SAR Compliance Test Report

Date of Report:	19/03/2025	**Client's Contact person:**	Pekko Ruippo
Number of pages:	57	**Responsible Test engineer:**	Kalle Orava
Testing laboratory:	**Verkotan Oy** Elektroniikkatie 17 90590 Oulu Finland	**Client:**	**GE Healthcare Finland oy** Kuortaneenkatu 2 00510 Helsinki Finland
Tested device:	**Carescape ONE**		
Related reports:	FCC_RF Exposure Evaluation_WSI module _ID6894_03022025		
Testing has been carried out in accordance with:	**47CFR §2.1093** Radiofrequency Radiation Exposure Evaluation: Portable Devices **KDB 447498 D01 General RF Exposure Guidance v06** **KDB 248227 D01 802.11 Wi-Fi SAR v02r02** **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		
Documentation:	The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory		
Test Results:	**The EUT complies with the requirements in respect of all parameters subject to the test.** The test results relate only to devices specified in this document		
Date and signatures:	19.03.2025 **Laboratory Manager** Miia Nurkkala		

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1. SUMMARY OF SAR TEST REPORT

1.1 Test Details

Device under Test (DUT):

Product:	Patient monitor
Manufacturer:	GE Healthcare Finland oy
Model:	Carescape ONE
Serial Number:	SXG24230012HP, SXG24210012HP
Hardware Version:	2
FCC ID Number:	Contains FCC ID OU5MULW01 and 2AO8L-WSI01
DUT Number:	20214, 20216
Battery Type used in testing:	Li-Ion Battery
State of the Sample:	Production sample

Testing information:

Testing performed:	16.12.2024 - 30.12.2024
Notes:	Fixed MBAN output power value
Document history & changes:	This document replaces report with ID "FCC_SAR report_Carescape ONE ID6952_26022025".
Document ID:	FCC_SAR report_Carescape ONE ID6952_19032025.docx
Temperature °C	22±2 / Controlled
Humidity RH%	30±20 / Controlled
Measurement performed by:	Kalle Orava, Kirsi Kyllönen
FCC Test Firm Designation Number:	FI0005

1.2 Maximum Results

The maximum reported* SAR values for Extremity-configuration for transmitting systems are shown in a table below. The device conforms to the requirements of the standards when the maximum reported SAR value is less than or equal to the limit. The SAR limit specified in FCC 47 CFR part 2 (2.1093) for Extremity SAR_{10g} is 4.0 W/kg.

1.2.1 Standalone SAR

WLAN Module:

System	Highest Reported* SAR_{10g}[W/kg] in Extremity Exposure Condition, 0mm separation distance	Result
2.4 GHz WLAN	**0.48**	**PASS**
5 GHz WLAN	**0.68**	**PASS**

* Reported SAR Values are scaled to upper limit of power tuning tolerance.

WSI Module:

System	Estimated* SAR_{10g}[W/kg] in Extremity Exposure Condition, 0mm separation distance	Result
MBAN	**0.13**	**PASS**
NFC	**0.001**	**PASS**

* According to KDB 447498 D01 General RF Exposure Guidance v06, section 4.3.1

1.2.2 Simultaneous Transmission SAR

Highest Simultaneous Transmission SAR	SAR_{10g}[W/kg] in Extremity Exposure Condition	Result
5GHz WLAN + MBAN + NFC	**0.81**	**PASS**

1.2.3 Maximum Drift

Maximum Drift During Measurements	-0.82 dB*

*Larger than 5% drifts included to scaling factors

1.2.4 Measurement Uncertainty

SAR 10g: IEC 62209-1528 (3 GHz – 6 GHz)

Expanded Uncertainty (k=2) 95 %	±23.0 %

SAR 10g: 0.3 – 3 GHz:

Expanded Uncertainty (k=2) 95 %	±21.9 %

2. DESCRIPTION OF THE DEVICE UNDER TEST (DUT)

The DUT is a patient monitor used by clinicians. It has a touch screen and a handle for easy movement of the monitor. Typically, the monitor is installed to a patient's bedside further than 20 cm from the patient.

The DUT has two radio modules. A WLAN module (FCC ID OU5MULW01) containing 2.4 GHz & 5GHz WLAN technology and WSI module (FCC ID 2AO8L-WSI01) containing MBAN and NFC technology. Both WLAN and MBAN use two antennas. MIMO transmission is supported by 2.4GHz WLAN.

The WSI module is a GEHC radio product that enables a host device to communicate with GEHC wireless sensors. The operation utilizes GEHC's proprietary MBAN radio technology for patient data transfer and NFC radio technology for device pairing.

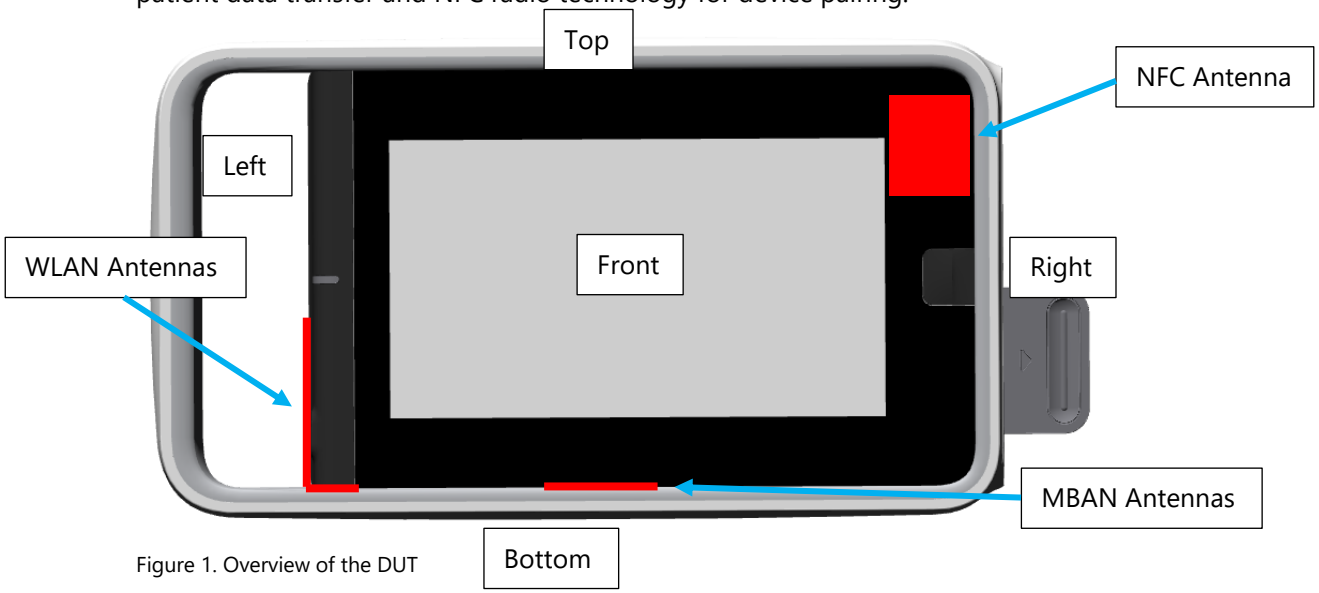


Figure 1. Overview of the DUT

Device Category	Portable
Exposure Environment	General population uncontrolled

2.1 Supported Frequency Bands and Operational Modes

WLAN module:

TX Frequency bands	Modes of Operation	Transmitter Frequency Range [MHz]
	2.4GHz WLAN	2412 – 2472
	5GHz WLAN	5180 – 5825*

*Used frequency depends on regional regulation.

WSI module:

TX Frequency bands	Modes of Operation	Transmitter Frequency Range [MHz]
	MBAN	2360 – 2500*
	NFC	13.56

*Used frequency depends on regional regulation.

2.2 Test Exemptions

Size of the DUT is 240 x 150 x 60 mm. Due to the large size of the DUT; all edges were not tested. Test exemptions were made based on antenna to edge separation distance according to KDB 447498 D01 General RF Exposure Guidance v06, section 4.3.1. The touch screen (front) was SAR tested for all WLAN bands as using the screen a common use case.

2.2.1 SISO Antenna 1

	Test Edge	Operation mode	Frequency range [MHz]	Antenna to edge distance [mm]	SAR test required [According to section 4.3.1]
Antenna 1	Left	802.11n	2412 - 2472	6.96	Yes
	Right	802.11n	2412 - 2472	196.85	No
	Top	802.11n	2412 - 2472	73.94	No
	Bottom	802.11n	2412 - 2472	28.27	No
	Back	802.11n	2412 - 2472	22.00	No
	Left	U-NII-2A	5250 - 5350	6.96	Yes
	Right	U-NII-2A	5250 - 5350	196.85	No
	Top	U-NII-2A	5250 - 5350	73.94	No
	Bottom	U-NII-2A	5250 - 5350	28.27	No
	Back	U-NII-2A	5250 - 5350	22.00	No
	Left	U-NII-2C	5470 - 5725	6.96	Yes
	Right	U-NII-2C	5470 - 5725	196.85	No
	Top	U-NII-2C	5470 - 5725	73.94	No
	Bottom	U-NII-2C	5470 - 5725	28.27	No
	Back	U-NII-2C	5470 - 5725	22.00	No

	Left	U-NII-3	5725 - 5835	6.96	Yes
	Right	U-NII-3	5725 - 5835	196.85	No
	Top	U-NII-3	5725 - 5835	73.94	No
	Bottom	U-NII-3	5725 - 5835	28.27	No
	Back	U-NII-3	5725 - 5835	22.00	No

2.2.2 SISO Antenna 2

	Test	Operation mode	Frequency range [MHz]	Antenna to edge distance [mm]	SAR test required [According to section 4.3.1]
Antenna 2	Left	U-NII-2A	5250 - 5350	6.96	Yes
	Right	U-NII-2A	5250 - 5350	196.97	No
	Top	U-NII-2A	5250 - 5350	112.00	No
	Bottom	U-NII-2A	5250 - 5350	7.38	Yes
	Back	U-NII-2A	5250 - 5350	15.92	No
	Left	U-NII-2C	5470 - 5725	6.96	Yes
	Right	U-NII-2C	5470 - 5725	196.97	No
	Top	U-NII-2C	5470 - 5725	112.00	No
	Bottom	U-NII-2C	5470 - 5725	7.38	Yes
	Back	U-NII-2C	5470 - 5725	15.92	No
	Left	U-NII-3	5725 - 5835	6.96	Yes
	Right	U-NII-3	5725 - 5835	196.97	No
	Top	U-NII-3	5725 - 5835	112.00	No
	Bottom	U-NII-3	5725 - 5835	7.38	Yes
	Back	U-NII-3	5725 - 5835	15.92	No

2.2.3 MIMO

	Test Position	Operation mode	Frequency range [MHz]	Closest antenna to edge distance [mm]	SAR test required [According to section 4.3.1]
MIMO	Left	802.11n	2412 - 2472	6.96	Yes
	Right	802.11n	2412 - 2472	196.85	No
	Top	802.11n	2412 - 2472	73.94	No
	Bottom	802.11n	2412 - 2472	7.38	Yes
	Back	802.11n	2412 - 2472	15.92	No

2.3 Simultaneous transmission

WLAN, MBAN and NFC can be operated simultaneously.

Possible simultaneous transmissions are:

- 2.4 GHz WLAN SISO, MBAN
- 2.4 GHz WLAN SISO, NFC
- 2.4 GHz WLAN SISO, MBAN, NFC
- 2.4 GHz WLAN MIMO, MBAN
- 2.4 GHz WLAN MIMO, NFC
- 2.4 GHz WLAN MIMO, MBAN, NFC
- 5 GHZ WLAN SISO, MBAN
- 5 GHZ WLAN SISO, NFC
- 5 GHZ WLAN SISO, MBAN, NFC
- MBAN, NFC

3. OUTPUT POWER

3.1 Maximum specified conducted output power

From the customer, including tune-up tolerances.

WLAN Module:

2.4GHz WLAN	Max Output Power [dBm]
802.11b	16.5
802.11n 40MHz	16.5
802.11n MIMO, antenna ports A+B	16.5
802.11n MIMO, per antenna	13.5

5GHz WLAN	Max Output Power [dBm]
802.11a	15.5

WSI Module:

NFC	Max Output Power [dBm]
13.56 MHz	30.37

MBAN	Max Output Power [dBm]
2360 – 2500 MHz	12

3.2 Tested conducted power

Measured conducted output power at transmitting antenna connector.

2.4 GHz WLAN:

Standard	Bandwidth [MHz]	Antenna	Transmission mode	Data rate	Output power [dBm]		
					2422 MHz	2437 MHz	2452 MHz
802.11n	40	A	OFDM	MCS0	9.22	13.48	9.25

Standard	Bandwidth [MHz]	Antenna	Transmission mode	Data rate	Output power [dBm]		
					2412 MHz	2437 MHz	2462 MHz
802.11n MIMO	20	A	OFDM	MCS12	11.07	12.75	10.94
802.11n MIMO	20	B	OFDM	MCS12	13	12.83	13.14

5GHz WLAN:

Standard	Bandwidth [MHz]	Antenna	Channel	Frequency [MHz]	Transmission Mode	Data Rate [Mbps]	Output power [dBm]
802.11a	20	A	52	5260	OFDM	6	9.27
802.11a	20	A	56	5280	OFDM	6	9.12
802.11a	20	A	60	5300	OFDM	6	9.14
802.11a	20	A	64	5320	OFDM	6	9.15
802.11a	20	A	100	5500	OFDM	6	10.30
802.11a	20	A	112	5560	OFDM	6	11.57
802.11a	20	A	116	5580	OFDM	6	11.69
802.11a	20	A	128	5640	OFDM	6	11.79
802.11a	20	A	132	5660	OFDM	6	11.80
802.11a	20	A	149	5745	OFDM	6	9.84
802.11a	20	A	165	5825	OFDM	6	11.48
802.11a	20	B	52	5260	OFDM	6	9.85
802.11a	20	B	56	5280	OFDM	6	9.91
802.11a	20	B	60	5300	OFDM	6	9.83
802.11a	20	B	64	5320	OFDM	6	9.78
802.11a	20	B	100	5500	OFDM	6	10.70
802.11a	20	B	112	5560	OFDM	6	11.80
802.11a	20	B	116	5580	OFDM	6	11.21
802.11a	20	B	128	5640	OFDM	6	11.54
802.11a	20	B	132	5660	OFDM	6	11.40
802.11a	20	B	149	5745	OFDM	6	9.28
802.11a	20	B	165	5825	OFDM	6	10.60

4. TEST EQUIPMENT

Dasy near field scanning system, manufactured by SPEAG was used for SAR testing. The test system consists of high precision robotics system (Staubli), robot controller, computer, near-field probe, probe alignment sensor, and a phantom containing the tissue equivalent material. The robot is a six-axis industrial robot performing precise movements to position the probe to the location of maximum electromagnetic field.

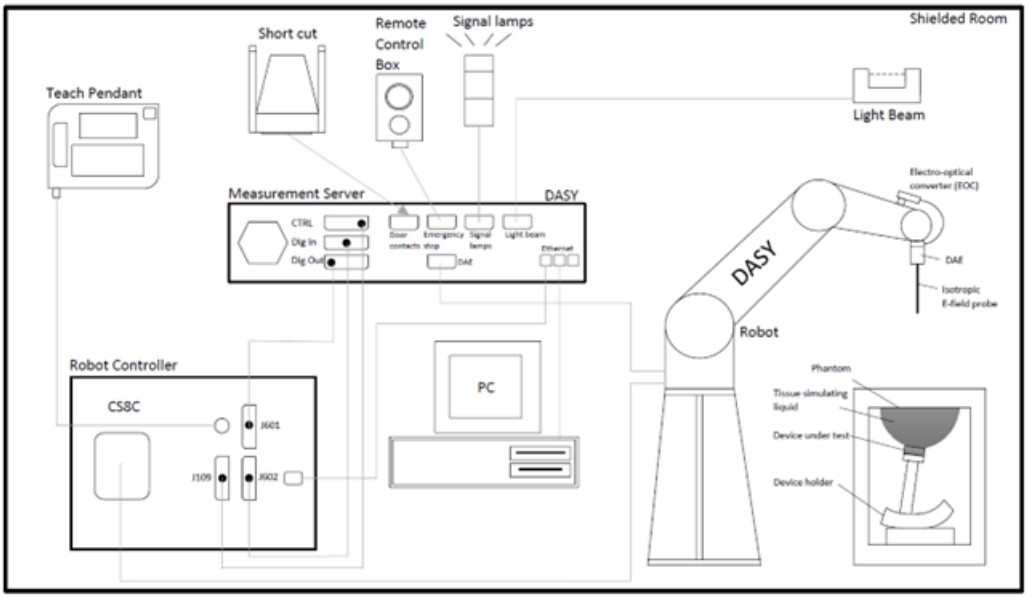


Figure 2 Schematic Laboratory Picture

4.1 Test Equipment List

Test Equipment	Model	Serial Number	Calibration Date	Interval [years]
Amplifier, 500-8000MHz	ZX60-83LN12+	NA	NA	NA
Amplifier, 800MHz-4200MHz, 10W	10S1G4A	320421	NA	NA
DAE4, converter	DAE4	705	04/2024	1
DAE4, converter	DAE4ip	1774	06/2024	1
DASY5 Software	52.8.8.1258	-	NA	NA
DASY8 Software	16.4.0.5005	-	NA	NA
Directional Power sensor	NRT-Z44	107780	02/2024	1
Inline Peak Power Sensor	MA24105A	2102058	11/2024	1
Isotropic DOS probe	EX3DV4	3892	04/2024	1
Isotropic DOS probe	EX3DV4	7827	06/2024	1
Network Analyzer	E5071B	MY42301191	03/2024	1
Power Sensor	NRP8S	1419.0006K02-108509-Zh	03/2024	2
Power reflection meter	NRT	835065/049	02/2024	3
System validation dipole	D2450V2	758	12/2024	3
System validation dipole	D5GHzV2	1014	12/2024	3
Vector Signal Generator	MG3710E	6262028676	11/2024	1
Vector Signal Generator	SMP02	836402/004	NA	NA

Main used test system components are listed above. For full equipment list and calibration intervals, please contact the testing laboratory.

4.1.1 Isotropic E-field Probe Type EX3DV4

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	Calibration certificate in Appendix D
Frequency	4 MHz to 10 GHz (dosimetry) Linearity: ± 0.2 dB (30 MHz to 10 GHz)
Directivity (typical)	±0.1 dB in TSL (rotation around probe axis) ±0.3 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 µW/g – >100 mW/g Linearity: ±0.2 dB (noise: typically <1 µW/g)
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Application	General dosimetry up to 6 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms

4.2 Phantoms

Modular flat phantom:

The Triple Modular Phantom consists of three identical modules that can be installed and removed separately without emptying the liquid. It is used for compliance testing of small wireless devices in body-worn configurations. The phantom conforms to the requirements of IEC/IEEE 62209-1528 and FCC published RF Exposure KDB Procedures.

4.3 Tissue Simulants

Recommended values for the dielectric parameters of the tissue simulants are given in IEC/IEEE 62209-1528 and FCC published RF Exposure KDB Procedures. The dielectric parameters of the used tissue simulants were within ±10% of the recommended values at frequencies under 3GHz and ±5% at frequencies above 3GHz. A liquid compensation algorithm was used in DASY with which measured peak average SAR values were corrected for the deviation of used liquid. Depth of the tissue simulant was at least 15.0 cm from the inner surface of the flat phantom.

Tissue simulant liquid Ingredients
Deionized Water, tween, salt

4.4 System Validation Status

Frequency [MHz]	Dipole Type / SN	Probe Type / SN	Calibrated Signal Type	DAE Unit / SN	Dielectric Constant [ε']	Conductivity σ [S/m]	Date
2450	D2450V2 - SN: 729	EX3DV4 - SN: 3892	CW	DAE 4 / 705	38.43	1.73	06/2024
5250	D5GHzV2 - SN: 1045	EX3DV4 - SN: 7827	SMC	DAE4ip / 1774	35.62	4.76	08/2024
5600	D5GHzV2 - SN: 1045	EX3DV4 - SN: 7827	SMC	DAE4ip / 1774	35.1	5.09	08/2024
5750	D5GHzV2 - SN: 1045	EX3DV4 - SN: 7827	SMC	DAE4ip / 1774	34.86	5.2	08/2024

4.5 System Check

Date	Tissue Type	Tissue Temp. [°C]	Frequency [MHz]	Input Power [mW]	Measured SAR_{1g} [W/kg]	1 W Target SAR_{1g} [W/kg]	1 W Normalized SAR_{1g} [W/kg]	Deviation [%]	Plot #
16.11.2024	WB Head	22	5250	250	7.72	73.09	77.2	5.62	1
17.12.2024	WB Head	22	5250	250	7.57	73.09	75.7	3.57	2
18.12.2024	WB Head	22	5600	250	7.62	72.92	76.2	4.50	3
19.12.2024	WB Head	22	5750	250	6.77	69.05	67.7	-1.96	4
30.12.2024	WB Head	22	2450	250	12.2	52.3	48.8	-6.69	5

4.5.1 Tissue Simulant Verification

				Measured		Target		Deviation	
Date	Tissue Type	Tissue Temp [°C]	Frequency [MHz]	Dielectric Constant [ε]	Conductivity σ [S/m]	Dielectric Constant [ε] Target	Conductivity σ [S/m] Target	ε [%]	σ [%]
16.12.2024	WB Head	20.7	5180	35.88	4.63	36.02	4.64	-0.4	-0.1
16.12.2024	WB Head	20.7	5240	35.78	4.69	35.96	4.7	-0.5	-0.1
16.12.2024	WB Head	20.7	5250	35.77	4.7	35.95	4.71	-0.5	-0.2
16.12.2024	WB Head	20.7	5260	35.75	4.71	35.94	4.72	-0.5	-0.2
16.12.2024	WB Head	20.7	5300	35.68	4.75	35.9	4.76	-0.6	-0.2
16.12.2024	WB Head	20.7	5320	35.65	4.77	35.88	4.78	-0.6	-0.2
17.12.2024	WB Head	22	5180	34.87	4.54	36.02	4.64	-3.2	-2.2
17.12.2024	WB Head	22	5240	34.77	4.6	35.96	4.7	-3.3	-2.2
17.12.2024	WB Head	22	5250	34.77	4.61	35.95	4.71	-3.3	-2.2
17.12.2024	WB Head	22	5260	34.75	4.61	35.94	4.72	-3.3	-2.3
17.12.2024	WB Head	22	5300	34.69	4.65	35.9	4.76	-3.4	-2.3
17.12.2024	WB Head	22	5320	34.65	4.67	35.88	4.78	-3.4	-2.3
18.12.2024	WB Head	21.5	5500	35.52	4.88	35.65	4.96	-0.4	-1.7
18.12.2024	WB Head	21.5	5580	35.39	4.96	35.53	5.05	-0.4	-1.7
18.12.2024	WB Head	21.5	5600	35.36	4.98	35.5	5.07	-0.4	-1.7
18.12.2024	WB Head	21.5	5640	35.3	5.02	35.46	5.11	-0.4	-1.7
18.12.2024	WB Head	21.5	5700	35.21	5.08	35.4	5.17	-0.5	-1.7
19.12.2024	WB Head	21.5	5660	34.96	5.0	35.44	5.13	-1.4	-2.5
19.12.2024	WB Head	21.5	5745	34.84	5.08	35.35	5.22	-1.5	-2.6
19.12.2024	WB Head	21.5	5750	34.83	5.08	35.35	5.22	-1.5	-2.6
19.12.2024	WB Head	21.5	5785	34.78	5.12	35.32	5.26	-1.5	-2.6
19.12.2024	WB Head	21.5	5825	34.72	5.15	35.28	5.3	-1.6	-2.7
30.12.2024	WB Head	21.3	2412	38.19	1.65	39.27	1.77	-2.7	-6.8
30.12.2024	WB Head	21.3	2422	38.18	1.65	39.25	1.78	-2.7	-6.9
30.12.2024	WB Head	21.3	2437	38.16	1.66	39.22	1.79	-2.7	-7.1
30.12.2024	WB Head	21.3	2442	38.15	1.66	39.21	1.79	-2.7	-7.1
30.12.2024	WB Head	21.3	2450	38.14	1.67	39.2	1.8	-2.7	-7.3
30.12.2024	WB Head	21.3	2452	38.13	1.67	39.2	1.8	-2.7	-7.3
30.12.2024	WB Head	21.3	2462	38.12	1.68	39.18	1.81	-2.7	-7.5
30.12.2024	WB Head	21.3	2472	38.1	1.68	39.17	1.82	-2.7	-7.8

5. TEST PROCEDURE

WLAN testing was carried out in accordance with FCC KDB Publications 447498 D01 General RF Exposure Guidance v06 and 248227 D01 802.11 Wi-Fi SAR. Test configurations for SAR testing were selected based on conducted power measurements.

A control software for WLAN was used to set the DUT to transmit at maximum power. The WLAN transmission modes for testing were selected according to largest channel bandwidth configuration, lowest order modulation and lowest data rate.

2.4GHz WLAN SISO and MIMO were tested with 802.11n standard with data rate of MCS0 and MCS12 respectively. 5GHz WLAN was tested with 802.11a standard with data rate of 6Mbit/s.

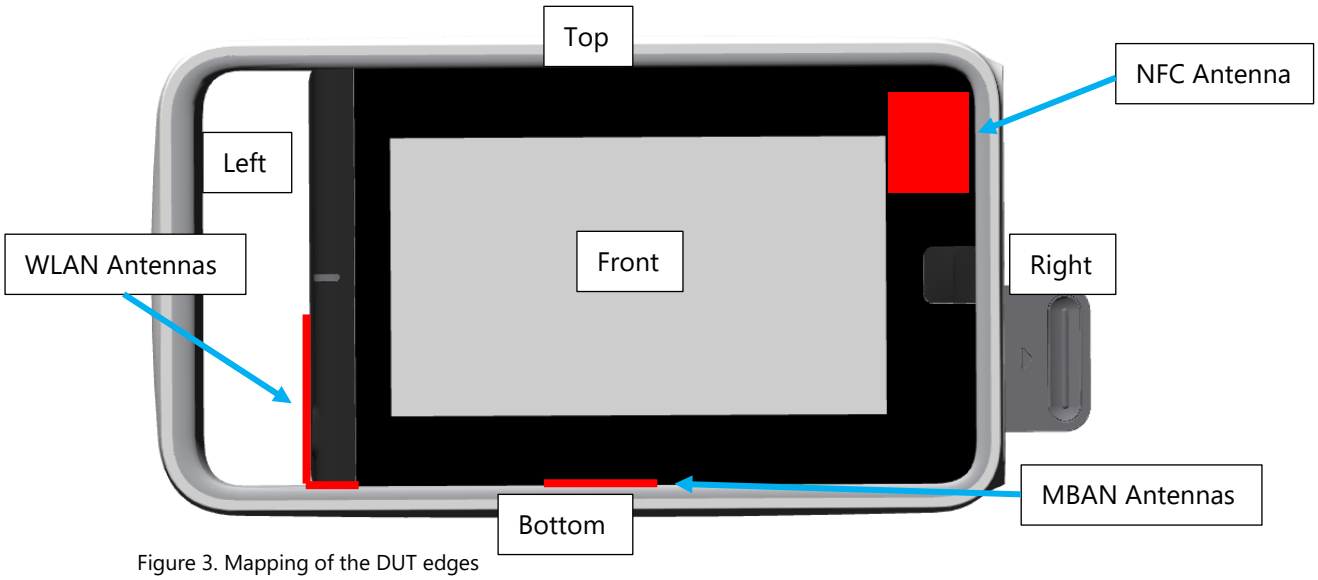


Figure 3. Mapping of the DUT edges

WSI module (FCC ID 2AO8L-WSI01) containing the MBAN and NFC transmitters, was evaluated in the RF exposure report FCC_RF Exposure Evaluation_WSI module _ID6894_03022025. MBAN has a duty cycle of 50.0% and NFC 0.07%. Both transmitters are exempt from SAR testing based on low time averaged power.

5.1 Test Positions

5.1.1 Extremity Configuration, 0mm separation distance

Extremity SAR was tested from the front side along with the required sides show in section 2.2. The device was placed on the top of a Rohacell and lifted towards the phantom until the distance between the phantom and the device was 0mm.

The plastic handle was removed, allowing testing next to the left side of the device with 0 mm separation distance

Photos of the test positions are presented in appendix A.

5.2 Scan Procedures

First, area scans were used for determination of the field distribution. Next, a zoom scan was performed around the highest E-field value to determine the averaged SAR value. Drift was determined by measuring the same point at the start of the area scan and again at the end of the zoom scan.

5.3 SAR Averaging Methods

The maximum SAR value was averaged over a cube of tissue using interpolation and extrapolation.

The interpolation, extrapolation and maximum search routines within Dasy are all based on the modified Quadratic Shepard's method (Robert J. Renka," Multivariate Interpolation of Large Sets of Scattered Data", University of North Texas ACM Transactions on Mathematical Software, vol. 14, no. 2, June 1988, pp. 139-148).
The interpolation scheme combines a least-square fitted function method with a weighted average method. A trivariate 3-D / bivariate 2-D quadratic function is computed for each measurement point and fitted to neighboring points by a least-square method. For the zoom scan, inverse distance weighting is incorporated to fit distant points more accurately. The interpolating function is finally calculated as a weighted average of the quadratics.

In the zoom scan, the interpolation function is used to extrapolate the Peak SAR from the deepest measurement points to the inner surface of the phantom.

6. MEASUREMENT UNCERTAINTY

DASY8 Uncertainty Budget
According to IEC/IEEE 62209-1528
(Frequency band: 3 GHz–6 GHz range)

Symbol	Error Description	Uncert. value	Prob. Dist.	Div.	(c_i) (1 g)	(c_i) (10 g)	Std. Unc. (1 g)	Std. Unc. (10 g)
Measurement System Errors								
CF	Probe Calibration	±13.1%	N	2	1	1	±6.55%	±6.55%
CF_{drift}	Probe Calibration Drift	±1.7%	R	$\sqrt{3}$	1	1	±1.0%	±1.0%
LIN	Probe Linearity	±4.7%	R	$\sqrt{3}$	1	1	±2.7%	±2.7%
BBS	Broadband Signal	±2.6%	R	$\sqrt{3}$	1	1	±1.5%	±1.5%
ISO	Probe Isotropy	±7.6%	R	$\sqrt{3}$	1	1	±4.4%	±4.4%
DAE	Other Probe+Electronic	±1.2%	N	1	1	1	±1.2%	±1.2%
AMB	RF Ambient	±1.8%	N	1	1	1	±1.8%	±1.8%
Δ_{xyz}	Probe Positioning	±0.005 mm	N	1	0.29	0.29	±0.15%	±0.15%
DAT	Data Processing	±2.3%	N	1	1	1	±2.3%	±2.3%
Phantom and Device Errors								
LIQ(σ)	Conductivity (meas.)^{DAK}	±2.5%	N	1	0.78	0.71	±2.0%	±1.8%
LIQ(T_σ)	Conductivity (temp.)^{BB}	±3.4%	R	$\sqrt{3}$	0.78	0.71	±1.5%	±1.4%
EPS	Phantom Permittivity	±14.0%	R	$\sqrt{3}$	0.25	0.25	±2.0%	±2.0%
DIS	Distance DUT – TSL	±2.0%	N	1	2	2	±4.0%	±4.0%
D_{xyz}	Device Positioning	±1.0%	N	1	1	1	±1.0%	±1.0%
H	Device Holder	±3.6%	N	1	1	1	±3.6%	±3.6%
MOD	DUT Modulation^{m}	±2.4%	R	$\sqrt{3}$	1	1	±1.4%	±1.4%
TAS	Time-average SAR	±1.7%	R	$\sqrt{3}$	1	1	±1.0%	±1.0%
RF_{drift}	DUT drift	±2.5%	N	1	1	1	±2.5%	±2.5%
VAL	Val Antenna Unc.^{val}	±0.0%	N	1	1	1	±0%	±0%
RF_{in}	Unc. Input Power^{val}	±0.0%	N	1	1	1	±0%	±0%
Correction to the SAR results								
C(ε, σ)	Deviation to Target	±1.9%	N	1	1	0.84	±1.9%	±1.6%
C(R)	SAR scaling^{p}	±0%	R	$\sqrt{3}$	1	1	±0%	±0%
u(ΔSAR)	Combined Uncertainty						±11.6%	±11.5%
U	**Expanded Uncertainty**						±23.3%	±23.0%

DASY5 Uncertainty Budget

According to IEC/IEEE 62209-1528

(Frequency band: 300MHz - 3GHz range)

Symbol	Error Description	Uncert. value	Prob. Dist.	Div.	(ci) 1g	(ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)
Measurement System Errors								
CF	Probe Calibration	±12.0%	N	√2	1	1	±6.0%	±6.0%
CF_{drift}	Probe Calibration Drift	±1.7%	R	√3	1	1	±1.0%	±1.0%
LIN	Probe Linearity	±4.7%	R	√3	1	1	±2.7%	±2.7%
BBS	Broadband Signal	±3.0%	R	√3	1	1	±1.7%	±1.7%
ISO	Probe Isotropy	±7.6%	R	3	1	1	±4.4%	±4.4%
DAE	Data Acquisition	±0.3%	N	1	1	1	±0.3%	±0.3%
AMB	RF Ambient	±1.8%	N	1	1	1	±1.8%	±1.8%
Δ_{sys}	Probe Positioning	±3.9%	N	1	0.14	0.14	±0.5%	±0.5%
DAT	Data Processing	±1.2%	N	1	1	1	±1.2%	±1.2%
Phantom and Device Errors								
LIQ(σ)	Conductivity (meas.)[DAK]	±2.5%	N	√1	0.78	0.71	±2.0%	±1.8%
$LIQ(T_\sigma)$	Conductivity (temp.)[BB]	±3.3%	R	√3	0.78	0.71	±1.5%	±1.4%
EPS	Phantom Permittivity	±14.0%	R	3	0	0	±0%	±0%
DIS	Distance DUT - TSL	±2.0%	N	1	2	2	±4.0%	±4.0%
D_{xyz}	Device Positioning (±0.5mm)	±1.0%	N	1	1	1	±1.0%	±1.0%
H	Device Holder	±3.6%	N	√1	1	1	±3.6%	±3.6%
MOD	DUT Modulation[m]	±2.4%	R	√3	1	1	±1.4%	±1.4%
TAS	Time-average SAR	±2.6%	R	3	1	1	±1.5%	±1.5%
RF_{drift}	DUT drift	±2.5%	N	1	1	1	±2.5%	±2.5%
VAL	Val Antenna Unc.[val]	±0.0%	N	1	1	1	±0%	±0%
RF_{in}	Unc. Input Power[val]	±0.0%	N	1	1	1	±0%	±0%
Correction to the SAR results								
C(ε, σ)	Deviation to Target	±1.9%	N	√1	1	0.84	±1.9%	±1.6%
C(R)	SAR scaling[p]	±0%	R	3	1	1	±0%	±0%
u(ΔSAR)	Combined Uncertainty						±11.0%	±10.9%
U	**Expanded Uncertainty**						±22.1%	±21.9%

7. TEST RESULTS

7.1 SAR Results for Extremity Condition with 0mm separation

2.4GHz WLAN SISO:

Mode	Data Rate	Bandwidth [MHz]	Antenna	Frequency [MHz]	Maximum Power [dBm]	Conducted Power [dBm]	Test Position	Measured SAR_{10g} [W/kg]	Power Drift* [dB]	Duty Cycle [%]	Scaling Factor	Reported SAR_{10g} [W/kg]	Plot #
802.11n	MCS0	40	A	2437	16.5	13.48	Front, 0mm	0.01	-0.39	92	2.19	0.03	
802.11n	MCS0	40	A	2437	16.5	13.48	Left, 0mm	0.24	-0.01	92	2.00	0.48	6
802.11n	MCS0	40	A	2422	16.5	9.22	Left, 0mm	0.08	0.05	92	5.35	0.43	
802.11n	MCS0	40	A	2452	16.5	9.25	Left, 0mm	0.08	-0.02	92	5.31	0.41	

*Larger than 5% drifts included to scaling factors

2.4GHz WLAN MIMO:

Mode	Data Rate	Bandwidth [MHz]	Antenna	Frequency [MHz]	Maximum Power [dBm]	Conducted Power [dBm]	Test Position	Measured SAR_{10g} [W/kg]	Power Drift* [dB]	Duty Cycle [%]	Scaling Factor	Reported SAR_{10g} [W/kg]	Plot #
802.11n	MCS12	20	A+B	2437	16.5	15.80	Front, 0mm	0.01	-0.56	68	1.34	0.02	
802.11n	MCS12	20	A+B	2437	16.5	15.80	Left, 0mm	0.13	0.04	68	1.17	0.15	7
802.11n	MCS12	20	A+B	2437	16.5	15.80	Bottom, 0mm	0.07	0.15	68	1.17	0.08	
802.11n	MCS12	20	A+B	2412	16.5	15.15	Left, 0mm	0.09	-0.07	68	1.36	0.12	
802.11n	MCS12	20	A+B	2462	16.5	15.19	Left, 0mm	0.10	-0.06	68	1.35	0.13	

*Larger than 5% drifts included to scaling factors

5GHz WLAN U-NII-1 & U-NII-2A:

Mode	Data Rate [Mbps]	Bandwidth [MHz]	Antenna	Channel	Frequency [MHz]	Maximum Power [dBm]	Conducted Power [dBm]	Test Position	Measured SAR_{10g} [W/kg]	Power Drift* [dB]	Duty Cycle [%]	Scaling Factor	Reported SAR_{10g} [W/kg]	Plot #
802.11a	6	20	A	52	5260	12.5	9.27	Front, 0mm	0.01	-0.52	96.2	2.37	0.02	
802.11a	6	20	A	52	5260	12.5	9.27	Left, 0mm	0.24	0.16	96.2	2.10	0.51	8
802.11a	6	20	A	60	5300	12.5	9.14	Left, 0mm	0.23	0.09	96.2	2.17	0.49	
802.11a	6	20	A	64	5320	12.5	9.15	Left, 0mm	0.18	0.05	96.2	2.16	0.39	

*Larger than 5% drifts included to scaling factors

Mode	Data Rate [Mbps]	Bandwidth [MHz]	Antenna	Channel	Frequency [MHz]	Maximum Power [dBm]	Conducted Power [dBm]	Test Position	Measured SAR_{10g} [W/kg]	Power Drift* [dB]	Duty Cycle [%]	Scaling Factor	Reported SAR_{10g} [W/kg]	Plot #
802.11a	6	20	B	56	5280	12.5	9.91	Front, 0mm	0.00	0**	96.2	1.82	0.01	
802.11a	6	20	B	56	5280	12.5	9.91	Left, 0mm	0.05	0.02	96.2	1.82	0.08	
802.11a	6	20	B	56	5280	12.5	9.91	Bottom, 0mm	0.02	0**	96.2	1.82	0.04	
802.11a	6	20	B	52	5260	12.5	9.85	Left, 0mm	0.05	-0.03	96.2	1.84	0.09	
802.11a	6	20	B	64	5320	12.5	9.78	Left, 0mm	0.06	-0.36	96.2	2.03	0.11	9

*Larger than 5% drifts included to scaling factors
**Due to low e-field generated by DUT at the location of drift measurement, the measurements are not applicable.

5GHz WLAN U-NII-2C

Mode	Data Rate [Mbps]	Bandwidth [MHz]	Antenna	Channel	Frequency [MHz]	Maximum Power [dBm]	Conducted Power [dBm]	Test Position	Measured SAR_{10g} [W/kg]	Power Drift* [dB]	Duty Cycle [%]	Scaling Factor	Reported SAR_{10g} [W/kg]	Plot #
802.11a	6	20	A	128	5640	15.5	11.79	Front, 0mm	0	0**	96.2	2.35	0.00	
802.11a	6	20	A	128	5640	15.5	11.79	Left, 0mm	0.28	0**	96.2	2.35	0.66	10
802.11a	6	20	A	116	5580	15.5	11.69	Left, 0mm	0.25	0.19	96.2	2.40	0.59	
802.11a	6	20	A	100	5500	14.5	10.3	Left, 0mm	0.17	0.29	96.2	2.81	0.48	

*Larger than 5% drifts included to scaling factors
**Due to low e-field generated by DUT at the location of drift measurement, the measurements are not applicable.

Mode	Data Rate [Mbps]	Bandwidth [MHz]	Antenna	Channel	Frequency [MHz]	Maximum Power [dBm]	Conducted Power [dBm]	Test Position	Measured SAR_{10g} [W/kg]	Power Drift* [dB]	Duty Cycle [%]	Scaling Factor	Reported SAR_{10g} [W/kg]	Plot #
802.11a	6	20	B	112	5560	15.5	11.8	Front, 0mm	0.04	0**	96.2	2.34	0.09	
802.11a	6	20	B	112	5560	15.5	11.8	Left, 0mm	0.22	-0.04	96.2	2.34	0.52	
802.11a	6	20	B	112	5560	15.5	11.8	Bottom, 0mm	0.08	-0.82	96.2	2.83	0.22	
802.11a	6	20	B	100	5500	14.5	10.7	Left, 0mm	0.17	0.16	96.2	2.40	0.40	
802.11a	6	20	B	128	5640	15.5	11.54	Left, 0mm	0.23	0.15	96.2	2.49	0.56	11

*Larger than 5% drifts included to scaling factors
**Due to low e-field generated by DUT at the location of drift measurement, the measurements are not applicable.

5GHz WLAN U-NII-3

Mode	Data Rate [Mbps]	Bandwidth [MHz]	Antenna	Channel	Frequency [MHz]	Maximum Power [dBm]	Conducted Power [dBm]	Test Position	Measured SAR_{10g} [W/kg]	Power Drift* [dB]	Duty Cycle [%]	Scaling Factor	Reported SAR_{10g} [W/kg]	Plot #
802.11a	6	20	A	132	5660	15.5	11.8	Front, 0mm	0.00	0**	96.2	2.34	0.00	
802.11a	6	20	A	132	5660	15.5	11.8	Left, 0mm	0.29	0.13	96.2	2.34	0.68	12
802.11a	6	20	A	149	5745	15.5	9.84	Left, 0mm	0.14	0.4	96.2	4.04	0.55	
802.11a	6	20	A	165	5825	14.5	11.48	Left, 0mm	0.17	0.26	96.2	2.13	0.36	

*Larger than 5% drifts included to scaling factors
**Due to low e-field generated by DUT at the location of drift measurement, the measurements are not applicable.

Mode	Data Rate [Mbps]	Bandwidth [MHz]	Antenna	Channel	Frequency [MHz]	Maximum Power [dBm]	Conducted Power [dBm]	Test Position	Measured SAR_{10g} [W/kg]	Power Drift* [dB]	Duty Cycle [%]	Scaling Factor	Reported SAR_{10g} [W/kg]	Plot #
802.11a	6	20	B	132	5660	15.5	11.4	Front, 0mm	0.03	0**	96.2	2.57	0.08	
802.11a	6	20	B	132	5660	15.5	11.4	Left, 0mm	0.20	0.1	96.2	2.57	0.52	13
802.11a	6	20	B	132	5660	15.5	11.4	Bottom, 0mm	0.05	0**	96.2	2.57	0.12	
802.11a	6	20	B	149	5745	15.5	9.28	Left, 0mm	0.11	0.39	96.2	4.58	0.49	
802.11a	6	20	B	165	5825	14.5	10.6	Left, 0mm	0.15	-0.27	96.2	2.61	0.39	

*Larger than 5% drifts included to scaling factors
**Due to low e-field generated by DUT at the location of drift measurement, the measurements are not applicable.

7.1 SAR Results for Extremity Exposure Condition for MBAN and NFC

WSI module (FCC ID 2AO8L-WSI01) containing MBAN and NFC transmissions was evaluated in the RF exposure report FCC_RF Exposure Evaluation_WSI module _ID6894_03022025. For simultaneous transmission SAR evaluation values were estimated.

Mode of Operation	Estimated SAR_{10g}[mW/g]
MBAN	0.13
NFC	0.001

7.2 IEC/IEEE 62209-1528:2020, Zoom Scan Evaluation

According to IEC/IEEE 62209-1528:2020, subclause 7.4.2 d.4), the zoom scan complies if the peak spatial-average SAR is below 0.1 W/kg, or if the following criteria is met:

1. The smallest horizontal distance from the local SAR peaks to all points 3 dB below the SAR peak is larger than the horizontal grid step.

2. Ratio of SAR at the second measured point (M2) to the SAR at the closest measured point (M1) at the x-y location of the measured maximum is at least 30%.

Zoom scan compliance according to IEC/IEEE 62209-1528:2020 is automatically verified by DASY software and all zoom scans in this test report do pass the criteria. The horizontal distance and Ratio between measurement points M2 and M1 of the highest SAR results are available in Appendix C.

7.3 Simultaneous Transmission Analysis

Simultaneous transmission analysis for the maximum SAR is in the table below. Direct summation of SAR results was performed.

Exposure Condition	Extremity SAR_{10g} [W/kg]		
Test Position	**Front**	**Left**	**Bottom**
2.4 GHz WLAN SAR	0.03	0.48	N/A
5 GHz WLAN SAR	0.09	0.68	0.22
Max WLAN SAR	**0.09**	**0.68**	**0.22**
Estimated MBAN SAR	**0.13**		
Estimated NFC SAR	**0.001**		
Direct Summation:	**0.22**	**0.81**	**0.35**

APPENDIX A: PHOTOS OF THE DUT

Size of the DUT is: 240 x 150 x 60 mm

Figure 4 DUT without the handle.

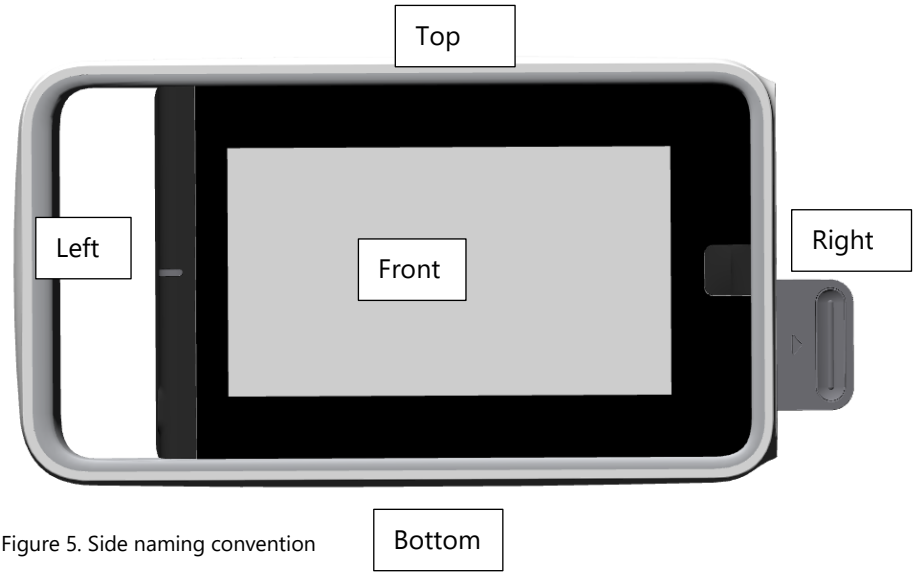


Figure 5. Side naming convention

Figure 6. Front side of the DUT, 0mm

Figure 7 Left side of the DUT, 0mm

Figure 8 Bottom side of the DUT, 0mm

APPENDIX B: SYSTEM CHECK SCAN

Plot 1

Date/Time: 2024-12-16, 10:57

Test Laboratory: Verkotan Oy

DUT: D5GHzV2 - SN1045

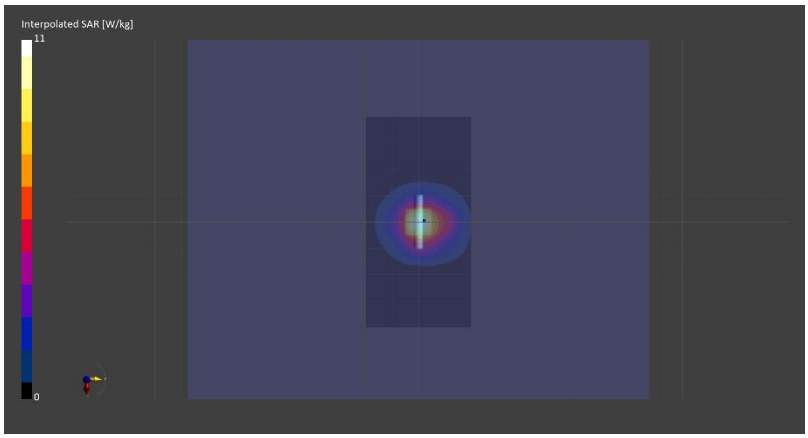
Communication System: UID 0, CW; Communication System Band: ; Frequency 5250.000 MHz;
Communication System PAR: ;

Medium parameters used: f= 5250.000; σ = 4.70 S/m; ε_r = 35.8; Head Simulating Liquid;
Phantom section: Flat section
Measurement Standard: DASY8 (IEC/IECC)

DASY Configuration:

- Probe: EX3DV4 - SN7827; ConvF(5.55, 5.41, 5.18); Calibrated: 2024-06-17
  - Sensor-Surface: 1.4 mm (All points), Mother scan peak deviation; 0.18; Mother scan avg offset: 2.08;
  - Electronics: DAE4ip - SN1774; Calibrated: 2024-06-18
  - Phantom: MFP V8.0 Center
  - DASY8 16.4.0.5005

Area Scan: Measurement grid: (40.0 mm x 80.0 mm)
Zoom Scan: Measurement grid: (22.0 mm x 22.0 mm x 22.0 mm)
Reference Value = 1.78 V/m; Power Drift = 0.07 dB
SAR(1 g) = 7.72 W/kg; SAR(10g) = 2.20 W/kg (Positive only)
Smallest distance from peaks to all points 3dB below = 6.9 mm
Ratio of SAR at M2 to SAR at M1 = 62.0%



Plot 2

Date/Time: 2024-12-17, 09:35

Test Laboratory: Verkotan Oy

DUT: D5GHzV2 - SN1045

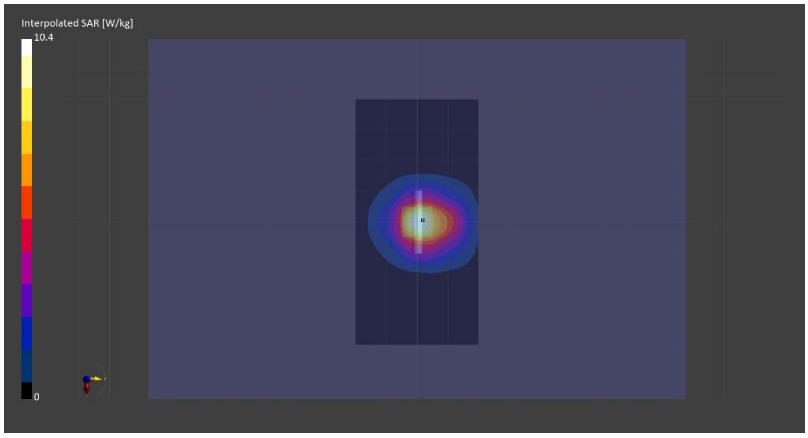
Communication System: UID 0, CW; Communication System Band: ; Frequency 5250.000 MHz;
Communication System PAR: ;

Medium parameters used: f= 5250.000; σ = 4.61 S/m; ε_r = 34.8; Head Simulating Liquid;
Phantom section: Flat section
Measurement Standard: DASY8 (IEC/IECC)

DASY Configuration:

- Probe: EX3DV4 - SN7827; ConvF(5.55, 5.41, 5.18); Calibrated: 2024-06-17
  - Sensor-Surface: 1.4 mm (VMS + 6p), Mother scan peak deviation; 0.05; Mother scan avg offset: 0.14;
  - Electronics: DAE4ip - SN1774; Calibrated: 2024-06-18
  - Phantom: MFP V8.0 Center
  - DASY8 16.4.0.5005

Area Scan: Measurement grid: (40.0 mm x 80.0 mm)
Zoom Scan: Measurement grid: (22.0 mm x 22.0 mm x 22.0 mm)
Reference Value = 3.47 V/m; Power Drift = 0.03 dB
SAR(1 g) = 7.57 W/kg; SAR(10g) = 2.17 W/kg (Positive only)
Smallest distance from peaks to all points 3dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 61.8%



Plot 3

Date/Time: 2024-12-18, 09:42

Test Laboratory: Verkotan Oy

DUT: D5GHzV2 - SN1045

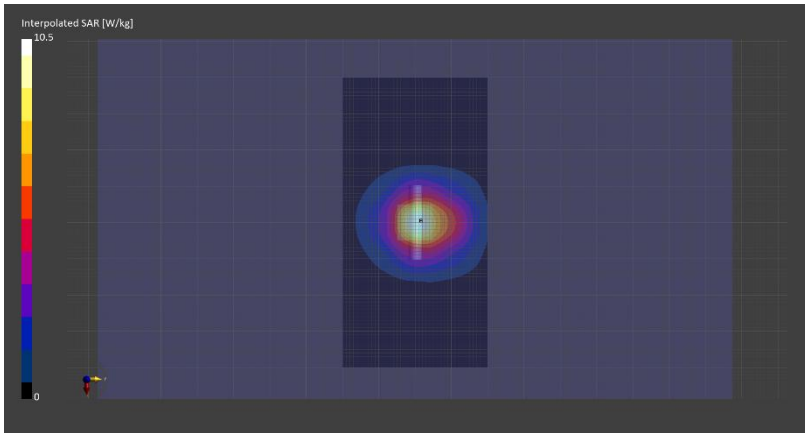
Communication System: UID 0, CW; Communication System Band: ; Frequency 5600.000 MHz;
Communication System PAR: ;

Medium parameters used: f= 5600.000; σ = 4.98 S/m; ε_r = 35.4; Head Simulating Liquid;
Phantom section: Flat section
Measurement Standard: DASY8 (IEC/IECC)

DASY Configuration:

- Probe: EX3DV4 - SN7827; ConvF(5.04, 4.91, 4.7); Calibrated: 2024-06-17
  - Sensor-Surface: 1.4 mm (VMS + 6p), Mother scan peak deviation; 0.07; Mother scan avg offset: 0.08;
  - Electronics: DAE4ip - SN1774; Calibrated: 2024-06-18
  - Phantom: MFP V8.0 Center
  - DASY8 16.4.0.5005

Area Scan: Measurement grid: (40.0 mm x 80.0 mm)
Zoom Scan: Measurement grid: (22.0 mm x 22.0 mm x 22.0 mm)
Reference Value = 3.02 V/m; Power Drift = -0.01 dB
SAR(1 g) = 7.62 W/kg; SAR(10g) = 2.19 W/kg (Positive only)
Smallest distance from peaks to all points 3dB below = 7.3 mm
Ratio of SAR at M2 to SAR at M1 = 59.4%



Plot 4

Date/Time: 2024-12-19, 09:21

Test Laboratory: Verkotan Oy

DUT: D5GHzV2 - SN1045

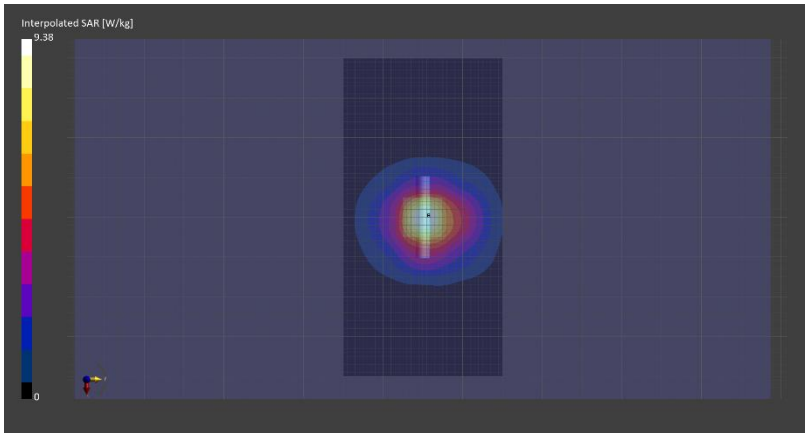
Communication System: UID 0, CW; Communication System Band: ; Frequency 5750.000 MHz;
Communication System PAR: ;

Medium parameters used: f= 5750.000; σ = 5.08 S/m; ε_r = 34.8; Head Simulating Liquid;
Phantom section: Flat section
Measurement Standard: DASY8 (IEC/IECC)

DASY Configuration:

- Probe: EX3DV4 - SN7827; ConvF(5.09, 4.96, 4.75); Calibrated: 2024-06-17
  - Sensor-Surface: 1.4 mm (VMS + 6p), Mother scan peak deviation; 0.05; Mother scan avg offset: 0.02;
  - Electronics: DAE4ip - SN1774; Calibrated: 2024-06-18
  - Phantom: MFP V8.0 Center
  - DASY8 16.4.0.5005

Area Scan: Measurement grid: (40.0 mm x 80.0 mm)
Zoom Scan: Measurement grid: (22.0 mm x 22.0 mm x 22.0 mm)
Reference Value = 2.53 V/m; Power Drift = 0.05 dB
SAR(1 g) = 6.77 W/kg; SAR(10g) = 1.94 W/kg (Positive only)
Smallest distance from peaks to all points 3dB below = 7.6 mm
Ratio of SAR at M2 to SAR at M1 = 58.3%



Plot 5

Date/Time: 30/12/2024 10:28:53

Test Laboratory: Verkotan Oy

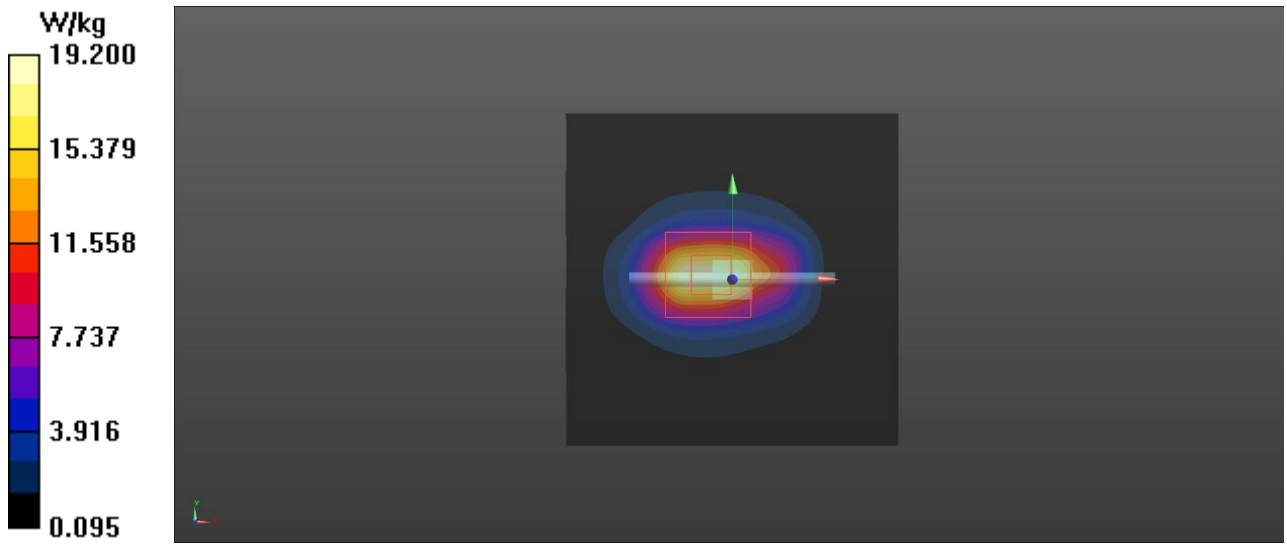
DUT: D2450V2 - SN729

Communication System: UID 0, CW (0); Communication System Band: D2450 (2450.0 MHz); Frequency: 2450 MHz;
Communication System PAR: 0 dB;
Medium parameters used (interpolated): f = 2450 MHz; σ = 1.669 S/m; ε_r = 38.138; ρ = 1000 kg/m^3
Phantom section: Center Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(7.14, 7.45, 7) @ 2450 MHz; Calibrated: 15/04/2024
  - Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = -4.0, 31.0
  - Electronics: DAE4 Sn705; Calibrated: 09/04/2024
  - Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx;
  - DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/System check/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 19.3 W/kg
Configuration/System check/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 108.7 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 22.9 W/kg
SAR(1 g) = 12.2 W/kg; SAR(10 g) = 5.73 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 9 mm
Ratio of SAR at M2 to SAR at M1 = 52.3%
Maximum value of SAR (measured) = 19.2 W/kg



APPENDIX C: MEASUREMENT SCANS

Plot 6

Date/Time: 30/12/2024 22:07:27

Test Laboratory: Verkotan Oy

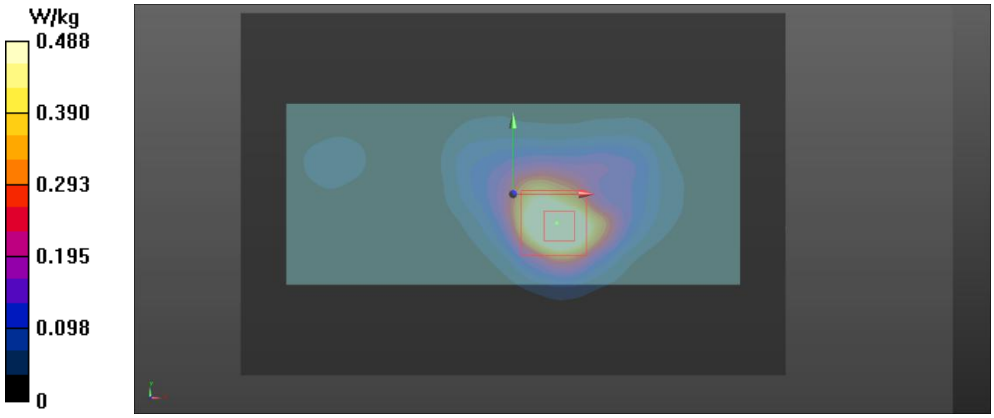
DUT: GE HealthCare Carescape ONE

Communication System: UID 0, WLAN 2.4 (0); Communication System Band: WLAN2.4GHz; Frequency: 2437 MHz;
Communication System PAR: 0 dB;
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.662 S/m; ε_r = 38.16; ρ = 1000 kg/m^3
Phantom section: Center Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(7.14, 7.45, 7) @ 2437 MHz; Calibrated: 15/04/2024
  - Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = -4.0, 31.0
  - Electronics: DAE4 Sn705; Calibrated: 09/04/2024
  - Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx;
  - DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Left FCC/802.11n, MCS0 2437MHz, 40MHz, Antenna A, Left, 0mm/Area Scan (151x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.757 W/kg
Left FCC/802.11n, MCS0 2437MHz, 40MHz, Antenna A, Left, 0mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.31 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.00 W/kg
SAR(1 g) = 0.511 W/kg; SAR(10 g) = 0.237 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 8.5 mm
Ratio of SAR at M2 to SAR at M1 = 51.9%
Maximum value of SAR (measured) = 0.799 W/kg



Plot 7

Date/Time: 30/12/2024 20:41:09

Test Laboratory: Verkotan Oy

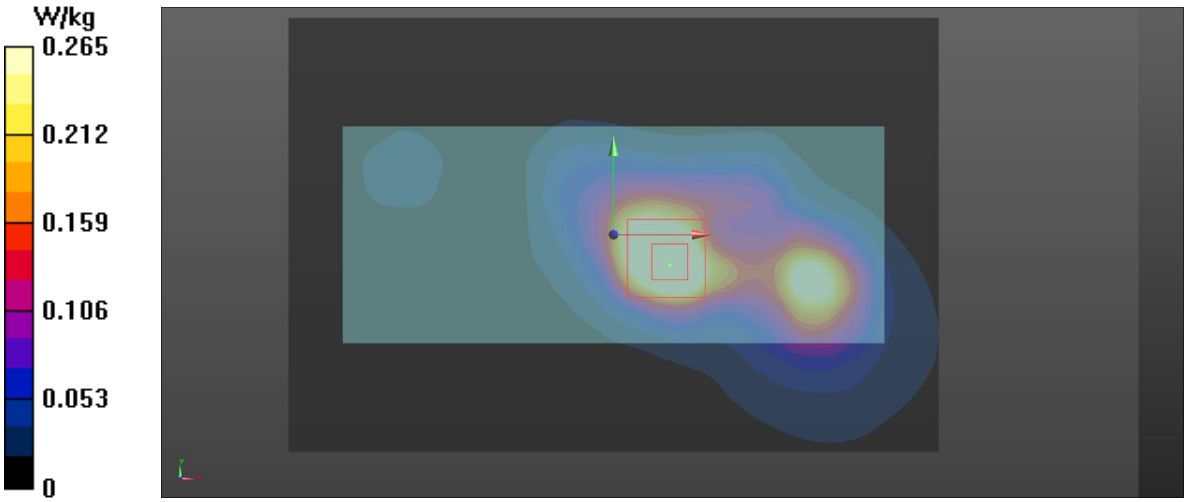
DUT: GE HealthCare Carescape ONE

Communication System: UID 0, WLAN 2.4 (0); Communication System Band: WLAN2.4GHz; Frequency: 2437 MHz;
Communication System PAR: 0 dB;
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.662 S/m; ε_r = 38.16; ρ = 1000 kg/m^3
Phantom section: Center Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(7.14, 7.45, 7) @ 2437 MHz; Calibrated: 15/04/2024
  - Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 31.0, -4.0
  - Electronics: DAE4 Sn705; Calibrated: 09/04/2024
  - Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx;
  - DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Left FCC/802.11n, MCS12, 2437MHz, MIMO, Left, 0mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.77 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.549 W/kg
SAR(1 g) = 0.280 W/kg; SAR(10 g) = 0.130 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 8.5 mm
Ratio of SAR at M2 to SAR at M1 = 51.3%
Maximum value of SAR (measured) = 0.447 W/kg
Left FCC/802.11n, MCS12, 2437MHz, MIMO, Left, 0mm/Area Scan (151x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.461 W/kg



Plot 8

Date/Time: 2024-12-17, 14:40

Test Laboratory: Verkotan Oy

DUT: Carescape ONE

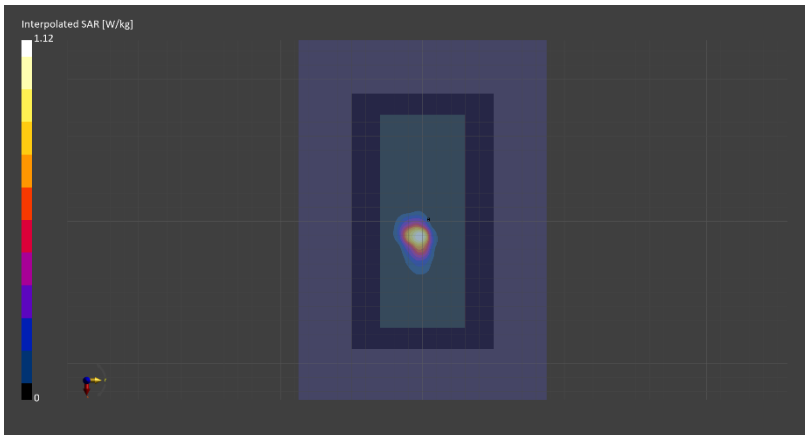
Communication System: UID 10317, WLAN; Communication System Band: U-NII-1, U-NII-2A; Frequency 5260.000 MHz;
Communication System PAR: ;

Medium parameters used: f= 5260.000; σ = 4.61 S/m; ε_r = 34.7; Head Simulating Liquid;
Phantom section: Flat section
Measurement Standard: DASY8 (IEC/IECC)

DASY Configuration:

- Probe: EX3DV4 - SN7827; ConvF(5.55, 5.41, 5.18); Calibrated: 2024-06-17
  - Sensor-Surface: 1.4 mm (VMS + 6p), Mother scan peak deviation; 0.09; Mother scan avg offset: 0.04;
  - Electronics: DAE4ip - SN1774; Calibrated: 2024-06-18
  - Phantom: MFP V8.0 Center
  - DASY8 16.4.0.5005

U-NII-1, U-NII-2A, IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle), CH52, EDGE LEFT, 0.00 mm
Area Scan: Measurement grid: (100.0 mm x 180.0 mm)
Zoom Scan: Measurement grid: (22.0 mm x 22.0 mm x 22.0 mm)
Reference Value = 0.42 V/m; Power Drift = 0.16 dB
SAR(1 g) = 0.831 W/kg; SAR(10g) = 0.242 W/kg (Positive only)
Smallest distance from peaks to all points 3dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 65.5%



Plot 9

Date/Time: 2024-12-17, 20:06

Test Laboratory: Verkotan Oy

DUT: Carescape ONE

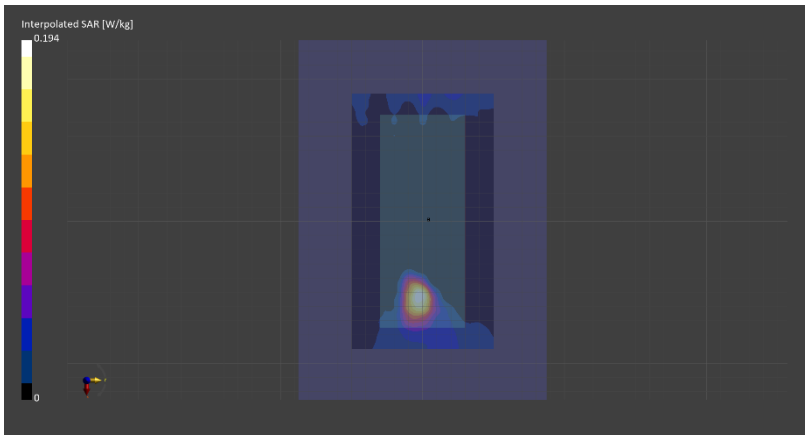
Communication System: UID 10317, WLAN; Communication System Band: U-NII-1, U-NII-2A; Frequency 5320.000 MHz;
Communication System PAR: ;

Medium parameters used: f= 5320.000; σ = 4.67 S/m; ε_r = 34.6; Head Simulating Liquid;
Phantom section: Flat section
Measurement Standard: DASY8 (IEC/IECC)

DASY Configuration:

- Probe: EX3DV4 - SN7827; ConvF(5.55, 5.41, 5.18); Calibrated: 2024-06-17
  - Sensor-Surface: 1.4 mm (VMS + 6p), Mother scan peak deviation; 0.25; Mother scan avg offset: 0.36;
  - Electronics: DAE4ip - SN1774; Calibrated: 2024-06-18
  - Phantom: MFP V8.0 Center
  - DASY8 16.4.0.5005

U-NII-1, U-NII-2A, IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle), CH64, EDGE LEFT, 0.00 mm
Area Scan: Measurement grid: (100.0 mm x 180.0 mm)
Zoom Scan: Measurement grid: (22.0 mm x 22.0 mm x 22.0 mm)
Reference Value = 0.08 V/m; Power Drift = -0.36 dB
SAR(1 g) = 0.166 W/kg; SAR(10g) = 0.055 W/kg (Positive only)
Smallest distance from peaks to all points 3dB below = 7.9 mm
Ratio of SAR at M2 to SAR at M1 = 63.1%



Plot 10

Date/Time: 2024-12-18, 18:32

Test Laboratory: Verkotan Oy

DUT: Carescape ONE

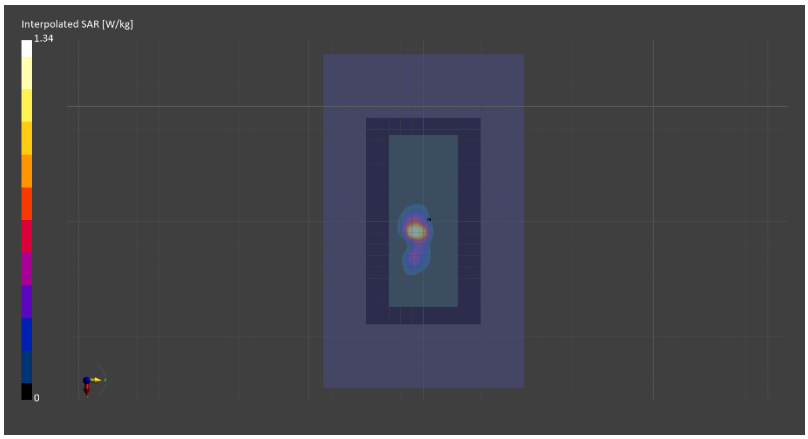
Communication System: UID 10317, WLAN; Communication System Band: U-NII-2C Standalone; Frequency 5640.000 MHz;
Communication System PAR: ;

Medium parameters used: f= 5640.000; σ = 5.02 S/m; ε_r = 35.3; Head Simulating Liquid;
Phantom section: Flat section
Measurement Standard: DASY8 (IEC/IECC)

DASY Configuration:

- Probe: EX3DV4 - SN7827; ConvF(5.04, 4.91, 4.7); Calibrated: 2024-06-17
  - Sensor-Surface: 1.4 mm (VMS + 6p), Mother scan peak deviation; 0.21; Mother scan avg offset: 0.72;
  - Electronics: DAE4ip - SN1774; Calibrated: 2024-06-18
  - Phantom: MFP V8.0 Center
  - DASY8 16.4.0.5005

U-NII-2C Standalone, IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle), CH128, EDGE LEFT, 0.00 mm
Area Scan: Measurement grid: (100.0 mm x 180.0 mm)
Zoom Scan: Measurement grid: (22.0 mm x 22.0 mm x 22.0 mm)
Reference Value = 0.57 V/m; Power Drift = 0.20 dB
SAR(1 g) = 0.985 W/kg; SAR(10g) = 0.280 W/kg (Positive only)
Smallest distance from peaks to all points 3dB below = 6.8 mm
Ratio of SAR at M2 to SAR at M1 = 61.4%



Test Laboratory: Verkotan Oy

DUT: Carescape ONE

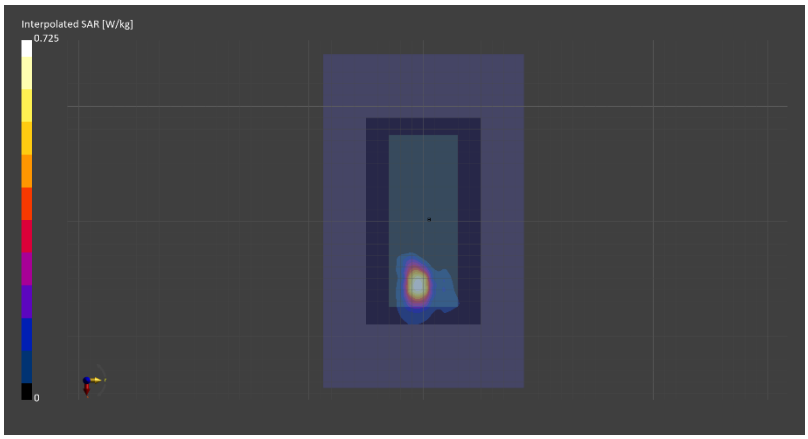
Communication System: UID 10317, WLAN; Communication System Band: U-NII-2C Standalone; Frequency 5640.000 MHz;
Communication System PAR: ;

Medium parameters used: f= 5640.000; σ = 5.02 S/m; ε_r = 35.3; Head Simulating Liquid;
Phantom section: Flat section
Measurement Standard: DASY8 (IEC/IECC)

DASY Configuration:

- Probe: EX3DV4 - SN7827; ConvF(5.04, 4.91, 4.7); Calibrated: 2024-06-17
  - Sensor-Surface: 1.4 mm (VMS + 6p), Mother scan peak deviation; 0.27; Mother scan avg offset: 0.41;
  - Electronics: DAE4ip - SN1774; Calibrated: 2024-06-18
  - Phantom: MFP V8.0 Center
  - DASY8 16.4.0.5005

U-NII-2C Standalone, IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle), CH128, EDGE LEFT, 0.00 mm
Area Scan: Measurement grid: (100.0 mm x 180.0 mm)
Zoom Scan: Measurement grid: (22.0 mm x 22.0 mm x 22.0 mm)
Reference Value = 0.30 V/m; Power Drift = 0.15 dB
SAR(1 g) = 0.670 W/kg; SAR(10g) = 0.227 W/kg (Positive only)
Smallest distance from peaks to all points 3dB below = 8.0 mm
Ratio of SAR at M2 to SAR at M1 = 60.4%



Test Laboratory: Verkotan Oy

DUT: Carescape ONE

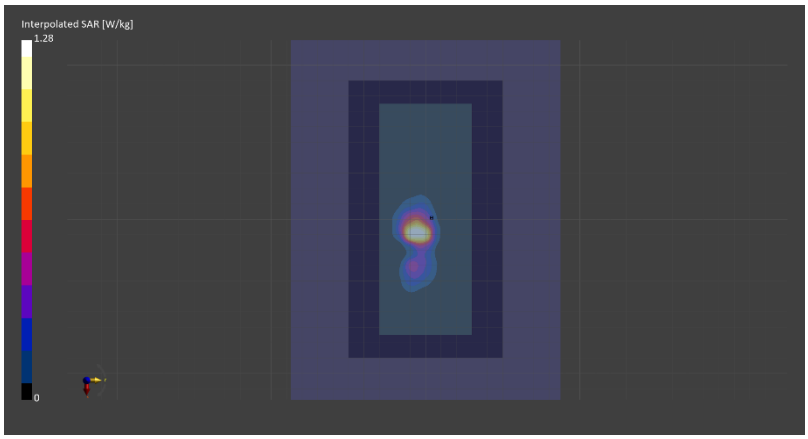
Communication System: UID 10317, WLAN; Communication System Band: U-NII-2C Standalone; Frequency 5660.000 MHz;
Communication System PAR: ;

Medium parameters used: f= 5660.000; σ = 5.00 S/m; ε_r = 35.0; Head Simulating Liquid;
Phantom section: Flat section
Measurement Standard: DASY8 (IEC/IECC)

DASY Configuration:

- Probe: EX3DV4 - SN7827; ConvF(5.04, 4.91, 4.7); Calibrated: 2024-06-17
  - Sensor-Surface: 1.4 mm (VMS + 6p), Mother scan peak deviation; 0.23; Mother scan avg offset: 0.72;
  - Electronics: DAE4ip - SN1774; Calibrated: 2024-06-18
  - Phantom: MFP V8.0 Center
  - DASY8 16.4.0.5005

U-NII-2C Standalone, IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle), CH132, EDGE LEFT, 0.00 mm
Area Scan: Measurement grid: (100.0 mm x 180.0 mm)
Zoom Scan: Measurement grid: (22.0 mm x 22.0 mm x 22.0 mm)
Reference Value = 0.56 V/m; Power Drift = 0.13 dB
SAR(1 g) = 1.01 W/kg; SAR(10g) = 0.289 W/kg (Positive only)
Smallest distance from peaks to all points 3dB below = 6.8 mm
Ratio of SAR at M2 to SAR at M1 = 61.7%



Plot 13

Date/Time: 2024-12-19, 22:04

Test Laboratory: Verkotan Oy

DUT: Carescape ONE

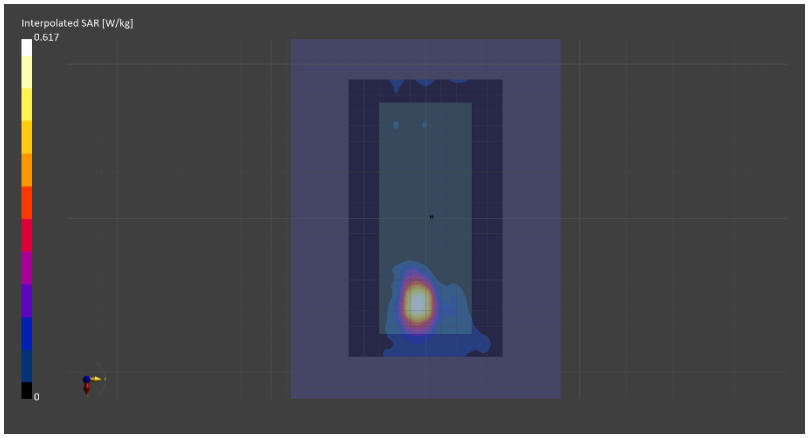
Communication System: UID 10317, WLAN; Communication System Band: U-NII-2C Standalone; Frequency 5660.000 MHz;
Communication System PAR: ;

Medium parameters used: f= 5660.000; σ = 5.00 S/m; ε_r = 35.0; Head Simulating Liquid;
Phantom section: Flat section
Measurement Standard: DASY8 (IEC/IECC)

DASY Configuration:

- Probe: EX3DV4 - SN7827; ConvF(5.04, 4.91, 4.7); Calibrated: 2024-06-17
  - Sensor-Surface: 1.4 mm (VMS + 6p), Mother scan peak deviation; 0.20; Mother scan avg offset: 0.14;
  - Electronics: DAE4ip - SN1774; Calibrated: 2024-06-18
  - Phantom: MFP V8.0 Center
  - DASY8 16.4.0.5005

U-NII-2C Standalone, IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle), CH132, EDGE LEFT, 0.00 mm
Area Scan: Measurement grid: (100.0 mm x 180.0 mm)
Zoom Scan: Measurement grid: (22.0 mm x 22.0 mm x 22.0 mm)
Reference Value = 0.24 V/m; Power Drift = 0.10 dB
SAR(1 g) = 0.588 W/kg; SAR(10g) = 0.202 W/kg (Positive only)
Smallest distance from peaks to all points 3dB below = 8.4 mm
Ratio of SAR at M2 to SAR at M1 = 60.3%



APPENDIX D: RELEVANT PAGES FROM PROBE CALIBRATION REPORTS

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client: Verkotan, Oulu, Finland
Certificate No.: EX-3892_Apr24

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:3892
Calibration procedure(s)	QA CAL-01.v10, QA CAL-12.v10, QA CAL-14.v7, QA CAL-23.v6, QA CAL-25.v8 Calibration procedure for dosimetric E-field probes
Calibration date	April 15, 2024

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3) °C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP2	SN: 104778	26-Mar-24 (No. 217-04036/04037)	Mar-25
Power sensor NRP-Z91	SN: 103244	26-Mar-24 (No. 217-04036)	Mar-25
OCP DAK-3.5 (weighted)	SN: 1249	05-Oct-23 (OCP-DAK3.5-1249_Oct23)	Oct-24
OCP DAK-12	SN: 1016	05-Oct-23 (OCP-DAK12-1016_Oct23)	Oct-24
Reference 20 dB Attenuator	SN: CC2552 (20x)	26-Mar-24 (No. 217-04046)	Mar-25
DAE4	SN: 660	23-Feb-24 (No. DAE4-660_Feb24)	Feb-25
Reference Probe EX3DV4	SN: 7349	03-Nov-23 (No. EX3-7349_Nov23)	Nov-24

Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-22)	In house check: Jun-24
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-22)	In house check: Jun-24
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-22)	In house check: Jun-24
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-22)	In house check: Jun-24
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-22)	In house check: Oct-24

	Name	Function	Signature
Calibrated by	Joanna Lleshaj	Laboratory Technician	
Approved by	Sven Kühn	Technical Manager	

Issued: April 15, 2024

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: EX-3892_Apr24 Page 1 of 9

Parameters of Probe: EX3DV4 - SN:3892

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc ($k = 2$)
Norm ($\mu V/(V/m)^2$) [A]	0.47	0.39	0.49	±10.1%
DCP (mV) [B]	102.6	104.9	102.5	±4.7%

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B $dB\sqrt{\mu V}$	C	D dB	VR mV	Max dev.	Max Unc[E] $k = 2$
0	CW	X	0.00	0.00	1.00	0.00	118.3	±1.9%	±4.7%
		Y	0.00	0.00	1.00		139.8		
		Z	0.00	0.00	1.00		123.5		

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of Norm X,Y,Z do not affect the E^2-field uncertainty inside TSL (see Page 5).
[B] Linearization parameter uncertainty for maximum specified field strength.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

Parameters of Probe: EX3DV4 - SN:3892

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle	34.0°
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

Note: Measurement distance from surface can be increased to 3–4 mm for an *Area Scan* job.

Parameters of Probe: EX3DV4 - SN:3892

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz)[C]	Relative Permittivity[F]	Conductivity[F] (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha[G]	Depth[G] (mm)	Unc ($k = 2$)
300	45.3	0.87	11.28	11.28	11.28	0.09	1.00	±13.3%
450	43.5	0.87	10.66	10.66	10.66	0.16	1.30	±13.3%
600	42.7	0.88	10.14	10.14	10.14	0.10	1.25	±13.3%
750	41.9	0.89	9.10	9.76	9.42	0.38	1.27	±11.0%
900	41.5	0.97	9.05	9.23	9.06	0.37	1.27	±11.0%
1750	40.1	1.37	8.02	8.45	7.93	0.26	1.27	±11.0%
1950	40.0	1.40	7.72	8.09	7.63	0.29	1.27	±11.0%
2450	39.2	1.80	7.14	7.45	7.00	0.30	1.27	±11.0%
2600	39.0	1.96	6.97	7.29	6.83	0.29	1.27	±11.0%
4400	36.9	3.84	6.07	6.33	5.93	0.37	1.27	±13.1%
4800	36.4	4.25	5.75	6.00	5.64	0.37	1.27	±13.1%

[C] Frequency validity above 300 MHz of ±100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ±50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ±10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4–9 MHz, and ConvF assessed at 13 MHz is 9–19 MHz. Above 5 GHz frequency validity can be extended to ±110 MHz.
[F] The probes are calibrated using tissue simulating liquids (TSL) that deviate for ε and σ by less than ±5% from the target values (typically better than ±3%) and are valid for TSL with deviations of up to ±10% if SAR correction is applied.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ±1% for frequencies below 3 GHz and below ±2% for frequencies between 3–6 GHz at any distance larger than half the probe tip diameter from the boundary.

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client	Verkotan Oulu, Finland	Certificate No.	EX-7827_Jun24

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:7827
Calibration procedure(s)	QA CAL-01.v10, QA CAL-12.v10, QA CAL-14.v7, QA CAL-23.v6, QA CAL-25.v8 Calibration procedure for dosimetric E-field probes
Calibration date	June 17, 2024

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP2	SN: 104778	26-Mar-24 (No. 217-04036/04037)	Mar-25
Power sensor NRP-Z91	SN: 103244	26-Mar-24 (No. 217-04036)	Mar-25
OCP DAK-3.5 (weighted)	SN: 1249	05-Oct-23 (OCP-DAK3.5-1249_Oct23)	Oct-24
OCP DAK-12	SN: 1016	05-Oct-23 (OCP-DAK12-1016_Oct23)	Oct-24
Reference 20 dB Attenuator	SN: CC2552 (20x)	26-Mar-24 (No. 217-04046)	Mar-25
DAE4	SN: 660	23-Feb-24 (No. DAE4-660_Feb24)	Feb-25
Reference Probe EX3DV4	SN: 7349	03-Nov-23 (No. EX3-7349_Nov23)	Nov-24

Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-22)	In house check: Jun-24
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-22)	In house check: Jun-24
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-22)	In house check: Jun-24
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-22)	In house check: Jun-24
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-22)	In house check: Oct-24

	Name	Function	Signature
Calibrated by	Joanna Lleshaj	Laboratory Technician	
Approved by	Sven Kühn	Technical Manager	i.A.

Issued: June 17, 2024

Parameters of Probe: EX3DV4 - SN:7827

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc ($k = 2$)
Norm ($\mu V/(V/m)^2$) [A]	0.68	0.59	0.65	±10.1%
DCP (mV) [B]	105.2	106.7	108.2	±4.7%

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B dB$\sqrt{\mu V}$	C	D dB	VR mV	Max dev.	Max Unc[E] $k = 2$
0	CW	X	0.00	0.00	1.00	0.00	125.5	±1.3%	±4.7%
		Y	0.00	0.00	1.00		139.9		
		Z	0.00	0.00	1.00		124.4		
10352	Pulse Waveform (200Hz, 10%)	X	1.50	60.42	6.26	10.00	60.0	±3.0%	±9.6%
		Y	1.76	61.64	7.01		60.0		
		Z	1.67	61.35	6.78		60.0		
10353	Pulse Waveform (200Hz, 20%)	X	0.78	60.00	4.82	6.99	80.0	±2.3%	±9.6%
		Y	0.79	60.00	5.06		80.0		
		Z	0.83	60.00	5.09		80.0		
10354	Pulse Waveform (200Hz, 40%)	X	0.00	124.15	0.75	3.98	95.0	±2.7%	±9.6%
		Y	20.00	72.00	7.00		95.0		
		Z	0.17	133.95	0.01		95.0		
10355	Pulse Waveform (200Hz, 60%)	X	14.74	159.60	1.72	2.22	120.0	±1.6%	±9.6%
		Y	10.23	158.19	15.01		120.0		
		Z	9.45	157.85	15.62		120.0		
10387	QPSK Waveform, 1 MHz	X	0.46	62.59	11.98	1.00	150.0	±2.8%	±9.6%
		Y	0.47	62.74	12.13		150.0		
		Z	0.39	60.99	10.84		150.0		
10388	QPSK Waveform, 10 MHz	X	1.23	65.53	13.42	0.00	150.0	±0.8%	±9.6%
		Y	1.22	65.57	13.18		150.0		
		Z	1.09	64.34	12.54		150.0		
10396	64-QAM Waveform, 100 kHz	X	1.51	62.93	15.25	3.01	150.0	±1.2%	±9.6%
		Y	1.66	64.17	15.59		150.0		
		Z	1.82	63.85	15.29		150.0		
10399	64-QAM Waveform, 40 MHz	X	2.73	66.19	14.99	0.00	150.0	±1.4%	±9.6%
		Y	2.75	66.45	15.04		150.0		
		Z	2.61	65.77	14.65		150.0		
10414	WLAN CCDF, 64-QAM, 40 MHz	X	3.81	66.67	15.48	0.00	150.0	±2.2%	±9.6%
		Y	3.62	66.20	15.13		150.0		
		Z	3.64	66.28	15.13		150.0		

Note: For details on UID parameters see Appendix

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of Norm X,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Linearization parameter uncertainty for maximum specified field strength.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

Parameters of Probe: EX3DV4 - SN:7827

Sensor Model Parameters

	C1 fF	C2 fF	α V^{-1}	T1 ms V^{-2}	T2 ms V^{-1}	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
x	8.1	58.60	33.51	1.11	0.00	4.90	0.00	0.00	1.00
y	7.3	52.31	32.95	1.60	0.00	4.90	0.35	0.00	1.00
z	7.6	53.89	32.48	4.50	0.00	4.92	0.53	0.00	1.00

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle	-76.1°
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

Note: Measurement distance from surface can be increased to 3–4 mm for an *Area Scan* job.

Parameters of Probe: EX3DV4 - SN:7827

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz)[C]	Relative Permittivity[F]	Conductivity[F] (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha[G]	Depth[G] (mm)	Unc[H] ($k = 2$)
750	41.9	0.89	9.79	9.54	9.13	0.37	1.27	±11.0%
900	41.5	0.97	9.35	9.11	8.72	0.37	1.27	±11.0%
1750	40.1	1.37	8.09	7.88	7.54	0.36	1.27	±11.0%
1950	40.0	1.40	7.87	7.67	7.34	0.36	1.27	±11.0%
2100	39.8	1.49	7.90	7.69	7.36	0.36	1.27	±11.0%
2300	39.5	1.67	7.64	7.44	7.12	0.36	1.27	±11.0%
2450	39.2	1.80	7.38	7.19	6.88	0.36	1.27	±11.0%
2600	39.0	1.96	7.20	7.02	6.72	0.36	1.27	±11.0%
3300	38.2	2.71	6.66	6.49	6.21	0.36	1.27	±13.1%
3500	37.9	2.91	6.71	6.53	6.26	0.36	1.27	±13.1%
3700	37.7	3.12	6.62	6.45	6.17	0.36	1.27	±13.1%
3900	37.5	3.32	6.47	6.30	6.03	0.36	1.27	±13.1%
4100	37.2	3.53	6.38	6.21	5.95	0.36	1.27	±13.1%
5250	35.9	4.71	5.55	5.41	5.18	0.31	1.27	±13.1%
5600	35.5	5.07	5.04	4.91	4.70	0.28	1.27	±13.1%
5750	35.4	5.22	5.09	4.96	4.75	0.27	1.27	±13.1%

[C] Frequency validity above 300 MHz of ±100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ±50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ±10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4–9 MHz, and ConvF assessed at 13 MHz is 9–19 MHz. Above 5 GHz frequency validity can be extended to ±110 MHz.

[F] The probes are calibrated using tissue simulating liquids (TSL) that deviate for ε and σ by less than ±5% from the target values (typically better than ±3%) and are valid for TSL with deviations of up to ±10% if SAR correction is applied.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ±1% for frequencies below 3 GHz and below ±2% for frequencies between 3–6 GHz at any distance larger than half the probe tip diameter from the boundary.

[H] The stated uncertainty is the total calibration uncertainty ($k = 2$) of Norm-ConvF. Therefore, The uncertainty stated is equivalent to the uncertainty component with the symbol CF in Table 9 of IEC/IEEE 62209-1528:2020.

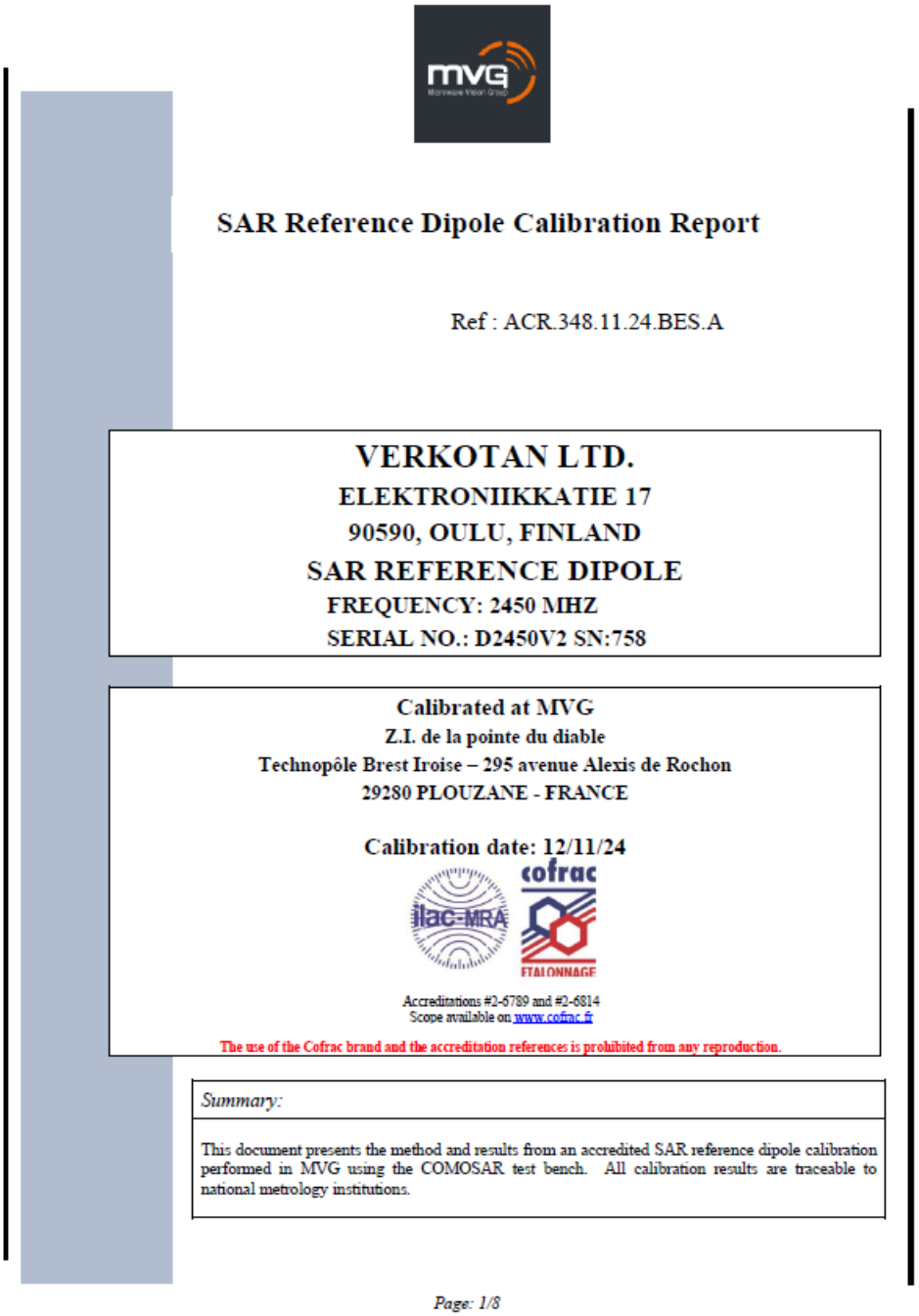
Parameters of Probe: EX3DV4 - SN:7827

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz)[C]	Relative Permittivity[F]	Conductivity[F] (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha[G]	Depth[G] (mm)	Unc[H] ($k = 2$)
6500	34.5	6.07	5.36	5.22	5.00	0.20	1.27	±18.6%

[C] Frequency validity at 6.5 GHz is −600/+700 MHz, and ±700 MHz at or above 7 GHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] The probes are calibrated using tissue simulating liquids (TSL) that deviate for ε and σ by less than ±10% from the target values (typically better than ±6%) and are valid for TSL with deviations of up to ±10%.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ±1% for frequencies below 3 GHz; below ±2% for frequencies between 3–6 GHz; and below ±4% for frequencies between 6–10 GHz at any distance larger than half the probe tip diameter from the boundary.
[H] The stated uncertainty is the total calibration uncertainty ($k = 2$) of Norm-ConvF. Therefore, The uncertainty stated is equivalent to the uncertainty component with the symbol CF in Table 9 of IEC/IEEE 62209-1528:2020.

APPENDIX E: RELEVANT PAGES FROM DIPOLE CALIBRATION REPORTS



SAR Reference Dipole Calibration Report

Ref : ACR.348.11.24.BES.A

VERKOTAN LTD.
ELEKTRONIIKKATIE 17
90590, OULU, FINLAND
SAR REFERENCE DIPOLE
FREQUENCY: 2450 MHZ
SERIAL NO.: D2450V2 SN:758

Calibrated at MVG
Z.I. de la pointe du diable
Technopôle Brest Iroise – 295 avenue Alexis de Rochon
29280 PLOUZANE - FRANCE

Calibration date: 12/11/24

Accreditations #2-6789 and #2-6814
Scope available on www.cofrac.fr

The use of the Cofrac brand and the accreditation references is prohibited from any reproduction.

Summary:

This document presents the method and results from an accredited SAR reference dipole calibration performed in MVG using the COMOSAR test bench. All calibration results are traceable to national metrology institutions.

Page: 1/8

SAR REFERENCE DIPOLE CALIBRATION REPORT Ref: ACR.348.11.24.BES.A

	Name	Function	Date	Signature
Prepared by :	Pedro Ruiz	Technical Manager	12/16/2024	
Checked & approved by:	Pedro Ruiz	Technical Manager	12/16/2024	
Authorized by:	Geraldine Toutain	Quality Manager	12/20/2024	

DocuSigned by:
Géraldine TOUTAIN
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	Customer Name
Distribution :	Verkotan Ltd.

Issue	Name	Date	Modifications
A	Pedro Ruiz	12/16/2024	Initial release

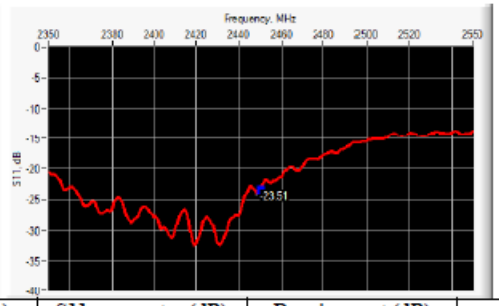
6 CALIBRATION RESULTS

6.1 MECHANICAL DIMENSIONS

L mm		h mm		d mm	
Measured	Required	Measured	Required	Measured	Required
-	51.50 +/- 2%	-	30.40 +/- 2%	-	3.60 +/- 2%

6.2 S11 PARAMETER

6.2.1 S11 parameter in Head Liquid



Frequency (MHz)	S11 parameter (dB)	Requirement (dB)	Impedance
2450	-23.51	-20	44.1Ω - 2.2jΩ

6.3 SAR

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards state that the system validation measurements must be performed using a reference dipole meeting the fore mentioned return loss and mechanical dimension requirements. The validation measurement must be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. Per the standards, the dipole shall be positioned below the bottom of the phantom, with the dipole length centered and parallel to the longest dimension of the flat phantom, with the top surface of the dipole at the described distance from the bottom surface of the phantom by using a prescribed spacer.

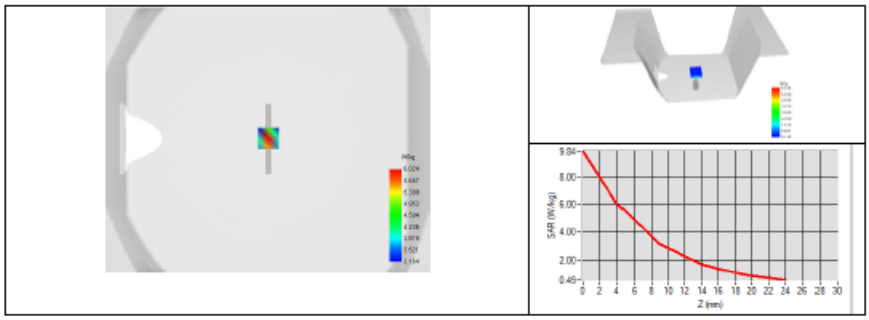
6.3.1 SAR with Head Liquid

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards state that the system validation measurements should produce the SAR values shown below (for phantom thickness of 2 mm), within the uncertainty for the system validation. All SAR values are normalized to 1 W forward power. In bracket, the measured SAR is given with the used input power.

Software	OPENSAR V5
Phantom	SN 13/09 SAM68
Probe	SN 36/23 EPGO431
Liquid	Head Liquid Values: eps' : 41.6 sigma : 1.81

Distance between dipole center and liquid	10.0 mm
Area scan resolution	dx=8mm/dy=8mm
Zoon Scan Resolution	dx=5mm/dy=5mm/dz=5mm
Frequency	2450 MHz
Input power	20 dBm
Liquid Temperature	20 +/- 1 °C
Lab Temperature	20 +/- 1 °C
Lab Humidity	30-70 %

Frequency	1g SAR (W/kg)			10g SAR (W/kg)		
	Measured	Measured normalized to 1W	Target normalized to 1W	Measured	Measured normalized to 1W	Target normalized to 1W
2450 MHz	5.35	53.53	52.40	2.59	25.86	24.00



SAR Reference Dipole Calibration Report

Ref : ACR.348.13.24.BES.A

VERKOTAN LTD.
ELEKTRONIIKKATIE 17
90590, OULU, FINLAND
SAR REFERENCE DIPOLE
FREQUENCY: 5200-5800 MHZ
SERIAL NO.: D5GHZV2 SN:1014

Calibrated at MVG
Z.I. de la pointe du diable
Technopôle Brest Iroise – 295 avenue Alexis de Rochon
29280 PLOUZANE - FRANCE

Calibration date: 12/11/24

Accreditations #2-6789 and #2-6814
Scope available on www.cofrac.fr

Summary:

This document presents the method and results from an accredited SAR reference dipole calibration performed in MVG using the COMOSAR test bench. All calibration results are traceable to national metrology institutions.

Page: 1/9

SAR REFERENCE DIPOLE CALIBRATION REPORT Ref: ACR.348.13.24.BES.A

	Name	Function	Date	Signature
Prepared by :	Pedro Ruiz	Technical Manager	12/16/2024	
Checked & approved by:	Pedro Ruiz	Technical Manager	12/16/2024	
Authorized by:	Geraldine Toutain	Quality Manager	12/20/2024	

DocuSigned by:
Géraldine TOUTAIN
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	Customer Name
Distribution :	Verkotan Ltd.

Issue	Name	Date	Modifications
A	Pedro Ruiz	12/16/2024	Initial release

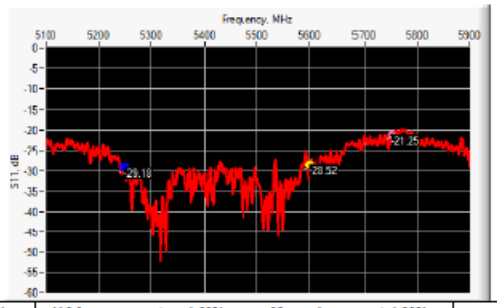
6 CALIBRATION RESULTS

6.1 MECHANICAL DIMENSIONS

L mm		h mm		d mm	
Measured	Required	Measured	Required	Measured	Required
-	20.60 +/- 2%	-	40.30 +/- 2%	-	3.60 +/- 2%

6.2 S11 PARAMETER

6.2.1 S11 parameter in Head Liquid



Frequency (MHz)	S11 parameter (dB)	Requirement (dB)	Impedance
5250	-29.18	-20	47.3Ω + 2.0jΩ
5600	-28.52	-20	49.9Ω - 3.7jΩ
5750	-21.25	-20	42.1Ω - 0.6jΩ

6.3 SAR

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards state that the system validation measurements must be performed using a reference dipole meeting the fore mentioned return loss and mechanical dimension requirements. The validation measurement must be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. Per the standards, the dipole shall be positioned below the bottom of the phantom, with the dipole length centered and parallel to the longest dimension of the flat phantom, with the top surface of the dipole at the described distance from the bottom surface of the phantom by using a prescribed spacer.

6.3.1 SAR with Head Liquid

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards state that the system validation measurements should produce the SAR values shown below (for phantom thickness of 2 mm), within the uncertainty for the system validation. All SAR values are normalized to 1 W forward power. In bracket, the measured SAR is given with the used input power.

Software	OPENSAR V5
Phantom	SN 13/09 SAM68
Probe	SN 36/23 EPGO431

Liquid	Head Liquid Values @ 5250 MHz: eps' : 35.2 sigma : 4.66 Head Liquid Values @ 5600 MHz: eps' : 34.1 sigma : 4.99 Head Liquid Values @ 5750 MHz: eps' : 33.7 sigma : 5.20
Distance between dipole center and liquid	10.0 mm
Area scan resolution	dx=8mm/dy=8mm
Zoon Scan Resolution	dx=4mm/dy=4mm/dz=2mm
Frequency	5250 MHz 5600 MHz 5750 MHz
Input power	20 dBm
Liquid Temperature	20 +/- 1 °C
Lab Temperature	20 +/- 1 °C
Lab Humidity	30-70 %

Frequency	1g SAR (W/kg)			10g SAR (W/kg)		
	Measured	Measured normalized to 1W	Target normalized to 1W	Measured	Measured normalized to 1W	Target normalized to 1W
5250 MHz	7.55	75.47	77.00	2.18	21.84	22.1
5600 MHz	8.54	85.38	78.30	2.49	24.90	23.20
5750 MHz	7.56	75.58	78.1	2.20	21.96	22.3

SAR MEASUREMENT PLOTS @ 5250 MHz