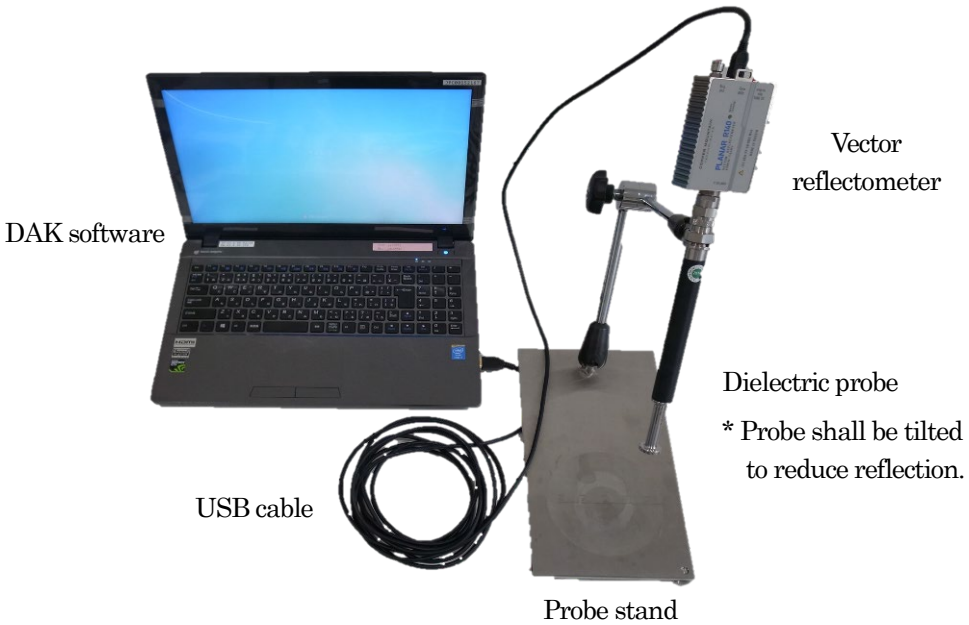
For SAR Testing (IEC/IEEE 62209-1528:2020; SR3; DASY8, 3 GHz to 6 GHz)										
Symbol	Source of Uncertainty	Uncertainty of Xi			u(Xi)	Ci		Ciu(Xi)		Vi Veff
		Xi	Prob. Dist.	Div.		1g	10g	1g	10g	
Measurement System Errors										
CF	Probe Calibration	±13.1%	N (k=2)	2	±6.6%	1	1	±6.6%	±6.6%	∞
CF_{drift}	Probe Calibration Drift	±1.7%	R	1.73	±1.0%	1	1	±1.0%	±1.0%	∞
LIN	Probe Linearity	±4.7%	R	1.73	±2.7%	1	1	±2.7%	±2.7%	∞
BBS	Broadband Signal	±2.6%	R	1.73	±1.5%	1	1	±1.5%	±1.5%	∞
ISO	Probe Isotropy	±7.6%	R	1.73	±4.4%	1	1	±4.4%	±4.4%	∞
DAE	Other Probe + Electronic	±1.2%	N	1	±1.2%	1	1	±1.2%	±1.2%	∞
AMB	RF Ambient	±1.8%	N	1	±1.8%	1	1	±1.8%	±1.8%	∞
Δ_{xyz}	Probe Positioning	±0.005mm	N	1	±0.5%	0.28	0.28	±0.2%	±0.2%	∞
DAT	Data Processing	±2.3%	N	1	±2.3%	1	1	±2.3%	±2.3%	∞
Phantom and DUT Errors										
LIQ (σ)	Conductivity (meas.)	±2.5%	N	1	±2.5%	0.78	0.71	±2.0%	±1.8%	∞
LIQ (T_c)	Conductivity (temp.)	±3.4%	R	1.73	±1.9%	0.78	0.71	±1.5%	±1.4%	∞
EPS	Phantom Permittivity	±14.0%	R	1.73	±8.1%	0.25	0.25	±2.0%	±2.0%	∞
DIS	Distance DUT - TSL	±2.0%	N	1	±2.0%	2	2	±4.0%	±4.0%	∞
D_{xyz}	Positioning Repeatability	±1.0%	N	1	±1.0%	1	1	±1.0%	±1.0%	∞
H	Device Holder	±3.6%	N	1	±3.6%	1	1	±3.6%	±3.6%	7
MOD	DUT Modulation	±2.4%	R	1.73	±1.4%	1	1	±1.4%	±1.4%	∞
TAS	Time-averaged SAR	±1.7%	R	1.73	±1.0%	1	1	±1.0%	±1.0%	∞
RF_{drift}	DUT Drift	±2.9%	N	1	±2.9%	1	1	±2.9%	±2.9%	∞
Corrections to the SAR result										
C(ε', σ)	Deviation to Target	±1.9%	N	1	±1.9%	1	0.84	±1.9%	±1.6%	∞
C(R)	SAR Scaling	±0.0%	R	1.73	±0.0%	1	1	±0.0%	±0.0%	∞
u(ΔSAR)	Combined Standard Uncertainty			RSS				±11.7%	±11.7%	792
U	Expanded Uncertainty (95% conf. interval)			k =2				±23.5%	±23.3%	-

☒ Table 2-6 DASY8 Uncertainty Budget for SAR System Check

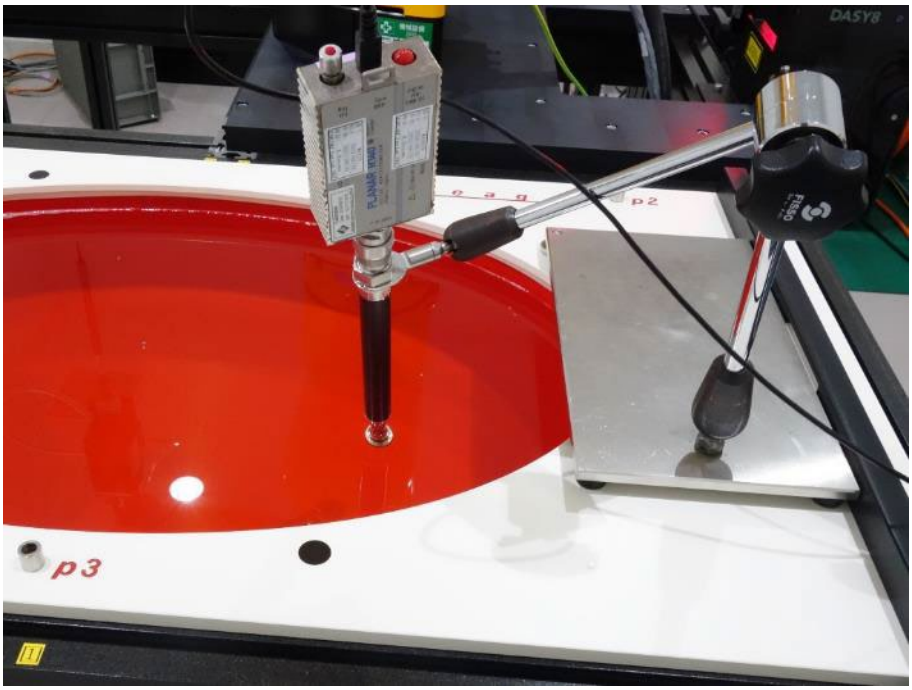
For SAR System Check (IEC/IEEE 62209-1528:2020; SR3; DASY8, 0.3 GHz to 6 GHz)										
Symbol	Source of Uncertainty	Uncertainty of Xi			u(Xi)	Ci		Ciu(Xi)		Vi Veff
		Xi	Prob. Dist.	Div.		1g	10g	1g	10g	
Measurement System Errors										
CF	Probe Calibration	±13.1%	N (k=2)	2	±6.6%	1	1	±6.6%	±6.6%	∞
CF_{drift}	Probe Calibration Drift	±1.7%	R	1.73	±1.0%	1	1	±1.0%	±1.0%	∞
LIN	Probe Linearity	±4.7%	R	1.73	±2.7%	1	1	±2.7%	±2.7%	∞
BBS	Broadband Signal	±0.0%	N (k=2)	2	±0.0%	1	1	±0.0%	±0.0%	∞
ISO	Probe Isotropy (axial)	±4.7%	R	1.73	±2.7%	1	1	±2.7%	±2.7%	∞
DAE	Other Probe + Electronic	±1.2%	N	1	±1.2%	1	1	±1.2%	±1.2%	∞
AMB	RF Ambient	±0.6%	N	1	±0.6%	1	1	±0.6%	±0.6%	∞
Δ_{xyz}	Probe Positioning	±0.005mm	N	1	±0.5%	0.28	0.28	±0.2%	±0.2%	∞
DAT	Data Processing	±0.6%	N	1	±0.6%	1	1	±0.6%	±0.6%	∞
Phantom and DUT Errors										
LIQ (σ)	Conductivity (meas.)	±2.5%	N	1	±2.5%	0.78	0.71	±2.0%	±1.8%	∞
LIQ (T_c)	Conductivity (temp.)	±3.4%	R	1.73	±1.9%	0.78	0.71	±1.5%	±1.4%	∞
EPS	Phantom Permittivity	±14.0%	R	1.73	±8.1%	0.25	0.25	±2.0%	±2.0%	∞
DIS	Distance DUT - TSL	±1.3%	N	1	±1.3%	2	2	±2.6%	±2.6%	∞
D_{xyz}	Positioning Repeatability	±1.2%	N	1	±1.2%	1	1	±1.2%	±1.2%	∞
MOD	DUT Modulation	±0.0%	R	1.73	±0.0%	1	1	±0.0%	±0.0%	∞
TAS	Time-averaged SAR	±0.0%	R	1.73	±0.0%	1	1	±0.0%	±0.0%	∞
VAL	Validation Antenna	±3.2%	N	1	±3.2%	1	1	±3.2%	±3.2%	∞
P_{in}	Accepted Power	±2.0%	N	1	±2.0%	1	1	±2.0%	±2.0%	∞
Corrections to the SAR result										
C(ε', σ)	Deviation to Target	±1.9%	N	1	±1.9%	1	0.84	±1.9%	±1.6%	∞
u(ΔSAR)	Combined Standard Uncertainty			RSS				±9.8%	±9.7%	∞
U	Expanded Uncertainty (95% conf. interval)			k =2				±19.7%	±19.5%	-

2.7. Dielectric Parameter Measurement of Tissue Simulating Liquids

The dielectric properties of the tissue simulating liquids used were verified within 24 hours before the SAR measurement.



(a) Dielectric Parameter Measurement System



(b) Example Photo: Dielectric Parameter Measurement

Figure 2-3 Dielectric Parameter Measurement Set-up

4th Site Shielded Room 3

TSL	Freq. (MHz)	Param.	Target *1	Meas.	Dev. (%) *2	Date	Amb. Temp. (deg. C)	Rel. Hum. (%RH)	Liquid Temp. (deg. C)
HBBL 600-10000 V6	2402	ε_r	39.29	39.80	1.30	2025/03/11	20.7	41.1	21.1
		σ (S/m)	1.76	1.69	-3.90				
	2402	ε_r	39.29	40.63	3.43	2025/03/21	21.3	48.1	19.2
		σ (S/m)	1.76	1.72	-2.41				
	2412	ε_r	39.27	40.61	3.42	2025/03/21	21.3	48.1	19.2
		σ (S/m)	1.77	1.72	-2.39				
	2412	ε_r	39.27	40.73	3.72	2025/04/07	20.3	44.0	20.8
		σ (S/m)	1.77	1.72	-2.54				
	2437	ε_r	39.22	40.57	3.43	2025/03/21	21.3	48.1	19.2
		σ (S/m)	1.79	1.75	-2.33				
	2437	ε_r	39.22	40.69	3.74	2025/04/07	20.3	44.0	20.8
		σ (S/m)	1.79	1.74	-2.58				
	2440	ε_r	39.22	39.71	1.25	2025/03/11	20.7	41.1	21.1
		σ (S/m)	1.79	1.72	-4.07				
	2441	ε_r	39.22	40.56	3.43	2025/03/21	21.3	48.1	19.2
		σ (S/m)	1.79	1.75	-2.31				
	2462	ε_r	39.18	40.52	3.41	2025/03/21	21.3	48.1	19.2
		σ (S/m)	1.81	1.77	-2.31				
	2462	ε_r	39.18	40.64	3.73	2025/04/07	20.3	44.0	20.8
		σ (S/m)	1.81	1.76	-2.71				
	2480	ε_r	39.16	39.64	1.22	2025/03/11	20.7	41.1	21.1
		σ (S/m)	1.83	1.76	-4.01				
	2480	ε_r	39.16	40.50	3.40	2025/03/21	21.3	48.1	19.2
		σ (S/m)	1.83	1.79	-2.34				
	5290	ε_r	35.88	35.68	-0.55	2025/03/19	20.3	50.1	19.2
		σ (S/m)	4.75	4.74	-0.06				
	5530	ε_r	35.61	36.87	3.54	2025/04/09	18.8	59.0	20.0
		σ (S/m)	4.99	4.98	-0.32				
	5530	ε_r	35.61	36.88	3.57	2025/04/10	20.0	50.5	19.6
		σ (S/m)	4.99	5.02	0.63				
	5610	ε_r	35.52	36.60	3.04	2025/04/09	18.8	59.0	20.0
		σ (S/m)	5.08	5.11	0.63				
	5610	ε_r	35.52	36.55	2.90	2025/04/10	20.0	50.5	19.6
		σ (S/m)	5.08	5.17	1.77				
	5775	ε_r	35.33	34.25	-3.04	2025/03/17	20.1	55.3	20.0
		σ (S/m)	5.24	5.08	-3.09				
	5775	ε_r	35.33	34.82	-1.44	2025/03/21	21.3	48.1	19.2
		σ (S/m)	5.24	5.21	-0.57				

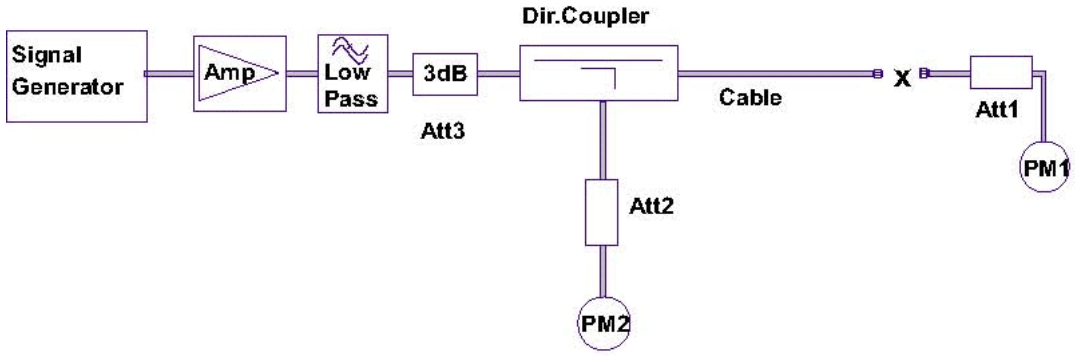
*1 Target values are linearly interpolated between the values defined in KDB 865664 D01, when necessary.

*2 The deviation of measured values from target values must be within +/-5 %.

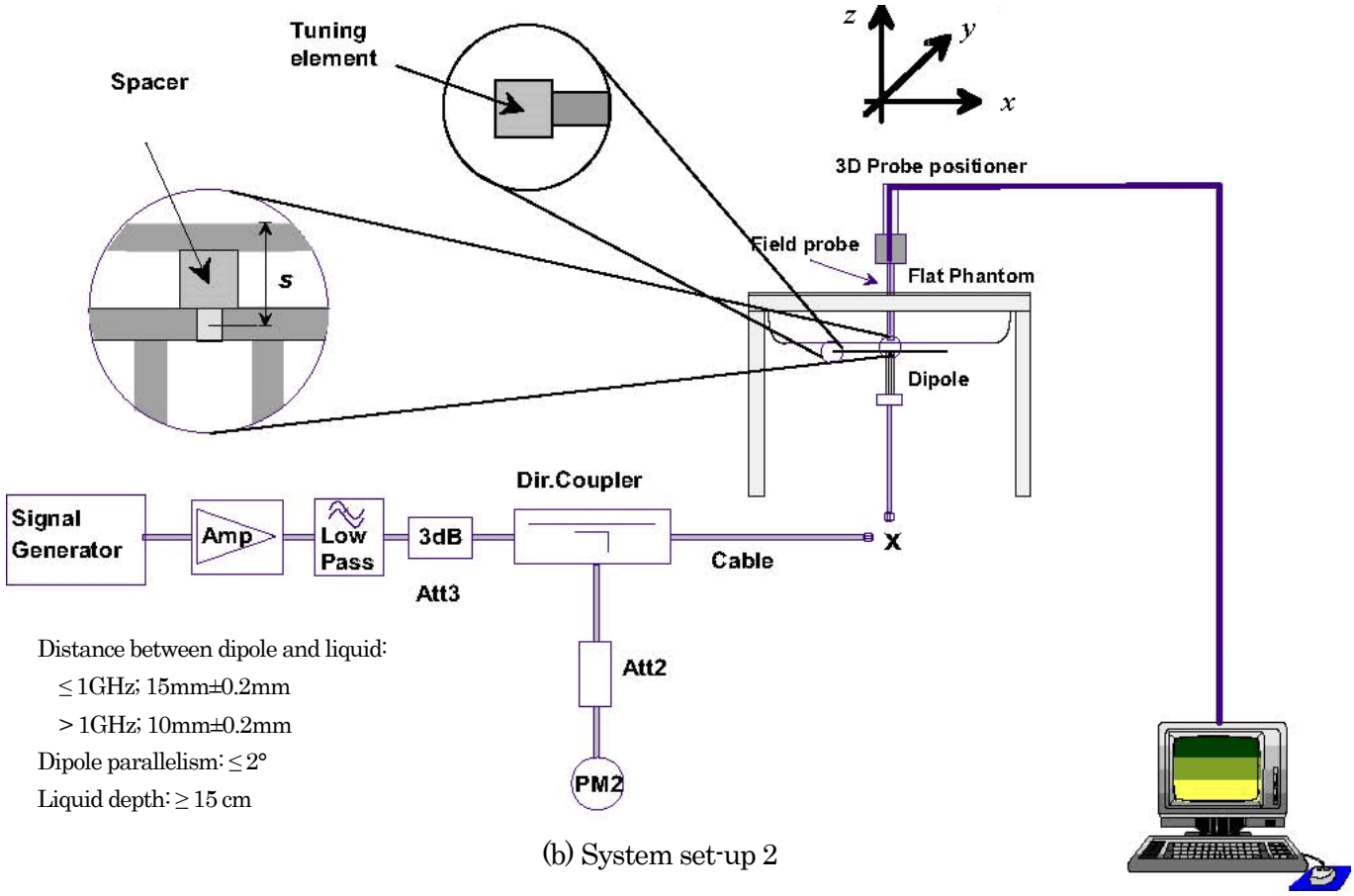
2.8. System Check Measurement

<SAR Measurement System Check>

The system check was performed before each series of SAR measurements using the same probe calibration point and tissue-equivalent medium.

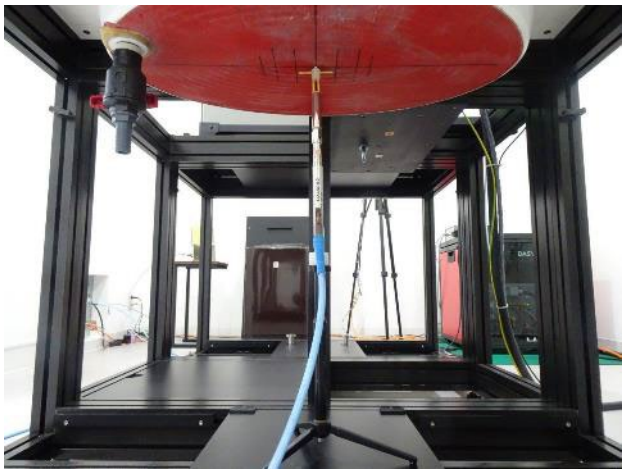


(a) System set-up 1



(b) System set-up 2

Figure 2-4 SAR System Check Measurement Set-up



D2450V2

D5GHzV2

(c) Photo: System Validation Dipole Placement

Figure 2-4 SAR System Check Measurement Set-up (continued)

4th Site Shielded Room 3

System Validation Dipole	Freq. (MHz)	Param.	250 mW-Meas. (W/kg)	1 W-Norm. (W/kg) *1	1 W-Target (W/kg) *2	Dev. (%) *3	Date	Amb. Temp. (deg. C)	Rel. Hum. (%RH)	Liquid Temp. (deg. C)	Note(s)
D2450V2	2450	1-g SAR	13.30	53.20	53.60	-0.75	2025/03/11	20.7	41.1	21.1	-
		10-g SAR	6.28	25.12	25.10	0.08					
D2450V2	2450	1-g SAR	13.50	54.00	53.60	0.75	2025/03/21	21.3	48.1	19.2	-
		10-g SAR	6.37	25.48	25.10	1.51					
D2450V2	2450	1-g SAR	13.40	53.60	53.60	0.00	2025/04/07	23.4	45.1	20.8	-
		10-g SAR	6.28	25.12	25.10	0.08					

System Validation Dipole	Freq. (MHz)	Param.	100 mW-Meas. (W/kg)	1 W-Norm. (W/kg) *1	1 W-Target (W/kg) *2	Dev. (%) *3	Date	Amb. Temp. (deg. C)	Rel. Hum. (%RH)	Liquid Temp. (deg. C)	Note(s)
D5GHzV2	5300	1-g SAR	7.89	78.90	80.70	-2.23	2025/03/19	20.7	45.1	19.0	-
		10-g SAR	2.25	22.50	23.10	-2.60					
D5GHzV2	5600	1-g SAR	8.91	89.10	82.30	8.26	2025/04/09	19.0	53.4	19.3	-
		10-g SAR	2.54	25.40	23.40	8.55					
D5GHzV2	5600	1-g SAR	8.92	89.20	82.30	8.38	2025/04/10	20.0	51.5	19.6	-
		10-g SAR	2.56	25.60	23.40	9.40					
D5GHzV2	5800	1-g SAR	7.40	74.00	79.30	-6.68	2025/03/17	21.4	43.0	19.7	-
		10-g SAR	2.09	20.90	22.40	-6.70					
D5GHzV2	5800	1-g SAR	7.77	77.70	79.30	-2.02	2025/03/21	22.0	43.3	19.5	-
		10-g SAR	2.21	22.10	22.40	-1.34					

*1 The normalized values (1 W) were calculated by normalizing the measured values to 1-W forward input power.

*2 The target values (1 W) are defined in IEEE Std 1528 and/or the calibration certificate of system validation dipoles used.

*3 The deviation of normalized values from target values must be within +/-10 %.

3. Conducted Power Measurements

☒<The Initial Test Configuration Procedures for Wi-Fi>

According to KDB 248227 D01,

the initial test configuration is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band.

When multiple channel bandwidth configurations in a frequency band have the same specified maximum output power, the initial test configuration is determined by applying the following steps sequentially.

1) The largest channel bandwidth configuration is selected among the multiple configurations in a frequency band with the same specified maximum output power.
2) If multiple configurations have the same specified maximum output power and largest channel bandwidth, the lowest order modulation among the largest channel bandwidth configurations is selected.
3) If multiple configurations have the same specified maximum output power, largest channel bandwidth and lowest order modulation, the lowest data rate configuration among these configurations is selected.
4) When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n.

3.1. Conducted Power Measurement Results

Wi-Fi 2.4 GHz

Date of measurement	Ambient temperature (deg.C)	Relative humidity (%RH)	Measured by
2024/7/10	20.5	50.4	Yu Inoue
2024/7/31	20.3	61.4	Yu Inoue

Mode	Freq. Band	Ch.	Freq. (MHz)	Data Rate /MCS	Meas. Frame Averaged Power (dBm)		Meas. Burst Averaged Power (dBm) *1		Max. Poss. Power (dBm)		Within 2 dB of Max. Poss. Power	SAR Tested	Note(s)
					Chain0	Chain1	Chain0	Chain1	Chain0	Chain1			
802.11b	2.4 GHz	1	2412	1.0 Mbps	8.77	8.73	8.77	8.73	9.50	9.50	Yes	Yes	
		6	2437	1.0 Mbps	8.81	8.86	8.81	8.86	9.50	9.50	Yes	Yes	
		11	2462	1.0 Mbps	**9.04**	**9.07**	9.04	9.08	9.50	9.50	Yes	Yes	Worst Ch
802.11g *2		1	2412	6.0 Mbps	8.62	8.55	8.65	8.58	9.50	9.50	Yes	-	
		6	2437	6.0 Mbps	8.65	8.68	8.68	8.70	9.50	9.50	Yes	-	
		11	2462	6.0 Mbps	**8.87**	**8.88**	8.89	8.91	9.50	9.50	Yes	-	
802.11n (HT20) *2		1	2412	MCS-0	8.61	8.61	8.63	8.64	9.50	9.50	Yes	-	
		6	2437	MCS-0	8.54	8.76	8.56	8.78	9.50	9.50	Yes	-	
		11	2462	MCS-0	**8.74**	**8.99**	8.77	9.02	9.50	9.50	Yes	-	

*1 Used for confirmation that the DUT's output power is within +0/-2 dB of the maximum tune-up tolerance limits (max. poss. power), since the maximum tune-up tolerance limits are defined as burst averaged values.

*2 SAR is not required for 802.11g/n channels when the highest reported SAR for DSSS (802.11b) is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg or 3 W/kg (1-g or 10-g respectively), according to KDB 248227 D01.

Wi-Fi 5 GHz (5.2 GHz and 5.3 GHz)

Date of measurement	Ambient temperature (deg.C)	Relative humidity (%RH)	Measured by
2024/7/10	20.5	50.4	Yu Inoue
2024/8/1	22.0	57.5	Yu Inoue
2024/8/2	21.5	63.3	Yu Inoue

The Initial Test Configuration (ITC) : IEEE 802.11ac (VHT80) in 5.3 GHz (*2)(*3)

Mode	Freq. Band	Ch.	Freq. (MHz)	Data Rate /MCS	Meas. Frame Averaged Power (dBm)		Meas. Burst Averaged Power (dBm) *1		Max. Poss. Power (dBm)		Within 2 dB of Max. Poss. Power	SAR Tested	Note(s)
					Chain0	Chain1	Chain0	Chain1	Chain0	Chain1			
802.11a	5.2 GHz	36	5180	6.0 Mbps	10.71	**10.42**	10.73	10.44	11.50	11.50	Yes	-	-
		40	5200	6.0 Mbps	**10.79**	10.35	10.81	10.37	11.50	11.50	Yes	-	-
		44	5220	6.0 Mbps	10.49	10.39	10.52	10.41	11.50	11.50	Yes	-	-
		48	5240	6.0 Mbps	10.51	10.30	10.54	10.33	11.50	11.50	Yes	-	-
	5.3 GHz	52	5260	6.0 Mbps	**10.59**	10.30	10.62	10.32	11.50	11.50	Yes	-	-
		56	5280	6.0 Mbps	10.37	**10.41**	10.39	10.44	11.50	11.50	Yes	-	-
		60	5300	6.0 Mbps	10.42	10.37	10.44	10.39	11.50	11.50	Yes	-	-
		64	5320	6.0 Mbps	10.46	10.33	10.49	10.35	11.50	11.50	Yes	-	-
802.11n (HT20)	5.2 GHz	36	5180	MCS-0	**10.40**	**10.18**	10.42	10.21	11.50	11.50	Yes	-	-
		40	5200	MCS-0	10.36	10.15	10.39	10.17	11.50	11.50	Yes	-	-
		44	5220	MCS-0	10.09	10.16	10.11	10.18	11.50	11.50	Yes	-	-
		48	5240	MCS-0	10.12	10.11	10.14	10.13	11.50	11.50	Yes	-	-
	5.3 GHz	52	5260	MCS-0	**10.20**	10.06	10.22	10.09	11.50	11.50	Yes	-	-
		56	5280	MCS-0	9.97	**10.19**	9.99	10.22	11.50	11.50	Yes	-	-
		60	5300	MCS-0	10.06	10.14	10.09	10.17	11.50	11.50	Yes	-	-
		64	5320	MCS-0	10.14	10.11	10.17	10.14	11.50	11.50	Yes	-	
802.11n (HT40)	5.2 GHz	38	5190	MCS-0	**11.01**	**10.68**	11.06	10.73	11.50	11.50	Yes	-	-
		46	5230	MCS-0	10.69	10.66	10.74	10.71	11.50	11.50	Yes	-	-
	5.3 GHz	54	5270	MCS-0	**10.81**	10.54	10.85	10.58	11.50	11.50	Yes	-	-
		62	5310	MCS-0	10.64	**10.64**	10.69	10.68	11.50	11.50	Yes	-	-
802.11ac (VHT20)	5.2 GHz	36	5180	MCS-0	10.39	**10.22**	10.41	10.24	11.50	11.50	Yes	-	-
		40	5200	MCS-0	**10.44**	10.17	10.46	10.19	11.50	11.50	Yes	-	-
		44	5220	MCS-0	10.09	10.17	10.12	10.20	11.50	11.50	Yes	-	-
		48	5240	MCS-0	10.15	10.14	10.18	10.17	11.50	11.50	Yes	-	-
	5.3 GHz	52	5260	MCS-0	**10.22**	10.10	10.24	10.12	11.50	11.50	Yes	-	-
		56	5280	MCS-0	10.02	**10.20**	10.05	10.23	11.50	11.50	Yes	-	-
		60	5300	MCS-0	10.09	10.16	10.12	10.18	11.50	11.50	Yes	-	-
		64	5320	MCS-0	10.17	10.10	10.20	10.13	11.50	11.50	Yes	-	-
802.11ac (VHT40)	5.2 GHz	38	5190	MCS-0	**11.05**	**10.67**	11.10	10.72	11.50	11.50	Yes	-	-
		46	5230	MCS-0	10.74	10.64	10.79	10.69	11.50	11.50	Yes	-	-
	5.3 GHz	54	5270	MCS-0	**10.84**	10.56	10.89	10.60	11.50	11.50	Yes	-	-
		62	5310	MCS-0	10.68	**10.63**	10.73	10.68	11.50	11.50	Yes	-	-
802.11ac (VHT80)	5.2 GHz	42	5210	MCS-0	**10.36**	**10.37**	10.47	10.48	11.50	11.50	Yes	-	-
	5.3 GHz	58	5290	MCS-0	**10.32**	**10.35**	10.42	10.45	11.50	11.50	Yes	Yes	ITC

*1 Used for confirmation that the DUT's output power is within +0/-2 dB of the maximum tune-up tolerance limits (max. poss. power), since the maximum tune-up tolerance limits are defined as burst averaged values.

*2 When the same maximum output power is specified for U-NII-1 and U-NII-2A bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg or 3 W/kg (1-g or 10-g respectively), SAR is not required for U-NII-1 band for that configuration.

*3 SAR is not required for the remaining 802.11 transmission configurations (802.11a/n-HT20/n-HT40/ac-VHT20/ac-VHT40) when the highest reported SAR for the initial test configuration (802.11 ac-VHT80) is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg or 3 W/kg (1-g or 10-g respectively), according to KDB 248227 D01.

Wi-Fi 5 GHz (5.6 GHz)

Date of measurement	Ambient temperature (deg.C)	Relative humidity (%RH)	Measured by
2024/7/10	20.5	50.4	Yu Inoue
2024/8/20	20.0	60.5	Yu Inoue
2024/8/21	20.5	61.6	Yu Inoue

The Initial Test Configuration (ITC) : IEEE 802.11ac (VHT80) (*3)

Mode	Freq. Band	Ch.	Freq. (MHz)	Data Rate /MCS	Meas. Frame Averaged Power (dBm)		Meas. Burst Averaged Power (dBm) *1		Max. Poss. Power (dBm)		Within 2 dB of Max. Poss. Power	SAR Tested	Note(s)
					Chain0	Chain1	Chain0	Chain1	Chain0	Chain1			
802.11a	5.6 GHz	100	5500	6.0 Mbps	9.99	10.41	10.01	10.44	11.50	11.50	Yes	-	-
		120	5600	6.0 Mbps	10.57	**10.42**	10.59	10.44	11.50	11.50	Yes	-	-
		140	5700	6.0 Mbps	**11.07**	10.41	11.09	10.43	11.50	11.50	Yes	-	-
802.11n (HT20)		100	5500	MCS-0	9.69	**10.27**	9.72	10.29	11.50	11.50	Yes	-	-
		120	5600	MCS-0	10.20	10.23	10.23	10.25	11.50	11.50	Yes	-	-
		140	5700	MCS-0	**10.68**	10.23	10.71	10.25	11.50	11.50	Yes	-	-
802.11ac (VHT20)		100	5500	MCS-0	9.59	10.23	9.61	10.26	11.50	11.50	Yes	-	-
		120	5600	MCS-0	10.14	10.24	10.17	10.27	11.50	11.50	Yes	-	-
		140	5700	MCS-0	**10.56**	**10.25**	10.59	10.27	11.50	11.50	Yes	-	-
802.11n (HT40)		102	5510	MCS-0	10.28	10.78	10.33	10.83	11.50	11.50	Yes	-	-
		118	5590	MCS-0	10.67	10.80	10.72	10.85	11.50	11.50	Yes	-	-
		134	5670	MCS-0	**10.99**	**10.83**	11.04	10.88	11.50	11.50	Yes	-	-
802.11ac (VHT40)		102	5510	MCS-0	10.31	10.77	10.36	10.81	11.50	11.50	Yes	-	-
		118	5590	MCS-0	10.70	10.79	10.75	10.83	11.50	11.50	Yes	-	-
		134	5670	MCS-0	**11.04**	**10.86**	11.09	10.91	11.50	11.50	Yes	-	-
802.11ac (VHT80)		106	5530	MCS-0	10.09	10.26	10.20	10.36	11.50	11.50	Yes	Yes	-
		122	5610	MCS-0	**10.52**	**10.31**	10.62	10.41	11.50	11.50	Yes	Yes	ITC

*1 Used for confirmation that the DUT's output power is within +0/-2 dB of the maximum tune-up tolerance limits (max. poss. power), since the maximum tune-up tolerance limits are defined as burst averaged values.

*3 SAR is not required for the remaining 802.11 transmission configurations (802.11 a/n-HT20/n-HT40/ac-VHT20/ac-VHT40) when the highest reported SAR for the initial test configuration (802.11 ac-VHT80) is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg or 3 W/kg (1-g or 10-g respectively), according to KDB 248227 D01.

Wi-Fi 5 GHz (5.8 GHz)

Date of measurement	Ambient temperature (deg.C)	Relative humidity (%RH)	Measured by
2024/7/10	20.5	50.4	Yu Inoue
2024/8/22	21.3	63.1	Yu Inoue

The Initial Test Configuration (ITC) : IEEE 802.11ac (VHT80) (*3)

Mode	Freq. Band	Ch.	Freq. (MHz)	Data Rate /MCS	Meas. Frame Averaged Power (dBm)		Meas. Burst Averaged Power (dBm) *1		Max. Poss. Power (dBm)		Within 2 dB of Max. Poss. Power	SAR Tested	Note(s)
					Chain0	Chain1	Chain0	Chain1	Chain0	Chain1			
802.11a	5.8 GHz	149	5745	6.0 Mbps	**10.97**	11.01	10.99	11.04	11.50	11.50	Yes	-	-
		157	5785	6.0 Mbps	10.57	**11.14**	10.59	11.16	11.50	11.50	Yes	-	-
		165	5825	6.0 Mbps	10.79	10.97	10.81	11.00	11.50	11.50	Yes	-	-
802.11n (HT20)		149	5745	MCS-0	**10.68**	10.83	10.71	10.85	11.50	11.50	Yes	-	-
		157	5785	MCS-0	10.16	**10.87**	10.19	10.89	11.50	11.50	Yes	-	-
		165	5825	MCS-0	10.29	10.76	10.31	10.78	11.50	11.50	Yes	-	-
802.11ac (VHT20)		149	5745	MCS-0	**10.58**	10.83	10.61	10.86	11.50	11.50	Yes	-	-
		157	5785	MCS-0	10.13	**10.91**	10.16	10.94	11.50	11.50	Yes	-	-
		165	5825	MCS-0	10.36	10.80	10.38	10.83	11.50	11.50	Yes	-	-
802.11n (HT40)		151	5755	MCS-0	**11.26**	10.30	11.31	10.35	11.50	11.50	Yes	-	-
		159	5795	MCS-0	10.85	**10.41**	10.90	10.46	11.50	11.50	Yes	-	-
802.11ac (VHT40)		151	5755	MCS-0	**11.26**	10.23	11.31	10.28	11.50	11.50	Yes	-	-
		159	5795	MCS-0	10.83	**10.39**	10.88	10.44	11.50	11.50	Yes	-	-
802.11ac (VHT80)		151	5755	MCS-0	**11.08**	**10.93**	11.19	11.03	11.50	11.50	Yes	Yes	ITC

*1 Used for confirmation that the DUT's output power is within +0/-2 dB of the maximum tune-up tolerance limits (max. poss. power), since the maximum tune-up tolerance limits are defined as burst averaged values.

*3 SAR is not required for the remaining 802.11 transmission configurations (802.11 a/n-HT20/n-HT40/ac-VHT20/ac-VHT40) when the highest reported SAR for the initial test configuration (802.11 ac-VHT80) is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg or 3 W/kg (1-g or 10-g respectively), according to KDB 248227 D01.

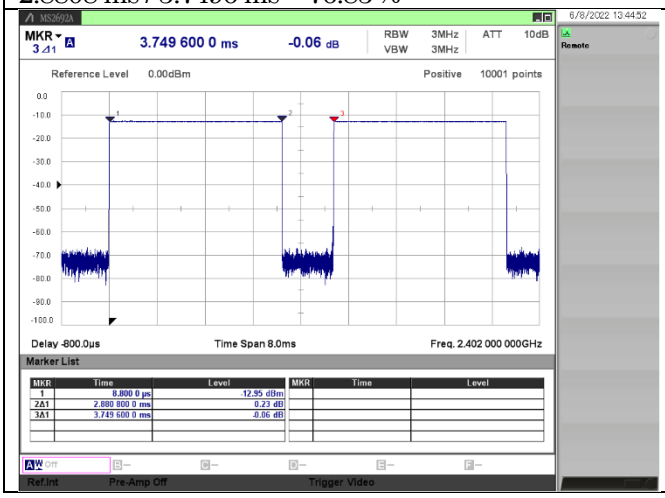
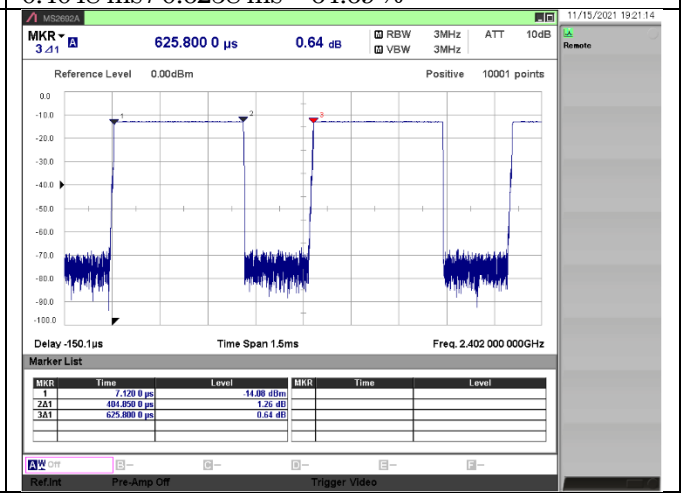
Bluetooth

Date of measurement	Ambient temperature (deg.C)	Relative humidity (%RH)	Measured by
2021/11/15	22.4	48.6	Shingo Onotora
2022/6/8	21.7	61.7	Yu Inoue

Mode	Ch.	Freq. (MHz)	Packet Type	Meas. Frame Averaged Power (dBm)	Meas. Burst Averaged Power (dBm) *1	Max. Poss. Power (dBm)	Within 2 dB of Max Poss. Power	SAR Tested	Note(s)
Classic	0	2402	DH5	7.39	8.53	10.10	Yes	Yes	-
	39	2441	DH5	7.64	8.79	10.10	Yes	Yes	-
	78	2480	DH5	**7.97**	9.12	10.10	Yes	Yes	Worst Ch
LE	0	2402	1.0 Mbps	6.64	8.53	10.10	Yes	Yes	-
	19	2440	1.0 Mbps	6.94	8.83	10.10	Yes	Yes	-
	39	2480	1.0 Mbps	**7.22**	9.12	10.10	Yes	Yes	Worst Ch

*1 Used for confirmation that the DUT's output power is within +0/-2 dB of the maximum tune-up tolerance limits (max. poss. power), since the maximum tune-up tolerance limits are defined as burst averaged values.

Duty Cycle Plot(s) for Bluetooth

Bluetooth Classic	Bluetooth LE
2.8808 ms / 3.7496 ms = 76.83 %	0.4048 ms / 0.6258 ms = 64.69 %
	

4. SAR Measurements

☒ **<SAR Correction/Scaling>**

According to KDB 447498 D01, KDB 248227 D01, and/or KDB 865664 D01,
the maximum SAR values are determined by taking account of the following correction or scaling factors.

The maximum 1-g SAR and/or 10-g SAR values (reported SAR) are calculated by applying the ΔSAR positive correction for deviations of the tissue-equivalent liquid and the power scaling for the maximum duty factor and maximum possible power levels (maximum tune-up tolerance limit) to each measured 1-g SAR and/or 10-g SAR value:

Reported SAR (W/kg) = Measured SAR (W/kg) * ΔSAR positive correction factor
* Duty cycle scaling factor * Tune-up scaling factor

where;

ΔSAR positive correction factor = (100 - ΔSAR*1) / 100

Duty cycle scaling factor = Max. possible duty cycle / Measured duty cycle used for the SAR measurement

Tune-up scaling factor = Max. possible power (mW) / Measured power used for the SAR measurement (mW)

*1 $\Delta SAR\ (\%) = c_e * \Delta\varepsilon_r + c_o * \Delta\sigma$

<For 1-g SAR>

$c_e = -7.854 * 10^{-4} f^3 + 9.402 * 10^{-3} f^2 - 2.742 * 10^{-2} f - 0.2026$

$c_o = 9.804 * 10^{-3} f^3 - 8.661 * 10^{-2} f^2 + 2.981 * 10^{-2} f + 0.7829$

<For 10-g SAR>

$c_e = 3.456 * 10^{-3} f^3 - 3.531 * 10^{-2} f^2 + 7.675 * 10^{-2} f - 0.1860$

$c_o = 4.479 * 10^{-3} f^3 - 1.586 * 10^{-2} f^2 - 0.1972 f + 0.7717$

where;

c_e	coefficient representing the sensitivity of SAR to permittivity
$\Delta\varepsilon_r$	percent change in permittivity
c_o	coefficient representing the sensitivity of SAR to conductivity
$\Delta\sigma$	percent change in conductivity
f	frequency in GHz

A negative ΔSAR would translate to a lower measured SAR value than what would be measured if using dielectric properties equal to the target values.

A positive ΔSAR would translate to a higher measured SAR value than what would be measured if using dielectric properties equal to the target values.

SAR correction shall not be made when the ΔSAR has a positive sign to provide a conservative SAR value.

The SAR is only corrected when ΔSAR has a negative sign.

☒ <SAR Test Reduction for Wi-Fi>

SAR test reduction for Wi-Fi is applied according to KDB 248227 D01.

For 2.4 GHz 802.11g/n OFDM configurations

SAR is not required for the following 2.4 GHz OFDM conditions.

1) When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.
2) 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 or 3 W/kg (1-g or 10-g respectively).

For U-NII-1 (5.2 GHz) and U-NII-2A (5.3 GHz) Bands

When the same transmitter and antenna(s) are used for U-NII-1 and U-NII-2A bands, additional SAR test reduction applies.

1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg or 3 W/kg (1-g or 10-g respectively), SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, each band is tested independently for SAR.
2) When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg or 3 W/kg (1-g or 10-g respectively), SAR is not required for the band with lower maximum output power in that test configuration; otherwise, each band is tested independently for SAR.

4.1. SAR Measurement Results

<Body-Worn SAR>

Wi-Fi 2.4 GHz

(Chain 0)

Date of measurement	Ambient temperature (deg.C)	Relative humidity (%RH)	Measured by
2025/3/21	21.1	39.6	Yosuke Kamiko

Mode	Ch.	Freq. (MHz)	Pos.	Dis. (mm)	Max. Poss. Power (dBm)	Meas. Power (dBm)	Max. Duty Cycle (%)	Meas. Duty Cycle (%)	Meas. 1-g SAR (W/kg)	Reported 1-g SAR (W/kg)	Liquid Temp. (deg. C)	Plot No.
Step 1: Worst Position Check												
802.11b	11	2462	Front	0	9.50	9.04	100.00	99.89	0.003	0.003	20.0	-
			Front-Right		9.50	9.04	100.00	99.89	0.013	0.014	20.0	-
			Left		9.50	9.04	100.00	99.89	N/D	N/D	20.0	-
			Right		9.50	9.04	100.00	99.89	0.218	**0.243**	20.1	1
			Bottom		9.50	9.04	100.00	99.89	0.007	0.008	20.0	-
Step 2: Worst Channel Check (for Step 1)												
802.11b	1	2412	Right	0	9.50	8.77	100.00	99.89	0.198	0.234	20.0	-
	6	2437			9.50	8.81	100.00	99.89	0.200	0.235	19.9	-

(Chain 1)

Date of measurement	Ambient temperature (deg.C)	Relative humidity (%RH)	Measured by
2025/4/7	24.0	45.8	Yosuke Kamiko

Mode	Ch.	Freq. (MHz)	Pos.	Dis. (mm)	Max. Poss. Power (dBm)	Meas. Power (dBm)	Max. Duty Cycle (%)	Meas. Duty Cycle (%)	Meas. 1-g SAR (W/kg)	Reported 1-g SAR (W/kg)	Liquid Temp. (deg. C)	Plot No.
Step 1: Worst Position Check												
802.11b	11	2462	Front	0	9.50	9.08	100.00	99.89	0.031	**0.034**	21.1	2
			Front-Right		9.50	9.08	100.00	99.89	0.027	0.030	21.1	-
			Left		9.50	9.08	100.00	99.89	0.015	0.017	21.3	-
			Right		9.50	9.08	100.00	99.89	0.001	0.001	21.4	-
			Bottom		9.50	9.08	100.00	99.89	N/D	N/D	21.4	-
Step 2: Worst Channel Check (for Step 1)												
802.11b	1	2412	Front	0	9.50	8.73	100.00	99.89	0.028	0.033	21.5	-
	6	2437			9.50	8.86	100.00	99.89	0.027	0.031	21.4	-

* N/D: Not Detected.

*1 The burst averaged power values are used for power scaling since the maximum tune-up tolerance limits are defined as burst averaged values.

*2 Reported SAR (W/kg) = Measured SAR (W/kg) * Duty cycle scaling factor * Tune-up scaling factor

where;

Duty cycle scaling factor = Max. possible duty cycle (%) / Measured duty cycle used for the SAR measurement (%)

Tune-up scaling factor = Max. possible power (mW) (* equal to 100% duty cycle) / Measured power used for the SAR measurement (mW)

Wi-Fi 5 GHz (5.3 GHz)

(Chain 0)

Date of measurement	Ambient temperature (deg.C)	Relative humidity (%RH)	Measured by
2025/3/19	21.8	44.9	Yosuke Kamiko

Mode	Ch.	Freq. (MHz)	Pos.	Dis. (mm)	Max. Poss. Power (dBm)	Meas. Power (dBm)	Max. Duty Cycle (%)	Meas. Duty Cycle (%)	Meas. 1-g SAR (W/kg)	Reported 1-g SAR (W/kg)	Liquid Temp. (deg. C)	Plot No.
802.11ac (VHT80)	58	5290	Front	0	11.50	10.42	100.00	97.64	0.012	0.016	19.5	-
			Front-Right		11.50	10.42	100.00	97.64	0.040	0.053	19.5	-
			Left		11.50	10.42	100.00	97.64	0.002	0.003	19.5	-
			Right		11.50	10.42	100.00	97.64	0.476	**0.625**	19.5	3
			Bottom		11.50	10.42	100.00	97.64	0.018	0.024	19.5	-

(Chain 1)

Date of measurement	Ambient temperature (deg.C)	Relative humidity (%RH)	Measured by
2025/3/19	20.8	39.8	Yosuke Kamiko

Mode	Ch.	Freq. (MHz)	Pos.	Dis. (mm)	Max. Poss. Power (dBm)	Meas. Power (dBm)	Max. Duty Cycle (%)	Meas. Duty Cycle (%)	Meas. 1-g SAR (W/kg)	Reported 1-g SAR (W/kg)	Liquid Temp. (deg. C)	Plot No.
802.11ac (VHT80)	58	5290	Front	0	11.50	10.45	100.00	97.64	0.184	0.240	19.3	-
			Front-Right		11.50	10.45	100.00	97.64	0.196	**0.255**	19.3	4
			Left		11.50	10.45	100.00	97.64	0.024	0.031	19.3	-
			Right		11.50	10.45	100.00	97.64	N/D	N/D	19.4	-
			Bottom		11.50	10.45	100.00	97.64	0.010	0.013	19.3	-

* N/D: Not Detected.

*1 The burst averaged power values are used for power scaling since the maximum tune-up tolerance limits are defined as burst averaged values.

*2 Reported SAR (W/kg) = Measured SAR (W/kg) * Duty cycle scaling factor * Tune-up scaling factor

where;

Duty cycle scaling factor = Max. possible duty cycle (%) / Measured duty cycle used for the SAR measurement (%)

Tune-up scaling factor = Max. possible power (mW) (* equal to 100% duty cycle) / Measured power used for the SAR measurement (mW)

Wi-Fi 5 GHz (5.6 GHz)

(Chain 0)

Date of measurement	Ambient temperature (deg.C)	Relative humidity (%RH)	Measured by
2025/4/9	23.2	40.9	Yosuke Kamiko

Mode	Ch.	Freq. (MHz)	Pos.	Dis. (mm)	Max. Poss. Power (dBm)	Meas. Power (dBm)	Max. Duty Cycle (%)	Meas. Duty Cycle (%)	Meas. 1-g SAR (W/kg)	Reported 1-g SAR (W/kg)	Liquid Temp. (deg. C)	Plot No.
Step 1: Worst Position Check												
802.11ac (VHT80)	122	5610	Front	0	11.50	10.62	100.00	97.64	0.005	0.006	19.5	-
			Front-Right		11.50	10.62	100.00	97.64	0.015	0.019	19.6	-
			Left		11.50	10.62	100.00	97.64	0.003	0.004	19.8	-
			Right		11.50	10.62	100.00	97.64	0.433	**0.543**	19.8	5
			Bottom		11.50	10.62	100.00	97.64	0.021	0.026	19.4	-
Step 2: Worst Channel Check (for Step 1)												
802.11ac (VHT80)	106	5530	Right	0	11.50	10.20	100.00	97.64	0.381	0.527	19.9	-

(Chain 1)

Date of measurement	Ambient temperature (deg.C)	Relative humidity (%RH)	Measured by
2025/4/10	19.6	52.5	Yu Inoue

Mode	Ch.	Freq. (MHz)	Pos.	Dis. (mm)	Max. Poss. Power (dBm)	Meas. Power (dBm)	Max. Duty Cycle (%)	Meas. Duty Cycle (%)	Meas. 1-g SAR (W/kg)	Reported 1-g SAR (W/kg)	Liquid Temp. (deg. C)	Plot No.
Step 1: Worst Position Check												
802.11ac (VHT80)	122	5610	Front	0	11.50	10.41	100.00	97.64	0.229	0.301	19.5	-
			Front-Right		11.50	10.41	100.00	97.64	0.247	**0.325**	19.5	6
			Left		11.50	10.41	100.00	97.64	0.013	0.017	19.4	-
			Right		11.50	10.41	100.00	97.64	0.001	0.001	19.5	-
			Bottom		11.50	10.41	100.00	97.64	0.018	0.024	19.6	-
Step 2: Worst Channel Check (for Step 1)												
802.11ac (VHT80)	106	5530	Front-Right	0	11.50	10.36	100.00	97.64	0.207	0.276	19.6	-

* N/D: Not Detected.

*1 The burst averaged power values are used for power scaling since the maximum tune-up tolerance limits are defined as burst averaged values.

*2 Reported SAR (W/kg) = Measured SAR (W/kg) * Duty cycle scaling factor * Tune-up scaling factor

where;

Duty cycle scaling factor = Max. possible duty cycle (%) / Measured duty cycle used for the SAR measurement (%)

Tune-up scaling factor = Max. possible power (mW) (* equal to 100% duty cycle) / Measured power used for the SAR measurement (mW)

Wi-Fi 5 GHz (5.8 GHz)

(Chain 0)

Date of measurement	Ambient temperature (deg.C)	Relative humidity (%RH)	Measured by
2025/3/17	20.9	39.4	Yosuke Kamiko

Mode	Ch.	Freq. (MHz)	Pos.	Dis. (mm)	Max. Poss. Power (dBm)	Meas. Power (dBm)	Max. Duty Cycle (%)	Meas. Duty Cycle (%)	Meas. 1-g SAR (W/kg)	Reported 1-g SAR (W/kg)	Liquid Temp. (deg. C)	Plot No.
802.11ac (VHT80)	155	5775	Front	0	11.50	11.19	100.00	97.64	0.005	0.006	19.7	-
			Front-Right		11.50	11.19	100.00	97.64	0.024	0.026	19.7	-
			Left		11.50	11.19	100.00	97.64	0.004	0.004	19.5	-
			Right		11.50	11.19	100.00	97.64	0.497	**0.547**	19.5	7
			Bottom		11.50	11.19	100.00	97.64	0.016	0.018	19.5	-

(Chain 1)

Date of measurement	Ambient temperature (deg.C)	Relative humidity (%RH)	Measured by
2025/3/21	23.0	40.8	Yu Inoue

Mode	Ch.	Freq. (MHz)	Pos.	Dis. (mm)	Max. Poss. Power (dBm)	Meas. Power (dBm)	Max. Duty Cycle (%)	Meas. Duty Cycle (%)	Meas. 1-g SAR (W/kg)	Reported 1-g SAR (W/kg)	Liquid Temp. (deg. C)	Plot No.
802.11ac (VHT80)	155	5775	Front	0	11.50	11.03	100.00	97.64	0.334	0.381	20.0	-
			Front-Right		11.50	11.03	100.00	97.64	0.362	**0.413**	19.7	8
			Left		11.50	11.03	100.00	97.64	0.014	0.016	19.7	-
			Right		11.50	11.03	100.00	97.64	0.002	0.002	19.7	-
			Bottom		11.50	11.03	100.00	97.64	0.023	0.026	19.7	-

* N/D: Not Detected.

*1 The burst averaged power values are used for power scaling since the maximum tune-up tolerance limits are defined as burst averaged values.

*2 Reported SAR (W/kg) = Measured SAR (W/kg) * Duty cycle scaling factor * Tune-up scaling factor

where;

Duty cycle scaling factor = Max. possible duty cycle (%) / Measured duty cycle used for the SAR measurement (%)

Tune-up scaling factor = Max. possible power (mW) (* equal to 100% duty cycle) / Measured power used for the SAR measurement (mW)

Bluetooth

Date of measurement	Ambient temperature (deg.C)	Relative humidity (%RH)	Measured by
2025/3/11	23.6	37.5	Sho Fukushima
2025/3/21	21.9	39.2	Yosuke Kamiko

Mode	Ch.	Freq. (MHz)	Pos.	Dis. (mm)	Max. Poss. Power (dBm)	Meas. Power (dBm)	Max. Duty Cycle (%)	Meas. Duty Cycle (%)	Meas. 1-g SAR (W/kg)	Reported 1-g SAR (W/kg)	Liquid Temp. (deg. C)	Plot No.
Step 1: Worst Position Check												
Classic	78	2480	Front	0	10.10	9.12	83.33	76.83	N/D	N/D	20.3	-
			Front-Right		10.10	9.12	83.33	76.83	0.005	0.007	20.4	-
			Left		10.10	9.12	83.33	76.83	N/D	N/D	20.4	
			Right		10.10	9.12	83.33	76.83	0.063	0.086	20.4	
			Bottom		10.10	9.12	83.33	76.83	0.003	0.004	20.4	-
Step 2: Worst Channel Check (for Step 1)												
Classic	0	2402	Right	0	10.10	8.53	83.33	76.83	0.053	0.083	20.3	-
	39	2441			10.10	8.79	83.33	76.83	0.053	0.078	20.3	-
Step 3: Worst Mode Check (for Step 1)												
LE	0	2402	Right	0	10.10	8.53	100.00	64.69	0.041	0.091	20.7	-
	19	2440			10.10	8.83	100.00	64.69	0.042	0.087	20.8	-
	39	2480			10.10	9.12	100.00	64.69	0.049	**0.095**	20.8	9

* N/D: Not Detected.

*1 The burst averaged power values are used for power scaling since the maximum tune-up tolerance limits are defined as burst averaged values.

*2 Reported SAR (W/kg) = Measured SAR (W/kg) * Duty cycle scaling factor * Tune-up scaling factor

where;

Duty cycle scaling factor = Max. possible duty cycle (%) / Measured duty cycle used for the SAR measurement (%)

Tune-up scaling factor = Max. possible power (mW) (* equal to 100% duty cycle) / Measured power used for the SAR measurement (mW)

5. Simultaneous Transmission SAR evaluation

☒ **<SAR Summation Analysis>**

Simultaneous transmission SAR evaluation is determined according to KDB 447498 D01, Evaluation by summation of Reported SAR values, as the reference method.

1) If Reported SAR summation > 1.6W/kg, SAR test exclusion is determined by the SPLSR.
2) SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (minimum separation distance), and the peak separation distance is determined form the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$ where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR location in the zoom scan.
3) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.

RF Exposure Conditions	Test Position	(1) Wi-Fi 2.4 GHz Chain 0 (Measured)	(2) Wi-Fi 2.4 GHz Chain 1 (Measured)	(3) Wi-Fi 5 GHz Chain 0 (Measured)	(4) Wi-Fi 5 GHz Chain 1 (Measured)	(5) Bluetooth (Measured)	Σ 1-g SAR (W/kg)		
							(1) + (2)	(3) + (4)	(3) + (4) + (5)
Body-Worn	Front	0.003	0.034	0.016	0.381	N/D	0.037	0.397	0.397
	Front-Right	0.014	0.030	0.053	0.413	0.007	0.044	0.466	0.473
	Left	N/D	0.017	0.004	0.031	N/D	0.017	0.035	0.035
	Right	0.243	0.001	0.625	0.002	0.095	0.244	0.627	**0.722**
	Bottom	0.008	N/D	0.026	0.026	0.004	0.008	0.052	0.056

*N/D: Not Detected.

Appendix A. Plots of SAR Measurement

Please see the following pages.

Plot No. 1

Test Laboratory: Sony Global Manufacturing & Operations Corporation EMC/RF Test Laboratory Main Lab. 4th Site Shielded Room 3

Measurement Report for 1VY012_Wi-Fi 2.4 GHz(Chain 0_11b_1Mbps_11ch)_Right_0mm

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	Serial Number
1VY012 (Right)	103.6 x 77.8 x 129.7	0008265

Exposure Conditions

Phantom Section	TSL	Position	Test Distance [mm]	TSL Conductivity [S/m]	TSL Permittivity
Flat	Head Simulating Liquid	Right	0.00	1.77	40.5

Band	Group	Frequency [MHz]	Channel Number [Ch]	Conversion Factor
WLAN 2.4GHz	WLAN	2462.000	11	7.02

Hardware Setup

DASY8 Software Version	Phantom	TSL (Measured Date)	Probe (Calibration Date)
16.4.0.5005	ELI V5.0 (20deg probe tilt)- 1259	HBBL-600-10000 (2025-03-21)	EX3DV4 - SN7452 (2025-02-13)

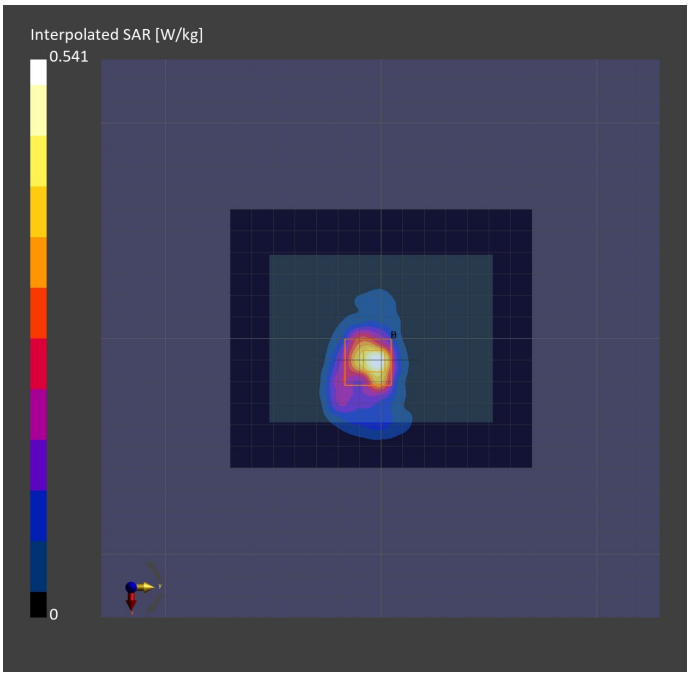
DAE (Calibration Date)
DAE4 Sn482 (2025-01-13)

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 140.0	30.0 x 30.0 x30.0
Grid Steps [mm]	10.0 x 10.0	5.0 x 5.0 x1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MAIA		N/A
Surface Detection		VMS + 6p
Scan Method		Measured

Measurement Results

	Area Scan	Zoom Scan
Date		2025-03-21
psSAR1g [W/kg]	0.236	0.218
psSAR10g [W/kg]	0.102	0.096
psAPD (1.0cm2, sq) [W/m2]	N/A	N/A
psAPD (4.0cm2, sq) [W/m2]	N/A	N/A
Power Drift [dB]		-0.03
Power Scaling		Disabled
TSL Correction		Positive only
M2/M1 [%]	N/A	73.7
Dist 3dB Peak [mm]	N/A	6.5



Plot No. 2

Test Laboratory: Sony Global Manufacturing & Operations Corporation EMC/RF Test Laboratory Main Lab. 4th Site Shielded Room 3

Measurement Report for 1VY012_Wi-Fi 2.4 GHz(Chain 1_11b_1Mbps_11ch)_Front_0mm

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	Serial Number
1VY012 (Front)	129.7 x 77.8 x 103.6	0008265

Exposure Conditions

Phantom Section	TSL	Position	Test Distance [mm]	TSL Conductivity [S/m]	TSL Permittivity
Flat	Head Simulating Liquid	Front	0.00	1.76	40.6

Band	Group	Frequency [MHz]	Channel Number [Ch]	Conversion Factor
WLAN 2.4GHz	WLAN	2462.000	11	7.51

Hardware Setup

DASY8 Software Version	Phantom	TSL (Measured Date)	Probe (Calibration Date)
16.4.0.5005	ELI V5.0 (20deg probe tilt)- 1259	HBBL-600-10000 (2025-04-07)	EX3DV4 - SN7372 (2024-06-18)

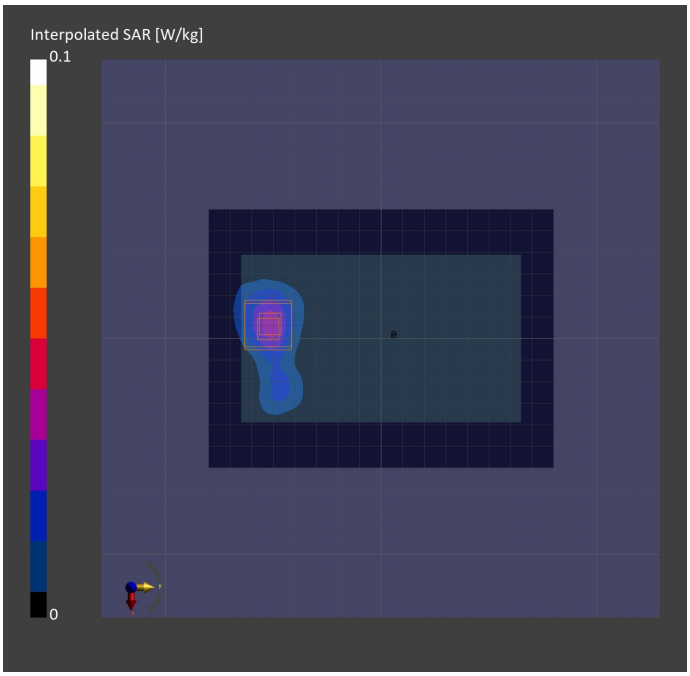
DAE (Calibration Date)
DAE4 Sn482 (2025-01-13)

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 160.0	30.0 x 30.0 x30.0
Grid Steps [mm]	10.0 x 10.0	5.0 x 5.0 x1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/AN/A	Yes
Grading Ratio	N/AN/A	1.5
MAIA		Y
Surface Detection		VMS + 6p
Scan Method		Measured

Measurement Results

	Area Scan	Zoom Scan
Date		2025-04-07
psSAR1g [W/kg]	0.029	0.031
psSAR10g [W/kg]	0.014	0.014
psAPD (1.0cm2, sq) [W/m2]	N/A	N/A
psAPD (4.0cm2, sq) [W/m2]	N/A	N/A
Power Drift [dB]		0.00
Power Scaling		Disabled
TSL Correction		Positive only
M2/M1 [%]	N/A	83.0
Dist 3dB Peak [mm]	N/A	9.1



Plot No. 3

Test Laboratory: Sony Global Manufacturing & Operations Corporation EMC/RF Test Laboratory Main Lab. 4th Site Shielded Room 3

Measurement Report for 1VY012_Wi-Fi 5.3 GHz(Chain 0_11ac_VHT80_MCS0_58ch)_Right_0mm

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	Serial Number
1VY012 (Right)	103.6 x 77.8 x 129.7	0008265

Exposure Conditions

Phantom Section	TSL	Position	Test Distance [mm]	TSL Conductivity [S/m]	TSL Permittivity
Flat	Head Simulating Liquid	Right	0.00	4.74	35.7

Band	Group	Frequency [MHz]	Channel Number [Ch]	Conversion Factor
WLAN 5GHz	WLAN	5290.000	58	5.38

Hardware Setup

DASY8 Software Version	Phantom	TSL (Measured Date)	Probe (Calibration Date)
16.4.0.5005	ELI V5.0 (20deg probe tilt)- 1259	HBBL-600-10000 (2025-03-19)	EX3DV4 - SN7452 (2025-02-13)

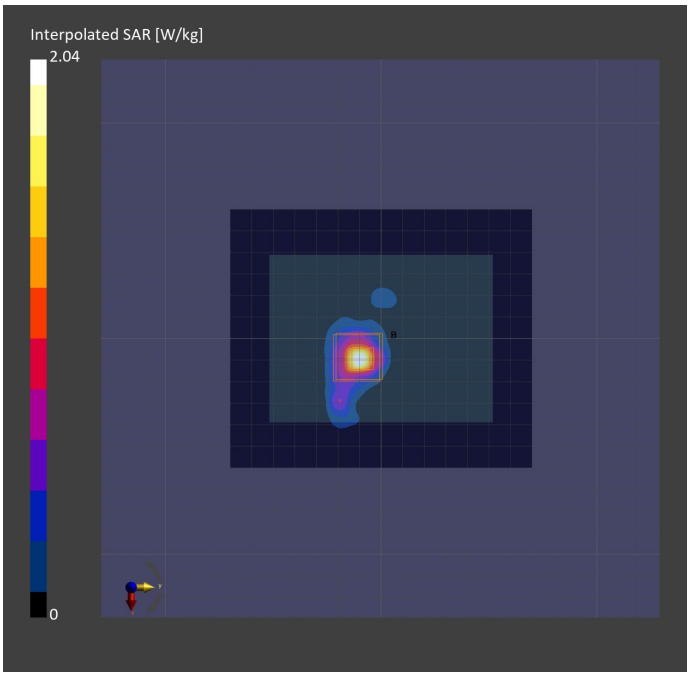
DAE (Calibration Date)
DAE4 Sn482 (2025-01-13)

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 140.0	22.0 x 22.0 x22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.4
MAIA		N/A
Surface Detection		VMS + 6p
Scan Method		Measured

Measurement Results

	Area Scan	Zoom Scan
Date		2025-03-19
psSAR1g [W/kg]	0.436	0.476
psSAR10g [W/kg]	0.128	0.133
psAPD (1.0cm2, sq) [W/m2]	N/A	N/A
psAPD (4.0cm2, sq) [W/m2]	N/A	N/A
Power Drift [dB]		0.10
Power Scaling		Disabled
TSL Correction		Positive only
M2/M1 [%]	N/A	63.7
Dist 3dB Peak [mm]	N/A	5.6



Plot No. 4

Test Laboratory: Sony Global Manufacturing & Operations Corporation EMC/RF Test Laboratory Main Lab. 4th Site Shielded Room 3

Measurement Report for 1VY012_Wi-Fi 5.3 GHz(Chain 1_11ac_VHT80_MCS0_58ch)_Front-Right_0mm

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	Serial Number
1VY012 (Front-Right)	140.0 x 77.8 x 103.6	0008265

Exposure Conditions

Phantom Section	TSL	Position	Test Distance [mm]	TSL Conductivity [S/m]	TSL Permittivity
Flat	Head Simulating Liquid	Front-Right	0.00	4.74	35.7

Band	Group	Frequency [MHz]	Channel Number [Ch]	Conversion Factor
WLAN 5GHz	WLAN	5290.000	58	5.38

Hardware Setup

DASY8 Software Version	Phantom	TSL (Measured Date)	Probe (Calibration Date)
16.4.0.5005	ELI V5.0 (20deg probe tilt)- 1259	HBBL-600-10000 (2025-03-19)	EX3DV4 - SN7452 (2025-02-13)

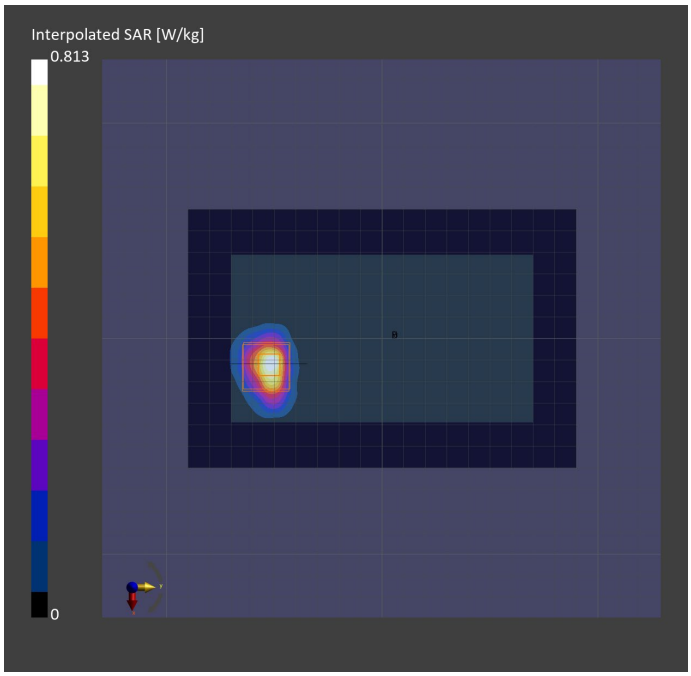
DAE (Calibration Date)
DAE4 Sn482 (2025-01-13)

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 180.0	22.0 x 22.0 x22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.4
MAIA		Y
Surface Detection		VMS + 6p
Scan Method		Measured

Measurement Results

	Area Scan	Zoom Scan
Date		2025-03-19
psSAR1g [W/kg]	0.188	0.196
psSAR10g [W/kg]	0.060	0.057
psAPD (1.0cm2, sq) [W/m2]	N/A	N/A
psAPD (4.0cm2, sq) [W/m2]	N/A	N/A
Power Drift [dB]		0.00
Power Scaling		Disabled
TSL Correction		Positive only
M2/M1 [%]	N/A	61.3
Dist 3dB Peak [mm]	N/A	6.4



Plot No. 5

Test Laboratory: Sony Global Manufacturing & Operations Corporation EMC/RF Test Laboratory Main Lab. 4th Site Shielded Room 3

Measurement Report for 1VY012_Wi-Fi 5.6 GHz(Chain 0_11ac_VHT80_MCS0_122ch)_Right_0mm

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	Serial Number
1VY012 (Right)	103.6 x 77.8 x 129.7	0008265

Exposure Conditions

Phantom Section	TSL	Position	Test Distance [mm]	TSL Conductivity [S/m]	TSL Permittivity
Flat	Head Simulating Liquid	Right	0.00	5.11	36.6

Band	Group	Frequency [MHz]	Channel Number [Ch]	Conversion Factor
WLAN 5GHz	WLAN	5610.000	122	4.19

Hardware Setup

DASY8 Software Version	Phantom	TSL (Measured Date)	Probe (Calibration Date)
16.4.0.5005	ELI V5.0 (20deg probe tilt)- 1259	HBBL-600-10000 (2025-04-09)	EX3DV4 - SN7372 (2024-06-18)

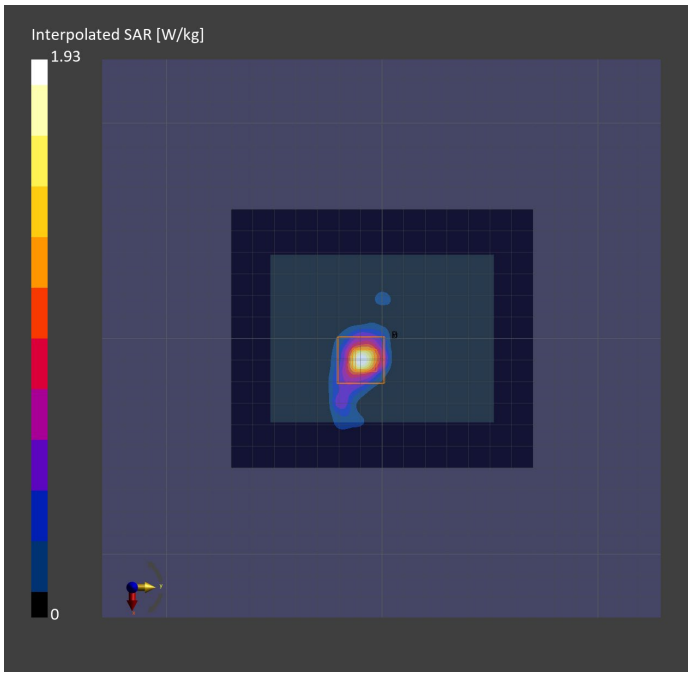
DAE (Calibration Date)
DAE4 Sn482 (2025-01-13)

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 140.0	22.0 x 22.0 x22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.4
MAIA		Y
Surface Detection		VMS + 6p
Scan Method		Measured

Measurement Results

	Area Scan	Zoom Scan
Date		2025-04-09
psSAR1g [W/kg]	0.391	0.433
psSAR10g [W/kg]	0.111	0.117
psAPD (1.0cm2, sq) [W/m2]	N/A	N/A
psAPD (4.0cm2, sq) [W/m2]	N/A	N/A
Power Drift [dB]		0.07
Power Scaling		Disabled
TSL Correction		Positive only
M2/M1 [%]	N/A	62.7
Dist 3dB Peak [mm]	N/A	6.1



Plot No. 6

Test Laboratory: Sony Global Manufacturing & Operations Corporation EMC/RF Test Laboratory Main Lab. 4th Site Shielded Room 3

Measurement Report for 1VY012_Wi-Fi 5.6 GHz(Chain 1_11ac_VHT80_MCS0_122ch)_Front-Right_0mm

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	Serial Number
1VY012 (Front-Right)	140.0 x 77.8 x 103.6	0008265

Exposure Conditions

Phantom Section	TSL	Position	Test Distance [mm]	TSL Conductivity [S/m]	TSL Permittivity
Flat	Head Simulating Liquid	Front-Right	0.00	5.17	36.6

Band	Group	Frequency [MHz]	Channel Number [Ch]	Conversion Factor
WLAN 5GHz	WLAN	5610.000	122	4.19

Hardware Setup

DASY8 Software Version	Phantom	TSL (Measured Date)	Probe (Calibration Date)
16.4.0.5005	ELI V5.0 (20deg probe tilt)- 1259	HBBL-600-10000 (2025-04-10)	EX3DV4 - SN7372 (2024-06-18)

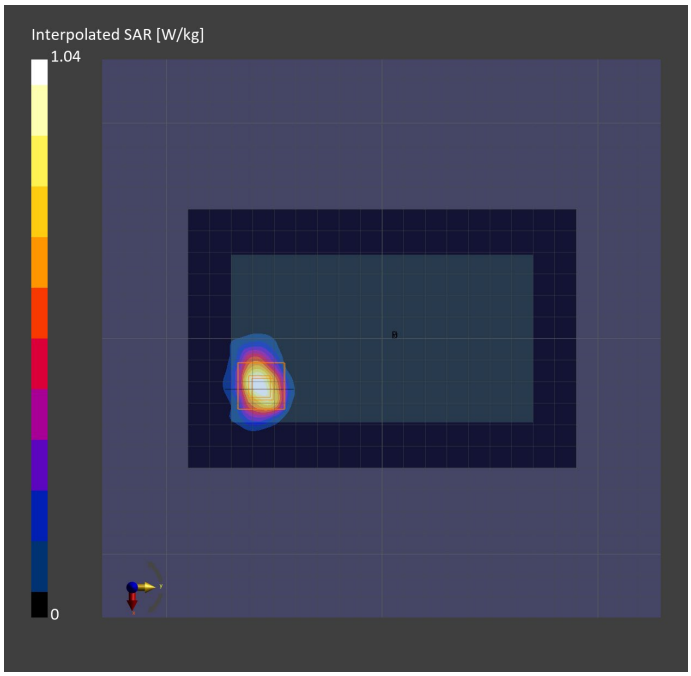
DAE (Calibration Date)
DAE4 Sn482 (2025-01-13)

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 180.0	22.0 x 22.0 x22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.4
MAIA		Y
Surface Detection		VMS + 6p
Scan Method		Measured

Measurement Results

	Area Scan	Zoom Scan
Date		2025-04-10
psSAR1g [W/kg]	0.219	0.247
psSAR10g [W/kg]	0.074	0.069
psAPD (1.0cm2, sq) [W/m2]	N/A	N/A
psAPD (4.0cm2, sq) [W/m2]	N/A	N/A
Power Drift [dB]		0.00
Power Scaling		Disabled
TSL Correction		Positive only
M2/M1 [%]	N/A	60.0
Dist 3dB Peak [mm]	N/A	6.5



Plot No. 7

Test Laboratory: Sony Global Manufacturing & Operations Corporation EMC/RF Test Laboratory Main Lab. 4th Site Shielded Room 3

Measurement Report for 1VY012_Wi-Fi 5.8 GHz(Chain 0_11ac_VHT80_MCS0_155ch)_Right_0mm

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	Serial Number
1VY012 (Right)	103.6 x 77.8 x 129.7	0008265

Exposure Conditions

Phantom Section	TSL	Position	Test Distance [mm]	TSL Conductivity [S/m]	TSL Permittivity
Flat	Head Simulating Liquid	Right	0.00	5.08	34.3

Band	Group	Frequency [MHz]	Channel Number [Ch]	Conversion Factor
WLAN 5GHz	WLAN	5775.000	155	5.08

Hardware Setup

DASY8 Software Version	Phantom	TSL (Measured Date)	Probe (Calibration Date)
16.4.0.5005	ELI V5.0 (20deg probe tilt)- 1259	HBBL-600-10000 (2025-03-17)	EX3DV4 - SN7452 (2025-02-13)

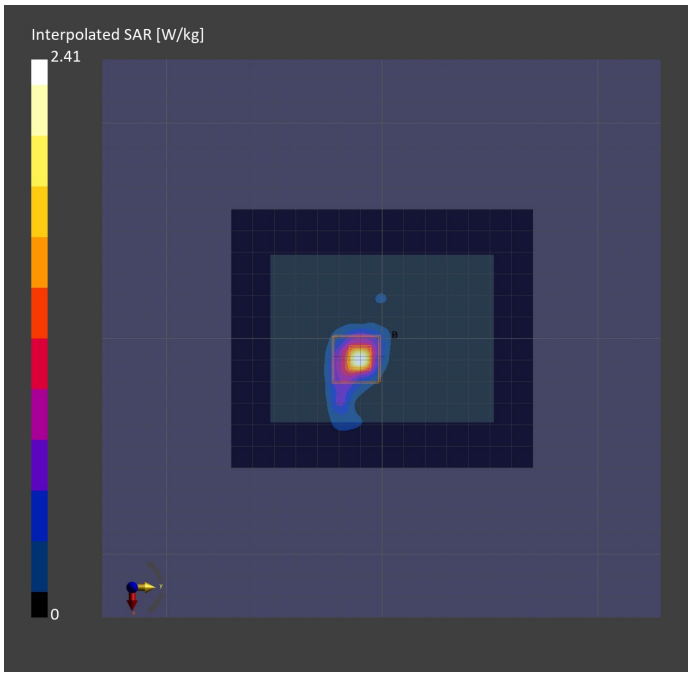
DAE (Calibration Date)
DAE4 Sn482 (2025-01-13)

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 140.0	22.0 x 22.0 x22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.4
MAIA		N/A
Surface Detection		VMS + 6p
Scan Method		Measured

Measurement Results

	Area Scan	Zoom Scan
Date		2025-03-17
psSAR1g [W/kg]	0.473	0.497
psSAR10g [W/kg]	0.132	0.134
psAPD (1.0cm2, sq) [W/m2]	N/A	N/A
psAPD (4.0cm2, sq) [W/m2]	N/A	N/A
Power Drift [dB]		-0.18
Power Scaling		Disabled
TSL Correction		Positive only
M2/M1 [%]	N/A	59.6
Dist 3dB Peak [mm]	N/A	5.7



Plot No. 8

Test Laboratory: Sony Global Manufacturing & Operations Corporation EMC/RF Test Laboratory Main Lab. 4th Site Shielded Room 3

Measurement Report for 1VY012_Wi-Fi 5.8 GHz(Chain 1_11ac_VHT80_MCS0_155ch)_Front-Right_0mm

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	Serial Number
1VY012 (Front-Right)	140.0 x 77.8 x 103.6	0008265

Exposure Conditions

Phantom Section	TSL	Position	Test Distance [mm]	TSL Conductivity [S/m]	TSL Permittivity
Flat	Head Simulating Liquid	Front-Right	0.00	5.21	34.8

Band	Group	Frequency [MHz]	Channel Number [Ch]	Conversion Factor
WLAN 5GHz	WLAN	5775.000	155	5.08

Hardware Setup

DASY8 Software Version	Phantom	TSL (Measured Date)	Probe (Calibration Date)
16.4.0.5005	ELI V5.0 (20deg probe tilt)- 1259	HBBL-600-10000 (2025-03-21)	EX3DV4 - SN7452 (2025-02-13)

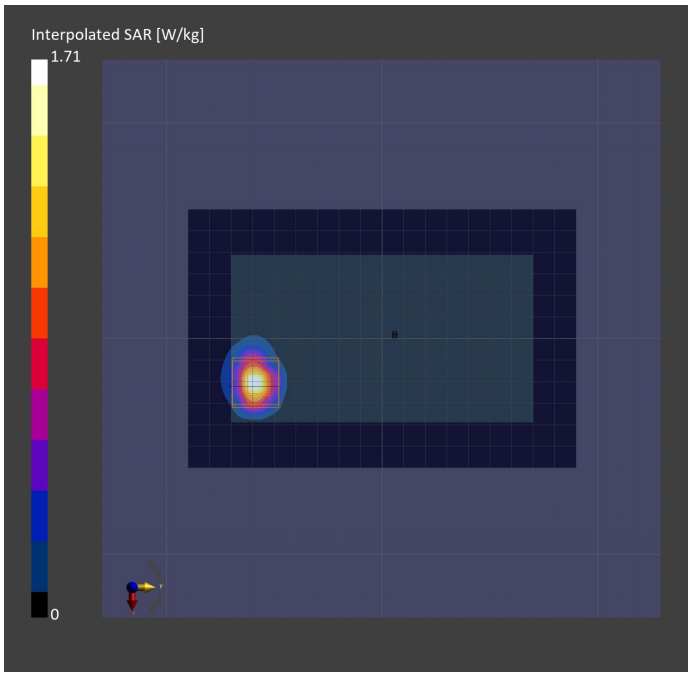
DAE (Calibration Date)
DAE4 Sn482 (2025-01-13)

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 180.0	22.0 x 22.0 x22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.4
MAIA		Y
Surface Detection		VMS + 6p
Scan Method		Measured

Measurement Results

	Area Scan	Zoom Scan
Date		2025-03-21
psSAR1g [W/kg]	0.320	0.362
psSAR10g [W/kg]	0.093	0.094
psAPD (1.0cm2, sq) [W/m2]	N/A	N/A
psAPD (4.0cm2, sq) [W/m2]	N/A	N/A
Power Drift [dB]		0.00
Power Scaling		Disabled
TSL Correction		Positive only
M2/M1 [%]	N/A	60.2
Dist 3dB Peak [mm]	N/A	6.4



Plot No. 9

Test Laboratory: Sony Global Manufacturing & Operations Corporation EMC/RF Test Laboratory Main Lab. 4th Site Shielded Room 3

Measurement Report for 1VY012_Bluetooth LE(1Mbps_39ch)_Right_0mm

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	Serial Number
1VY012 (Right)	103.6 x 77.8 x 129.7	0008265

Exposure Conditions

Phantom Section	TSL	Position	Test Distance [mm]	TSL Conductivity [S/m]	TSL Permittivity
Flat	Head Simulating Liquid	Right	0.00	1.76	39.6

Band	Group	Frequency [MHz]	Channel Number [Ch]	Conversion Factor
ISM 2.4 GHz Band	Bluetooth LE	2480.000	39	7.02

Hardware Setup

DASY8 Software Version	Phantom	TSL (Measured Date)	Probe (Calibration Date)
16.4.0.5005	ELI V5.0 (20deg probe tilt)- 1259	HBBL-600-10000 (2025-03-11)	EX3DV4 - SN7452 (2025-02-13)

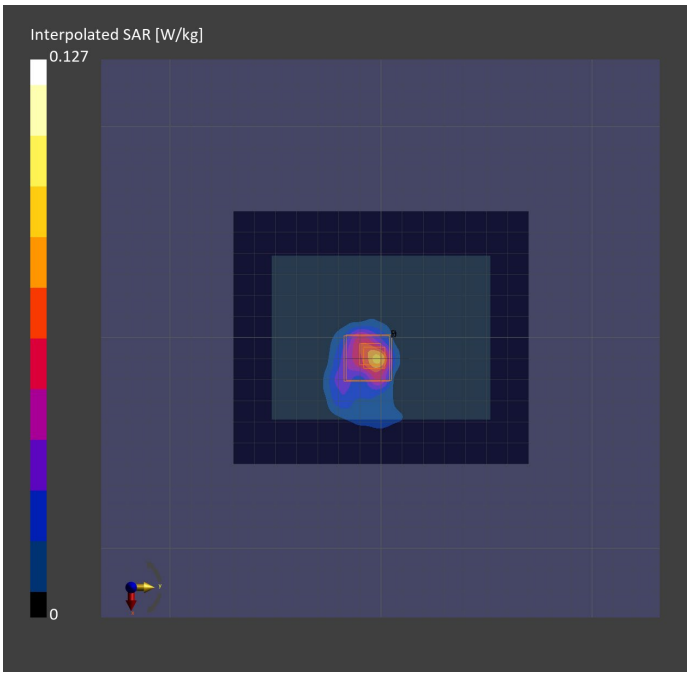
DAE (Calibration Date)
DAE4 Sn482 (2025-01-13)

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 140.0	30.0 x 30.0 x30.0
Grid Steps [mm]	10.0 x 10.0	5.0 x 5.0 x1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MAIA		Y
Surface Detection		VMS + 6p
Scan Method		Measured

Measurement Results

	Area Scan	Zoom Scan
Date		2025-03-11
psSAR1g [W/kg]	0.051	0.049
psSAR10g [W/kg]	0.022	0.020
psAPD (1.0cm2, sq) [W/m2]	N/A	N/A
psAPD (4.0cm2, sq) [W/m2]	N/A	N/A
Power Drift [dB]		-0.06
Power Scaling		Disabled
TSL Correction		Positive only
M2/M1 [%]	N/A	71.4
Dist 3dB Peak [mm]	N/A	5.9



Appendix B. Plots of System Check

Please see the following pages.

Test Laboratory: Sony Global Manufacturing & Operations Corporation EMC/RF Test Laboratory Main Lab. 4th Site Shielded Room 3

Measurement Report for System Check_D2450_HSL (1)

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	Serial Number
D2450V2 - SN936	50.0 x 10.0 x 290.0	-

Exposure Conditions

Phantom Section	TSL	Position	Test Distance [mm]	TSL Conductivity [S/m]	TSL Permittivity
Flat	Head Simulating Liquid	-	-	1.73	39.7

Band	Group	Frequency [MHz]	Channel Number [Ch]	Conversion Factor
-	CW	2450.000	0	7.02

Hardware Setup

DASY8 Software Version	Phantom	TSL (Measured Date)	Probe (Calibration Date)
16.4.0.5005	ELI V5.0 (20deg probe tilt)- 1259	HBBL-600-10000 (2025-03-11)	EX3DV4 - SN7452 (2025-02-13)

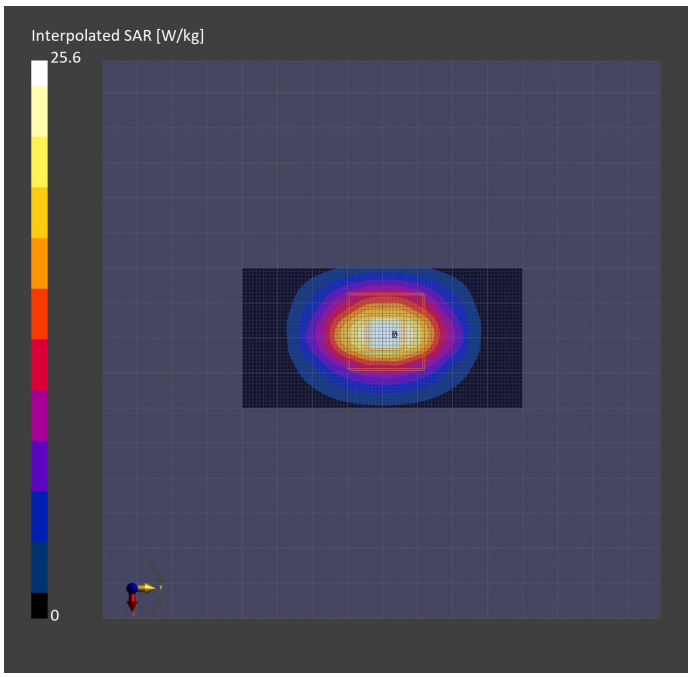
DAE (Calibration Date)
DAE4 Sn482 (2025-01-13)

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 80.0	30.0 x 30.0 x30.0
Grid Steps [mm]	10.0 x 10.0	5.0 x 5.0 x1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MAIA		N/A
Surface Detection		VMS + 6p
Scan Method		Measured

Measurement Results

	Area Scan	Zoom Scan
Date		2025-03-11
psSAR1g [W/kg]	13.6	13.3
psSAR10g [W/kg]	6.29	6.28
psAPD (1.0cm2, sq) [W/m2]	N/A	N/A
psAPD (4.0cm2, sq) [W/m2]	N/A	N/A
Power Drift [dB]		-0.02
Power Scaling		Disabled
TSL Correction		Positive only
M2/M1 [%]	N/A	82.9
Dist 3dB Peak [mm]	N/A	9.0



Test Laboratory: Sony Global Manufacturing & Operations Corporation EMC/RF Test Laboratory Main Lab. 4th Site Shielded Room 3

Measurement Report for System Check_D2450_HSL (2)

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	Serial Number
D2450V2 - SN936	50.0 x 10.0 x 290.0	-

Exposure Conditions

Phantom Section	TSL	Position	Test Distance [mm]	TSL Conductivity [S/m]	TSL Permittivity
Flat	Head Simulating Liquid	-	-	1.76	40.5

Band	Group	Frequency [MHz]	Channel Number [Ch]	Conversion Factor
-	CW	2450.000	0	7.02

Hardware Setup

DASY8 Software Version	Phantom	TSL (Measured Date)	Probe (Calibration Date)
16.4.0.5005	ELI V5.0 (20deg probe tilt)- 1259	HBBL-600-10000 (2025-03-21)	EX3DV4 - SN7452 (2025-02-13)

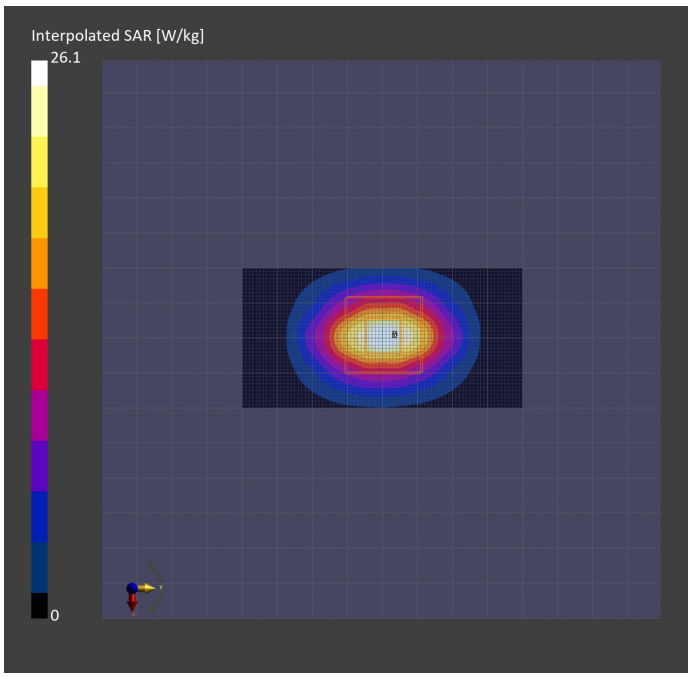
DAE (Calibration Date)
DAE4 Sn482 (2025-01-13)

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 80.0	30.0 x 30.0 x30.0
Grid Steps [mm]	10.0 x 10.0	5.0 x 5.0 x1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MAIA		N/A
Surface Detection		VMS + 6p
Scan Method		Measured

Measurement Results

	Area Scan	Zoom Scan
Date		2025-03-21
psSAR1g [W/kg]	13.9	13.5
psSAR10g [W/kg]	6.36	6.37
psAPD (1.0cm2, sq) [W/m2]	N/A	N/A
psAPD (4.0cm2, sq) [W/m2]	N/A	N/A
Power Drift [dB]		0.01
Power Scaling		Disabled
TSL Correction		Positive only
M2/M1 [%]	N/A	82.8
Dist 3dB Peak [mm]	N/A	9.0



Test Laboratory: Sony Global Manufacturing & Operations Corporation EMC/RF Test Laboratory Main Lab. 4th Site Shielded Room 3

Measurement Report for System Check_D2450_HSL (3)

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	Serial Number
D2450V2 - SN936	50.0 x 10.0 x 290.0	-

Exposure Conditions

Phantom Section	TSL	Position	Test Distance [mm]	TSL Conductivity [S/m]	TSL Permittivity
Flat	Head Simulating Liquid	-	-	1.75	40.7

Band	Group	Frequency [MHz]	Channel Number [Ch]	Conversion Factor
-	CW	2450.000	0	7.51

Hardware Setup

DASY8 Software Version	Phantom	TSL (Measured Date)	Probe (Calibration Date)
16.4.0.5005	ELI V5.0 (20deg probe tilt)- 1259	HBBL-600-10000 (2025-04-07)	EX3DV4 - SN7372 (2024-06-18)

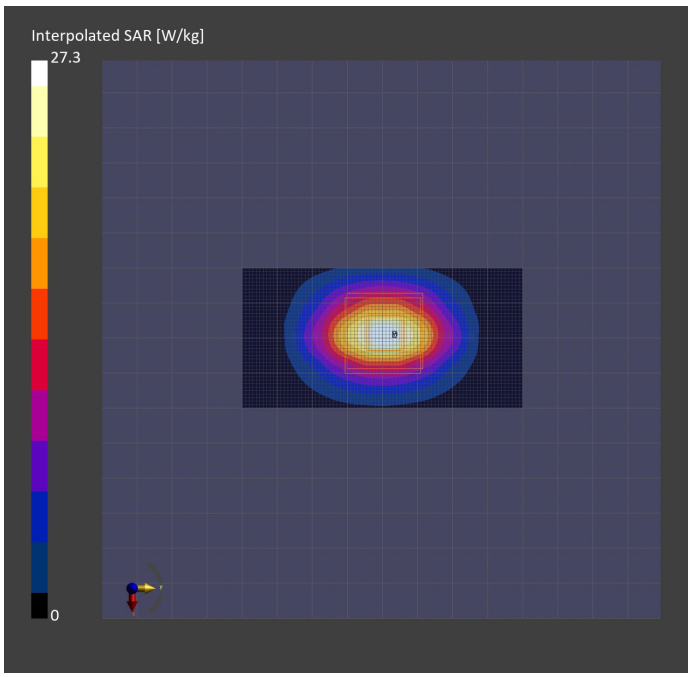
DAE (Calibration Date)
DAE4 Sn482 (2025-01-13)

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 80.0	30.0 x 30.0 x30.0
Grid Steps [mm]	10.0 x 10.0	5.0 x 5.0 x1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MAIA		N/A
Surface Detection		VMS + 6p
Scan Method		Measured

Measurement Results

	Area Scan	Zoom Scan
Date		2025-04-07
psSAR1g [W/kg]	13.8	13.4
psSAR10g [W/kg]	6.41	6.28
psAPD (1.0cm2, sq) [W/m2]	N/A	N/A
psAPD (4.0cm2, sq) [W/m2]	N/A	N/A
Power Drift [dB]		-0.05
Power Scaling		Disabled
TSL Correction		Positive only
M2/M1 [%]	N/A	80.9
Dist 3dB Peak [mm]	N/A	9.0



Test Laboratory: Sony Global Manufacturing & Operations Corporation EMC/RF Test Laboratory Main Lab. 4th Site Shielded Room 3

Measurement Report for System Check_D5300_HSL

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	Serial Number
D5GHzV2 - SN1183	50.0 x 10.0 x 300.0	-

Exposure Conditions

Phantom Section	TSL	Position	Test Distance [mm]	TSL Conductivity [S/m]	TSL Permittivity
Flat	Head Simulating Liquid	-	-	4.76	35.7

Band	Group	Frequency [MHz]	Channel Number [Ch]	Conversion Factor
-	CW	5300.000	0	5.38

Hardware Setup

DASY8 Software Version	Phantom	TSL (Measured Date)	Probe (Calibration Date)
16.4.0.5005	ELI V5.0 (20deg probe tilt)- 1259	HBBL-600-10000 (2025-03-19)	EX3DV4 - SN7452 (2025-02-13)

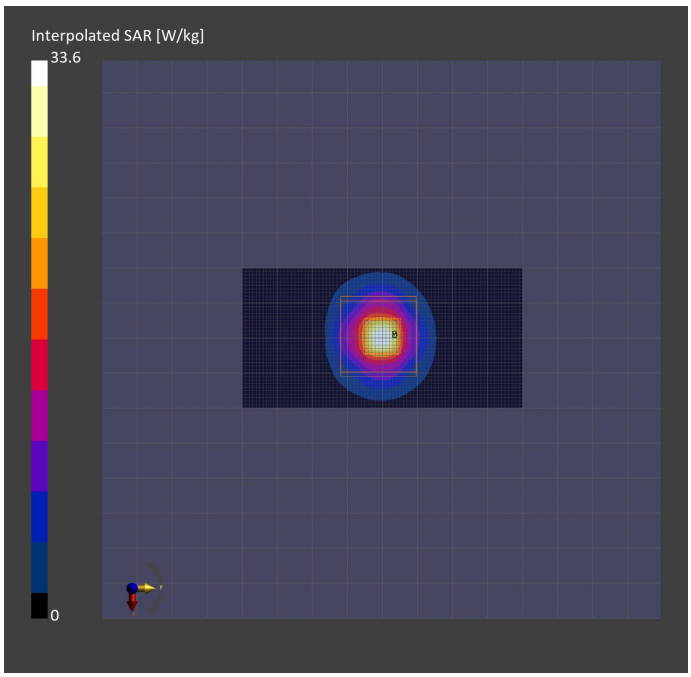
DAE (Calibration Date)
DAE4 Sn482 (2025-01-13)

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 80.0	22.0 x 22.0 x22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.4
MAIA		N/A
Surface Detection		VMS + 6p
Scan Method		Measured

Measurement Results

	Area Scan	Zoom Scan
Date		2025-03-19
psSAR1g [W/kg]	7.67	7.89
psSAR10g [W/kg]	2.16	2.25
psAPD (1.0cm2, sq) [W/m2]	N/A	N/A
psAPD (4.0cm2, sq) [W/m2]	N/A	N/A
Power Drift [dB]		0.06
Power Scaling		Disabled
TSL Correction		Positive only
M2/M1 [%]	N/A	62.8
Dist 3dB Peak [mm]	N/A	7.3



Test Laboratory: Sony Global Manufacturing & Operations Corporation EMC/RF Test Laboratory Main Lab. 4th Site Shielded Room 3

Measurement Report for System Check_D5600_HSL (1)

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	Serial Number
D5GHzV2 - SN1183	50.0 x 10.0 x 300.0	-

Exposure Conditions

Phantom Section	TSL	Position	Test Distance [mm]	TSL Conductivity [S/m]	TSL Permittivity
Flat	Head Simulating Liquid	-	-	5.09	36.6

Band	Group	Frequency [MHz]	Channel Number [Ch]	Conversion Factor
-	CW	5600.000	0	4.19

Hardware Setup

DASY8 Software Version	Phantom	TSL (Measured Date)	Probe (Calibration Date)
16.4.0.5005	ELI V5.0 (20deg probe tilt)- 1259	HBBL-600-10000 (2025-04-09)	EX3DV4 - SN7372 (2024-06-18)

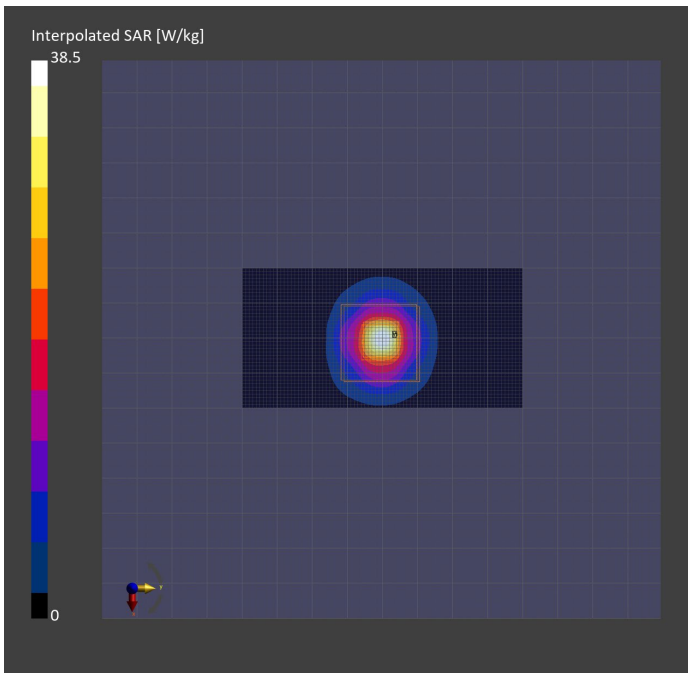
DAE (Calibration Date)
DAE4 Sn482 (2025-01-13)

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 80.0	22.0 x 22.0 x22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.4
MAIA		N/A
Surface Detection		VMS + 6p
Scan Method		Measured

Measurement Results

	Area Scan	Zoom Scan
Date		2025-04-09
psSAR1g [W/kg]	8.67	8.91
psSAR10g [W/kg]	2.44	2.54
psAPD (1.0cm2, sq) [W/m2]	N/A	N/A
psAPD (4.0cm2, sq) [W/m2]	N/A	N/A
Power Drift [dB]		0.02
Power Scaling		Disabled
TSL Correction		Positive only
M2/M1 [%]	N/A	62.2
Dist 3dB Peak [mm]	N/A	7.4



Test Laboratory: Sony Global Manufacturing & Operations Corporation EMC/RF Test Laboratory Main Lab. 4th Site Shielded Room 3

Measurement Report for System Check_D5600_HSL (2)

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	Serial Number
D5GHzV2 - SN1183	50.0 x 10.0 x 300.0	-

Exposure Conditions

Phantom Section	TSL	Position	Test Distance [mm]	TSL Conductivity [S/m]	TSL Permittivity
Flat	Head Simulating Liquid	-	-	5.14	36.6

Band	Group	Frequency [MHz]	Channel Number [Ch]	Conversion Factor
-	CW	5600.000	0	4.19

Hardware Setup

DASY8 Software Version	Phantom	TSL (Measured Date)	Probe (Calibration Date)
16.4.0.5005	ELI V5.0 (20deg probe tilt)- 1259	HBBL-600-10000 (2025-04-10)	EX3DV4 - SN7372 (2024-06-18)

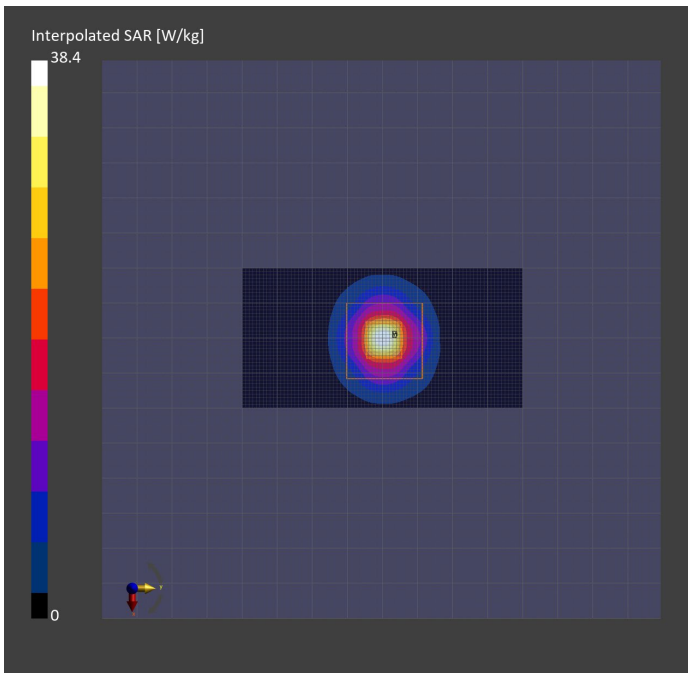
DAE (Calibration Date)
DAE4 Sn482 (2025-01-13)

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 80.0	22.0 x 22.0 x22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.4
MAIA		N/A
Surface Detection		VMS + 6p
Scan Method		Measured

Measurement Results

	Area Scan	Zoom Scan
Date		2025-04-10
psSAR1g [W/kg]	8.72	8.92
psSAR10g [W/kg]	2.45	2.56
psAPD (1.0cm2, sq) [W/m2]	N/A	N/A
psAPD (4.0cm2, sq) [W/m2]	N/A	N/A
Power Drift [dB]		0.08
Power Scaling		Disabled
TSL Correction		Positive only
M2/M1 [%]	N/A	62.1
Dist 3dB Peak [mm]	N/A	7.2



Test Laboratory: Sony Global Manufacturing & Operations Corporation EMC/RF Test Laboratory Main Lab. 4th Site Shielded Room 3

Measurement Report for System Check_D5800_HSL (1)

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	Serial Number
D5GHzV2 - SN1183	50.0 x 10.0 x 300.0	-

Exposure Conditions

Phantom Section	TSL	Position	Test Distance [mm]	TSL Conductivity [S/m]	TSL Permittivity
Flat	Head Simulating Liquid	-	-	5.09	34.3

Band	Group	Frequency [MHz]	Channel Number [Ch]	Conversion Factor
-	CW	5800.000	0	5.08

Hardware Setup

DASY8 Software Version	Phantom	TSL (Measured Date)	Probe (Calibration Date)
16.4.0.5005	ELI V5.0 (20deg probe tilt)- 1259	HBBL-600-10000 (2025-03-17)	EX3DV4 - SN7452 (2025-02-13)

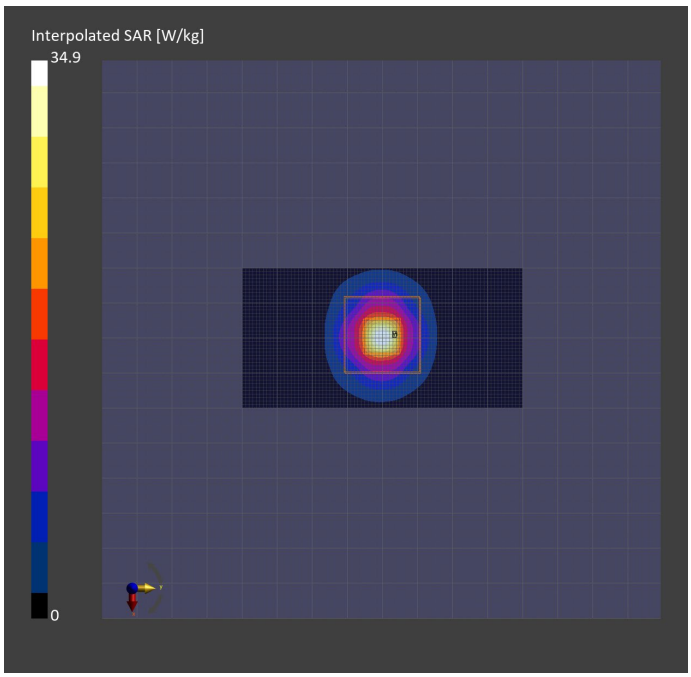
DAE (Calibration Date)
DAE4 Sn482 (2025-01-13)

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 80.0	22.0 x 22.0 x22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.4
MAIA		N/A
Surface Detection		VMS + 6p
Scan Method		Measured

Measurement Results

	Area Scan	Zoom Scan
Date		2025-03-17
psSAR1g [W/kg]	6.71	7.40
psSAR10g [W/kg]	1.88	2.09
psAPD (1.0cm2, sq) [W/m2]	N/A	N/A
psAPD (4.0cm2, sq) [W/m2]	N/A	N/A
Power Drift [dB]		0.19
Power Scaling		Disabled
TSL Correction		Positive only
M2/M1 [%]	N/A	58.8
Dist 3dB Peak [mm]	N/A	7.2



Test Laboratory: Sony Global Manufacturing & Operations Corporation EMC/RF Test Laboratory Main Lab. 4th Site Shielded Room 3

Measurement Report for System Check_D5800_HSL (2)

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	Serial Number
D5GHzV2 - SN1183	50.0 x 10.0 x 300.0	-

Exposure Conditions

Phantom Section	TSL	Position	Test Distance [mm]	TSL Conductivity [S/m]	TSL Permittivity
Flat	Head Simulating Liquid	-	-	5.20	34.9

Band	Group	Frequency [MHz]	Channel Number [Ch]	Conversion Factor
-	CW	5800.000	0	5.08

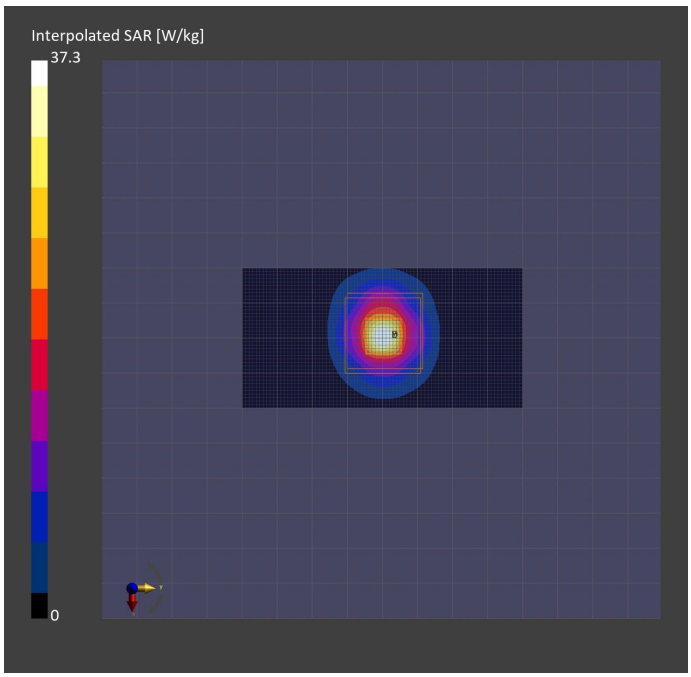
Hardware Setup

DASY8 Software Version	Phantom	TSL (Measured Date)	Probe (Calibration Date)
16.4.0.5005	ELI V5.0 (20deg probe tilt)- 1259	HBBL-600-10000 (2025-03-21)	EX3DV4 - SN7452 (2025-02-13)

DAE (Calibration Date)
DAE4 Sn482 (2025-01-13)

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 80.0	22.0 x 22.0 x22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.4
MAIA		N/A
Surface Detection		VMS + 6p
Scan Method		Measured

Measurement Results

	Area Scan	Zoom Scan
Date		2025-03-21
psSAR1g [W/kg]	7.54	7.77
psSAR10g [W/kg]	2.13	2.21
psAPD (1.0cm2, sq) [W/m2]	N/A	N/A
psAPD (4.0cm2, sq) [W/m2]	N/A	N/A
Power Drift [dB]		-0.08
Power Scaling		Disabled
TSL Correction		Positive only
M2/M1 [%]	N/A	58.1
Dist 3dB Peak [mm]	N/A	7.3