

SAR Compliance Test Report

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Tested device:	EXIA		
Related reports:	-		
Testing has been carried out in accordance with:	47CFR §2.1093 Radiofrequency Radiation Exposure Evaluation: Portable Devices FCC published RF exposure KDB procedures 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04 447498 D04 Interim General RF Exposure Guidance v01 248227 D01 802.11 Wi-Fi SAR v02r02 941225 D01 3G SAR Procedures v03r01 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 RSS-102, Issue 6, 2023 Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)		
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:

23.07.2025

Laboratory Manager

Miia Nurkkala

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1. SUMMARY OF SAR TEST REPORT

1.1 Test Details

Device under Test (DUT):

Product:	Exoskeleton
Manufacturer:	German Bionic Systems GmbH
Model:	EXIA
Serial Number:	99-99-00-71, 99-99-00-70
FCC ID Number:	VVX-LM843, 2AJYU-8PYA007
ISED ID Number:	10531A-LM843, 23761-8PYA008
DUT Number:	20049, 20050
Battery Type used in testing:	Li-Ion Battery
State of the Sample:	Production sample

Testing information:

Testing performed:	21.05.2025 – 14.7-2025
Notes:	-
Document history & changes:	Initial version
Document ID:	FCC ISED_SAR report_EXIA_ID7573_23072025
Temperature °C	22±2 / Controlled
Humidity RH%	30±20 / Controlled
Measurement performed by:	Ilari Kinnunen, Kirsi Kyllönen, Miia Nurkkala
FCC Test Firm Designation Number:	F10005
ISED Company Number:	22218

1.2 Maximum Results

The maximum reported* SAR values for Body-worn 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) and Health Canada's RF exposure guideline, Safety Code 6 for Head/Body SAR_{1g} is 1.6 W/kg.

1.2.1 Standalone SAR

System	Highest Reported* SAR _{1g} [W/kg] in Body-Worn Exposure Condition, 0mm separation distance	Result
WCDMA 2	0.40	PASS
WCDMA 4	0.37	PASS
WCDMA 5	0.54	PASS
LTE 2	0.63	PASS
LTE 5	0.40	PASS
LTE 7	0.39	PASS
LTE 12	0.42	PASS
LTE 13	0.28	PASS
LTE 66	0.52	PASS
2.4 GHz WLAN	0.034	PASS
5 GHz WLAN	0.072	PASS

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

1.2.2 Simultaneous Transmission SAR

Highest Simultaneous Transmission SAR	SAR _{1g} [W/kg] in Body-Worn Exposure Condition	Result
LTE 2 + 5 GHz WLAN	0.702	PASS

1.2.3 Maximum Drift

Maximum Drift During Measurements	-2.02dB*
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*Larger than 5% drifts included to scaling factors

1.2.4 Measurement Uncertainty

DASY5 System, SAR 1g: 300 MHz – 3 GHz:

Expanded Uncertainty (k=2) 95 %	±22.6 %
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DASY5 System, SAR 1g: 3 – 6 GHz:

Expanded Uncertainty (k=2) 95 %	±23.3 %
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2. DESCRIPTION OF THE DEVICE UNDER TEST (DUT)

DUT is an exoskeleton that combines the efficiency and power of a machine with human decision-making and intelligence. It actively supports and enhances the user's movements, reducing fatigue during physically demanding tasks. It supports WCDMA, LTE, WLAN 2.4 GHz and WLAN 5 GHz wireless technologies. WLAN 5 GHz is supported up to 5320 MHz and channels above this frequency are disabled.



Figure 1 Overview of the DUT

Device Category	Portable
Exposure Environment	General population uncontrolled

2.1 Supported Frequency Bands and Operational Modes

TX Frequency bands	Modes of Operation	Transmitter Frequency Range [MHz]
	WCDMA 2	1850 – 1910
	WCDMA 4	1710 – 1755
	WCDMA 5	824 – 849
	LTE 2	1850 – 1910
	LTE 5	824 – 849
	LTE 7	2500 – 2570
	LTE 12	698 – 716
	LTE 13	777 – 787
	LTE 66	1710 – 1780
	2.4 GHz WLAN	2412 – 2462
	5 GHz WLAN	5180 – 5320

2.2 Test Exemptions

2.2.1 Excluded Bands from Testing

According to April 2015 TCB workshop, SAR test exclusion can be applied for testing overlapping LTE bands when the specified maximum output power, including tune-up tolerance, is less or same for the smaller band as for the larger band.

The channel bandwidth and other operating parameters for the smaller band must be fully supported by the larger band.

For this product:

- LTE-M1 4 band, 1710-1755 MHz, is excluded from the testing as it is fully covered by LTE-M1 66 band, 1710-1780 MHz

3. OUTPUT POWER

3.1 Maximum specified conducted output power

From the customer, including tune-up tolerances;

WCDMA	Output power [dBm]	Tolerance $\pm$ [dB]	Max Output Power [dBm]
2	24	1/-3	25
4	24	1/-3	25
5	24	1/-3	25

LTE	Output power [dBm]	Tolerance $\pm$ [dB]	Max Output Power [dBm]
2	23	+/-2.7	25.7
5	23	+/-2.7	25.7
7	23	+/-2.7	25.7
12	23	+/-2.7	25.7
13	23	+/-2.7	25.7
66	23	+/-2.7	25.7

2.4GHz WLAN	Max Output Power [dBm]
802.11b	17
802.11g	15
802.11n	14

5GHz WLAN	Max Output Power [dBm]
802.11a	15
802.11n	14
802.11ac	12

3.2 Tested conducted power

Measured conducted output power at transmitting antenna connector;

WCDMA:

Band	Reference Channel	CH:9262 1852.4 MHz	CH:9400 1880 MHz	CH:9538 1907.6 MHz
WCDMA 2	HSDPA Subtest-1	22.05	21.99	22.31
	HSDPA Subtest-2	22.1	22.06	22.38
	HSDPA Subtest-3	21.71	21.65	21.88
	HSDPA Subtest-4	21.67	21.67	21.83
	HSUPA Subtest-1	22.07	22.14	22.31
	HSUPA Subtest-2	21.68	21.66	21.83
	HSUPA Subtest-3	22.1	22.1	22.36
	HSUPA Subtest-4	22.11	22.1	22.37
	HSUPA Subtest-5	22.14	22.12	22.38
	RMC 12.2K	22.87	22.76	23.36

Band	Reference Channel	CH:1312 1712.4 MHz	CH:1413 1732.6 MHz	CH:1513 1752.6 MHz
WCDMA 4	HSDPA Subtest-1	21.78	21.69	21.68
	HSDPA Subtest-2	21.55	21.49	21.64
	HSDPA Subtest-3	21.04	20.98	21.24
	HSDPA Subtest-4	21.04	20.93	21.16
	HSUPA Subtest-1	21.67	21.55	21.66
	HSUPA Subtest-2	20.95	20.9	21.14
	HSUPA Subtest-3	21.5	21.49	21.59
	HSUPA Subtest-4	21.37	21.35	21.53
	HSUPA Subtest-5	21.44	21.36	21.52
	RMC 12.2K	22.66	22.54	22.7

Band	Reference Channel	CH:4132 826.4 MHz	CH:4183 836.6 MHz	CH:4233 846.6 MHz
WCDMA 5	HSDPA Subtest-1	21.39	21.16	21.17
	HSDPA Subtest-2	21.25	21.08	21.18
	HSDPA Subtest-3	20.73	20.47	20.64
	HSDPA Subtest-4	20.76	20.44	20.56
	HSUPA Subtest-1	21.33	21.09	21.2
	HSUPA Subtest-2	20.75	20.53	20.58
	HSUPA Subtest-3	21.23	21.0	21.13
	HSUPA Subtest-4	21.13	20.99	21.11
	HSUPA Subtest-5	21.09	20.95	21.06
	RMC 12.2K	22.23	22.04	22.23

LTE:

LTE modes are selected for conducted testing based on KDB 941225 D05 SAR for LTE Devices v02r05.

Band / BW [MHz]	Modulation	RBs	RB Start	CH:18607 1850.7 MHz	CH:18900 1880 MHz	CH:19193 1909.3 MHz	3GPP MPR [dB]
B2 / BW:1.4	QPSK	1	0	22.35	22.09	22.12	0
			2	22.54	22.17	22.23	
			5	22.41	22.1	22.18	
		3	0	22.41	22.21	22.22	
			1	22.45	22.25	22.2	
			3	22.44	22.16	22.13	
		6	0	21.37	21.26	21.19	1
	16QAM	1	0	21.22	20.93	20.76	
			2	21.33	20.86	20.88	
			5	21.17	20.76	20.43	
		3	0	21.38	21.07	21.04	
			1	21.43	21.09	21.18	
			3	21.43	21.13	21.12	
		6	0	20.47	20.1	20.25	2

Band / BW [MHz]	Modulation	RBs	RB Start	CH:18615 1851.5 MHz	CH:18900 1880 MHz	CH:19185 1908.5 MHz	3GPP MPR [dB]
B2 / BW:3	QPSK	1	0	22.41	21.87	21.99	0
			7	23.16	21.97	23.08	
			14	22.4	21.96	22.27	
		8	0	21.52	21.08	21.31	1
			3	21.4	21.15	21.23	
			7	21.44	21.16	21.09	
		15	0	21.35	21.2	21.23	
			0	20.57	20.75	20.8	
	16QAM	1	7	20.94	20.86	20.9	2
			14	20.69	20.78	20.73	
			0	20.38	20.1	20.17	
		8	3	20.37	20.07	20.19	
			7	20.23	20.08	20.26	
			0	20.39	20.19	20.27	
		15	0	20.39	20.19	20.27	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:18625 1852.5 MHz	CH:18900 1880 MHz	CH:19175 1907.5 MHz	3GPP MPR [dB]
B2 / BW:5	QPSK	1	0	22.18	22.05	22.23	0
			12	22.16	22.12	22.11	
			24	21.96	21.99	21.95	
		12	0	21.14	21.06	21.2	1
			6	21.23	21.15	21.11	
			13	21.09	21.13	21.05	
		25	0	20.98	21.05	21.25	
			0	20.77	20.53	21.05	
	16QAM	1	12	21.11	20.6	20.75	2
			24	20.61	20.59	20.34	
			0	20.05	19.89	20.09	
		12	6	20.14	20.08	20.23	
			13	20.05	20.07	20.05	
			0	20.09	20.11	20.25	
		25	0	20.09	20.11	20.25	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:18650 1855 MHz	CH:18900 1880 MHz	CH:19150 1905 MHz	3GPP MPR [dB]		
B2 / BW:10	QPSK	1	0	22.29	22.1	22.23	0		
			24	22.17	22.1	22.26			
			49	21.94	22.14	22.13			
		25	0	21.08	21.1	21.24	1		
			12	21.05	21.1	21.15			
			25	20.87	20.99	21.07			
		50	0	21.02	21.07	21.04			
			16QAM	1	0	20.74		20.46	20.39
					24	21.03		20.63	21.11
	49	20.21			20.64	20.4			
	25	0		20.09	20.11	20.19	2		
		12		20.23	20.13	20.27			
		25		20.02	20.22	20.18			
	50	0		20.12	20.28	20.31			

Band / BW [MHz]	Modulation	RBs	RB Start	CH:18675 1857.5 MHz	CH:18900 1880 MHz	CH:19125 1902.5 MHz	3GPP MPR [dB]
B2 / BW:15	QPSK	1	0	22.07	21.87	21.98	0
			37	22.2	22.33	22.41	
			74	21.97	22.16	22.16	
		36	0	21.01	21.0	21.2	1
			19	21.04	21.04	21.14	
			39	20.9	21.06	21.09	
		75	0	21.03	21.03	21.0	
	16QAM		0	20.82	20.36	20.73	
	1	37	20.87	20.89	21.04		
		74	20.55	20.53	20.62		
	36	0	20.19	20.12	20.3	2	
		19	20.22	20.14	20.33		
		39	20.1	20.16	20.05		
		75	0	20.12	20.03		20.08

Band / BW [MHz]	Modulation	RBs	RB Start	CH:18700 1860 MHz	CH:18900 1880 MHz	CH:19100 1900 MHz	3GPP MPR [dB]	
B2 / BW:20	QPSK	1	0	22.34	21.9	21.96	0	
			50	22.31	22.27	22.3		
			99	22.0	22.31	22.17		
		50	0	21.11	21.18	21.24	1	
			25	21.16	21.18	21.29		
			50	20.98	21.07	21.08		
		100	0	21.09	21.08	21.12		
	16QAM	1	0	20.91	20.7	20.65		2
			50	20.91	21.0	21.02		
			99	20.2	20.46	20.39		
		50	0	20.28	20.26	20.11		
			25	20.31	20.35	20.26		
			50	20.14	20.14	20.05		
		100	0	20.18	20.18	20.1		

Band / BW [MHz]	Modulation	RBs	RB Start	CH:19957 1710.7 MHz	CH:20175 1732.5 MHz	CH:20393 1754.3 MHz	3GPP MPR [dB]
B4 / BW:1.4	QPSK	1	0	22.6	22.48	22.55	0
			2	22.65	22.57	22.64	
			5	22.6	22.52	22.62	
		3	0	22.76	22.55	22.59	
			1	22.74	22.57	22.77	
			3	22.69	22.52	22.64	
		6	0	21.71	21.71	21.59	1
	16QAM	1	0	21.24	21.27	21.4	
			2	21.03	21.3	21.36	
			5	20.93	21.14	21.28	
		3	0	21.66	21.46	21.57	
			1	21.87	21.7	21.74	
			3	21.91	21.62	21.71	
		6	0	20.78	20.75	20.83	2

Band / BW [MHz]	Modulation	RBs	RB Start	CH:19965 1711.5 MHz	CH:20175 1732.5 MHz	CH:20385 1753.5 MHz	3GPP MPR [dB]
B4 / BW:3	QPSK	1	0	22.67	22.43	22.34	0
			7	22.75	22.7	22.5	
			14	22.61	22.7	22.59	
		8	0	21.68	21.68	21.7	1
			3	21.74	21.68	21.57	
			7	21.76	21.61	21.61	
		15	0	21.72	21.66	21.55	
	16QAM	1	0	21.18	21.18	21.11	
			7	21.27	21.25	21.57	
			14	21.24	21.16	21.09	
		8	0	20.59	20.27	20.59	2
			3	20.63	20.59	20.68	
			7	20.66	20.52	20.68	
		15	0	20.78	20.61	20.62	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:19975 1712.5 MHz	CH:20175 1732.5 MHz	CH:20375 1752.5 MHz	3GPP MPR [dB]
B4 / BW:5	QPSK	1	0	22.57	22.48	22.49	0
			12	22.61	22.52	22.59	
			24	22.5	22.39	22.66	
		12	0	21.71	21.66	21.74	1
			6	21.75	21.59	21.77	
			13	21.75	21.52	21.77	
		25	0	21.66	21.59	21.68	
	16QAM	1	0	21.3	21.2	21.23	
			12	21.46	21.2	21.42	
			24	21.3	21.14	21.32	
		12	0	20.41	20.41	20.43	2
			6	20.54	20.55	20.67	
			13	20.73	20.46	20.57	
		25	0	20.73	20.55	20.66	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:20000 1715 MHz	CH:20175 1732.5 MHz	CH:20350 1750 MHz	3GPP MPR [dB]
B4 / BW:10	QPSK	1	0	22.53	22.57	22.8	0
			24	22.64	22.55	22.6	
			49	22.27	22.3	22.85	
		25	0	21.6	21.62	21.79	1
			12	21.66	21.57	21.86	
			25	21.56	21.48	21.81	
		50	0	21.59	21.66	21.7	
	16QAM	1	0	21.29	21.27	21.78	
			24	21.27	21.3	21.34	
			49	21.02	21.04	21.24	
		25	0	20.51	20.62	20.64	2
			12	20.68	20.55	20.88	
			25	20.65	20.52	20.72	
		50	0	20.71	20.64	20.72	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:20025 1717.5 MHz	CH:20175 1732.5 MHz	CH:20325 1747.5 MHz	3GPP MPR [dB]
B4 / BW:15	QPSK	1	0	22.64	22.73	22.81	0
			37	22.49	22.41	22.8	
			74	22.66	22.68	22.7	
		36	0	21.75	21.64	21.63	1
			19	21.72	21.57	21.7	
			39	21.56	21.71	21.68	
		75	0	21.64	21.59	21.71	
	16QAM	1	0	21.36	21.45	21.61	
			37	21.43	21.34	21.61	
			74	20.93	21.07	21.38	
		36	0	20.73	20.66	20.61	2
			19	20.8	20.61	20.64	
			39	20.56	20.57	20.64	
		75	0	20.63	20.52	20.64	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:20050 1720 MHz	CH:20175 1732.5 MHz	CH:20300 1745 MHz	3GPP MPR [dB]
B4 / BW:20	QPSK	1	0	22.93	22.8	22.67	0
			50	22.63	22.71	22.95	
			99	22.7	22.7	22.81	
		50	0	21.89	21.77	21.78	1
			25	21.82	21.68	21.79	
			50	21.85	21.68	21.72	
		100	0	21.85	21.84	21.72	
	16QAM	1	0	21.57	21.54	21.62	
			50	21.6	21.25	21.75	
			99	21.17	20.84	21.5	
		50	0	20.91	20.64	20.96	2
			25	20.84	20.66	20.8	
			50	20.79	20.77	20.79	
		100	0	20.82	20.79	20.81	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:20407 824.7 MHz	CH:20525 836.5 MHz	CH:20643 848.3 MHz	3GPP MPR [dB]
B5 / BW:1.4	QPSK	1	0	22.25	22.23	22.16	0
			2	22.34	22.25	22.09	
			5	22.14	22.07	22.33	
		3	0	22.28	22.27	22.49	
			1	22.29	22.36	22.44	
			3	22.25	22.21	22.33	
		6	0	21.29	21.31	21.39	1
	16QAM	1	0	20.98	21.01	21.11	
			2	20.59	21.03	20.8	
			5	20.6	20.92	20.74	
		3	0	20.86	21.4	21.42	
			1	21.51	21.54	21.45	
			3	21.57	21.38	21.51	
		6	0	20.63	20.51	20.25	2

Band / BW [MHz]	Modulation	RBs	RB Start	CH:20415 825.5 MHz	CH:20525 836.5 MHz	CH:20635 847.5 MHz	3GPP MPR [dB]
B5 / BW:3	QPSK	1	0	22.32	22.18	22.4	0
			7	22.06	22.25	22.21	
			14	22.34	22.24	22.17	
		8	0	21.31	21.41	21.46	1
			3	21.28	21.35	21.28	
			7	21.26	21.31	21.41	
		15	0	21.23	21.31	21.43	
	16QAM	1	0	21.0	20.71	20.81	
			7	20.99	20.95	21.18	
			14	20.89	20.49	20.66	
		8	0	20.24	20.27	20.35	2
			3	20.14	20.19	20.34	
			7	20.22	20.26	20.3	
		15	0	20.24	20.4	20.48	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:20425 826.5 MHz	CH:20525 836.5 MHz	CH:20625 846.5 MHz	3GPP MPR [dB]
B5 / BW:5	QPSK	1	0	22.18	22.33	22.04	0
			12	22.36	22.18	22.64	
			24	22.51	21.85	22.27	
		12	0	21.22	21.37	21.32	1
			6	21.39	21.3	21.37	
			13	21.45	21.28	21.39	
		25	0	21.25	21.37	21.3	
	16QAM	1	0	20.98	21.04	20.61	
			12	21.12	21.09	21.1	
			24	21.07	20.84	20.54	
		12	0	19.97	20.3	20.25	2
			6	20.23	20.14	20.31	
			13	20.36	20.11	20.19	
		25	0	20.27	20.28	20.28	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:20450 829 MHz	CH:20525 836.5 MHz	CH:20600 844 MHz	3GPP MPR [dB]
B5 / BW:10	QPSK	1	0	22.21	22.73	22.39	0
			24	22.54	22.44	22.49	
			49	22.52	22.39	22.33	
		25	0	21.44	21.55	21.42	1
			12	21.6	21.39	21.38	
			25	21.68	21.37	21.3	
		50	0	21.49	21.46	21.29	
	16QAM	1	0	21.01	21.71	21.36	
			24	21.2	21.06	21.16	
			49	21.05	20.72	20.91	
		25	0	20.37	20.42	20.25	2
			12	20.53	20.25	20.39	
			25	20.66	20.21	20.36	
		50	0	20.53	20.31	20.3	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:20775 2502.5 MHz	CH:21100 2535 MHz	CH:21425 2567.5 MHz	3GPP MPR [dB]
B7 / BW:5	QPSK	1	0	22.78	22.54	22.74	0
			12	22.99	22.64	22.6	
			24	22.85	22.59	22.82	
		12	0	21.81	21.65	21.81	1
			6	21.9	21.68	21.79	
			13	21.89	21.74	21.87	
		25	0	21.82	21.6	21.83	
	16QAM	1	0	21.47	21.55	21.49	
			12	21.76	21.3	21.48	
			24	21.45	21.29	21.41	
		12	0	20.91	20.44	20.75	2
			6	20.84	20.41	20.71	
			13	20.67	20.51	20.98	
		25	0	20.95	20.6	20.88	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:20800 2505 MHz	CH:21100 2535 MHz	CH:21400 2565 MHz	3GPP MPR [dB]
B7 / BW:10	QPSK	1	0	22.96	22.52	22.77	0
			24	23.0	22.72	22.92	
			49	22.98	22.83	22.77	
		25	0	21.82	21.74	21.89	1
			12	21.84	21.62	21.86	
			25	21.92	21.58	21.9	
		50	0	21.89	21.7	21.96	
	16QAM	1	0	21.5	21.36	21.45	
			24	21.37	21.27	21.25	
			49	21.77	21.38	21.36	
		25	0	20.96	20.69	20.94	2
			12	20.88	20.68	20.99	
			25	21.07	20.65	21.03	
		50	0	21.0	20.72	21.03	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:20825 2507.5 MHz	CH:21100 2535 MHz	CH:21375 2562.5 MHz	3GPP MPR [dB]
B7 / BW:15	QPSK	1	0	22.77	22.67	22.8	0
			37	23.21	22.64	22.73	
			74	22.86	22.86	23.0	
		36	0	21.91	21.62	21.77	1
			19	22.0	21.55	21.68	
			39	21.98	21.54	21.84	
	16QAM	75	0	21.8	21.55	21.86	
			0	21.51	21.37	21.54	
			37	21.91	21.25	21.68	
		36	74	21.76	21.54	21.39	
			0	21.05	20.71	20.98	
			19	21.14	20.72	20.93	
		75	39	21.08	20.71	21.02	2
			0	20.86	20.65	20.84	
			0	20.86	20.65	20.84	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:20850 2510 MHz	CH:21100 2535 MHz	CH:21350 2560 MHz	3GPP MPR [dB]
B7 / BW:20	QPSK	1	0	22.56	22.39	22.39	0
			50	22.77	22.36	22.43	
			99	22.6	22.56	22.68	
		50	0	21.6	21.51	21.7	1
			25	21.8	21.51	21.6	
			50	21.67	21.51	21.8	
	16QAM	100	0	21.61	21.5	21.78	
			0	21.09	21.36	21.36	
			50	21.84	21.46	21.58	
		1	99	21.4	21.24	21.18	
			0	20.71	20.6	20.84	2
			25	20.99	20.61	20.78	
		50	50	20.87	20.73	21.02	
			0	20.76	20.62	20.92	
			0	20.76	20.62	20.92	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:23017 699.7 MHz	CH:23095 707.5 MHz	CH:23173 715.3 MHz	3GPP MPR [dB]
B12 / BW:1.4	QPSK	1	0	22.73	22.75	22.65	0
			2	22.75	22.75	22.8	
			5	22.6	22.77	22.68	
		3	0	22.8	22.8	22.63	
			1	22.74	22.84	22.69	
			3	22.73	22.8	22.68	
	16QAM	6	0	21.83	21.84	21.57	1
			0	21.69	21.45	21.24	
			2	21.53	21.52	21.18	
		1	5	21.53	21.47	21.31	
			0	21.87	21.58	21.66	
			1	21.86	21.88	21.78	
		3	3	21.77	21.91	21.76	
			0	20.92	21.01	20.69	2
			0	20.92	21.01	20.69	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:23025 700.5 MHz	CH:23095 707.5 MHz	CH:23165 714.5 MHz	3GPP MPR [dB]
B12 / BW:3	QPSK	1	0	22.66	22.76	22.73	0
			7	22.61	22.82	22.79	
			14	22.76	22.77	22.79	
		8	0	21.98	21.82	21.82	1
			3	21.92	21.98	21.73	
			7	21.84	22.0	21.79	
		15	0	21.85	21.95	21.71	
	16QAM	1	0	21.74	21.34	21.52	
			7	21.79	21.7	21.32	
			14	21.59	21.59	21.71	
		8	0	20.95	20.86	20.79	2
			3	20.9	20.93	20.68	
			7	20.82	20.86	20.73	
		15	0	20.86	20.77	20.7	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:23035 701.5 MHz	CH:23095 707.5 MHz	CH:23155 713.5 MHz	3GPP MPR [dB]
B12 / BW:5	QPSK	1	0	22.59	22.5	22.48	0
			12	22.54	22.73	22.45	
			24	22.54	22.58	22.61	
		12	0	21.55	21.62	21.54	1
			6	21.43	21.68	21.59	
			13	21.59	21.61	21.38	
		25	0	21.55	21.52	21.45	
	16QAM	1	0	21.55	21.18	21.54	
			12	21.34	21.47	21.51	
			24	21.38	21.22	21.2	
		12	0	20.48	20.27	20.43	2
			6	20.38	20.47	20.54	
			13	20.3	20.5	20.27	
		25	0	20.49	20.43	20.48	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:23060 704 MHz	CH:23095 707.5 MHz	CH:23130 711 MHz	3GPP MPR [dB]
B12 / BW:10	QPSK	1	0	22.16	22.4	22.41	0
			24	22.32	22.47	22.57	
			49	22.38	22.5	22.32	
		25	0	21.25	21.45	21.48	1
			12	21.49	21.48	21.55	
			25	21.54	21.5	21.56	
		50	0	21.51	21.43	21.54	
	16QAM	1	0	21.23	21.11	21.19	
			24	20.87	21.32	21.61	
			49	20.75	21.5	21.17	
		25	0	20.24	20.41	20.5	2
			12	20.37	20.36	20.68	
			25	20.5	20.55	20.52	
		50	0	20.48	20.4	20.75	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:23205 779.5 MHz	CH:23230 782 MHz	CH:23255 784.5 MHz	3GPP MPR [dB]
B13 / BW:5	QPSK	1	0	22.76	22.6	23.04	0
			12	22.98	23.2	23.57	
			24	22.96	23.47	22.87	
		12	0	22.11	22.23	22.25	1
			6	22.24	22.32	22.45	
			13	22.18	22.33	22.38	
		25	0	22.1	22.25	22.33	
	16QAM	1	0	21.85	21.98	21.75	2
			12	22.27	22.25	22.31	
			24	21.82	21.77	22.11	
		12	0	20.8	20.83	21.07	
			6	21.05	21.02	21.18	
			13	20.98	21.17	21.44	
		25	0	20.92	21.16	21.19	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:23230 782 MHz	3GPP MPR [dB]
B13 / BW:10	QPSK	1	0	22.17	0
			24	23.4	
			49	22.58	
		25	0	22.32	1
			12	22.3	
			25	22.19	
		50	0	22.25	
	16QAM	1	0	21.29	2
			24	21.75	
			49	21.4	
		25	0	21.09	
			12	21.08	
			25	21.2	
		50	0	21.14	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:131979 1710.7 MHz	CH:132322 1745 MHz	CH:132665 1779.3 MHz	3GPP MPR [dB]
B66 / BW:1.4	QPSK	1	0	22.24	22.41	22.48	0
			2	22.49	22.55	22.64	
			5	22.45	22.42	22.56	
		3	0	22.48	22.73	22.61	
			1	22.56	22.68	22.59	
			3	22.47	22.59	22.6	
		6	0	21.38	21.51	21.49	1
	16QAM	1	0	21.35	21.24	21.21	
			2	21.03	21.29	21.21	
			5	20.97	21.84	21.18	
		3	0	21.38	21.47	21.47	
			1	21.51	21.6	21.41	
			3	21.38	21.59	21.46	
		6	0	20.29	20.74	20.7	2

Band / BW [MHz]	Modulation	RBs	RB Start	CH:131987 1711.5 MHz	CH:132322 1745 MHz	CH:132657 1778.5 MHz	3GPP MPR [dB]
B66 / BW:3	QPSK	1	0	22.41	22.68	22.6	0
			7	22.69	22.55	22.29	
			14	22.53	22.52	22.4	
		8	0	21.47	21.61	21.57	1
			3	21.54	21.65	21.56	
			7	21.47	21.65	21.48	
		15	0	21.39	21.69	21.62	
	16QAM	1	0	21.03	21.13	20.96	1
			7	21.42	21.39	21.28	
			14	20.93	21.13	21.12	
		8	0	20.48	20.58	20.55	
			3	20.42	20.55	20.41	
			7	20.39	20.52	20.44	
		15	0	20.42	20.72	20.65	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:131997 1712.5 MHz	CH:132322 1745 MHz	CH:132647 1777.5 MHz	3GPP MPR [dB]
B66 / BW:5	QPSK	1	0	22.16	22.47	22.48	0
			12	22.32	22.64	22.95	
			24	22.5	22.64	22.5	
		12	0	21.25	21.57	21.62	1
			6	21.3	21.64	21.52	
			13	21.32	21.62	21.48	
		25	0	21.3	21.65	21.57	
	16QAM	1	0	20.84	21.1	21.09	1
			12	21.25	21.65	21.48	
			24	21.05	21.06	20.85	
		12	0	20.05	20.38	20.7	
			6	20.29	20.43	20.62	
			13	20.39	20.48	20.5	
		25	0	20.48	20.58	20.52	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:132022 1715 MHz	CH:132322 1745 MHz	CH:132622 1775 MHz	3GPP MPR [dB]
B66 / BW:10	QPSK	1	0	22.31	22.42	22.52	0
			24	22.51	22.63	22.51	
			49	22.28	22.42	22.41	
		25	0	21.38	21.54	21.63	1
			12	21.49	21.65	21.47	
			25	21.41	21.62	21.46	
		50	0	21.22	21.58	21.53	
	16QAM	1	0	20.61	21.29	21.3	1
			24	21.1	21.27	21.2	
			49	21.03	21.17	20.89	
		25	0	20.26	20.65	20.72	
			12	20.48	20.58	20.47	
			25	20.4	20.57	20.5	
		50	0	20.38	20.6	20.61	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:132047 1717.5 MHz	CH:132322 1745 MHz	CH:132597 1772.5 MHz	3GPP MPR [dB]
B66 / BW:15	QPSK	1	0	22.37	22.6	22.57	0
			37	22.47	22.76	22.65	
			74	22.48	22.59	22.29	
		36	0	21.34	21.56	21.66	1
			19	21.38	21.61	21.51	
			39	21.26	21.6	21.48	
	16QAM	75	0	21.37	21.51	21.59	
			0	21.09	21.41	21.48	
			37	21.21	21.61	21.46	
		36	74	20.76	21.4	20.9	
			0	20.46	20.55	20.66	
			19	20.51	20.69	20.53	
		75	39	20.39	20.67	20.47	2
			0	20.41	20.6	20.52	

Band / BW [MHz]	Modulation	RBs	RB Start	CH:132072 1720 MHz	CH:132322 1745 MHz	CH:132572 1770 MHz	3GPP MPR [dB]
B66 / BW:20	QPSK	1	0	22.53	22.62	22.36	0
			50	22.69	22.71	22.48	
			99	22.46	22.63	22.34	
		50	0	21.68	21.62	21.56	1
			25	21.56	21.59	21.5	
			50	21.55	21.44	21.26	
	16QAM	100	0	21.58	21.49	21.54	
			0	20.82	21.35	21.29	
			50	21.6	21.51	21.80	
		1	99	20.59	21.37	20.54	
			0	20.52	20.69	20.67	2
		50	25	20.57	20.61	20.55	
			50	20.55	20.63	20.5	
			0	20.53	20.53	20.53	
		100	0				

2.4 GHz WLAN:

Standard	Bandwidth [MHz]	Transmission mode	Data rate [Mbps]	Output power [dBm]		
				CH 1 2412 MHz	CH 6 2437 MHz	CH 11 2462 MHz
802.11b	20	DSSS	1	16.62	16.35	15.88

5GHz WLAN:

Standard	Bandwidth [MHz]	Channel	Frequency [MHz]	Transmission mode	Data Rate [Mbps]	Output power [dBm]
802.11a	20	52	5260	OFDM	6	14.10
802.11a	20	56	5280	OFDM	6	14.40
802.11a	20	60	5300	OFDM	6	14.75
802.11a	20	64	5320	OFDM	6	14.52

WLAN 5 GHz channels above 5320 MHz has been disabled.

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.

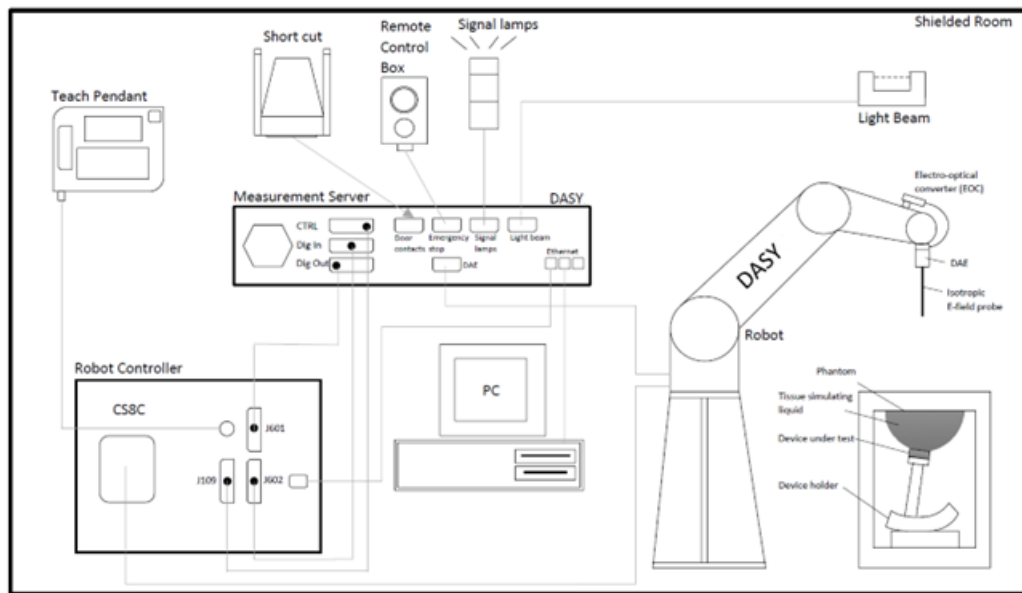


Figure 2 Schematic Laboratory Picture

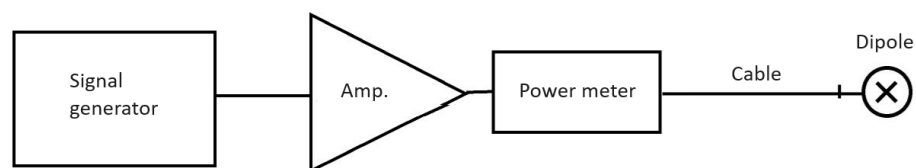


Figure 3. Signal source setup for system check

4.1 Test Equipment List

Test Equipment	Model	Serial Number	Calibration Date	Interval [years]
Amplifier, 800-4200MHz, 50W	5163F	1022	NA	NA
DAE4, converter	DAE4	1332	02/2025	1
DASY5 Software	52.8.8.1258	-	NA	NA
Inline Peak Power Sensor	MA24105A	2102058	11/2024	1
Isotropic DOS probe	EX3DV4	7447	02/2025	1
Network Analyzer	E5071C	MY46102812	05/2025	1
Power Sensor	NRP8S	1419.0006K02-108509-Zh	03/2024	2
Radio Communication Analyzer	MT8820C	6200883099	10/2024	1
Radio Communication Analyzer	MT8820C	6200930942	12/2024	1
Radio Communication Analyzer	MT8820C	6200951734	11/2024	1
Signal Analyzer	MS2830A	6201180758	N/A	N/A
System validation dipole	D1800V2	2d075	12/2024	3
System validation dipole	D1900V2	511	03/2023	3
System validation dipole	D2450V2	758	12/2024	3
System validation dipole	D5GHzV2	1014	12/2024	3
System validation dipole	D835V2	448	03/2023	3
System validation dipole	SID2600	51/18 DIP 2G600-474	12/2024	3
System validation dipole	SID750	49/21 DIP0G750-635	05/2025	3

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

Dipole calibration period supporting data:

		Measured on 09/2024			Calibrated		
Dipole and Serial Number	Frequency [MHz]	Return Loss [dB]	Impedance [Ω]		Return Loss [dB]	Impedance [Ω]	
D835V2-SN:448	835	-23.0	43.6	-1.9	-21.53	42.3	-0.1
D1900V2-SN:511	1900	-23.0	44.5	-3.8	-23.34	48.5	-6.6

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 μ W/g – > 100 mW/g Linearity: ± 0.2 dB (noise: typically <1 μ W/g)
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Application	General dosimetry up to 6 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms

4.2 Phantoms

Eli Phantom:

The phantom used in SAR tests was an ELI phantom, manufactured by SPEAG. ELI phantom is used for compliance testing of handheld and body-mounted wireless devices in the frequency range of 4 MHz to 10 GHz. The phantom conforms to the requirements of IEC/IEEE 62209-1528 and FCC published RF Exposure KDB Procedures. The shell thickness of the bottom plate is 2 ± 0.2 mm.

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 $\pm 10\%$ of the recommended values at frequencies under 3GHz and $\pm 5\%$ 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
1800	D1800V2-2d075	EX3DV4 - SN: 7447	CW	DAE 4 / 1332	38.56	1.34	03/2025
1900	D1900V2-511	EX3DV4 - SN: 7447	CW	DAE 4 / 1332	38.56	1.43	03/2025
2450	D2450V2-758	EX3DV4 - SN: 7447	CW	DAE 4 / 1332	37.65	1.8	03/2025
2600	DIP2G600-474	EX3DV4 - SN: 7447	CW	DAE 4 / 1332	37.47	1.84	03/2025
5250	D5GHzV2-1014	EX3DV4 - SN: 7447	CW	DAE 4 / 1332	34.65	4.55	03/2025
750	DIP G750 - 635	EX3DV4 - SN: 7447	CW	DAE 4 / 1332	41.67	0.89	03/2025
835	D835V2 - 455	EX3DV4 - SN: 7447	CW	DAE 4 / 1332	41.24	0.92	03/2025

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 #
26.5.2025	WB Head	22	1900	250	9.15	38.02	36.6	-3.7	1
27.5.2025	WB Head	22	835	250	2.49	9.36	9.96	6.4	2
28.5.2025	WB Head	22	835	250	2.51	9.36	10.04	7.3	3
30.5.2025	WB Head	22	1800	250	8.91	37.44	35.64	-4.8	4
2.6.2025	WB Head	22	750	250	2.18	8.74	8.72	-0.2	5
2.6.2025	WB Head	22	1900	250	9.06	38.02	36.24	-4.7	6
4.6.2025	WB Head	22	2600	250	13.4	58.26	53.2	-8.0	7
5.6.2025	WB Head	22	2600	250	14.9	58.26	53.2	2.3	8
5.6.2025	WB Head	22	2450	250	12.3	53.53	49.2	-8.1	9
14.7.2025	WB Head	22	5250	100	7.28	75.47	72.8	-3.5	10

4.5.1 Tissue Simulant Verification

Date	Tissue Type	Tissue Temp [°C]	Frequency [MHz]	Measured		Target		Deviation	
				Dielectric Constant [ε]	Conductivity σ [S/m]	Dielectric Constant [ε] Target	Conductivity σ [S/m] Target	ε [%]	σ [%]
26.05.2025	WB Head	22.4	1852.4	39.58	1.41	40.0	1.4	-1.1	0.4
26.05.2025	WB Head	22.4	1860	39.56	1.41	40.0	1.4	-1.1	0.7
26.05.2025	WB Head	22.4	1880	39.53	1.42	40.0	1.4	-1.2	1.5
26.05.2025	WB Head	22.4	1900	39.5	1.43	40.0	1.4	-1.2	2.3
26.05.2025	WB Head	22.4	1907.6	39.48	1.44	40.0	1.4	-1.3	2.6
27.05.2025	WB Head	22.4	779.5	42.12	0.91	41.76	0.89	0.8	1.5
27.05.2025	WB Head	22.4	782	42.1	0.91	41.75	0.89	0.8	1.6
27.05.2025	WB Head	22.4	784.5	42.09	0.91	41.74	0.89	0.8	1.7
27.05.2025	WB Head	22.4	829	41.88	0.93	41.53	0.9	0.8	3.1
27.05.2025	WB Head	22.4	835	41.86	0.93	41.5	0.9	0.9	3.3
27.05.2025	WB Head	22.4	836.5	41.85	0.93	41.5	0.9	0.8	3.2
27.05.2025	WB Head	22.4	844	41.82	0.93	41.5	0.91	0.8	2.6
28.05.2025	WB Head	22.4	826.4	41.96	0.91	41.54	0.9	1.0	1.7
28.05.2025	WB Head	22.4	835	41.92	0.92	41.5	0.9	1.0	1.9
28.05.2025	WB Head	22.4	836.6	41.92	0.92	41.5	0.9	1.0	1.8
28.05.2025	WB Head	22.4	846.6	41.88	0.92	41.5	0.91	0.9	1.0
30.05.2025	WB Head	21.9	1712.4	39.05	1.32	40.13	1.35	-2.7	-2.3
30.05.2025	WB Head	21.9	1720	39.03	1.32	40.11	1.35	-2.7	-2.4
30.05.2025	WB Head	21.9	1732.6	39.0	1.33	40.1	1.36	-2.7	-2.3
30.05.2025	WB Head	21.9	1745	38.98	1.34	40.08	1.37	-2.7	-2.4
30.05.2025	WB Head	21.9	1752.6	38.96	1.34	40.07	1.37	-2.8	-2.4
30.05.2025	WB Head	21.9	1770	38.93	1.35	40.04	1.38	-2.8	-2.4
30.05.2025	WB Head	21.9	1800	38.87	1.37	40.0	1.4	-2.8	-2.4
02.06.2025	WB Head	22.2	704	43.44	0.89	42.15	0.89	3.1	0.9
02.06.2025	WB Head	22.2	707.5	43.42	0.9	42.13	0.89	3.1	1.0
02.06.2025	WB Head	22.2	711	43.4	0.9	42.11	0.89	3.1	1.1
02.06.2025	WB Head	22.2	750	43.2	0.91	41.9	0.89	3.1	2.5
04.06.2025	WB Head	22.2	2510	38.15	1.84	39.12	1.86	-2.5	-1.5
04.06.2025	WB Head	22.2	2535	38.1	1.85	39.09	1.89	-2.5	-2.0
04.06.2025	WB Head	22.2	2600	38.0	1.9	39.0	1.96	-2.6	-3.1
05.06.2025	WB Head	21.6	2412	39.03	1.77	39.27	1.77	-0.6	0.5
05.06.2025	WB Head	21.6	2437	38.99	1.79	39.22	1.79	-0.6	0.1
05.06.2025	WB Head	21.6	2450	38.97	1.8	39.2	1.8	-0.6	0.0
05.06.2025	WB Head	21.6	2462	38.94	1.81	39.18	1.81	-0.6	-0.2
05.06.2025	WB Head	21.6	2510	38.87	1.84	39.12	1.86	-0.6	-1.1
05.06.2025	WB Head	21.6	2560	38.78	1.88	39.05	1.92	-0.7	-1.9
05.06.2025	WB Head	21.6	2600	38.71	1.91	39.0	1.96	-0.8	-2.6
14.07.2025	WB Head	22	5250	36.74	4.75	35.95	4.71	2.2	0.9
14.07.2025	WB Head	22	5260	36.73	4.76	35.94	4.72	2.2	0.9
14.07.2025	WB Head	22	5300	36.67	4.8	35.9	4.76	2.1	0.7
14.07.2025	WB Head	22	5320	36.65	4.81	35.88	4.78	2.1	0.7

5. TEST PROCEDURE

Test configurations for SAR testing were selected based on conducted power measurements. Low, mid and high frequency channels for the configuration with the highest SAR value were tested as per ISED notice 2016-DRS001. For cellular technologies, the device was set to transmit using maximum power with a communication tester.

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 was tested with 802.11b standard with data rate of 1Mbit/s and 5GHz WLAN was tested with 802.11a standard with data rate of 6Mbit/s.

WLAN 5 GHz channels above 5320 MHz has been disabled.

5.1 Test Positions

5.1.1 Body-worn Configuration, 0mm separation distance

Body SAR was tested from the user's side, which would be pressed against the user's back. For the testing the vest worn with the device was detached to be able to reach the shortest possible test separation.

The device was placed on the top of a Rohacell and placed below the flat phantom with 0mm separation.

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

Uncertainty Budget According to IEC/IEEE 62209-1528 (Frequency band: 300MHz–3GHz range)								
Symbol	Error Description	Uncert. value	Prob. Dist.	Div.	(c) (1g)	(c) (10g)	Std. Unc. (1g)	Std. Unc. (10g)
Measurement System Errors								
CF	Probe Calibration	±13.3%	N	$\sqrt{2}$	1	1	±6.7%	±6.7%
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	±2.8%	R	$\sqrt{3}$	1	1	±1.6%	±1.6%
ISO	Probe Isotropy	±7.6%	R	3	1	1	±4.4%	±4.4%
DAE	Other Probe+Electronic	±0.8%	N	1	1	1	±0.8%	±0.8%
AMB	RF Ambient	±1.8%	N	1	1	1	±1.8%	±1.8%
Δ_{sys}	Probe Positioning	±0.006mm	N	1	0.14	0.14	±0.10%	±0.10%
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	$\sqrt{1}$	0.78	0.71	±2.0%	±1.8%
LIQ(T_{σ})	Conductivity (temp.) ^{BB}	±3.3%	R	$\sqrt{3}$	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	±1.0%	N	1	1	1	±1.0%	±1.0%
H	Device Holder	±3.6%	N	$\sqrt{1}$	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	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%	±0.0%
RF _{in}	Unc. Input Power ^{val}	±0.0%	N	1	1	1	±0.0%	±0.0%
Correction to the SAR results								
C(ϵ, σ)	Deviation to Target	±1.9%	N	$\sqrt{1}$	1	0.84	±1.9%	±1.6%
C(R)	SAR scaling ^p	±0.0%	R	3	1	1	±0.0%	±0.0%
u(Δ SAR)	Combined Uncertainty						±11.3%	±11.2%
U	Expanded Uncertainty						±22.6%	±22.5%

Uncertainty Budget According to IEC/IEEE 62209-1528 (Frequency band: 3GHz–6GHz range)								
Symbol	Error Description	Uncert. value	Prob. Dist.	Div.	(c) _i (1g)	(c) _i (10g)	Std. Unc. (1g)	Std. Unc. (10g)
Measurement System Errors								
CF	Probe Calibration	±13.1%	N	√2	1	1	±6.55%	±6.55%
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	±2.6%	R	√3	1	1	±1.5%	±1.5%
ISO	Probe Isotropy	±7.6%	R	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 _{sys}	Probe Positioning	±0.005mm	N	1	0.29	0.29	±0.2%	±0.2%
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	√3	0.78	0.71	±1.5%	±1.4%
EPS	Phantom Permittivity	±14.0%	R	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	√3	1	1	±1.4%	±1.4%
TAS	Time-average SAR	±1.7%	R	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%	±0.0%
RF _{in}	Unc. Input Power ^{val}	±0.0%	N	1	1	1	±0.0%	±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	±0.0%	R	3	1	1	±0.0%	±0.0%
u(ΔSAR)	Combined Uncertainty						±11.6%	±11.6%
U	Expanded Uncertainty						±23.3%	±23.1%

7. TEST RESULTS

7.1 SAR Results for Body Exposure Condition with 0mm separation

WCDMA:

Band	Channel	Frequency [MHz]	Mode	Maximum Power [dBm]	Conducted Power [dBm]	Test Position	Measured SAR _{1g} [W/kg]	Power Drift [dB]	Duty Cycle	Scaling Factor	Reported SAR _{1g} [W/kg]	Plot #
WCDMA 2	9400	1880	RMC 12.2K	25	22.76	Back	0.237	-0.02	1:1	1.67	0.40	11
WCDMA 2	9262	1852.4	RMC 12.2K	25	22.87	Back	0.241	-0.13	1:1	1.63	0.39	
WCDMA 2	9538	1907.6	RMC 12.2K	25	23.36	Back	0.182	-0.14	1:1	1.46	0.27	

Band	Channel	Frequency [MHz]	Mode	Maximum Power [dBm]	Conducted Power [dBm]	Test Position	Measured SAR _{1g} [W/kg]	Power Drift [dB]	Duty Cycle	Scaling Factor	Reported SAR _{1g} [W/kg]	Plot #
WCDMA 4	1413	1732.6	RMC 12.2K	25	22.54	Back	0.134	-0.04	1:1	1.76	0.24	
WCDMA 4	1312	1712.4	RMC 12.2K	25	22.66	Back	0.129	-0.03	1:1	1.71	0.22	
WCDMA 4	1513	1752.6	RMC 12.2K	25	22.7	Back	0.215	0.05	1:1	1.70	0.37	12

Band	Channel	Frequency [MHz]	Mode	Maximum Power [dBm]	Conducted Power [dBm]	Test Position	Measured SAR _{1g} [W/kg]	Power Drift [dB]	Duty Cycle	Scaling Factor	Reported SAR _{1g} [W/kg]	Plot #
WCDMA 5	4183	836.6	RMC 12.2K	25	22.04	Back	0.247	-0.01	1:1	1.98	0.49	
WCDMA 5	4132	826.4	RMC 12.2K	25	22.23	Back	0.236	-0.21	1:1	1.89	0.45	
WCDMA 5	4233	846.6	RMC 12.2K	25	22.23	Back	0.285	-0.13	1:1	1.89	0.54	13

LTE:

Band	Channel	Frequency [MHz]	Modulation / BW [MHz]	RB Size	RB Offset	Maximum Power [dBm]	Conducted Power [dBm]	Test position	Measure SAR _{1g} [W/kg]	Power Drift [dB]	Duty Cycle	Scaling Factor	Reported SAR _{1g} [W/kg]	Plot #
LTE 2	18700	1860	QPSK / 20	1	0	25.7	22.34	Back	0.266	-0.22*	1:1	2.28	0.61	
LTE 2	18700	1860	QPSK / 20	50	25	25.7	21.16	Back	0.204	-0.36*	1:1	3.09	0.63	14
LTE 2	18900	1880	QPSK / 20	1	99	25.7	22.31	Back	0.242	-0.32	1:1	2.35	0.57	
LTE 2	19100	1900	QPSK / 20	1	50	25.7	22.3	Back	0.195	-0.33	1:1	2.36	0.46	

*Larger than 5% drifts included to scaling factors

Band	Channel	Frequency [MHz]	Modulation / BW [MHz]	RB Size	RB Offset	Maximum Power [dBm]	Conducted Power [dBm]	Test position	Measure SAR _{1g} [W/kg]	Power Drift [dB]	Duty Cycle	Scaling Factor	Reported SAR _{1g} [W/kg]	Plot #
LTE 5	20525	836.5	QPSK / 10	1	0	25.7	22.73	Back	0.189	-0.31*	1:1	2.13	0.40	15
LTE 5	20525	836.5	QPSK / 10	25	0	25.7	21.55	Back	0.147	-0.22*	1:1	2.74	0.40	
LTE 5	20450	829	QPSK / 10	1	24	25.7	22.54	Back	0.178	0.04	1:1	2.07	0.37	
LTE 5	20600	844	QPSK / 10	1	24	25.7	22.49	Back	0.188	-0.06	1:1	2.09	0.39	

*Larger than 5% drifts included to scaling factors

Band	Channel	Frequency [MHz]	Modulation / BW [MHz]	RB Size	RB Offset	Maximum Power [dBm]	Conducted Power [dBm]	Test position	Measure SAR _{1g} [W/kg]	Power Drift [dB]	Duty Cycle	Scaling Factor	Reported SAR _{1g} [W/kg]	Plot #
LTE 7	20850	2510	QPSK / 20	1	50	25.7	22.77	Back	0.153	0.31*	1:1	2.11	0.32	
LTE 7	20850	2510	QPSK / 20	50	25	25.7	21.8	Back	0.126	0.52*	1:1	2.77	0.35	
LTE 7	21100	2535	QPSK / 20	1	99	25.7	22.56	Back	0.165	0.64*	1:1	2.39	0.39	
LTE 7	21350	2560	QPSK / 20	1	99	25.7	22.68	Back	0.196	0.02	1:1	2.00	0.39	16

*Larger than 5% drifts included to scaling factors

Band	Channel	Frequency [MHz]	Modulation / BW [MHz]	RB Size	RB Offset	Maximum Power [dBm]	Conducted Power [dBm]	Test position	Measure SAR _{1g} [W/kg]	Power Drift [dB]	Duty Cycle	Scaling Factor	Reported SAR _{1g} [W/kg]	Plot #
LTE 12	23130	711	QPSK / 10	1	24	25.7	22.57	Back	0.204	-0.18	1:1	2.06	0.42	17
LTE 12	23130	711	QPSK / 10	25	25	25.7	21.56	Back	0.156	-0.16	1:1	2.59	0.40	
LTE 12	23060	704	QPSK / 10	1	49	25.7	22.38	Back	0.196	-0.14	1:1	2.15	0.42	
LTE 12	23095	707.5	QPSK / 10	1	49	25.7	22.5	Back	0.192	-0.08	1:1	2.09	0.40	

Band	Channel	Frequency [MHz]	Modulation / BW [MHz]	RB Size	RB Offset	Maximum Power [dBm]	Conducted Power [dBm]	Test position	Measure SAR _{1g} [W/kg]	Power Drift [dB]	Duty Cycle	Scaling Factor	Reported SAR _{1g} [W/kg]	Plot #
LTE 13	23230	782	QPSK / 10	1	24	25.7	23.4	Back	0.144	-0.17	1:1	1.70	0.24	
LTE 13	23230	782	QPSK / 10	25	0	25.7	22.32	Back	0.128	-0.14	1:1	2.18	0.28	
LTE 13	23205	779.5	QPSK / 5	1	12	25.7	22.98	Back	0.138	-0.39*	1:1	2.05	0.28	18
LTE 13	23255	784.5	QPSK / 5	1	12	25.7	23.57	Back	0.123	-0.23*	1:1	1.72	0.21	

*Larger than 5% drifts included to scaling factors

Band	Channel	Frequency [MHz]	Modulation / BW [MHz]	RB Size	RB Offset	Maximum Power [dBm]	Conducted Power [dBm]	Test position	Measure SAR _{1g} [W/kg]	Power Drift [dB]	Duty Cycle	Scaling Factor	Reported SAR _{1g} [W/kg]	Plot #
LTE 66	132322	1745	QPSK / 20	1	50	25.7	22.71	Back	0.197	-0.09	1:1	1.99	0.39	
LTE 66	132322	1745	QPSK / 20	50	0	25.7	21.62	Back	0.142	-0.24*	1:1	2.70	0.38	
LTE 66	132072	1720	QPSK / 20	1	50	25.7	22.69	Back	0.135	-0.12	1:1	2.00	0.27	
LTE 66	132572	1770	QPSK / 20	1	50	25.7	22.48	Back	0.237	-0.23*	1:1	2.21	0.52	19

*Larger than 5% drifts included to scaling factors

2.4GHz WLAN:

Standard	Data Rate [Mbps]	Bandwidth [MHz]	Channel	Frequency [MHz]	Maximum Power [dBm]	Conducted Power [dBm]	Test Position	Measured SAR _{1g} [W/kg]	Power Drift [dB]	Duty Cycle	Scaling Factor	Reported SAR _{1g} [W/kg]	Plot #
802.11b	1	20	1	2412	17	16.62	Back	0.0125	-2.02*	1:1	1.74	0.022	
802.11b	1	20	6	2437	17	16.35	Back	0.0173	-1.69*	1:1	1.71	0.030	
802.11b	1	20	11	2462	17	15.88	Back	0.0197	-1.29*	1:1	1.74	0.034	20

*Larger than 5% drifts included to scaling factors

5GHz WLAN:

Standard	Data Rate [Mbps]	Bandwidth [MHz]	Channel	Frequency [MHz]	Maximum Power [dBm]	Conducted Power [dBm]	Test Position	Measured SAR _{1g} [W/kg]	Power Drift [dB]	Duty Cycle	Scaling Factor	Reported SAR _{1g} [W/kg]	Plot #
802.11a	6	20	52	5260	15	14.1	Back	0.023	-0.05	1:1	1.23	0.028	
802.11a	6	20	60	5300	15	14.75	Back	0.0683	0.13	1:1	1.06	0.072	21
802.11a	6	20	64	5320	15	14.52	Back	0.056	0.2	1:1	1.12	0.063	

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 Cellular SAR and the maximum WLAN SAR is in the table below. Direct summation of SAR results was performed.

Body SAR:

Exposure Condition	Body SAR1g [W/kg]
Test Position	Back
WCDMA 2	0.40
WCDMA 4	0.22
WCDMA 5	0.54
LTE 2	0.63
LTE 5	0.40
LTE 7	0.39
LTE 12	0.42
LTE 13	0.28
LTE 66	0.52
Maximum Cellular SAR	0.63
2.4GHz WLAN	0.034
5 GHz WLAN	0.072
Direct Summation:	0.702

APPENDIX A: PHOTOS OF THE DUT

Photos of the DUT:



Figure 4 View of the devices towards the user, without the vest



Figure 5 Back view of the device, without the vest



Figure 6 Side view of the devices, without the vest



Figure 7 The actual use case of the device, there is a vest attached to the device to facilitate the use of the device.



Figure 8 The DUT under the phantom with 0mm separation distance, the side against the user, test position.



Figure 9 The DUT under the phantom with 0mm separation

APPENDIX B: SYSTEM CHECK SCAN

Plot 1

Date/Time: 26.5.25 09:07:02

Test Laboratory: Verkotan Oy

DUT: D1900V2 - SN511

Communication System: UID 0, CW (0); Communication System Band: D1900 (1900.0 MHz); Frequency: 1900 MHz;

Communication System PAR: 0 dB;

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.432$ S/m; $\epsilon_r = 39.501$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(7.89, 7.59, 7.97) @ 1900 MHz; Calibrated: 7.2.25
 - Sensor-Surface: 1.4mm (Mechanical Surface Detection), $z = -4.0, 31.0$
 - Electronics: DAE4 Sn1332; Calibrated: 5.2.25
 - Phantom: SAR1_Phantom1_ELI_Left; Type: QD OVA 002 AA;
 - DASYS2 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/System Check 1900MHz/Area Scan (81x61x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 14.1 W/kg

Configuration/System Check 1900MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

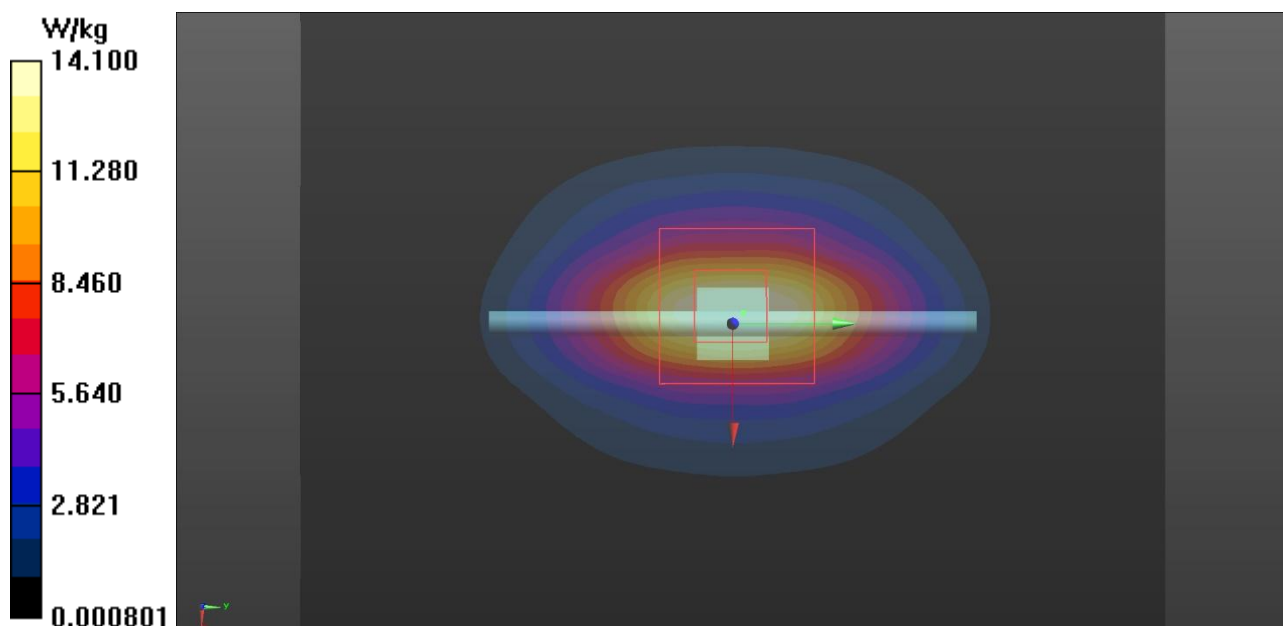
Reference Value = 104.9 V/m; Power Drift = -0.19 dB

Peak SAR (extrapolated) = 16.6 W/kg

SAR(1 g) = 9.15 W/kg; SAR(10 g) = 4.8 W/kg (SAR corrected for target medium)

Smallest distance from peaks to all points 3 dB below = 10 mm

Ratio of SAR at M2 to SAR at M1 = 56.4% Maximum value of SAR (measured) = 14.2 W/kg



Plot 2

Date/Time: 27.5.25 08:56:40

Test Laboratory: Verkotan Oy

DUT: D835V2 - SN455

Communication System: UID 0, CW (0); Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz;

Communication System PAR: 0 dB;

Medium parameters used: $f = 835$ MHz; $\sigma = 0.93$ S/m; $\epsilon_r = 41.856$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(8.84, 8.51, 8.94) @ 835 MHz; Calibrated: 7.2.25
 - Sensor-Surface: 1.4mm (Mechanical Surface Detection), $z = 31.0, -4.0$
 - Electronics: DAE4 Sn1332; Calibrated: 5.2.25
 - Phantom: SAR1_Phantom1_ELI_left; Type: QD OVA 002 AA;
 - DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/System Check 835MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 62.40 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 3.69 W/kg

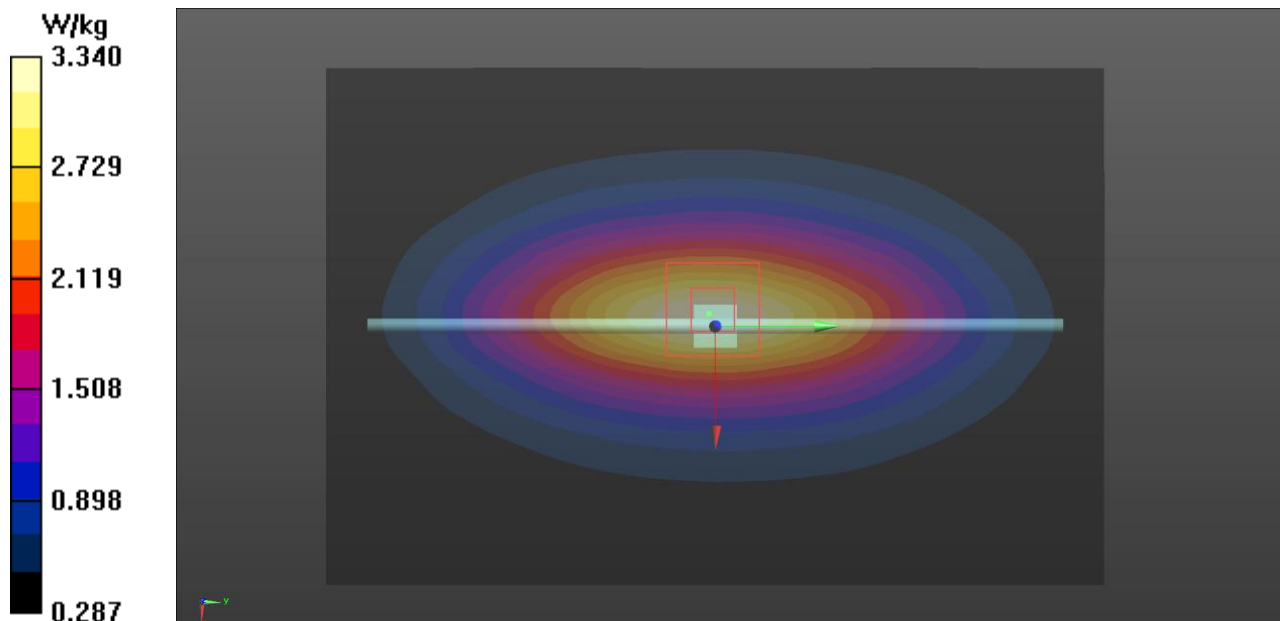
SAR(1 g) = 2.49 W/kg; SAR(10 g) = 1.64 W/kg (SAR corrected for target medium)

Smallest distance from peaks to all points 3 dB below = 16 mm

Ratio of SAR at M2 to SAR at M1 = 68.6% Maximum value of SAR (measured) = 3.34 W/kg

Configuration/System Check 835MHz/Area Scan (121x81x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 3.36 W/kg



Plot 3

Date/Time: 28.5.25 08:25:08

Test Laboratory: Verkotan Oy

DUT: D835V2 - SN455

Communication System: UID 0, CW (0); Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz;

Communication System PAR: 0 dB;

Medium parameters used: $f = 835$ MHz; $\sigma = 0.918$ S/m; $\epsilon_r = 41.922$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(8.84, 8.51, 8.94) @ 835 MHz; Calibrated: 7.2.25
 - Sensor-Surface: 1.4mm (Mechanical Surface Detection), $z = -4.0, 31.0$
 - Electronics: DAE4 Sn1332; Calibrated: 5.2.25
 - Phantom: SAR1_Phantom1_EL1_left; Type: QD OVA 002 AA;
 - DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/System Check 835MHz/Area Scan (121x81x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 3.34 W/kg

Configuration/System Check 835MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 64.79 V/m; Power Drift = -0.31 dB

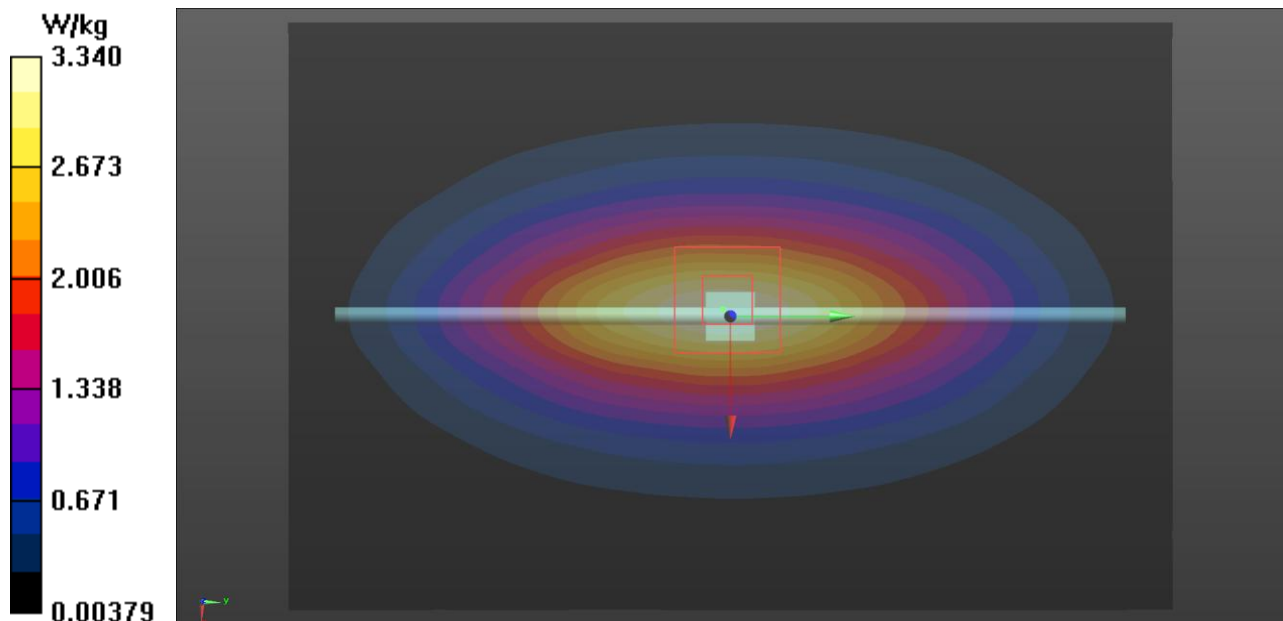
Peak SAR (extrapolated) = 3.73 W/kg

SAR(1 g) = 2.51 W/kg; SAR(10 g) = 1.65 W/kg (SAR corrected for target medium)

Smallest distance from peaks to all points 3 dB below = 16 mm

Ratio of SAR at M2 to SAR at M1 = 68%

Maximum value of SAR (measured) = 3.34 W/kg



Plot 4

Date/Time: 30.5.25 08:21:40

Test Laboratory: Verkotan Oy

DUT: D1800V2- 2d075

Communication System: UID 0, CW (0); Communication System Band: D1800 (1800.0 MHz); Frequency: 1800 MHz;

Communication System PAR: 0 dB;

Medium parameters used: $f = 1800$ MHz; $\sigma = 1.366$ S/m; $\epsilon_r = 38.872$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(8.1, 7.8, 8.19) @ 1800 MHz; Calibrated: 7.2.25
 - Sensor-Surface: 1.4mm (Mechanical Surface Detection), $z = -4.0, 31.0$
 - Electronics: DAE4 Sn1332; Calibrated: 5.2.25
 - Phantom: SAR1_Phantom1_ELI_left; Type: QD OVA 002 AA;
 - DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/System Check 1800MHz/Area Scan (81x61x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 13.0 W/kg

Configuration/System Check 1800MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 87.55 V/m; Power Drift = -0.15 dB

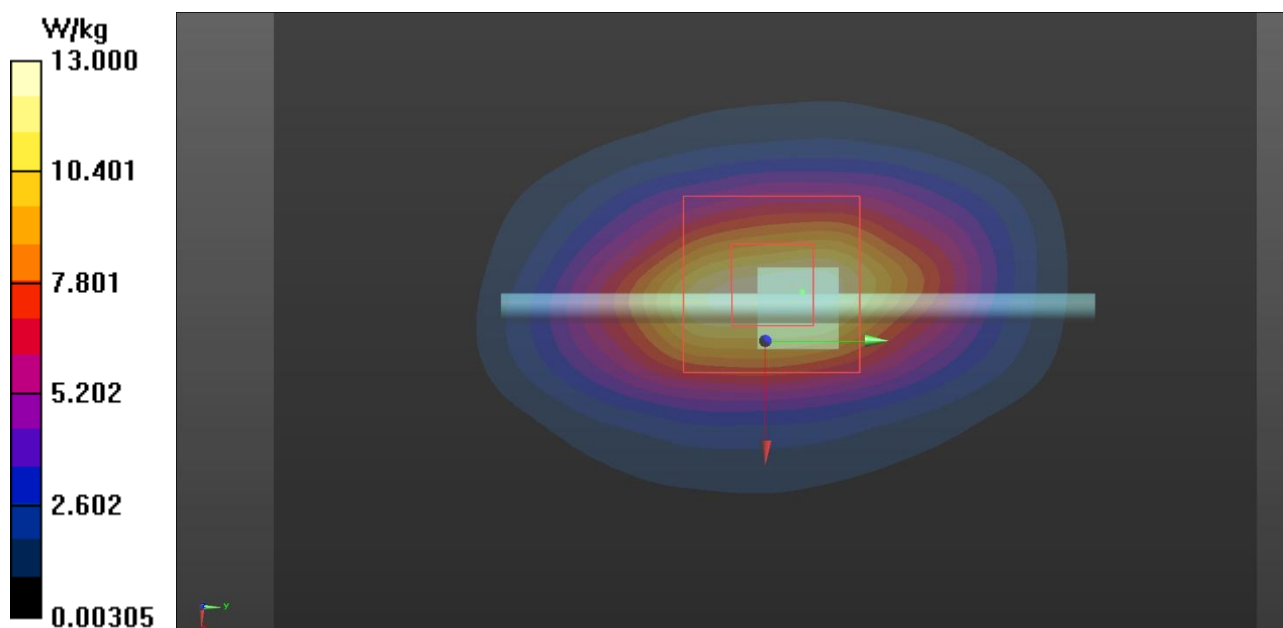
Peak SAR (extrapolated) = 15.4 W/kg

SAR(1 g) = 8.91 W/kg; SAR(10 g) = 4.73 W/kg (SAR corrected for target medium)

Smallest distance from peaks to all points 3 dB below = 10 mm

Ratio of SAR at M2 to SAR at M1 = 57.8%

Maximum value of SAR (measured) = 13.2 W/kg



Plot 5

Date/Time: 2.6.25 09:26:08

Test Laboratory: Verkotan Oy

DUT: DIP OG750 - 635

Communication System: UID 0, CW (0); Communication System Band: D750 (750.0 MHz); Frequency: 750 MHz;

Communication System PAR: 0 dB;

Medium parameters used: $f = 750$ MHz; $\sigma = 0.912$ S/m; $\epsilon_r = 43.198$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(9.4, 9.05, 9.5) @ 750 MHz; Calibrated: 7.2.25
 - 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 Sn1332; Calibrated: 5.2.25
 - Phantom: SAR1_Phantom1_ELI_left; Type: QD OVA 002 AA;
 - DASYS2 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/System Check 750MHz 2/Area Scan (141x81x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 2.98 W/kg

Configuration/System Check 750MHz 2/Zoom Scan (7x8x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 58.81 V/m; Power Drift = -0.14 dB

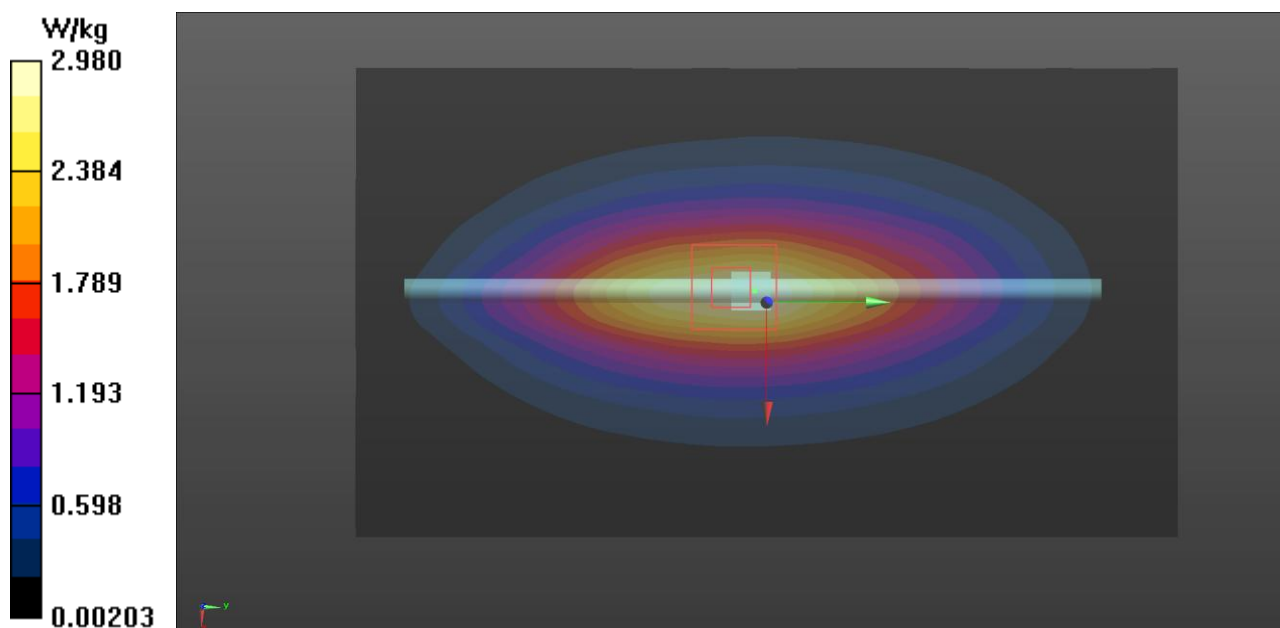
Peak SAR (extrapolated) = 3.19 W/kg

SAR(1 g) = 2.18 W/kg; SAR(10 g) = 1.44 W/kg (SAR corrected for target medium)

Smallest distance from peaks to all points 3 dB below = 17.9 mm

Ratio of SAR at M2 to SAR at M1 = 68%

Maximum value of SAR (measured) = 2.88 W/kg



Plot 6

Date/Time: 2.6.25 17:14:25

Test Laboratory: Verkotan Oy

DUT: D1900V2 - SN511

Communication System: UID 0, CW (0); Communication System Band: D1900 (1900.0 MHz); Frequency: 1900 MHz;

Communication System PAR: 0 dB;

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.449$ S/m; $\epsilon_r = 39.989$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(7.89, 7.59, 7.97) @ 1900 MHz; Calibrated: 7.2.25
 - Sensor-Surface: 1.4mm (Mechanical Surface Detection), $z = 31.0, -4.0$
 - Electronics: DAE4 Sn1332; Calibrated: 5.2.25
 - Phantom: SAR1_Phantom1_ELI_left; Type: QD OVA 002 AA;
 - DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/1900MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 96.72 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 16.2 W/kg

SAR(1 g) = 9.06 W/kg; SAR(10 g) = 4.79 W/kg (SAR corrected for target medium)

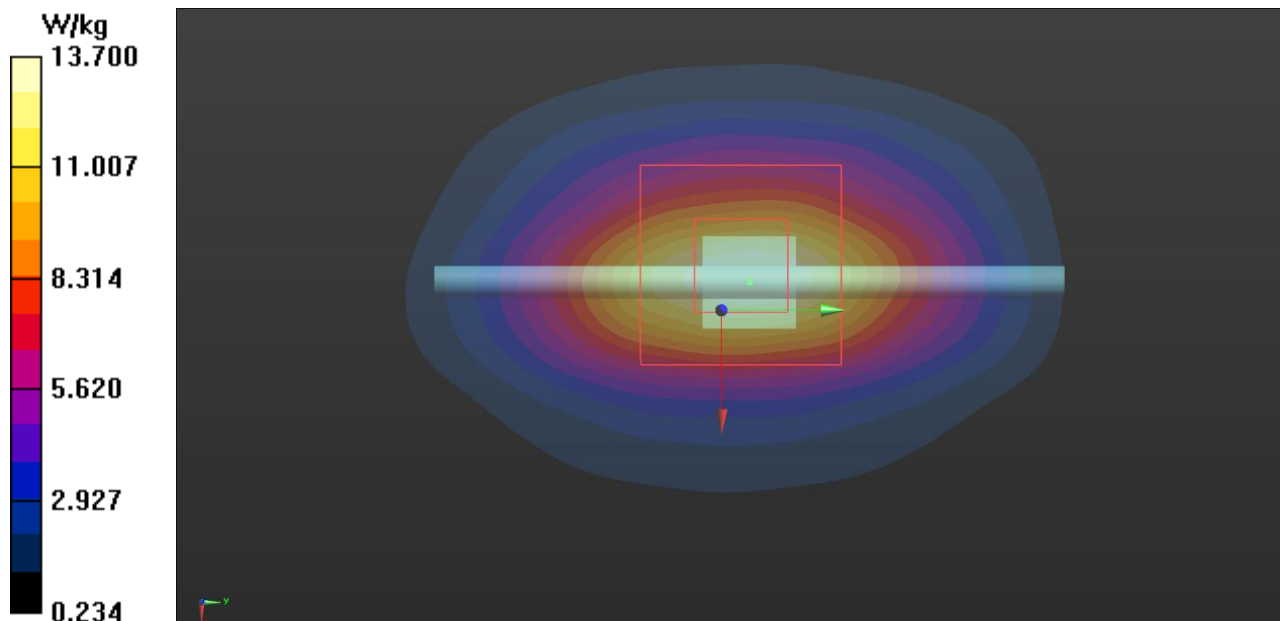
Smallest distance from peaks to all points 3 dB below = 10 mm

Ratio of SAR at M2 to SAR at M1 = 57.9%

Maximum value of SAR (measured) = 13.7 W/kg

Configuration/1900MHz/Area Scan (141x81x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 13.6 W/kg



Plot 7

Date/Time: 4.6.25 07:51:22

Test Laboratory: Verkotan Oy

DUT: D2600V2 - SN474

Communication System: UID 0, CW (0); Communication System Band: D2600 (2600.0 MHz); Frequency: 2600 MHz;

Communication System PAR: 0 dB;

Medium parameters used: $f = 2600$ MHz; $\sigma = 1.899$ S/m; $\epsilon_r = 37.996$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(7.41, 7.14, 7.5) @ 2600 MHz; Calibrated: 7.2.25
 - Sensor-Surface: 1.4mm (Mechanical Surface Detection), $z = 31.0, -4.0$
 - Electronics: DAE4 Sn1332; Calibrated: 5.2.25
 - Phantom: SAR1_Phantom1_ELI_left; Type: QD OVA 002 AA;
 - DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/2600MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 111.0 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 27.1 W/kg

SAR(1 g) = 13.4 W/kg; SAR(10 g) = 6.02 W/kg (SAR corrected for target medium)

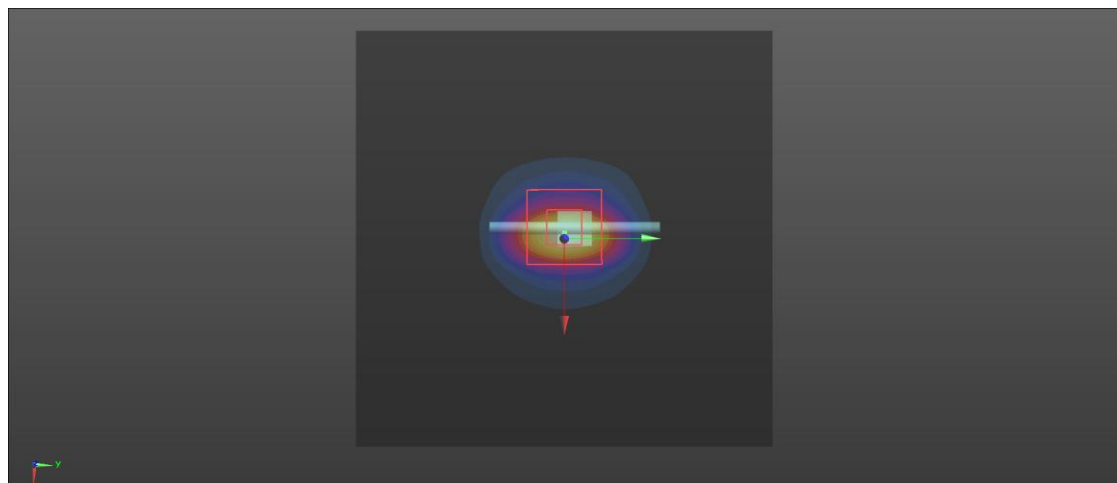
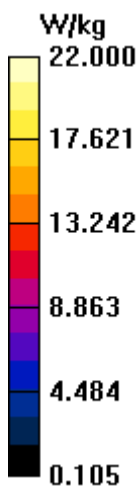
Smallest distance from peaks to all points 3 dB below = 9 mm

Ratio of SAR at M2 to SAR at M1 = 50%

Maximum value of SAR (measured) = 22.0 W/kg

Configuration/2600MHz/Area Scan (81x81x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 21.6 W/kg



Plot 8

Date/Time: 5.6.25 08:30:01

Test Laboratory: Verkotan Oy

DUT: D2600V2 - SN474

Communication System: UID 0, CW (0); Communication System Band: D2600 (2600.0 MHz); Frequency: 2600 MHz;

Communication System PAR: 0 dB;

Medium parameters used: $f = 2600$ MHz; $\sigma = 1.909$ S/m; $\epsilon_r = 38.705$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(7.41, 7.14, 7.5) @ 2600 MHz; Calibrated: 7.2.25
 - Sensor-Surface: 1.4mm (Mechanical Surface Detection), $z = 31.0, -4.0$
 - Electronics: DAE4 Sn1332; Calibrated: 5.2.25
 - Phantom: SAR1_Phantom1_ELI_left; Type: QD OVA 002 AA;
 - DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/2600MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 119.8 V/m; Power Drift = -0.17 dB

Peak SAR (extrapolated) = 30.6 W/kg

SAR(1 g) = 14.9 W/kg; SAR(10 g) = 6.66 W/kg (SAR corrected for target medium)

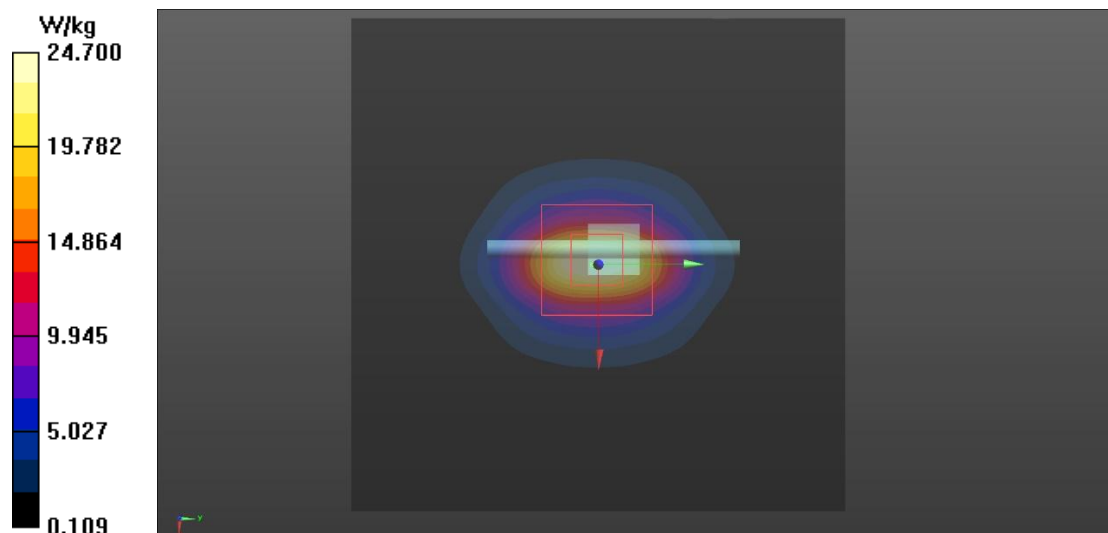
Smallest distance from peaks to all points 3 dB below = 9 mm

Ratio of SAR at M2 to SAR at M1 = 48.6%

Maximum value of SAR (measured) = 24.7 W/kg

Configuration/2600MHz/Area Scan (81x81x1): Interpolated grid: $dx=1.200$ mm, $dy=1.200$ mm

Maximum value of SAR (interpolated) = 24.3 W/kg



Plot 9

Date/Time: 5.6.25 13:04:10

Test Laboratory: Verkotan Oy

DUT: D2450V2 -SN:758

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; $\sigma = 1.8$ S/m; $\epsilon_r = 38.971$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(7.56, 7.28, 7.65) @ 2450 MHz; Calibrated: 7.2.25
 - Sensor-Surface: 1.4mm (Mechanical Surface Detection), $z = 31.0, -4.0$
 - Electronics: DAE4 Sn1332; Calibrated: 5.2.25
 - Phantom: SAR1_Phantom1_ELI_left; Type: QD OVA 002 AA;
 - DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/2450MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 107.8 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 23.7 W/kg

SAR(1 g) = 12.3 W/kg; SAR(10 g) = 5.88 W/kg (SAR corrected for target medium)

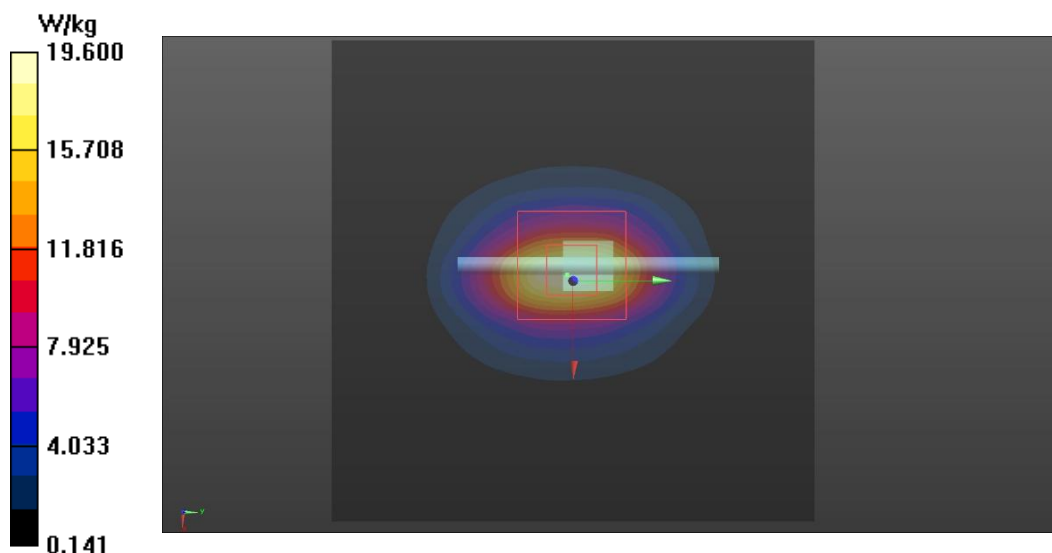
Smallest distance from peaks to all points 3 dB below = 9 mm

Ratio of SAR at M2 to SAR at M1 = 52.6%

Maximum value of SAR (measured) = 19.6 W/kg

Configuration/2450MHz/Area Scan (81x81x1): Interpolated grid: $dx=1.200$ mm, $dy=1.200$ mm

Maximum value of SAR (interpolated) = 19.4 W/kg



Plot 10

Date/Time: 14.7.25 11:42:46

Test Laboratory: Verkotan Oy

DUT: D5GHzV2 - SN1045

Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5250 MHz;

Communication System PAR: 0 dB;

Medium parameters used (interpolated): $f = 5250$ MHz; $\sigma = 4.754$ S/m; $\epsilon_r = 36.74$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(5.52, 5.32, 5.58) @ 5250 MHz; Calibrated: 7.2.25
 - Sensor-Surface: 1.4mm (Mechanical Surface Detection), $z = -4.0, 25.0$
 - Electronics: DAE4 Sn1332; Calibrated: 5.2.25
 - Phantom: SAR1_Phantom1_ELI_Left; Type: QD OVA 002 AA;
 - DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/5250MHz/Area Scan (91x51x1): Interpolated grid: $dx=1.000$ mm, $dy=1.000$ mm

Maximum value of SAR (interpolated) = 18.4 W/kg

Configuration/5250MHz/Zoom Scan (9x9x8)/Cube 0: Measurement grid: $dx=4$ mm, $dy=4$ mm, $dz=1.4$ mm

Reference Value = 60.97 V/m; Power Drift = -0.06 dB

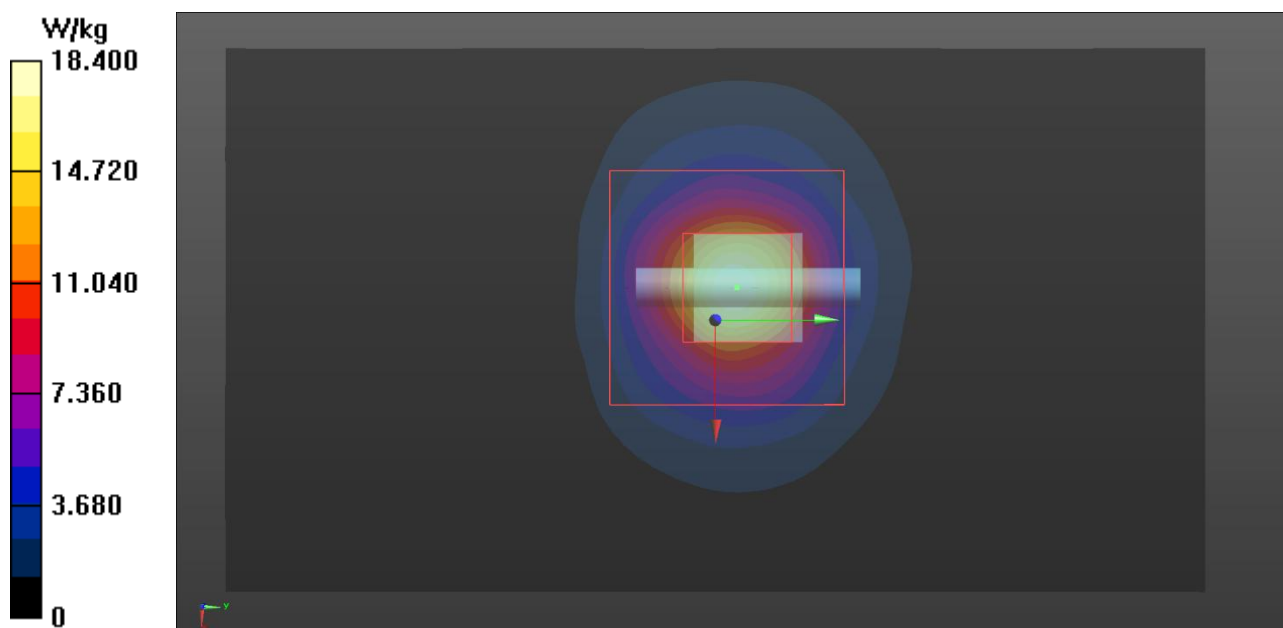
Peak SAR (extrapolated) = 32.0 W/kg

SAR(1 g) = 7.28 W/kg; SAR(10 g) = 2.06 W/kg (SAR corrected for target medium)

Smallest distance from peaks to all points 3 dB below = 6.9 mm

Ratio of SAR at M2 to SAR at M1 = 62.3%

Maximum value of SAR (measured) = 18.9 W/kg



APPENDIX C: MEASUREMENT SCANS

Plot 11

Date/Time: 26.5.25 15:51:23

Test Laboratory: Verkotan Oy

DUT: Exia Exoskeleton

Communication System: UID 0, WCDMA (0); Communication System Band: Band 2; Frequency: 1880 MHz;

Communication System PAR: 0 dB;

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.422$ S/m; $\epsilon_r = 39.531$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(7.89, 7.59, 7.97) @ 1880 MHz; Calibrated: 7.2.25
 - 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 Sn1332; Calibrated: 5.2.25
 - Phantom: SAR1_Phantom1_ELI_left; Type: QD OVA 002 AA;
 - DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/WCDMA 2, MID, RMC 12.2K/Area Scan (161x171x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 0.366 W/kg

Configuration/WCDMA 2, MID, RMC 12.2K/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

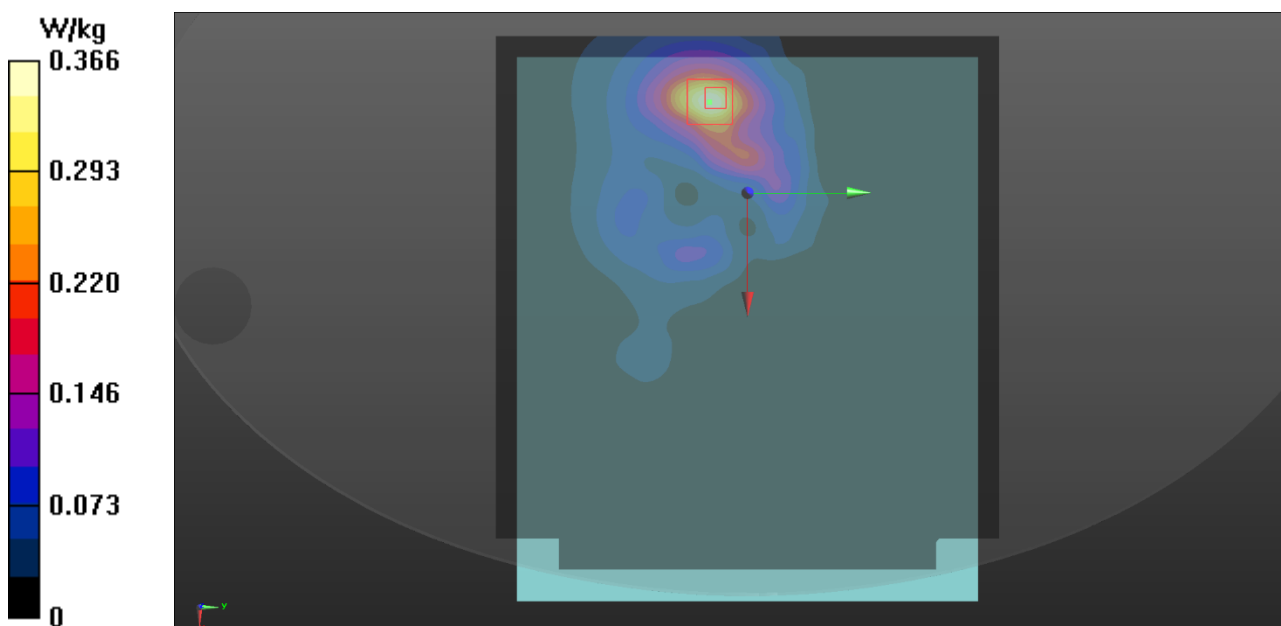
Reference Value = 12.17 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.461 W/kg

SAR(1 g) = 0.237 W/kg; SAR(10 g) = 0.138 W/kg (SAR corrected for target medium)

Smallest distance from peaks to all points 3 dB below = 12.6 mm

Ratio of SAR at M2 to SAR at M1 = 48.9% Maximum value of SAR (measured) = 0.371 W/kg



Plot 12

Date/Time: 30.5.25 11:25:25

Test Laboratory: Verkotan Oy

DUT: Exia Exoskeleton

Communication System: UID 0, WCDMA (0); Communication System Band: Band 4; Frequency: 1752.6 MHz;

Communication System PAR: 0 dB;

Medium parameters used: $f = 1753$ MHz; $\sigma = 1.34$ S/m; $\epsilon_r = 38.962$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(8.1, 7.8, 8.19) @ 1752.6 MHz; Calibrated: 7.2.25
 - Sensor-Surface: 1.4mm (Mechanical Surface Detection), Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), $z = 31.0, -4.0$
 - Electronics: DAE4 Sn1332; Calibrated: 5.2.25
 - Phantom: SAR1_Phantom1_ELI_left; Type: QD OVA 002 AA;
 - DASYS2 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/wcdma 4, HIGH/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 12.07 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.401 W/kg

SAR(1 g) = 0.215 W/kg; SAR(10 g) = 0.128 W/kg (SAR corrected for target medium)

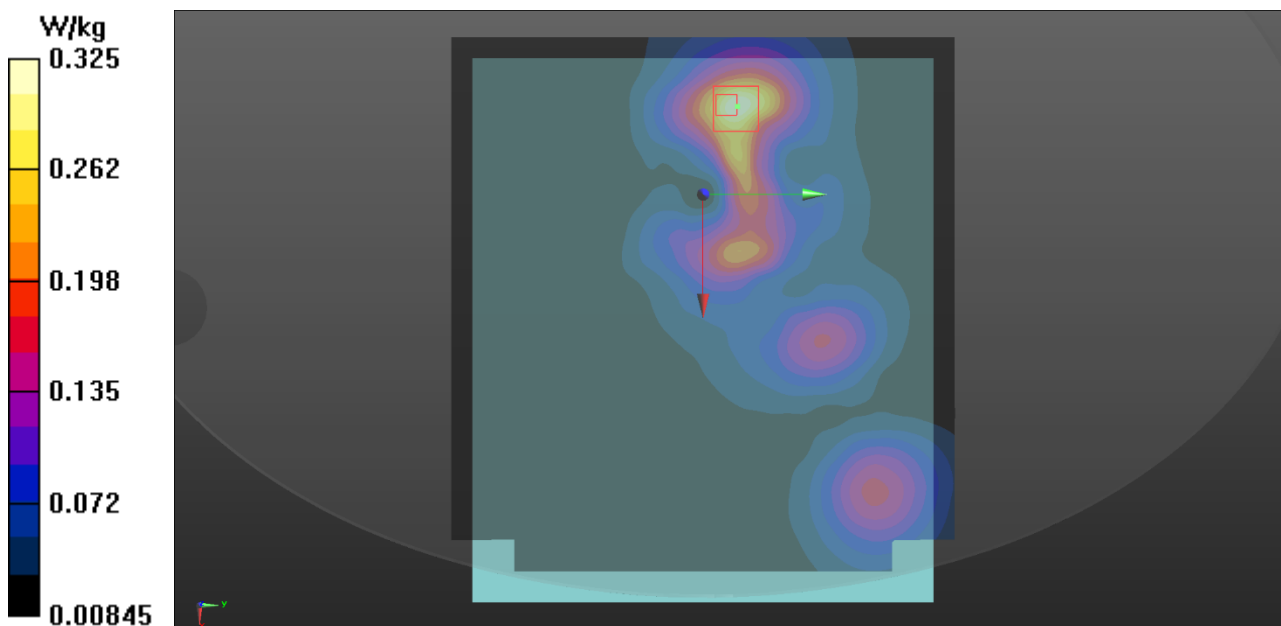
Smallest distance from peaks to all points 3 dB below = 12.4 mm

Ratio of SAR at M2 to SAR at M1 = 50.7%

Maximum value of SAR (measured) = 0.325 W/kg

Configuration/wcdma 4, HIGH/Area Scan (161x171x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 0.313 W/kg



Plot 13

Date/Time: 28.5.25 18:42:42

Test Laboratory: Verkotan Oy

DUT: Exia Exoskeleton

Communication System: UID 0, WCDMA (0); Communication System Band: Band 5; Frequency: 846.6 MHz;

Communication System PAR: 0 dB;

Medium parameters used: $f = 847$ MHz; $\sigma = 0.922$ S/m; $\epsilon_r = 41.88$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(8.84, 8.51, 8.94) @ 846.6 MHz; Calibrated: 7.2.25
 - Sensor-Surface: 1.4mm (Mechanical Surface Detection), Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), $z = 31.0, -4.0$
 - Electronics: DAE4 Sn1332; Calibrated: 5.2.25
 - Phantom: SAR1_Phantom1_ELI_left; Type: QD OVA 002 AA;
 - DASYS2 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/WCDMA 5 , HIGH, RMC 12.2K/Zoom Scan (11x8x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 11.50 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 0.527 W/kg

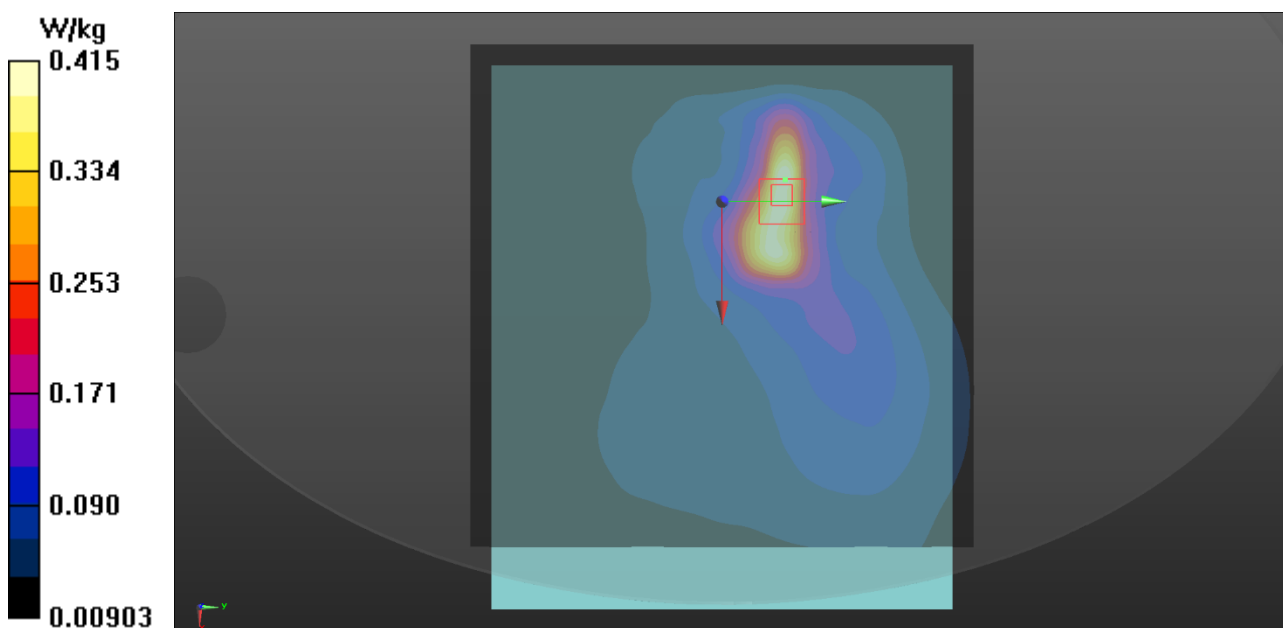
SAR(1 g) = 0.285 W/kg; SAR(10 g) = 0.179 W/kg (SAR corrected for target medium)

Smallest distance from peaks to all points 3 dB below = 9.5 mm

Ratio of SAR at M2 to SAR at M1 = 49.9% Maximum value of SAR (measured) = 0.415 W/kg

Configuration/WCDMA 5 , HIGH, RMC 12.2K/Area Scan (161x161x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 0.361 W/kg



Plot 14

Date/Time: 26.5.25 12:57:27

Test Laboratory: Verkotan Oy

DUT: Exia Exoskeleton

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 2, E-UTRA/FDD (1850.0 - 1910.0 MHz); Frequency: 1860 MHz;

Communication System PAR: 0 dB;

Medium parameters used: $f = 1860$ MHz; $\sigma = 1.41$ S/m; $\epsilon_r = 39.564$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(7.89, 7.59, 7.97) @ 1860 MHz; Calibrated: 7.2.25
 - 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 Sn1332; Calibrated: 5.2.25
 - Phantom: SAR1_Phantom1_ELI_Left; Type: QD OVA 002 AA;
 - DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/LTE 2, LOW, QPSK, 20MHz, RB50, Offset25/Area Scan (161x171x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm Maximum value of SAR (interpolated) = 0.334 W/kg

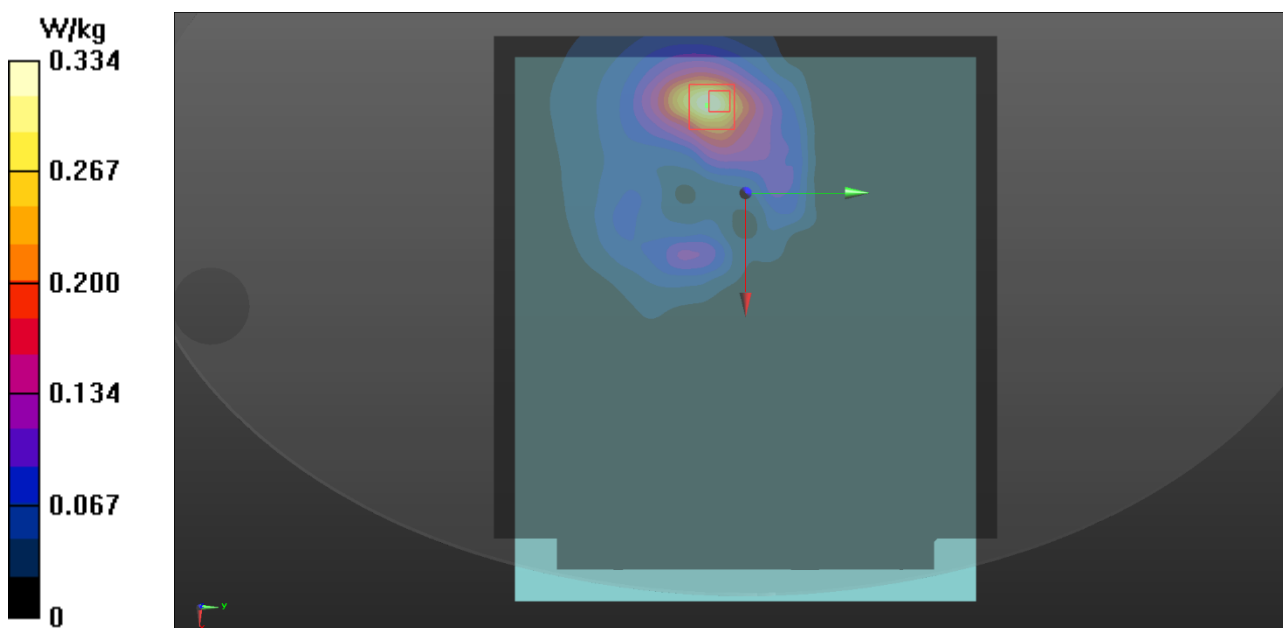
Configuration/LTE 2, LOW, QPSK, 20MHz, RB50, Offset25/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm Reference Value = 11.77 V/m; Power Drift = -0.36 dB

Peak SAR (extrapolated) = 0.390 W/kg

SAR(1 g) = 0.204 W/kg; SAR(10 g) = 0.120 W/kg (SAR corrected for target medium)

Smallest distance from peaks to all points 3 dB below = 11.1 mm

Ratio of SAR at M2 to SAR at M1 = 49.8% Maximum value of SAR (measured) = 0.317 W/kg



Plot 15

Date/Time: 27.5.25 10:03:36

Test Laboratory: Verkotan Oy

DUT: Exia Exoskeleton

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 5, E-UTRA/FDD (824.0 - 849.0 MHz); Frequency: 836.5 MHz;

Communication System PAR: 0 dB;

Medium parameters used (interpolated): $f = 836.5$ MHz; $\sigma = 0.93$ S/m; $\epsilon_r = 41.85$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(8.84, 8.51, 8.94) @ 836.5 MHz; Calibrated: 7.2.25
 - Sensor-Surface: 1.4mm (Mechanical Surface Detection), $z = 31.0, -4.0$
 - Electronics: DAE4 Sn1332; Calibrated: 5.2.25
 - Phantom: SAR1_Phantom1_ELI_left; Type: QD OVA 002 AA;
 - DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/LTE 5, MID, QPSK, 10MHz, RB1, Offset0/Zoom Scan (8x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 12.67 V/m; Power Drift = -0.31 dB

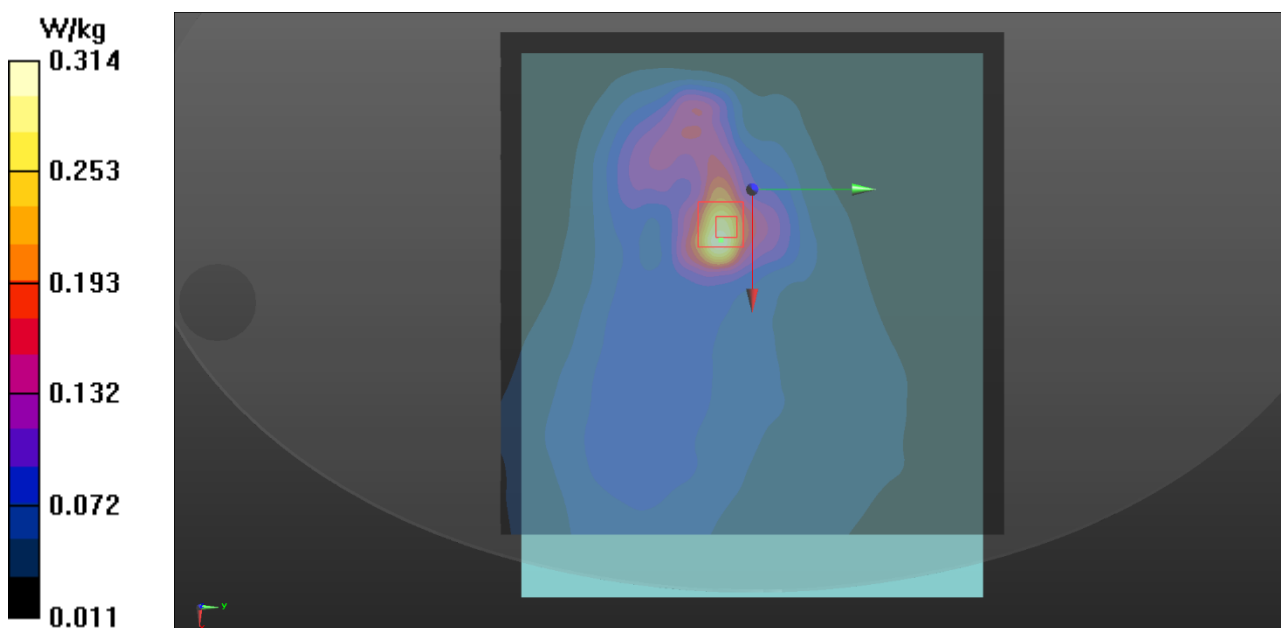
Peak SAR (extrapolated) = 0.397 W/kg

SAR(1 g) = 0.189 W/kg; SAR(10 g) = 0.107 W/kg (SAR corrected for target medium)

Smallest distance from peaks to all points 3 dB below = 10 mm

Ratio of SAR at M2 to SAR at M1 = 47.6% Maximum value of SAR (measured) = 0.314 W/kg

Configuration/LTE 5, MID, QPSK, 10MHz, RB1, Offset0/Area Scan (161x161x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm Maximum value of SAR (interpolated) = 0.291 W/kg



Plot 16

Date/Time: 5.6.25 10:09:45

Test Laboratory: Verkotan Oy

DUT: Exia Exoskeleton

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 7, E-UTRA/FDD (2500.0 - 2570.0 MHz); Frequency: 2560 MHz;

Communication System PAR: 0 dB;

Medium parameters used: $f = 2560$ MHz; $\sigma = 1.88$ S/m; $\epsilon_r = 38.778$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(7.41, 7.14, 7.5) @ 2560 MHz; Calibrated: 7.2.25
 - 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 Sn1332; Calibrated: 5.2.25
 - Phantom: SAR1_Phantom1_ELI_left; Type: QD OVA 002 AA;
 - DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/LTE 7, QPSK 20, RB 1, 99 2/Area Scan (201x161x1): Interpolated grid: $dx=1.200$ mm, $dy=1.200$ mm

Maximum value of SAR (interpolated) = 0.281 W/kg

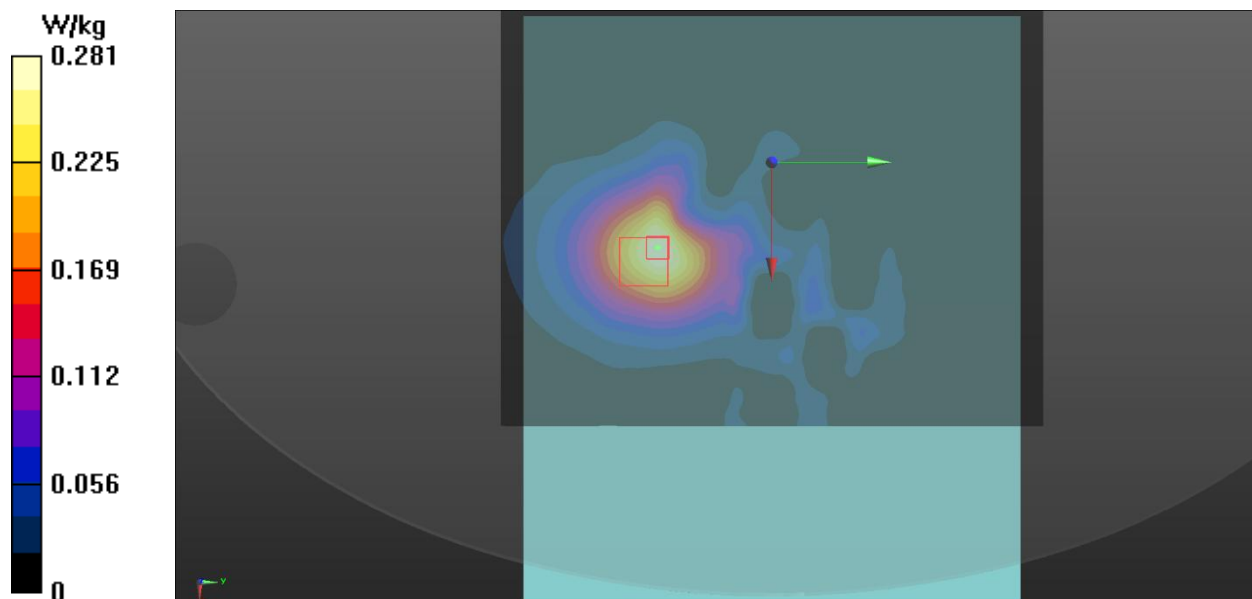
Configuration/LTE 7, QPSK 20, RB 1, 99 2/Zoom Scan 2 (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 0.9660 V/m; Power Drift = 0.02 dB Peak SAR (extrapolated) = 0.331 W/kg

SAR(1 g) = 0.196 W/kg; SAR(10 g) = 0.104 W/kg (SAR corrected for target medium)

Smallest distance from peaks to all points 3 dB below = 27.3 mm

Ratio of SAR at M2 to SAR at M1 = 58.4% Maximum value of SAR (measured) = 0.282 W/kg



Plot 17

Date/Time: 2.6.25 12:41:34

Test Laboratory: Verkotan Oy

DUT: Exia Exoskeleton

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 12, E-UTRA/FDD (698.0 - 716.0 MHz); Frequency: 711 MHz;

Communication System PAR: 0 dB;

Medium parameters used: $f = 711$ MHz; $\sigma = 0.897$ S/m; $\epsilon_r = 43.402$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(9.4, 9.05, 9.5) @ 711 MHz; Calibrated: 7.2.25
 - Sensor-Surface: 1.4mm (Mechanical Surface Detection), Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), $z = 31.0, -4.0$
 - Electronics: DAE4 Sn1332; Calibrated: 5.2.25
 - Phantom: SAR1_Phantom1_ELI_left; Type: QD OVA 002 AA;
 - DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/LTE 12 HIGH, QPSK, 10MHz, RB1, Offset24/Zoom Scan (8x8x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm Reference Value = 14.83 V/m; Power Drift = -0.18 dB

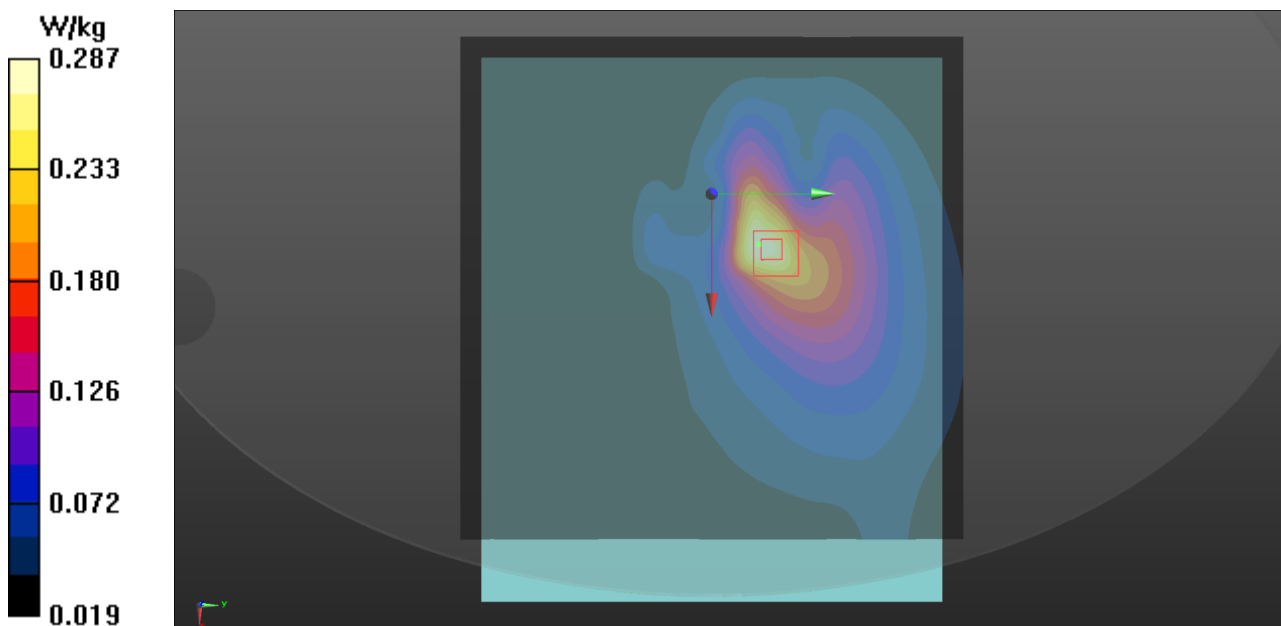
Peak SAR (extrapolated) = 0.341 W/kg

SAR(1 g) = 0.204 W/kg; SAR(10 g) = 0.132 W/kg (SAR corrected for target medium)

Smallest distance from peaks to all points 3 dB below = 13.9 mm

Ratio of SAR at M2 to SAR at M1 = 60% Maximum value of SAR (measured) = 0.287 W/kg

Configuration/LTE 12 HIGH, QPSK, 10MHz, RB1, Offset24/Area Scan (161x161x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm Maximum value of SAR (interpolated) = 0.282 W/kg



Plot 18

Date/Time: 27.5.25 13:12:05

Test Laboratory: Verkotan Oy

DUT: Exia Exoskeleton

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 13, E-UTRA/FDD (777.0 - 787.0 MHz); Frequency: 779.5 MHz;

Communication System PAR: 0 dB;

Medium parameters used (interpolated): $f = 779.5$ MHz; $\sigma = 0.907$ S/m; $\epsilon_r = 42.113$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(9.4, 9.05, 9.5) @ 779.5 MHz; Calibrated: 7.2.25
 - 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 Sn1332; Calibrated: 5.2.25
 - Phantom: SAR1_Phantom1_ELI_Left; Type: QD OVA 002 AA;
 - DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/LTE 13, LOW, QPSK, 5MHz, RB1, Offset12/Area Scan (161x161x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm Maximum value of SAR (interpolated) = 0.223 W/kg

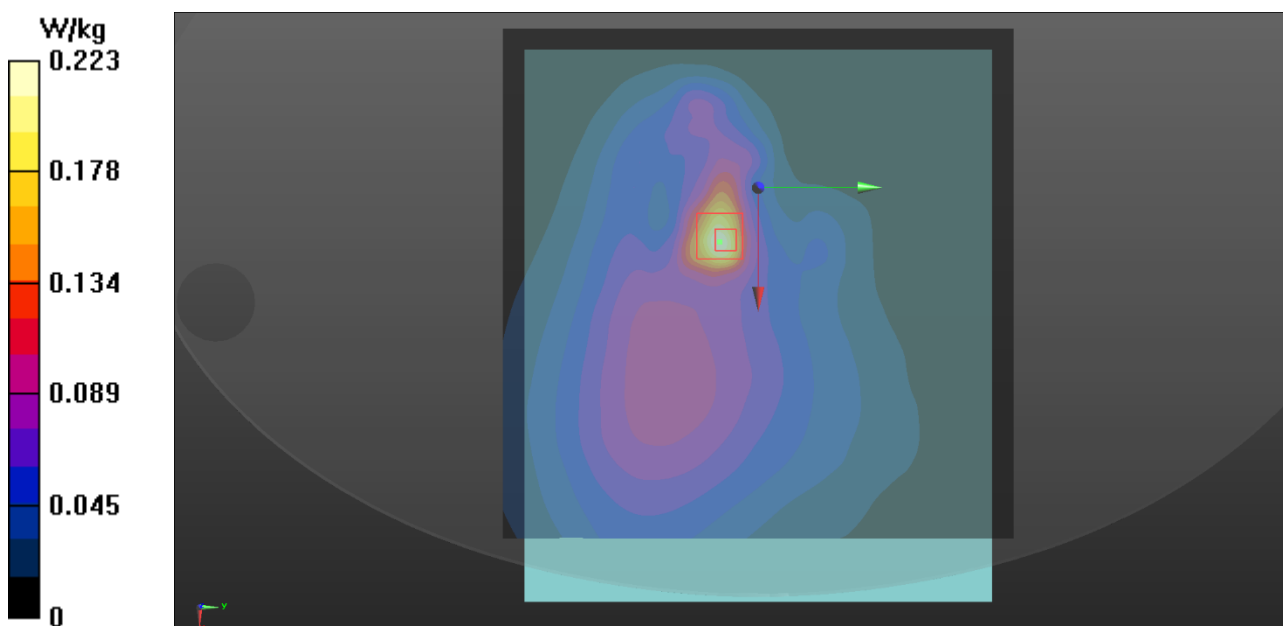
Configuration/LTE 13, LOW, QPSK, 5MHz, RB1, Offset12/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm Reference Value = 11.39 V/m; Power Drift = -0.39 dB

Peak SAR (extrapolated) = 0.296 W/kg

SAR(1 g) = 0.138 W/kg; SAR(10 g) = 0.081 W/kg (SAR corrected for target medium)

Smallest distance from peaks to all points 3 dB below = 9.5 mm

Ratio of SAR at M2 to SAR at M1 = 45.6% Maximum value of SAR (measured) = 0.232 W/kg



Plot 19

Date/Time: 30.5.25 13:56:41

Test Laboratory: Verkotan Oy

DUT: Exia Exoskeleton

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 66; Frequency: 1770 MHz;

Communication System PAR: 0 dB;

Medium parameters used: $f = 1770$ MHz; $\sigma = 1.35$ S/m; $\epsilon_r = 38.932$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(8.1, 7.8, 8.19) @ 1770 MHz; Calibrated: 7.2.25
 - Sensor-Surface: 1.4mm (Mechanical Surface Detection), Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), $z = 31.0, -4.0$
 - Electronics: DAE4 Sn1332; Calibrated: 5.2.25
 - Phantom: SAR1_Phantom1_ELI_left; Type: QD OVA 002 AA;
 - DASYS2 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/LTE66, HIGH, QPSK, 20MHz, RB1, offset 50/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm Reference Value = 13.06 V/m; Power Drift = -0.23 dB

Peak SAR (extrapolated) = 0.440 W/kg

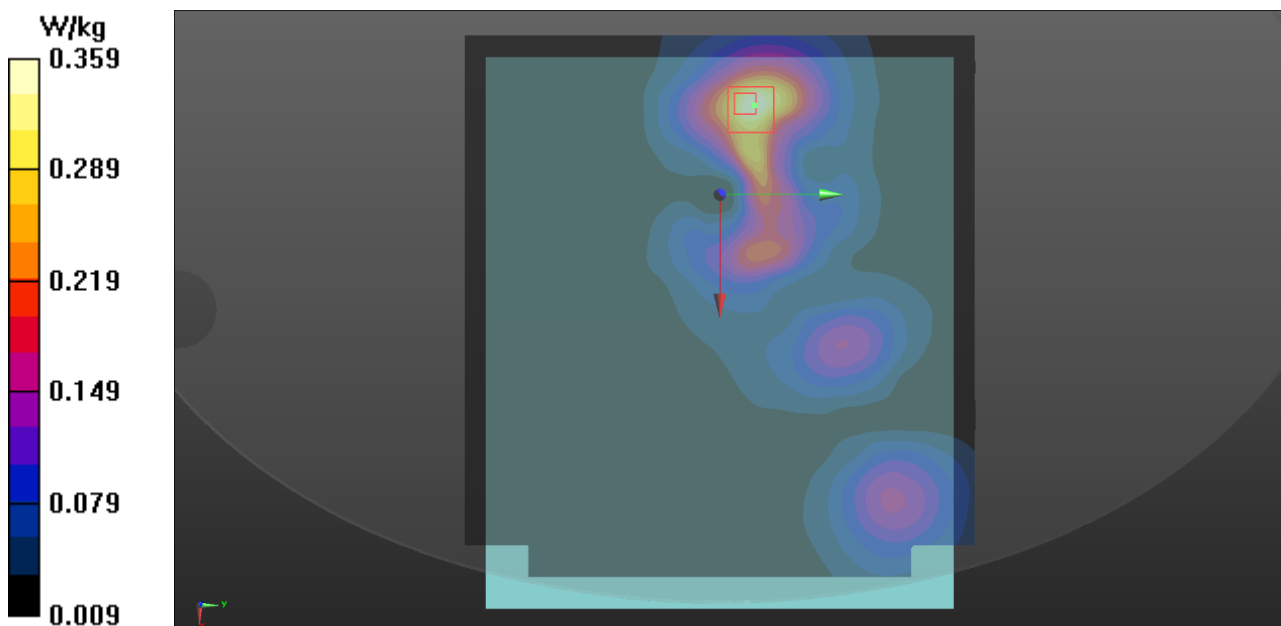
SAR(1 g) = 0.237 W/kg; SAR(10 g) = 0.141 W/kg (SAR corrected for target medium)

Smallest distance from peaks to all points 3 dB below = 11.7 mm

Ratio of SAR at M2 to SAR at M1 = 50.9%

Maximum value of SAR (measured) = 0.359 W/kg

Configuration/LTE66, HIGH, QPSK, 20MHz, RB1, offset 50/Area Scan (161x171x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm Maximum value of SAR (interpolated) = 0.340 W/kg



Plot 20

Date/Time: 5.6.25 15:45:17

Test Laboratory: Verkotan Oy

DUT: Exia Exoskeleton

Communication System: UID 0, WLAN 2.4 (0); Communication System Band: WLAN2.4GHz; Frequency: 2462 MHz;

Communication System PAR: 0 dB;

Medium parameters used: $f = 2462$ MHz; $\sigma = 1.809$ S/m; $\epsilon_r = 38.944$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(7.56, 7.28, 7.65) @ 2462 MHz; Calibrated: 7.2.25
 - Sensor-Surface: 1.4mm (Mechanical Surface Detection), Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), $z = 31.0, -4.0$
 - Electronics: DAE4 Sn1332; Calibrated: 5.2.25
 - Phantom: SAR1_Phantom1_ELI_left; Type: QD OVA 002 AA;
 - DASYS2 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/wlan 2.4 1mbps 2 2/Zoom Scan 2 (9x9x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 1.784 V/m; Power Drift = -1.29 dB

Peak SAR (extrapolated) = 0.0360 W/kg

SAR(1 g) = 0.020 W/kg; SAR(10 g) = 0.011 W/kg (SAR corrected for target medium)

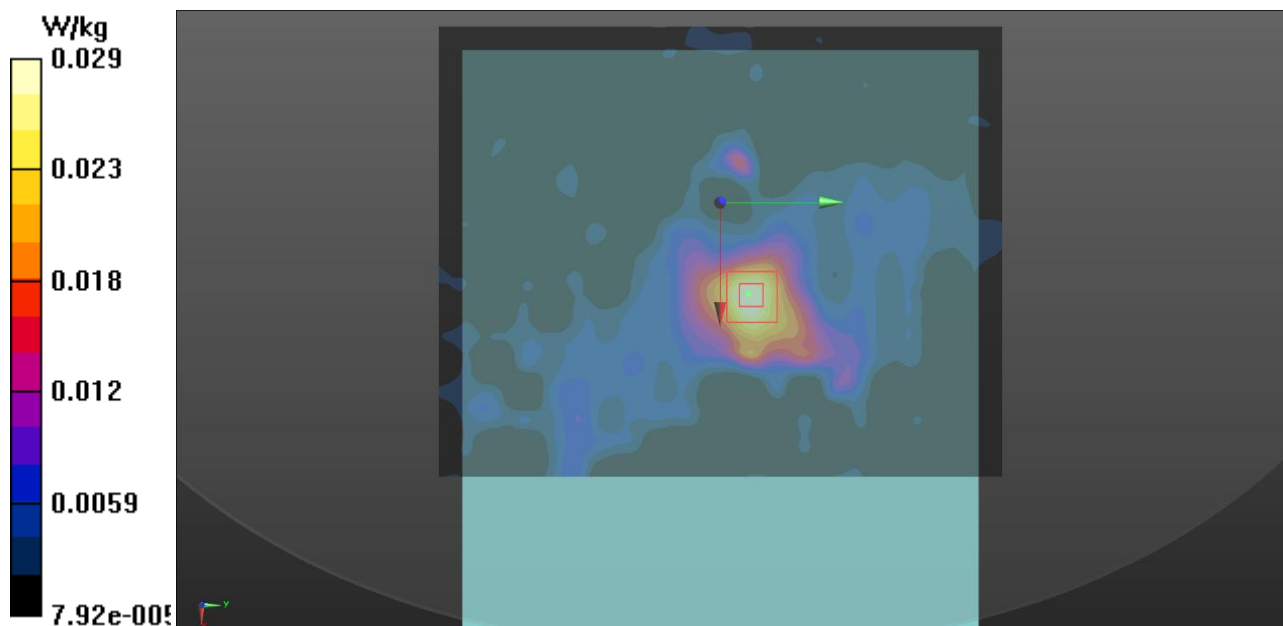
Smallest distance from peaks to all points 3 dB below: Larger than measurement grid

Ratio of SAR at M2 to SAR at M1 = 53.7%

Maximum value of SAR (measured) = 0.0292 W/kg

Configuration/wlan 2.4 1mbps 2 2/Area Scan (201x161x1): Interpolated grid: $dx=1.200$ mm, $dy=1.200$ mm

Maximum value of SAR (interpolated) = 0.0327 W/kg



Plot 21

Date/Time: 14.7.25 16:29:33

Test Laboratory: Verkotan Oy

DUT: Exia Exoskeleton

Communication System: UID 0, WLAN5GHz (0); Communication System Band: 5GHz; Frequency: 5300 MHz;

Communication System PAR: 0 dB;

Medium parameters used (interpolated): $f = 5300$ MHz; $\sigma = 4.795$ S/m; $\epsilon_r = 36.668$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(5.52, 5.32, 5.58) @ 5300 MHz; Calibrated: 7.2.25
 - Sensor-Surface: 1.4mm (Mechanical Surface Detection), Sensor-Surface: 1.4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), $z = 25.0, -4.0$
 - Electronics: DAE4 Sn1332; Calibrated: 5.2.25
 - Phantom: SAR1_Phantom1_ELI_left; Type: QD OVA 002 AA;
 - DASYS2 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/wlan 5GHz 6mbps ch60/Zoom Scan 2 (9x9x8)/Cube 0: Measurement grid: $dx=4$ mm, $dy=4$ mm, $dz=1.4$ mm

Reference Value = 4.130 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 0.318 W/kg

SAR(1 g) = 0.068 W/kg; SAR(10 g) = 0.022 W/kg (SAR corrected for target medium)

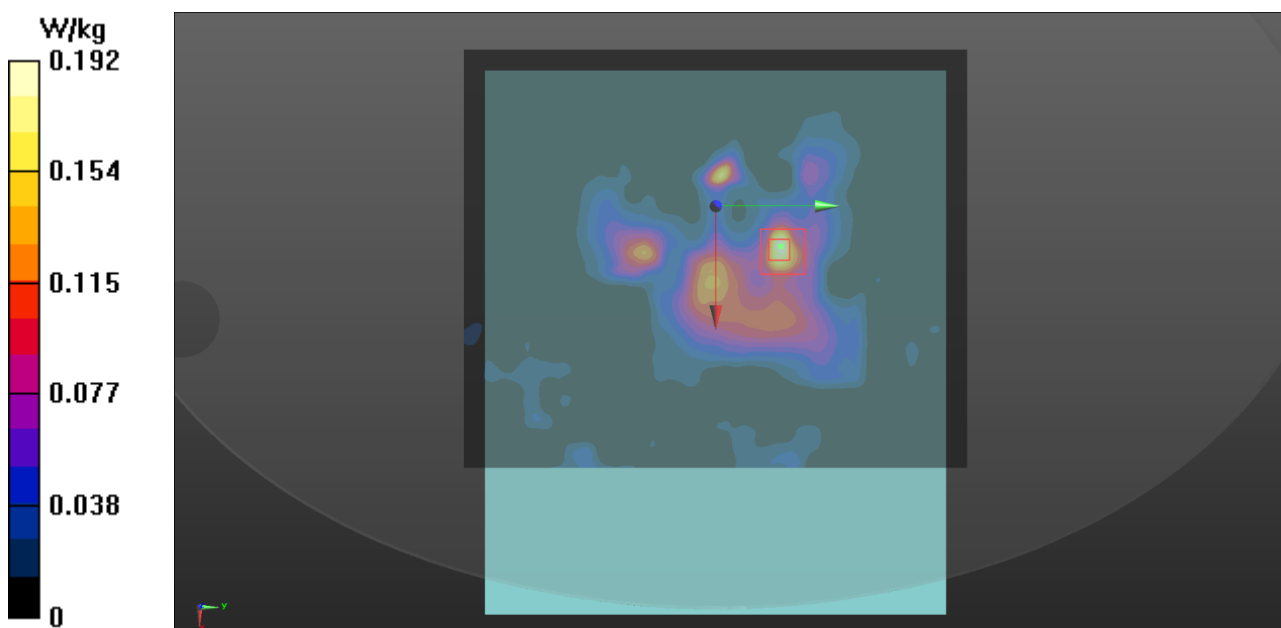
Smallest distance from peaks to all points 3 dB below = 6.8 mm

Ratio of SAR at M2 to SAR at M1 = 56%

Maximum value of SAR (measured) = 0.192 W/kg

Configuration/wlan 5GHz 6mbps ch60/Area Scan (241x201x1): Interpolated grid: $dx=1.000$ mm, $dy=1.000$ mm

Maximum value of SAR (interpolated) = 0.173 W/kg



APPENDIX D: RELEVANT PAGES FROM PROBE & DAE 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-7447_Feb25**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:7447**

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 **February 07, 2025**

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 $(22 \pm 3)^\circ\text{C}$ and humidity $< 70\%$.
Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Calibration Date (Certificate No.)	Sched. Cal.
Power Sensor R&S NRP-33T	SN: 100967	28-Mar-24 (No. 217-04038)	Mar-25
Short [S6019] + Attenuator [S6020]	SN: L1119	28-Mar-24 (No. 217-04048)	Mar-25
OCP DAK-12	SN: 1016	24-Sept-24 (No. OCP-DAK12-1016_Sep24)	Sep-25
OCP DAK-3.5	SN: 1249	23-Sept-24 (No. OCP-DAK3.5-1249_Sep24)	Sep-25
Reference Probe EX3DV4	SN: 7349	10-Jan-25 (No. EX3-7349_Jan25)	Jan-26
DAE4	SN: 1301	07-Nov-24 (No. DAE4-1301_Nov24)	Nov-25

Secondary Standards	ID	Check Date (in house)	Sched. Check
ACAP 2020 Calibration Box	SN: L1404	30-Sept-24 (No. Report_ACAP2020E-Cave_20240930s)	Sep-25

	Name	Function	Signature
Calibrated by	Paulo Pina	Laboratory Technician	
Approved by	Sven Köhn	Technical Manager	
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			

Issued: February 07, 2025

Certificate No: EX-7447_Feb25

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EX3DV4 - SN:7447

February 07, 2025

Parameters of Probe: EX3DV4 - SN:7447

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k = 2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.42	0.43	0.43	$\pm 10.1\%$
DCP (mV) ^B	95.9	91.9	99.5	$\pm 4.7\%$

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B dB $\sqrt{\mu\text{V}}$	C	D dB	VR mV	Max dev.	Max Unc ^E k = 2
0	CW	X	0.00	0.00	1.00	0.00	138.6	$\pm 1.7\%$	$\pm 4.7\%$
		Y	0.00	0.00	1.00		141.7		
		Z	0.00	0.00	1.00		135.0		

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.

EX3DV4 - SN:7447

February 07, 2025

Parameters of Probe: EX3DV4 - SN:7447

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle	38.6°
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.

EX3DV4 - SN:7447

February 07, 2025

Parameters of Probe: EX3DV4 - SN:7447

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle	38.6°
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.

**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
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: DAE4-1332_Feb25

CALIBRATION CERTIFICATE

Object DAE4 - SD 000 D04 BM - SN: 1332

Calibration procedure(s) QA CAL-06.v30
Calibration procedure for the data acquisition electronics (DAE)

Calibration date: February 05, 2025

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 ($22 \pm 3^\circ\text{C}$) and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	27-Aug-24 (No:40547)	Aug-25
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Auto DAE Calibration Unit	SE UWS 053 AA 1001	23-Jan-25 (in house check)	In house check: Jan-26
Calibrator Box V2.1	SE UMS 006 AA 1002	23-Jan-25 (in house check)	In house check: Jan-26

Calibrated by:	Name Dominique Steffen	Function Laboratory Technician	Signature
Approved by:	Name Sven Kühn	Function Technical Manager	Signature

Issued: February 5, 2025

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

Certificate No: DAE4-1332_Feb25

Page 1 of 5

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1 μ V , full range = -100...+300 mV

Low Range: 1LSB = 61 nV , full range = -1.....+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	404.388 $\pm$ 0.02% (k=2)	403.789 $\pm$ 0.02% (k=2)	403.986 $\pm$ 0.02% (k=2)
Low Range	4.00058 $\pm$ 1.50% (k=2)	3.97378 $\pm$ 1.50% (k=2)	3.96150 $\pm$ 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	64.5 $^{\circ}$ $\pm$ 1 $^{\circ}$
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Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range	Reading (μV)	Difference (μV)	Error (%)
Channel X + Input	200034.87	1.05	0.00
Channel X + Input	20003.48	-0.15	-0.00
Channel X - Input	-20007.26	1.80	-0.01
Channel Y + Input	200036.46	2.50	0.00
Channel Y + Input	20003.72	-0.02	-0.00
Channel Y - Input	-20012.41	-3.41	0.02
Channel Z + Input	200037.10	3.38	0.00
Channel Z + Input	20003.35	-0.39	-0.00
Channel Z - Input	-20011.39	-2.23	0.01

Low Range	Reading (μV)	Difference (μV)	Error (%)
Channel X + Input	1999.21	0.33	0.02
Channel X + Input	198.42	-0.23	-0.12
Channel X - Input	-201.16	-0.21	0.11
Channel Y + Input	1998.86	0.11	0.01
Channel Y + Input	197.94	-0.63	-0.32
Channel Y - Input	-202.39	-1.25	0.62
Channel Z + Input	1998.61	-0.05	-0.00
Channel Z + Input	197.95	-0.70	-0.35
Channel Z - Input	-202.11	-0.89	0.44

2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (μV)
Channel X	200	-16.43	-18.36
	- 200	19.28	17.84
Channel Y	200	-22.58	-22.93
	- 200	21.27	21.07
Channel Z	200	-9.80	-9.99
	- 200	9.39	9.03

3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	-0.80	-3.50
Channel Y	200	6.54	-	1.86
Channel Z	200	9.07	3.62	-

4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	High Range (LSB)	Low Range (LSB)
Channel X	15927	15639
Channel Y	16077	15695
Channel Z	16001	15779

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec
Input 10M Ω

	Average (μ V)	min. Offset (μ V)	max. Offset (μ V)	Std. Deviation (μ V)
Channel X	0.70	-0.33	1.44	0.32
Channel Y	-0.39	-1.47	0.48	0.37
Channel Z	-0.10	-1.21	1.34	0.44

6. Input Offset Current

Nominal input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for information)

	Zeroing (kOhm)	Measuring (MOhm)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

8. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+7.9
Supply (- Vcc)	-7.6

9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	+6	+14
Supply (- Vcc)	-0.01	-8	-9

APPENDIX E: RELEVANT PAGES FROM DIPOLE CALIBRATION REPORTS

DocuSign Envelope ID: 5C52517C-7FBF-46B6-8CC1-F810A827F83F



SAR Reference Dipole Calibration Report

Ref : ACR.288.11.24.BES.A

VERKOTAN LTD.
ELEKTRONIIKKATIE 17
90590, OULU, FINLAND
MVG COMOSAR REFERENCE DIPOLE
FREQUENCY: 750 MHZ
SERIAL NO.: 4921-DIP0G750-635

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

Calibration date: 05/15/25



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

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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

DocuSign Envelope ID: 5C52517C-7F8F-49B6-8CC1-F810A827F83F



SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref. ACR.288.11.24.BES.A

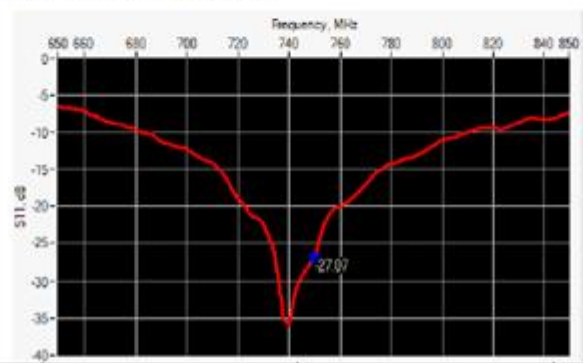
6 CALIBRATION RESULTS

6.1 MECHANICAL DIMENSIONS

L mm		h mm		d mm	
Measured	Required	Measured	Required	Measured	Required
-	176.00 +/- 2%	-	100.00 +/- 2%	-	6.35 +/- 2%

6.2 S11 PARAMETER

6.2.1 S11 parameter in Head Liquid



Frequency (MHz)	S11 parameter (dB)	Requirement (dB)	Impedance
750	-27.07	-20	$54.6\Omega + 0.3j\Omega$

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.

Page: 6/8

Template_ACR.DDD.N.YY.MVGB.ISSUE_SAR Reference Dipole vM

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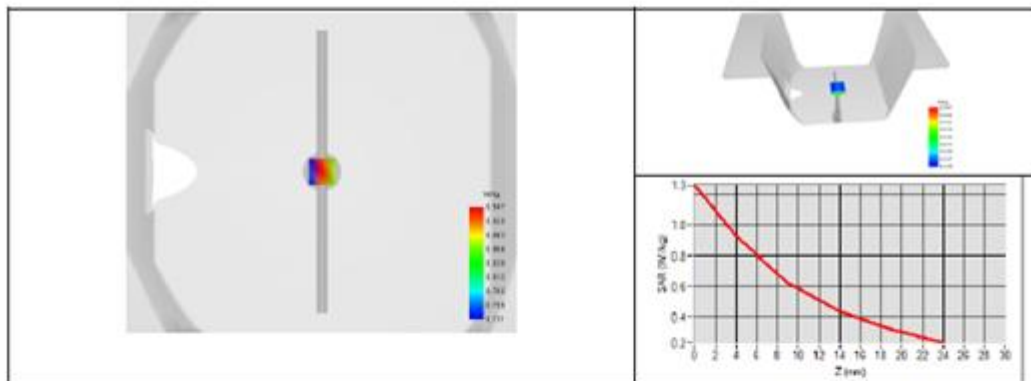


SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.288.11.24.BES.A

Software	OPENSAR V5
Phantom	SN 13/09 SAM68
Probe	4424-EPGO-443
Liquid	Head Liquid Values: ϵ_{ps} : 44.6 σ : 0.88
Distance between dipole center and liquid	15.0 mm
Area scan resolution	$dx=8mm/dy=8mm$
Zoon Scan Resolution	$dx=8mm/dy=8mm/dz=5mm$
Frequency	750 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
750 MHz	0.87	8.74	8.49	0.54	5.36	5.55





SAR Reference Dipole Calibration Report

Ref : ACR.68.6.23.BES.A

VERKOTAN OY
ELEKTRONIIKKATIE 17
90590, OULU, FINLAND
SAR REFERENCE DIPOLE
FREQUENCY: 835 MHZ
SERIAL NO.: 448

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

Calibration date: 03/09/2023



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

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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.006.23.005.A

	Name	Function	Date	Signature
Prepared by :	Cyrille ONNEE	Measurement Responsible	3/9/2023	
Checked & approved by:	Jérôme Luc	Technical Manager	3/9/2023	
Authorized by:	Yann Toutain	Laboratory Director	3/9/2023	

Yann
Toutain ID

Signature numérique
de Yann Toutain ID
Date : 2023.03.09
15:03:27 +01'00'

	Customer Name
Distribution :	Verkotan Oy

Issue	Name	Date	Modifications
A	Cyrille ONNEE	3/9/2023	Initial release

Page: 2/8

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Ref: ACR.68.623.BES.A

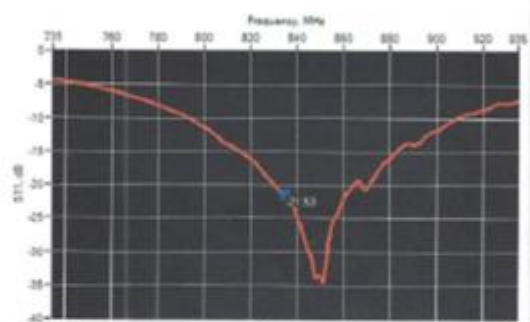
6 CALIBRATION RESULTS

6.1 MECHANICAL DIMENSIONS

L mm		h mm		d mm	
Measured	Required	Measured	Required	Measured	Required
-	161.00 +/- 2%	-	89.80 +/- 2%	-	3.60 +/- 2%

6.2 S11 PARAMETER

6.2.1 S11 parameter in Head Liquid



Frequency (MHz)	S11 parameter (dB)	Requirement (dB)	Impedance
835	-21.53	-20	42.3Ω - 0.1jΩ

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.

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.

Page: 6/8

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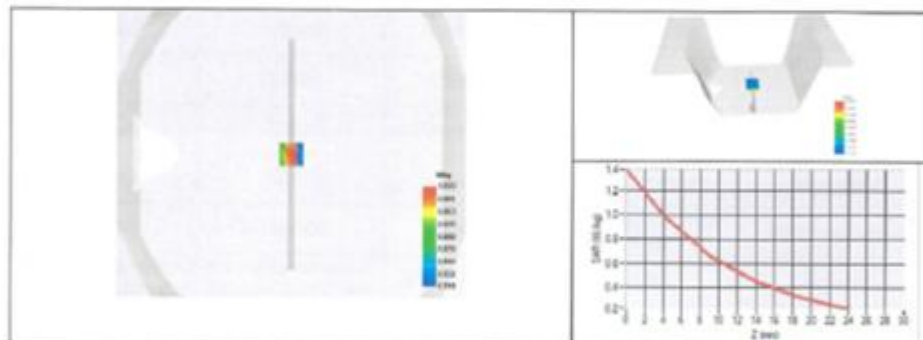


SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.68.623.BES.A

Software	OPENSAR V5
Phantom	SN 13/09 SAM68
Probe	SN 41/18 EPG0333
Liquid	Head Liquid Values: ϵ_{ps} : 44.1 sigma: 0.89
Distance between dipole center and liquid	15.0 mm
Area scan resolution	$dx=8mm/dy=8mm$
Zoon Scan Resolution	$dx=8mm/dy=8mm/dz=5mm$
Frequency	835 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
835 MHz	0.94	9.36	9.56	0.61	6.05	6.22



Page: 7/8

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SAR Reference Dipole Calibration Report

Ref : ACR.348.9.24.BES.A

VERKOTAN LTD.
ELEKTRONIKKATIE 17
90590, OULU, FINLAND
SAR REFERENCE DIPOLE
FREQUENCY: 1800 MHZ
SERIAL NO.: D1800V2-SN:2D075

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

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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.

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SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.348.924.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	

Desigined by:
Geraldine TOUITAIN
A10BAC31CB5441A

	Customer Name
Distribution :	Verkotan Ltd.

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

Page: 2/8

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SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.348.924.BES.A

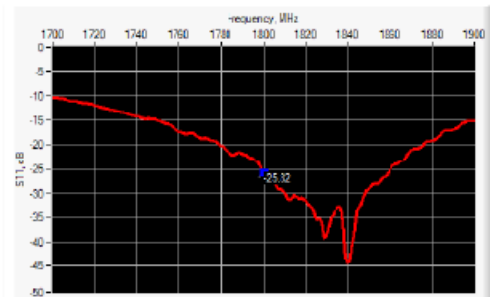
6 CALIBRATION RESULTS

6.1 MECHANICAL DIMENSIONS

L mm		h mm		d mm	
Measured	Required	Measured	Required	Measured	Required
-	72.00 +/- 2%	-	41.70 +/- 2%	-	3.60 +/- 2%

6.2 S11 PARAMETER

6.2.1 S11 parameter in Head Liquid



Frequency (MHz)	S11 parameter (dB)	Requirement (dB)	Impedance
1800	-25.82	-20	$46.0\Omega + 2.8j\Omega$

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 EPG0431
Liquid	Head Liquid Values: eps' : 43.3 sigma : 1.35

Page: 6/8

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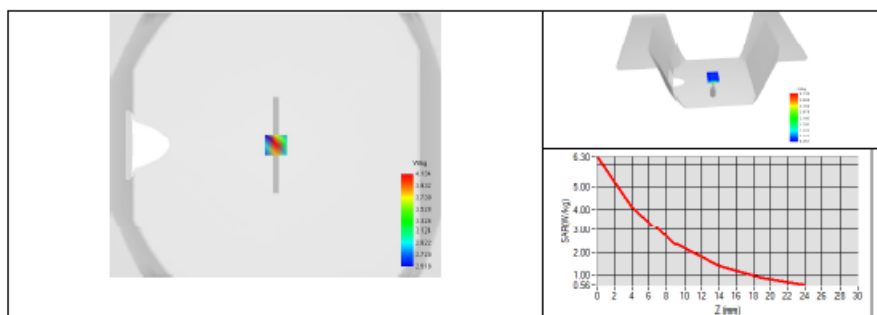


SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.348.9.24.BES.A

Distance between dipole center and liquid	10.0 mm
Area scan resolution	dx=8mm/dy=8mm
Zoon Scan Resolution	dx=8mm/dy=8mm/dz=5mm
Frequency	1800 MHz
Input power	20 dBW
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
1800 MHz	3.74	37.44	38.40	2.03	20.31	20.10



Page: 7/8

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SAR Reference Dipole Calibration Report

Ref : ACR.68.5.23.BES.A

VERKOTAN OY
ELEKTRONIIKKATIE 17
90590, OULU, FINLAND
SAR REFERENCE DIPOLE
FREQUENCY: 1900 MHZ
SERIAL NO.: 511

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

Calibration date: 03/09/2023



Accreditations #2-6769 and #2-6814
Scope available on www.cofrac.fr

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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.68.5.25.BES.A

	Name	Function	Date	Signature
Prepared by :	Cyrille ONNEE	Measurement Responsible	3/9/2023	
Checked & approved by:	Jérôme Luc	Technical Manager	3/9/2023	
Authorized by:	Yann Toutain	Laboratory Director	3/9/2023	

Yann
Toutain ID
Signature numérique de
Yann Toutain ID
Date : 2023.03.09
15:01:12 +01'00'

	Customer Name
Distribution :	Verkotan Oy

Issue	Name	Date	Modifications
A	Cyrille ONNEE	3/9/2023	Initial release

Page: 2/8

Template: ACR.DDD.N.Y1.M1.G.B.ISSUE, SAR Reference Dipole v1.

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Ref: ACR.68.3.23.BES.A

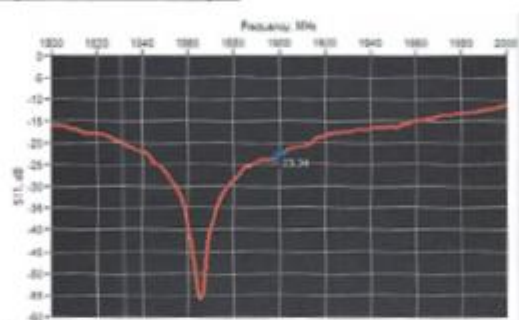
6 CALIBRATION RESULTS

6.1 MECHANICAL DIMENSIONS

L mm		h mm		d mm	
Measured	Required	Measured	Required	Measured	Required
-	68.00 +/- 2%	-	39.50 +/- 2%	-	3.60 +/- 2%

6.2 S11 PARAMETER

6.2.1 S11 parameter in Head Liquid



Frequency (MHz)	S11 parameter (dB)	Requirement (dB)	Impedance
1900	-23.34	-20	48.5Ω - 6.6jΩ

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.

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.

Page: 6/8

Template: ACR.DD.N.YI.MVGR.ISSUE_SAR Reference Dipole v1

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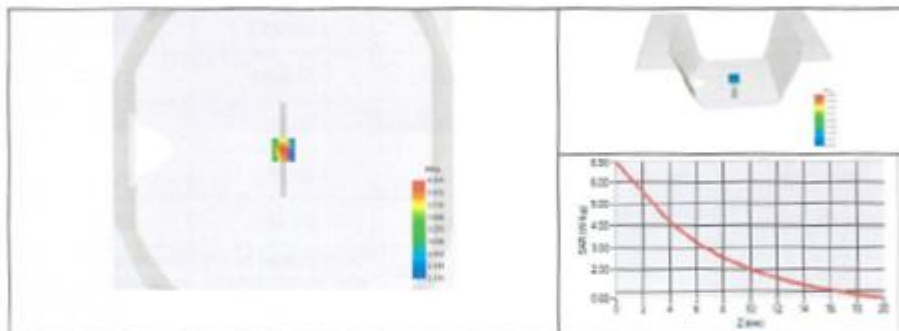


SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.68.5.23.BFS.A

Software	OPENSAR V5
Phantom	SN 13.09 SAM68
Probe	SN 41/18 EPG0333
Liquid	Head Liquid Values: $\epsilon_{\text{pw}} = 40.4$ $\sigma = 1.40$
Distance between dipole center and liquid	10.0 mm
Area scan resolution	$dx=8\text{mm}/dy=8\text{mm}$
Zoon Scan Resolution	$dx=8\text{mm}/dy=8\text{mm}/dz=5\text{mm}$
Frequency	1900 MHz
Input power	20 dBm
Liquid Temperature	20 $\pm$ 1 $^{\circ}\text{C}$
Lab Temperature	20 $\pm$ 1 $^{\circ}\text{C}$
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
1900 MHz	3.80	38.02	39.70	1.94	19.41	20.50



Page: 7/8

Template: ACR.DDD.N.YY.M1.GR.ISSUE, SAR Reference Dipole v1.

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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

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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.



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
A1C0BAC91CEB441A

	Customer Name
Distribution :	Verkotan Ltd.

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

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SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.348.11.24.BES.A

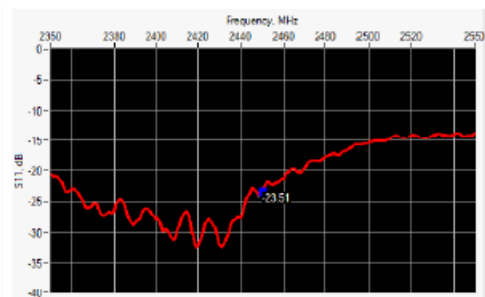
6 CALIBRATION RESULTS

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

Page: 6/8

Template_ACR.DDD.N.YY.MVGB.ISSUE_SAR Reference Dipole vM

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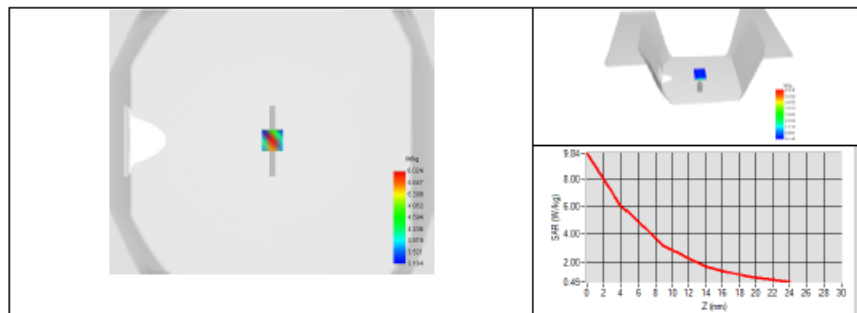


SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.348.11.24.BES.A

Distance between dipole center and liquid	10.0 mm
Area scan resolution	$dx=8mm/dy=8mm$
Zoom 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



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SAR Reference Dipole Calibration Report

Ref : ACR.348.12.24.BES.A

VERKOTAN LTD.
ELEKTRONIIKKATIE 17
90590, OULU, FINLAND
MVG COMOSAR REFERENCE DIPOLE
FREQUENCY: 2600 MHZ
SERIAL NO.: SN 51/18 DIP2G600-474

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.



SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.348.12.24.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:
Geraldine TOUTAIN
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	Customer Name
Distribution :	Verkotan Ltd.

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

Page: 2/8

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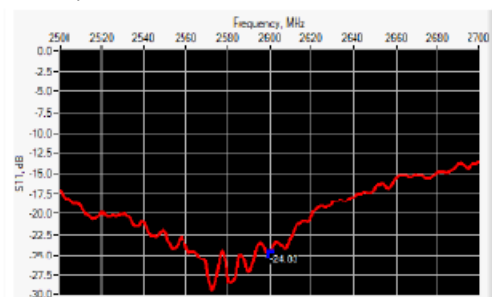
6 CALIBRATION RESULTS

6.1 MECHANICAL DIMENSIONS

L mm		h mm		d mm	
Measured	Required	Measured	Required	Measured	Required
-	48.50 +/- 2%	-	28.30 +/- 2%	-	3.60 +/- 2%

6.2 S11 PARAMETER

6.2.1 S11 parameter in Head Liquid



Frequency (MHz)	S11 parameter (dB)	Requirement (dB)	Impedance
2600	-24.83	-20	45.2Ω - 2.7jΩ

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.

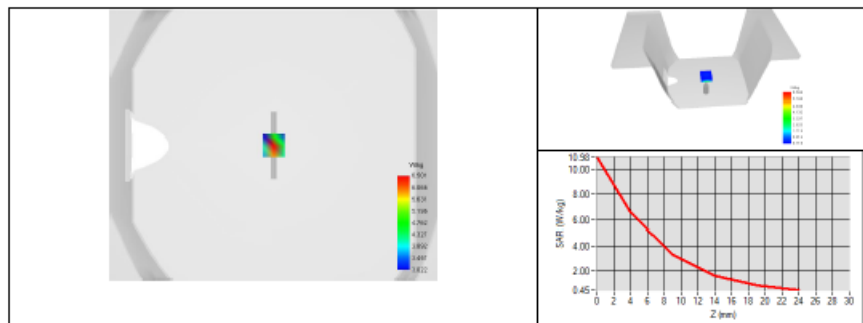


SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.348.12.24.BES.A

Software	OPENSAR V5
Phantom	SN 13/09 SAM68
Probe	3523-EPGO-429
Liquid	Head Liquid Values: $\epsilon_{ps}' : 42.3$ σ : 1.96
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	2600 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
2600 MHz	5.83	58.26	55.30	2.69	26.94	24.60



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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

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.



SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.348.1324.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:
Geraldine TOUTAIN
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	Customer Name
Distribution :	Verkotan Ltd.

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

Page: 2/0

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SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.348.13.24.BES.A

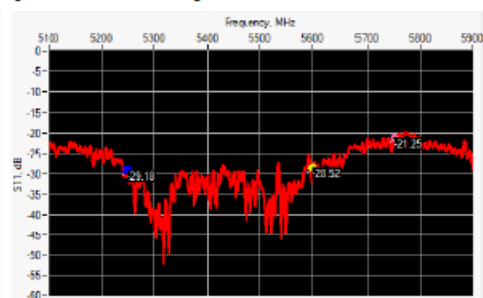
6 CALIBRATION RESULTS

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	$47.3\Omega + 2.0j\Omega$
5600	-28.52	-20	$49.9\Omega - 3.7j\Omega$
5750	-21.25	-20	$42.1\Omega - 0.6j\Omega$

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 EPG0431

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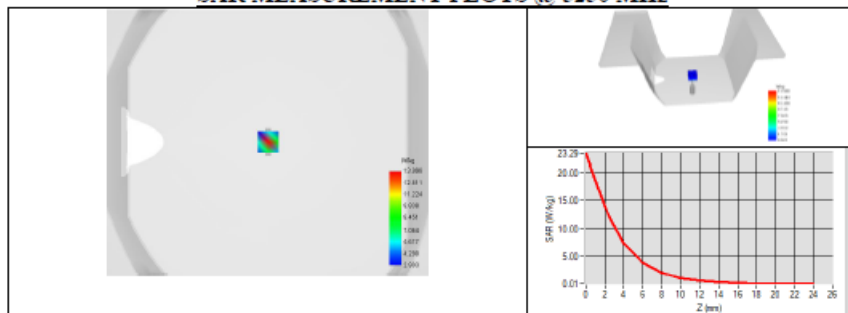
SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.348.13.24.BES.A

Liquid	Head Liquid Values @ 5250 MHz: ϵ_p' : 35.2 σ : 4.66 Head Liquid Values @ 5600 MHz: ϵ_p' : 34.1 σ : 4.99 Head Liquid Values @ 5750 MHz: ϵ_p' : 33.7 σ : 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 $\pm$ 1 $^{\circ}$ C
Lab Temperature	20 $\pm$ 1 $^{\circ}$ 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



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