SAR Compliance Test Report

Date of Report	5/02/2021	**Client's Contact person:**	Pirjo Laurila
Number of pages:	103	**Responsible Test engineer:**	Ilari Kinnunen
Testing laboratory:	**Verkotan Oy** Elektroniikkatie 17 90590 Oulu Finland	**Client:**	**Framery Oy** Patamäenkatu 7 33900 Tampere Finland
Tested device	**Framery Control Unit**		
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

IEEE 1528 - 2013
IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Technique

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:

05.02.2021

Miia Nurkkala

Digitaalinen allekirjoittaja: Miia Nurkkala
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Laboratory Manager

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1. SUMMARY OF SAR TEST REPORT

1.1 Test Details

Equipment under Test (EUT):

Product:	Framery Control Unit
Manufacturer:	Framery
Model:	9000456-01A
IMEI Number:	862771040019020
FCC Number:	2AX4J9000456 containing 2AX4J201906EG21G
DUT Number:	22192
Battery Type used in testing:	-
State of the Sample	Prototype fully representing production units

Testing information:

Testing performed:	01.12.2020 – 17.12.2020
Notes:	FCC designation number for the testing laboratory is FI0005. This report replaces FCC SAR Report_Framery Control Unit_ID4520_01022021. FCC designation number added.
Document ID:	FCC SAR Report_Framery Control Unit_ID4520_05022021
Temperature °C	22±2 / Controlled
Humidity RH%	30±20 / Controlled
Measurement performed by:	Ilari Kinnunen

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1.2 Maximum Results

The maximum reported* SAR values for extremity and body-worn exposure condition. 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) is SAR_{10g} of 4.0 W/kg for extremities and SAR_{1g} of 1.6 W/kg for body.

1.2.1 Standalone SAR

System	Highest Reported* SAR_{10g}(W/kg) in Extremity Exposure Condition, 0 mm separation	Highest Reported* SAR_{1g}(W/kg) in Body-Worn Condition, 10 mm separation	Result
GSM 850	1.81	1.03	PASS
GSM 1900	1.05	0.38	PASS
WCDMA 2	1.43	0.60	PASS
WCDMA 4	1.58	1.21	PASS
WCDMA 5	0.75	0.35	PASS
LTE 2	1.27	0.46	PASS
LTE 4	1.47	1.16	PASS
LTE 5	0.82	0.49	PASS
LTE 7	2.63	1.44	PASS
LTE 12	1.11	0.87	PASS
LTE 13	0.62	0.40	PASS
LTE 25	1.48	0.51	PASS
LTE 26	0.76	0.48	PASS
LTE 41	1.39	0.73	PASS
BT	0.02	0.02	PASS

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

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1.2.2 Simultaneous Transmission Extremity SAR

Highest Simultaneous Transmission SAR	SAR_{10g}(W/kg) in Extremity Exposure Condition
LTE 7 + Bluetooth	2.65

1.2.3 Simultaneous Transmission Body SAR

Highest Simultaneous Transmission SAR	SAR_{1g}(W/kg) in Body-Worn Condition
LTE 7 + Bluetooth	1.46

1.2.4 Maximum Drift

Maximum Drift During Measurements	-0.69 dB*

*Drifts >5% have been considered in the scaling factor

1.2.5 Measurement Uncertainty

Expanded Uncertainty (k=2) 95 %	±23.4 %

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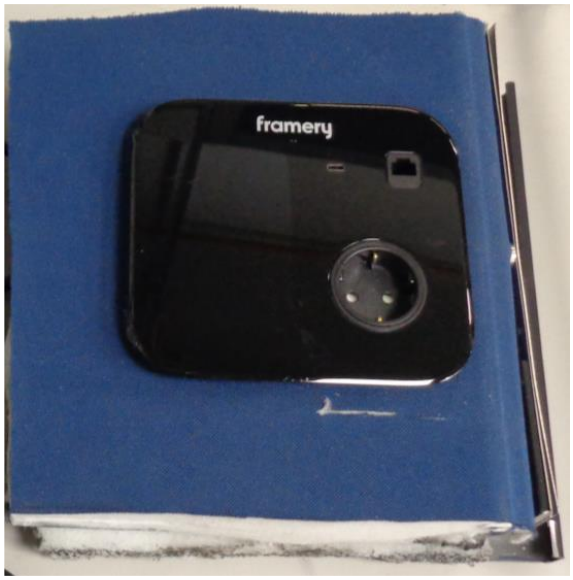
2. DESCRIPTION OF THE DEVICE UNDER TEST (DUT)

The DUT is a control unit that is installed to a wall of an office phone booth. The control unit incorporates a wireless module and has a touch screen.



Exposure Environment	General population, uncontrolled

2.1 Supported Frequency Bands and Operational Modes

	Modes of Operation	Modulation Mode	Transmitter Frequency Range (MHz)
TX Frequency bands	GSM/GPRS/EDGE 850	GMSK/8PSK	824-849
	GSM/GPRS/EDGE 1900	GMSK/8PSK	1850-1910
	WCDMA 2	QPSK	1850-1910
	WCDMA 4	QPSK	1710-1755
	WCDMA 5	QPSK	824-849
	LTE 2	QPSK/16QAM	1850-1910
	LTE 4	QPSK/16QAM	1710-1755
	LTE 5	QPSK/16QAM	824-849
	LTE 7	QPSK/16QAM	699-716
	LTE 12	QPSK/16QAM	777-787
	LTE 13	QPSK/16QAM	788-798
	LTE 25	QPSK/16QAM	1850-1915
	LTE 26	QPSK/16QAM	814-849
	LTE 41	QPSK/16QAM	2496-2690
	Bluetooth 5.1	GFSK	2400-2483.5

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2.2 Bluetooth SAR test exclusion

2.2.1 Body SAR_{1g}

According to Appendix A of 447498D01 the SAR test exclusion power threshold for 2450MHz is 38mW at ≤20mm separation distance. The distance between the Bluetooth antenna and the screen of the device is 11.18 mm, thus the separation distance of 20 mm to the users' body is assumed. The maximum output power of the Bluetooth transmitter is 1.8mW thus it is below the test exclusion threshold.

2.2.2 Extremity SAR_{10g}

According to Appendix A of 447498D01 the SAR test exclusion power threshold for 2450MHz is 19mW at ≤10mm separation distance. The maximum output power of the Bluetooth transmitter is 1.8mW thus it is below the test exclusion threshold.

2.3 Simultaneous transmission

Bluetooth and the cellular mode can be operated simultaneously.

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3. OUTPUT POWER

3.1 Maximum specified conducted output power

From the customer, including tune-up tolerances;

GPRS 850 Slot Configuration	Max Output Power [dBm]
GPRS (1Tx-slot)	35
GPRS (2Tx-slot)	35
GPRS (3Tx-slot)	33.2
GPRS (4Tx-slot)	32

GPRS 1900 Slot Configuration	Max Output Power [dBm]
GPRS (1Tx-slot)	32
GPRS (2Tx-slot)	32
GPRS (3Tx-slot)	30.2
GPRS (4Tx-slot)	29

WCDMA	Max Output Power [dBm]
WCDMA 2	25
WCDMA 4	25
WCDMA 5	25

LTE	Max Output Power [dBm]
LTE 2	25
LTE 4	25
LTE 5	25
LTE 7	25
LTE 12	25
LTE 13	25
LTE 25	25
LTE 26	25
LTE 41	25

Bluetooth	Max Output Power [dBm]
Bluetooth 5.1	2.5

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3.2 Tested conducted power

Measured conducted output power at transmitting antenna connector;

GSM:

Slot Configuration Info	GSM 850 CH128 824.2 MHz	GSM 850 CH 190 836.6 MHz	GSM 850 CH 251 848.8 MHz	GSM 1900 CH 512 1850.2 MHz	GSM 1900 CH 661 1880.0 MHz	GSM 1900 CH 810 1909.8 MHz
GPRS (GMSK, 1Tx-slot)	32.32	32.34	31.87	30	29.79	30.45
GPRS (GMSK, 2Tx-slot)	30.38	30.29	30.34	**28.61**	**28.75**	**28.81**
GPRS (GMSK, 3Tx-slot)	**29.18**	**28.82**	**28.98**	26.62	26.26	26.69
GPRS (GMSK, 4Tx-slot)	27.84	27.57	27.63	25.11	25.19	25.12
EDGE (8PSK, 1Tx-slot)	26.42	26.3	26.2	26.18	26.33	26.11
EDGE (8PSK, 2Tx-slot)	25.29	25.03	25.04	24.98	25.1	25.14
EDGE (8PSK, 3Tx-slot)	23.61	23.47	23.35	23.57	23.6	23.59
EDGE (8PSK, 4Tx-slot)	22.42	22.3	22.22	22.24	22.25	22.21

Time averaged power:

Slot Configuration	GSM 850 CH 128 824.2 MHz	GSM 850 CH 190 836.6 MHz	GSM 850 CH 251 848.8MHz	GSM 1900 CH 512 1850.2 MHz	GSM 1900 CH 661 1880.0 MHz	GSM 1900 CH 810 1909.8 MHz
GPRS 1-slot	23.32	23.34	22.87	21	20.79	21.45
GPRS 2-slot	24.38	24.29	24.34	**22.61**	**22.75**	**22.81**
GPRS 3-slot	**24.92**	**24.56**	**24.72**	22.36	22	22.43
GPRS 4-slot	24.84	24.57	24.63	22.11	22.19	22.12
EDGE 1-slot	17.42	17.3	17.2	17.18	17.33	17.11
EDGE 2-slot	19.29	19.03	19.04	18.98	19.1	19.14
EDGE 3-slot	19.35	19.21	19.09	19.31	19.34	19.33
EDGE 4-slot	19.42	19.3	19.22	19.24	19.25	19.21

Slot configuration with highest time averaged power was selected for SAR testing.

WCDMA:

Mode / Reference Channel	WCDMA 2			WCDMA 4			WCDMA 5		
	CH 9262 1852.4 MHz	CH 9400 1880.0 MHz	CH 9538 1907.6 MHz	CH 1312 1712.4 MHz	CH 1413 1732.6 MHz	CH 1513 1752.6 MHz	CH 4132 826.4 MHz	CH 4183 836.6 MHz	CH 4233 846.6 MHz
RMC 12.2K	23.04	23.11	23.14	23.4	23.6	23.35	23.08	23.07	23.02
HSDPA Subtest-1	21.91	22.18	22.19	22.16	22.53	22.19	22	22.01	21.98
HSDPA Subtest-2	21.98	22.24	22.17	22.29	22.46	22.16	21.99	22.09	22.07
HSDPA Subtest-3	21.45	21.72	21.71	21.82	22.08	21.75	21.54	21.58	21.46
HSDPA Subtest-4	21.42	21.81	21.8	21.77	22.06	21.9	21.54	21.56	21.54
HSUPA Subtest-1	21.92	22.22	22.19	22.26	22.47	22.16	22.06	22.05	22.09
HSUPA Subtest-2	21.52	21.68	21.67	21.86	22.05	21.82	21.67	21.62	21.52
HSUPA Subtest-3	22.02	22.28	22.17	22.22	22.57	22.28	22.1	22.12	22.08
HSUPA Subtest-4	22.13	22.2	22.24	22.47	22.6	22.41	22.09	22.19	22.06
HSUPA Subtest-5	22.08	22.3	22.11	22.35	22.6	22.4	22.1	22.11	22.18

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LTE:

The DUT is LTE Cat 1 device and has limited data rate up to 5 Mb/s in uplink, for this reason the 16QAM modulation and bandwidths of 10MHz and higher are measured using resource block size of 1 and 27, as 27 is the maximum supported amount.

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 18607 1850.7 MHz	CH 18900 1880.0 MHz	CH 19193 1909.3 MHz	3GPP MPR [dB]	CH 18607 1850.7 MHz	CH 18900 1880.0 MHz	CH 19193 1909.3 MHz	3GPP MPR [dB]
2 / 1.4M	1	0	22.76	22.89	22.84	0	22.07	22.26	21.53	1
	1	2	22.74	22.92	22.71	0	22.18	22.54	21.54	1
	1	5	22.69	22.97	22.63	0	21.88	22.45	21.24	1
	3	0	22.74	23.08	22.66	0	21.99	22.17	21.59	1
	3	1	22.64	23.1	22.66	0	21.61	21.84	21.77	1
	3	3	22.52	23.11	22.6	0	21.49	21.71	21.64	1
	6	0	21.61	22.21	21.81	1	20.8	21.28	20.86	2

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 18615 1851.5 MHz	CH 18900 1880.0 MHz	CH 19185 1918.5 MHz	3GPP MPR [dB]	CH 18615 1851.5 MHz	CH 18900 1880.0 MHz	CH 19185 1918.5 MHz	3GPP MPR [dB]
2 / 3M	1	0	22.66	23.02	22.67	0	22.07	22.38	21.54	1
	1	7	22.8	23.17	22.73	0	22.29	22.15	21.53	1
	1	14	22.73	23.18	22.55	0	22.22	21.97	21.44	1
	8	0	21.7	22.19	21.7	1	21.12	21.0	20.79	2
	8	3	21.71	22.24	21.78	1	21.06	21.26	20.77	2
	8	7	21.71	22.28	21.63	1	21.19	21.28	20.59	2
	15	0	21.73	22.22	21.7	1	20.93	21.16	20.85	2

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 18625 1852.5 MHz	CH 18900 1880.0 MHz	CH 19175 1907.5 MHz	3GPP MPR [dB]	CH 18625 1852.5 MHz	CH 18900 1880.0 MHz	CH 19175 1907.5 MHz	3GPP MPR [dB]
2 / 5M	1	0	22.67	22.91	22.57	0	21.74	21.91	21.45	1
	1	12	23.01	23.45	22.98	0	21.93	22.28	21.65	1
	1	24	22.88	23.06	22.61	0	22.26	22.13	21.56	1
	12	0	21.72	22.07	21.78	1	20.64	21.18	20.78	2
	12	6	21.8	22.21	21.91	1	20.43	21.18	20.85	2
	12	13	21.76	22.24	21.84	1	20.49	21.33	20.76	2
	25	0	21.79	22.16	21.8	1	20.76	21.09	20.88	2

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LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 18650 1855 MHz	CH 18900 1880.0 MHz	CH 19150 1905 MHz	3GPP MPR [dB]	CH 18650 1855 MHz	CH 18900 1880.0 MHz	CH 19150 1905 MHz	3GPP MPR [dB]
2 / 10M	1	0	22.77	22.98	22.41	0	21.99	21.86	21.44	1
	1	24	22.94	23.39	22.88	0	22.14	22.55	21.7	1
	1	49	22.85	23.07	22.66	0	21.88	21.87	21.52	1
	25	0	21.95	22.09	21.56	1	N/A*	N/A*	N/A*	N/A*
	25	12	21.91	22.16	21.73	1	N/A*	N/A*	N/A*	N/A*
	25	25	21.85	22.13	21.87	1	N/A*	N/A*	N/A*	N/A*
	50	0	21.94	22.07	21.57	1	N/A*	N/A*	N/A*	N/A*
	27	0	N/A*	N/A*	N/A*	N/A*	20.82	21.36	20.55	2

*16QAM modulation and bandwidths of 10MHz and higher are measured using resource block size of 1 and 27, as 27 is the maximum supported amount.

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 18675 1857.5 MHz	CH 18900 1880.0 MHz	CH 19125 1902.5 MHz	3GPP MPR [dB]	CH 18675 1857.5 MHz	CH 18900 1880.0 MHz	CH 19125 1902.5 MHz	3GPP MPR [dB]
2 / 15M	1	0	22.57	22.37	22.66	0	22.03	21.6	21.83	1
	1	37	23.12	23.18	22.89	0	22.29	22.14	21.56	1
	1	74	22.46	23.03	22.41	0	21.33	21.58	21.6	1
	36	0	21.81	22.07	21.7	1	N/A*	N/A*	N/A*	N/A*
	36	19	21.77	22.12	21.56	1	N/A*	N/A*	N/A*	N/A*
	36	39	21.72	22.08	21.63	1	N/A*	N/A*	N/A*	N/A*
	75	0	21.8	22.01	21.67	1	N/A*	N/A*	N/A*	N/A*
	27	0	N/A*	N/A*	N/A*	N/A*	20.8	21.08	20.72	2

*16QAM modulation and bandwidths of 10MHz and higher are measured using resource block size of 1 and 27, as 27 is the maximum supported amount.

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 18700 1860.0 MHz	CH 18900 1880.0 MHz	CH 19100 1900.0 MHz	3GPP MPR [dB]	CH 18700 1860.0 MHz	CH 18900 1880.0 MHz	CH 19100 1900.0 MHz	3GPP MPR [dB]
2 / 20M	1	0	22.48	21.81	22.97	0	21.38	21.04	22.4	1
	1	50	23.06	23.31	23.03	0	21.52	22.74	22.25	1
	1	99	21.95	22.76	22.8	0	20.92	22.3	22.05	1
	50	0	21.81	21.95	21.71	1	N/A*	N/A*	N/A*	N/A*
	50	25	21.81	22.09	21.73	1	N/A*	N/A*	N/A*	N/A*
	50	50	21.84	22.07	21.59	1	N/A*	N/A*	N/A*	N/A*
	100	0	21.78	21.97	21.69	1	N/A*	N/A*	N/A*	N/A*
	27	0	N/A*	N/A*	N/A*	N/A*	20.92	20.98	20.95	2

*16QAM modulation and bandwidths of 10MHz and higher are measured using resource block size of 1 and 27, as 27 is the maximum supported amount.

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LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 19957 1710.7 MHz	CH 20175 1732.5 MHz	CH 20393 1754.3 MHz	3GPP MPR [dB]	CH 19957 1710.7 MHz	CH 20175 1732.5 MHz	CH 20393 1754.3 MHz	3GPP MPR [dB]
4 / 1.4M	1	0	23.27	23.5	23.34	0	22.55	22.4	22.38	1
	1	2	23.11	23.51	23.42	0	22.87	22.52	22.69	1
	1	5	23.13	23.46	23.46	0	22.66	22.52	22.55	1
	3	0	23.46	23.42	23.46	0	22.53	22.71	22.41	1
	3	1	23.48	23.45	23.51	0	22.46	22.74	22.2	1
	3	3	23.34	23.48	23.5	0	22.47	22.49	21.97	1
	6	0	22.55	22.56	22.65	1	21.83	21.7	21.45	2

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 19965 1711.5 MHz	CH 20175 1732.5 MHz	CH 20385 1753.5 MHz	3GPP MPR [dB]	CH 19965 1711.5 MHz	CH 20175 1732.5 MHz	CH 20385 1753.5 MHz	3GPP MPR [dB]
4 / 3M	1	0	23.2	23.42	23.32	0	22.83	22.38	21.89	1
	1	7	23.32	23.66	23.72	0	22.86	22.53	22.51	1
	1	14	23.27	23.42	23.45	0	22.71	22.47	22.49	1
	8	0	22.44	22.53	22.49	1	21.87	21.76	21.38	2
	8	3	22.53	22.46	22.5	1	21.8	21.69	21.39	2
	8	7	22.47	22.57	22.56	1	21.64	21.72	21.39	2
	15	0	22.56	22.5	22.47	1	21.56	21.58	21.52	2

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 19975 1711.5 MHz	CH 20175 1732.5 MHz	CH 20375 1753.5 MHz	3GPP MPR [dB]	CH 19975 1711.5 MHz	CH 20175 1732.5 MHz	CH 20375 1753.5 MHz	3GPP MPR [dB]
4 / 5M	1	0	23.15	23.39	23.12	0	22.65	22.64	21.93	1
	1	12	23.54	23.69	23.44	0	22.84	22.8	22.96	1
	1	24	23.36	23.35	23.47	0	22.92	22.59	22.63	1
	12	0	22.35	22.51	22.52	1	21.86	21.72	21.72	2
	12	6	22.42	22.45	22.57	1	21.65	21.71	21.64	2
	12	13	22.43	22.54	22.63	1	21.63	21.66	21.79	2
	25	0	22.44	22.47	22.54	1	21.68	21.64	21.63	2

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LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 20000 1715.0 MHz	CH 20175 1732.5 MHz	CH 20350 1750.0 MHz	3GPP MPR [dB]	CH 20000 1715.0 MHz	CH 20175 1732.5 MHz	CH 20350 1750.0 MHz	3GPP MPR [dB]
4 / 10M	1	0	23.24	23.49	23.31	0	21.99	22.75	22.71	1
	1	24	23.76	23.61	23.7	0	22.77	22.5	23.53	1
	1	49	23.4	23.29	23.54	0	22.23	22.4	23.52	1
	25	0	22.44	22.52	22.39	1	N/A*	N/A*	N/A*	N/A*
	25	12	22.52	22.4	22.61	1	N/A*	N/A*	N/A*	N/A*
	25	25	22.55	22.51	22.67	1	N/A*	N/A*	N/A*	N/A*
	50	0	22.4	22.56	22.61	1	N/A*	N/A*	N/A*	N/A*
	27	0	N/A*	N/A*	N/A*	N/A*	21.71	21.85	21.78	2

*16QAM modulation and bandwidths of 10MHz and higher are measured using resource block size of 1 and 27, as 27 is the maximum supported amount.

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 20025 1717.0 MHz	CH 20175 1732.5 MHz	CH 20325 1747.5 MHz	3GPP MPR [dB]	CH 20025 1717.0 MHz	CH 20175 1732.5 MHz	CH 20325 1747.5 MHz	3GPP MPR [dB]
4 / 15M	1	0	22.95	23.41	23.35	0	21.97	22.58	22.75	1
	1	37	23.56	23.69	23.57	0	22.84	22.51	23.6	1
	1	74	23.43	23.3	23.74	0	22.98	21.93	23.65	1
	36	0	22.4	22.51	22.5	1	N/A*	N/A*	N/A*	N/A*
	36	19	22.55	22.42	22.59	1	N/A*	N/A*	N/A*	N/A*
	36	39	22.66	22.38	22.6	1	N/A*	N/A*	N/A*	N/A*
	75	0	22.47	22.44	22.61	1	N/A*	N/A*	N/A*	N/A*
	27	0	N/A*	N/A*	N/A*	N/A*	21.72	21.66	21.65	2

*16QAM modulation and bandwidths of 10MHz and higher are measured using resource block size of 1 and 27, as 27 is the maximum supported amount.

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 20050 1720.0 MHz	CH 20175 1732.5 MHz	CH 20300 1745.0 MHz	3GPP MPR [dB]	CH 20050 1720.0 MHz	CH 20175 1732.5 MHz	CH 20300 1745.0 MHz	3GPP MPR [dB]
4 / 20M	1	0	23.05	23.47	23.56	0	21.97	22.92	23.14	1
	1	50	23.66	23.8	23.79	0	22.62	23.44	23.43	1
	1	99	23.4	23.37	23.98	0	22.46	22.91	23.34	1
	50	0	22.44	22.57	22.58	1	N/A*	N/A*	N/A*	N/A*
	50	25	22.59	22.49	22.54	1	N/A*	N/A*	N/A*	N/A*
	50	50	22.7	22.48	22.71	1	N/A*	N/A*	N/A*	N/A*
	100	0	22.57	22.44	22.64	1	N/A*	N/A*	N/A*	N/A*
	27	0	N/A*	N/A*	N/A*	N/A*	21.52	21.82	21.85	2

*16QAM modulation and bandwidths of 10MHz and higher are measured using resource block size of 1 and 27, as 27 is the maximum supported amount.

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LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 20407 824.7 MHz	CH 20525 836.5 MHz	CH 20643 848.3 MHz	3GPP MPR [dB]	CH 20407 824.7 MHz	CH 20525 836.5 MHz	CH 20643 848.3 MHz	3GPP MPR [dB]
5 / 1.4M	1	0	23.11	22.98	23.04	0	22.21	21.57	22.39	1
	1	2	23.04	23.18	23.3	0	22.3	21.88	22.42	1
	1	5	23.4	23.09	23.0	0	22.26	21.78	22.24	1
	3	0	23.13	23.21	23.13	0	22.21	21.43	21.63	1
	3	1	23.02	23.18	22.91	0	22.26	21.54	21.41	1
	3	3	23.15	23.16	22.97	0	21.56	21.56	21.32	1
	6	0	22.18	22.15	22.01	1	20.84	20.87	21.0	2

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 20415 825.5 MHz	CH 20525 836.5 MHz	CH 20635 847.5 MHz	3GPP MPR [dB]	CH 20415 825.5 MHz	CH 20525 836.5 MHz	CH 20635 847.5 MHz	3GPP MPR [dB]
5 / 3M	1	0	23.09	22.97	23.01	0	22.41	21.9	21.86	1
	1	7	23.16	23.22	23.08	0	22.94	22.11	22.09	1
	1	14	23.63	23.1	23.14	0	23.21	21.85	21.86	1
	8	0	22.23	22.18	22.18	1	21.51	20.96	21.23	2
	8	3	22.04	22.2	22.07	1	21.09	20.94	21.5	2
	8	7	22.27	22.23	22.09	1	21.14	20.99	21.18	2
	15	0	22.26	22.16	22.13	1	21.07	21.1	21.18	2

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 20425 826.5 MHz	CH 20525 836.5 MHz	CH 20625 846.5 MHz	3GPP MPR [dB]	CH 20425 826.5 MHz	CH 20525 836.5 MHz	CH 20625 846.5 MHz	3GPP MPR [dB]
5 / 5M	1	0	22.92	22.86	22.95	0	22.2	21.99	21.49	1
	1	12	23.43	23.42	23.05	0	22.47	22.17	21.99	1
	1	24	23.2	22.98	23.02	0	22.6	22.07	21.81	1
	12	0	22.1	22.06	22.03	1	20.93	21.01	21.1	2
	12	6	22.29	22.1	22.09	1	21.13	21.21	21.08	2
	12	13	22.29	22.16	22.1	1	21.27	21.26	20.82	2
	25	0	22.18	22.17	22.01	1	21.29	21.17	21.02	2

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LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 20450 829.0 MHz	CH 20525 836.5 MHz	CH 20600 844 MHz	3GPP MPR [dB]	CH 20450 829.0 MHz	CH 20525 836.5 MHz	CH 20600 844 MHz	3GPP MPR [dB]
5 / 10M	1	0	22.9	23.07	22.98	0	21.37	22.34	22.34	1
	1	24	23.29	23.23	23.12	0	21.81	22.42	22.35	1
	1	49	23.06	23.06	22.89	0	22.76	22.02	21.95	1
	25	0	22.27	22.13	22.1	1	N/A*	N/A*	N/A*	N/A*
	25	12	22.25	22.11	22.04	1	N/A*	N/A*	N/A*	N/A*
	25	25	22.24	22.15	22.04	1	N/A*	N/A*	N/A*	N/A*
	50	0	22.23	22.1	22.11	1	N/A*	N/A*	N/A*	N/A*
	27	0	N/A*	N/A*	N/A*	N/A*	21.28	21.44	21.31	2

*16QAM modulation and bandwidths of 10MHz and higher are measured using resource block size of 1 and 27, as 27 is the maximum supported amount.

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LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 20775 2502.5 MHz	CH 21100 2535.0 MHz	CH 21425 2567.5 MHz	3GPP MPR [dB]	CH 20775 2502.5 MHz	CH 21100 2535.0 MHz	CH 21425 2567.5 MHz	3GPP MPR [dB]
7 / 5M	1	0	22.29	22.14	22.21	0	21.61	21.19	20.7	1
	1	12	22.49	22.45	22.44	0	21.86	21.41	20.95	1
	1	24	22.23	22.25	22.15	0	21.79	21.6	21.18	1
	12	0	21.38	21.47	21.36	1	20.44	20.27	20.29	2
	12	6	21.41	21.42	21.44	1	20.39	20.25	20.37	2
	12	13	21.31	21.32	21.45	1	20.27	20.19	20.36	2
	25	0	21.33	21.34	21.49	1	20.45	20.27	20.39	2

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 20800 2505.0 MHz	CH 21100 2535.0 MHz	CH 21400 2565.0 MHz	3GPP MPR [dB]	CH 20800 2505.0 MHz	CH 21100 2535.0 MHz	CH 21400 2565.0 MHz	3GPP MPR [dB]
7 / 10M	1	0	22.39	22.29	22.27	0	21.18	21.21	20.89	1
	1	24	22.37	22.52	22.57	0	21.6	21.5	21.57	1
	1	49	22.07	22.45	22.44	0	21.35	20.94	21.11	1
	25	0	21.43	21.46	21.48	1	N/A*	N/A*	N/A*	N/A*
	25	12	21.5	21.45	21.52	1	N/A*	N/A*	N/A*	N/A*
	25	25	21.36	21.39	21.58	1	N/A*	N/A*	N/A*	N/A*
	50	0	21.44	21.47	21.49	1	N/A*	N/A*	N/A*	N/A*
	27	0	N/A*	N/A*	N/A*	N/A*	20.28	20.29	20.6	2

*16QAM modulation and bandwidths of 10MHz and higher are measured using resource block size of 1 and 27, as 27 is the maximum supported amount.

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 20825 2507.5 MHz	CH 21100 2535.0 MHz	CH 21375 2562.5 MHz	3GPP MPR [dB]	CH 20825 2507.5 MHz	CH 21100 2535.0 MHz	CH 21375 2562.5 MHz	3GPP MPR [dB]
7 / 15M	1	0	22.25	22.33	22.29	0	21.51	20.85	20.83	1
	1	37	22.47	22.55	22.48	0	21.14	20.83	21.09	1
	1	74	21.93	22.36	22.41	0	20.85	20.82	21.15	1
	36	0	21.45	21.51	21.45	1	N/A*	N/A*	N/A*	N/A*
	36	19	21.43	21.46	21.54	1	N/A*	N/A*	N/A*	N/A*
	36	39	21.42	21.4	21.51	1	N/A*	N/A*	N/A*	N/A*
	75	0	21.37	21.35	21.46	1	N/A*	N/A*	N/A*	N/A*
	27	0	N/A*	N/A*	N/A*	N/A*	20.14	20.2	19.98	2

*16QAM modulation and bandwidths of 10MHz and higher are measured using resource block size of 1 and 27, as 27 is the maximum supported amount.

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LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 20850 2510.0 MHz	CH 21100 2535.0 MHz	CH 21350 2560.0 MHz	3GPP MPR [dB]	CH 20850 2510.0 MHz	CH 21100 2535.0 MHz	CH 21350 2560.0 MHz	3GPP MPR [dB]
7 / 20M	1	0	22.08	22.01	22.52	0	21.35	21.38	20.79	1
	1	50	22.42	22.6	22.85	0	21.39	21.48	20.73	1
	1	99	22.06	22.0	22.48	0	21.12	21.25	20.62	1
	50	0	21.47	21.41	21.42	1	N/A*	N/A*	N/A*	N/A*
	50	25	21.38	21.52	21.53	1	N/A*	N/A*	N/A*	N/A*
	50	50	21.38	21.41	21.56	1	N/A*	N/A*	N/A*	N/A*
	100	0	21.37	21.4	21.45	1	N/A*	N/A*	N/A*	N/A*
	27	0	N/A*	N/A*	N/A*	N/A*	20.34	20.08	19.74	2

*16QAM modulation and bandwidths of 10MHz and higher are measured using resource block size of 1 and 27, as 27 is the maximum supported amount.

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LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 23017 699.7 MHz	CH 23095 707.5 MHz	CH 23173 715.3 MHz	3GPP MPR [dB]	CH 23017 699.7 MHz	CH 23095 707.5 MHz	CH 23173 715.3 MHz	3GPP MPR [dB]
12 / 1.4M	1	0	23.17	23.2	22.82	0	22.31	21.83	22.33	1
	1	2	23.25	23.23	22.85	0	22.6	22.04	22.51	1
	1	5	23.03	23.15	22.8	0	22.43	21.85	22.2	1
	3	0	23.13	22.91	22.97	0	22.36	21.78	21.76	1
	3	1	23.1	23.23	23.13	0	22.4	22.23	21.83	1
	3	3	23.2	22.91	22.99	0	22.29	22.0	21.59	1
	6	0	22.16	22.0	22.02	1	21.3	21.03	21.05	2

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 23025 700.5 MHz	CH 23095 707.5 MHz	CH 23165 714.5 MHz	3GPP MPR [dB]	CH 23025 700.5 MHz	CH 23095 707.5 MHz	CH 23165 714.5 MHz	3GPP MPR [dB]
12 / 3M	1	0	23.0	23.19	23.26	0	22.02	21.87	21.52	1
	1	7	23.21	23.07	23.04	0	22.66	21.69	21.92	1
	1	14	23.05	23.03	22.89	0	22.6	21.68	21.75	1
	8	0	22.17	22.01	22.11	1	21.03	20.92	20.88	2
	8	3	22.15	21.97	22.07	1	21.12	21.07	21.06	2
	8	7	22.21	21.98	21.88	1	21.19	20.99	20.87	2
	15	0	22.1	22.04	22.08	1	21.02	20.96	21.14	2

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 23035 701.5 MHz	CH 23095 707.5 MHz	CH 23155 713.5 MHz	3GPP MPR [dB]	CH 23035 701.5 MHz	CH 23095 707.5 MHz	CH 23155 713.5 MHz	3GPP MPR [dB]
12 / 5M	1	0	23.09	22.84	22.81	0	22.39	21.86	21.61	1
	1	12	23.5	23.42	23.02	0	22.55	21.79	21.93	1
	1	24	23.18	22.78	22.63	0	22.56	21.77	21.58	1
	12	0	22.03	21.93	21.99	1	20.96	20.92	20.87	2
	12	6	22.15	22.05	21.96	1	20.95	20.98	20.7	2
	12	13	22.06	21.99	21.94	1	20.84	20.96	20.85	2
	25	0	22.0	22.02	21.91	1	20.93	20.95	20.94	2

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LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 23060 704.0 MHz	CH 23095 707.5 MHz	CH 23130 711.0 MHz	3GPP MPR [dB]	CH 23060 704.0 MHz	CH 23095 707.5 MHz	CH 23130 711.0 MHz	3GPP MPR [dB]
12 / 10M	1	0	23.0	22.78	22.84	0	22.12	22.02	21.87	1
	1	24	23.44	23.14	23.08	0	22.48	22.22	22.07	1
	1	49	23.22	22.69	22.63	0	22.85	21.59	21.31	1
	25	0	21.87	22.0	21.85	1	N/A*	N/A*	N/A*	N/A*
	25	12	22.04	22.03	21.87	1	N/A*	N/A*	N/A*	N/A*
	25	25	21.95	21.95	21.94	1	N/A*	N/A*	N/A*	N/A*
	50	0	21.93	21.99	21.97	1	N/A*	N/A*	N/A*	N/A*
	27	0	N/A*	N/A*	N/A*	N/A*	21.02	21.1	21.0	2

*16QAM modulation and bandwidths of 10MHz and higher are measured using resource block size of 1 and 27, as 27 is the maximum supported amount.

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LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 23205 779.5 MHz	CH 23230 782.0 MHz	CH 23255 784.5 MHz	3GPP MPR [dB]	CH 23205 779.5 MHz	CH 23230 782.0 MHz	CH 23255 784.5 MHz	3GPP MPR [dB]
13 / 5M	1	0	23.31	23.51	23.21	0	22.5	22.27	22.6	1
	1	12	23.19	23.76	23.72	0	22.12	22.09	22.64	1
	1	24	23.48	23.52	23.39	0	22.74	22.42	22.65	1
	12	0	22.28	22.41	22.34	1	21.47	21.56	21.33	2
	12	6	22.29	22.36	22.35	1	21.26	21.21	21.29	2
	12	13	22.38	22.32	22.41	1	21.59	21.28	21.5	2
	25	0	22.32	22.34	22.38	1	21.53	21.35	21.68	2

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			NA	CH 23230 782.0 MHz	NA	3GPP MPR [dB]	NA	CH 23230 782.0 MHz	NA	3GPP MPR [dB]
13 / 10M	1	0	N/A*	23.36	N/A*	0	N/A*	22.43	N/A*	1
	1	24	N/A*	23.07	N/A*	0	N/A*	22.25	N/A*	1
	1	49	N/A*	23.17	N/A*	0	N/A*	22.56	N/A*	1
	25	0	N/A*	22.38	N/A*	1	N/A*	N/A*	N/A*	N/A*
	25	12	N/A*	22.41	N/A*	1	N/A*	N/A*	N/A*	N/A*
	25	25	N/A*	22.36	N/A*	1	N/A*	N/A*	N/A*	N/A*
	50	0	N/A*	22.4	N/A*	1	N/A*	N/A*	N/A*	N/A*
	27	0	N/A*	N/A*	N/A*	N/A*	N/A*	21.37	N/A*	2

*16QAM modulation and bandwidths of 10MHz and higher are measured using resource block size of 1 and 27, as 27 is the maximum supported amount.

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LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 26047 1850.7 MHz	CH 26365 1882.5 MHz	CH 26683 1914.3 MHz	3GPP MPR [dB]	CH 26047 1850.7 MHz	CH 26365 1882.5 MHz	CH 26683 1914.3 MHz	3GPP MPR [dB]
25 / 1.4M	1	0	23.37	23.66	21.47	0	22.57	22.24	21.0	1
	1	2	23.27	23.84	21.25	0	22.65	22.54	20.79	1
	1	5	23.23	23.71	20.84	0	22.39	22.29	20.32	1
	3	0	23.39	23.8	21.33	0	22.39	22.53	20.51	1
	3	1	23.22	23.77	21.24	0	22.13	22.58	20.4	1
	3	3	23.29	23.67	20.93	0	22.11	22.72	20.07	1
	6	0	22.3	22.79	21.03	1	21.5	21.65	20.37	2

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 26055 1852.0 MHz	CH 26365 1882.5 MHz	CH 26675 1914.0 MHz	3GPP MPR [dB]	CH 26055 1852.0 MHz	CH 26365 1882.5 MHz	CH 26675 1914.0 MHz	3GPP MPR [dB]
25 / 3M	1	0	23.32	23.68	22.8	0	21.63	22.51	22.05	1
	1	7	23.5	23.64	21.83	0	22.7	22.45	21.22	1
	1	14	23.46	23.67	20.89	0	22.73	22.35	20.26	1
	8	0	22.34	22.77	22.18	1	21.59	21.47	21.53	2
	8	3	22.25	22.79	21.76	1	21.53	21.43	21.07	2
	8	7	22.27	22.69	21.22	1	21.55	21.39	20.55	2
	15	0	22.3	22.77	21.71	1	20.97	21.43	21.01	2

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 26065 1852.5 MHz	CH 26365 1882.5 MHz	CH 26665 1912.5 MHz	3GPP MPR [dB]	CH 26065 1852.5 MHz	CH 26365 1882.5 MHz	CH 26665 1912.5 MHz	3GPP MPR [dB]
25 / 5M	1	0	23.31	23.67	23.25	0	22.41	22.66	21.92	1
	1	12	23.4	23.81	22.75	0	22.36	22.5	21.88	1
	1	24	23.2	23.7	21.02	0	22.28	22.4	20.26	1
	12	0	22.34	22.71	22.3	1	21.21	21.73	21.28	2
	12	6	22.22	22.67	22.23	1	21.07	21.7	21.2	2
	12	13	22.24	22.57	21.61	1	21.05	21.46	20.89	2
	25	0	22.31	22.68	22.38	1	21.32	21.47	21.46	2

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LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 26090 1855.0 MHz	CH 26365 1882.5 MHz	CH 26640 1910.0 MHz	3GPP MPR [dB]	CH 26090 1855.0 MHz	CH 26365 1882.5 MHz	CH 26640 1910.0 MHz	3GPP MPR [dB]
25 / 10M	1	0	23.34	23.42	23.18	0	22.29	22.46	21.98	1
	1	24	23.23	23.83	23.21	0	22.55	22.96	22.4	1
	1	49	23.03	23.4	20.17	0	22.03	22.35	19.72	1
	25	0	22.32	22.74	22.24	1	N/A*	N/A*	N/A*	N/A*
	25	12	22.26	22.77	22.28	1	N/A*	N/A*	N/A*	N/A*
	25	25	22.26	22.64	22.18	1	N/A*	N/A*	N/A*	N/A*
	50	0	22.34	22.74	22.27	1	N/A*	N/A*	N/A*	N/A*
	27	0	N/A*	N/A*	N/A*	N/A*	21.23	21.59	21.2	2

*16QAM modulation and bandwidths of 10MHz and higher are measured using resource block size of 1 and 27, as 27 is the maximum supported amount.

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 26115 1857.5 MHz	CH 26365 1882.5 MHz	CH 26615 1907.5 MHz	3GPP MPR [dB]	CH 26115 1857.5 MHz	CH 26365 1882.5 MHz	CH 26615 1907.5 MHz	3GPP MPR [dB]
25 / 15M	1	0	23.17	23.09	22.32	0	22.54	22.4	21.47	1
	1	37	23.34	23.86	23.46	0	22.61	22.59	22.15	1
	1	74	22.59	23.22	20.54	0	21.47	21.83	19.89	1
	36	0	22.3	22.64	22.19	1	N/A*	N/A*	N/A*	N/A*
	36	19	22.17	22.71	22.27	1	N/A*	N/A*	N/A*	N/A*
	36	39	22.16	22.69	22.16	1	N/A*	N/A*	N/A*	N/A*
	75	0	22.16	22.59	22.15	1	N/A*	N/A*	N/A*	N/A*
	27	0	N/A*	N/A*	N/A*	N/A*	21.23	21.5	21.25	2

*16QAM modulation and bandwidths of 10MHz and higher are measured using resource block size of 1 and 27, as 27 is the maximum supported amount.

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 26140 1860.0 MHz	CH 26365 1882.5 MHz	CH 26590 1905.0 MHz	3GPP MPR [dB]	CH 26140 1860.0 MHz	CH 26365 1882.5 MHz	CH 26590 1905.0 MHz	3GPP MPR [dB]
25 / 20M	1	0	23.04	22.28	22.75	0	21.9	21.55	21.78	1
	1	50	23.33	23.57	23.39	0	21.8	23.26	22.73	1
	1	99	22.22	23.06	20.9	0	21.09	22.79	19.95	1
	50	0	22.17	22.45	22.14	1	N/A*	N/A*	N/A*	N/A*
	50	25	22.06	22.65	22.2	1	N/A*	N/A*	N/A*	N/A*
	50	50	22.16	22.55	22.07	1	N/A*	N/A*	N/A*	N/A*
	100	0	22.1	22.45	22.17	1	N/A*	N/A*	N/A*	N/A*
	27	0	N/A*	N/A*	N/A*	N/A*	21.37	21.58	21.34	2

*16QAM modulation and bandwidths of 10MHz and higher are measured using resource block size of 1 and 27, as 27 is the maximum supported amount.

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LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 26697 814.7 MHz	CH 26865 831.5 MHz	CH 27033 848.3 MHz	3GPP MPR [dB]	CH 26697 814.7 MHz	CH 26865 831.5 MHz	CH 27033 848.3 MHz	3GPP MPR [dB]
26 / 1.4M	1	0	23.12	23.24	23.02	0	22.12	22.36	22.54	1
	1	2	23.11	23.48	23.4	0	22.42	22.26	22.7	1
	1	5	23.03	23.41	23.25	0	22.54	22.33	22.49	1
	3	0	23.13	23.35	23.26	0	22.27	22.22	21.98	1
	3	1	23.11	23.37	23.3	0	22.24	22.36	21.96	1
	3	3	23.01	23.35	23.32	0	22.03	22.14	21.91	1
	6	0	22.07	22.31	22.3	1	21.19	21.21	20.91	2

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 26705 815.5 MHz	CH 26865 831.5 MHz	CH 27025 847.5 MHz	3GPP MPR [dB]	CH 26705 815.5 MHz	CH 26865 831.5 MHz	CH 27025 847.5 MHz	3GPP MPR [dB]
26 / 3M	1	0	23.16	23.41	23.11	0	22.53	22.09	22.04	1
	1	7	23.29	23.52	23.26	0	22.55	22.21	22.1	1
	1	14	23.21	23.44	23.09	0	22.66	22.12	21.93	1
	8	0	22.17	22.4	22.22	1	21.31	21.07	20.95	2
	8	3	22.08	22.39	22.24	1	20.98	21.06	20.89	2
	8	7	22.17	22.4	22.14	1	20.94	21.05	20.9	2
	15	0	22.13	22.33	22.3	1	21.24	21.23	20.98	2

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 26715 816.5 MHz	CH 26865 831.5 MHz	CH 27015 846.5 MHz	3GPP MPR [dB]	CH 26715 816.5 MHz	CH 26865 831.5 MHz	CH 27015 846.5 MHz	3GPP MPR [dB]
26 / 5M	1	0	22.96	23.22	23.16	0	22.45	22.24	21.46	1
	1	12	23.2	23.5	23.57	0	22.28	22.34	22.41	1
	1	24	22.93	23.43	23.14	0	22.52	22.23	21.89	1
	12	0	22.16	22.39	22.27	1	21.02	21.32	21.05	2
	12	6	22.21	22.42	22.25	1	21.03	21.35	20.97	2
	12	13	22.19	22.45	22.18	1	21.23	21.39	20.89	2
	25	0	22.19	22.34	22.26	1	21.25	21.11	21.23	2

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LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 26740 819.0 MHz	CH 26865 831.5 MHz	CH 26990 844.0 MHz	3GPP MPR [dB]	CH 26740 819.0 MHz	CH 26865 831.5 MHz	CH 26990 844.0 MHz	3GPP MPR [dB]
26 / 10M	1	0	23.15	23.28	23.22	0	22.12	22.5	22.25	1
	1	24	23.58	23.74	23.2	0	22.64	22.82	22.28	1
	1	49	23.58	23.27	23.06	0	22.41	22.26	21.61	1
	25	0	22.15	22.37	22.26	1	N/A*	N/A*	N/A*	N/A*
	25	12	22.28	22.45	22.27	1	N/A*	N/A*	N/A*	N/A*
	25	25	22.37	22.43	22.2	1	N/A*	N/A*	N/A*	N/A*
	50	0	22.15	22.39	22.3	1	N/A*	N/A*	N/A*	N/A*
	27	0	N/A*	N/A*	N/A*	N/A*	21.15	21.37	21.24	2

*16QAM modulation and bandwidths of 10MHz and higher are measured using resource block size of 1 and 27, as 27 is the maximum supported amount.

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 26765 821.5 MHz	CH 26865 831.5 MHz	CH 26965 841.5 MHz	3GPP MPR [dB]	CH 26765 821.5 MHz	CH 26865 831.5 MHz	CH 26965 841.5 MHz	3GPP MPR [dB]
26 / 15M	1	0	22.73	23.18	23.26	0	22.08	22.14	22.21	1
	1	37	23.22	23.5	23.46	0	23.04	22.44	22.15	1
	1	74	23.04	23.19	23.17	0	22.72	21.79	22.07	1
	36	0	22.05	22.31	22.29	1	N/A*	N/A*	N/A*	N/A*
	36	19	22.2	22.34	22.29	1	N/A*	N/A*	N/A*	N/A*
	36	39	22.22	22.25	22.13	1	N/A*	N/A*	N/A*	N/A*
	75	0	22.09	22.23	22.12	1	N/A*	N/A*	N/A*	N/A*
	27	0	N/A*	N/A*	N/A*	N/A*	21.1	21.23	21.32	2

*16QAM modulation and bandwidths of 10MHz and higher are measured using resource block size of 1 and 27, as 27 is the maximum supported amount.

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LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 39675 2498.5 MHz	CH 40620 2593 MHz	CH 41565 2687.5 MHz	3GPP MPR [dB]	CH 39675 2498.5 MHz	CH 40620 2593 MHz	CH 41565 2687.5 MHz	3GPP MPR [dB]
41 / 5M	1	0	22.77	22.62	22.82	0	22.07	21.21	21.62	1
	1	12	23.03	23.23	23.27	0	22.5	21.67	21.89	1
	1	24	22.78	22.68	22.76	0	22.39	21.27	21.48	1
	12	0	21.88	21.63	21.69	1	20.57	20.49	20.71	2
	12	6	21.9	21.67	21.79	1	20.54	20.35	20.6	2
	12	13	21.84	21.6	21.7	1	20.46	20.25	20.52	2
	25	0	21.81	21.62	21.69	1	20.74	20.39	20.64	2

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 39700 2501.0 MHz	CH 40620 2593.0 MHz	CH 41540 2685.0 MHz	3GPP MPR [dB]	CH 39700 2501.0 MHz	CH 40620 2593.0 MHz	CH 41540 2685.0 MHz	3GPP MPR [dB]
41 / 10M	1	0	22.91	22.53	22.64	0	21.68	21.92	21.39	1
	1	24	22.91	22.69	22.79	0	22.71	22.09	21.64	1
	1	49	23.08	22.5	22.59	0	22.0	21.88	21.22	1
	25	0	21.93	21.75	21.7	1	N/A*	N/A*	N/A*	N/A*
	25	12	21.92	21.78	21.76	1	N/A*	N/A*	N/A*	N/A*
	25	25	21.97	21.63	21.76	1	N/A*	N/A*	N/A*	N/A*
	50	0	21.89	21.72	21.78	1	N/A*	N/A*	N/A*	N/A*
	27	0	N/A*	N/A*	N/A*	N/A*	20.8	20.62	20.77	2

*16QAM modulation and bandwidths of 10MHz and higher are measured using resource block size of 1 and 27, as 27 is the maximum supported amount.

LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 39725 2503.5 MHz	CH 40620 2593.0 MHz	CH 41515 2682.5 MHz	3GPP MPR [dB]	CH 39725 2503.5 MHz	CH 40620 2593.0 MHz	CH 41515 2682.5 MHz	3GPP MPR [dB]
41 / 15M	1	0	22.7	22.61	22.42	0	21.77	21.73	21.6	1
	1	37	22.84	22.58	22.8	0	22.68	21.82	21.64	1
	1	74	22.79	22.28	22.52	0	22.12	21.54	21.05	1
	36	0	21.69	21.7	21.73	1	N/A*	N/A*	N/A*	N/A*
	36	19	21.86	21.73	21.81	1	N/A*	N/A*	N/A*	N/A*
	36	39	21.77	21.59	21.61	1	N/A*	N/A*	N/A*	N/A*
	75	0	21.73	21.6	21.73	1	N/A*	N/A*	N/A*	N/A*
	27	0	N/A*	N/A*	N/A*	N/A*	20.5	20.47	20.65	2

*16QAM modulation and bandwidths of 10MHz and higher are measured using resource block size of 1 and 27, as 27 is the maximum supported amount.

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LTE Band / BW	RB Size RBs	RB Offset RB Start	QPSK				16QAM			
			CH 39750 2506.0 MHz	CH 40620 2593.0 MHz	CH 41490 2680.0 MHz	3GPP MPR [dB]	CH 39750 2506.0 MHz	CH 40620 2593.0 MHz	CH 41490 2680.0 MHz	3GPP MPR [dB]
41 / 20M	1	0	22.33	22.57	22.56	0	21.77	21.24	21.88	1
	1	50	22.72	22.41	22.98	0	22.21	21.33	22.46	1
	1	99	22.56	22.11	22.68	0	22.06	21.12	22.18	1
	50	0	21.63	21.66	21.59	1	N/A*	N/A*	N/A*	N/A*
	50	25	21.79	21.66	21.77	1	N/A*	N/A*	N/A*	N/A*
	50	50	21.78	21.55	21.58	1	N/A*	N/A*	N/A*	N/A*
	100	0	21.61	21.55	21.64	1	N/A*	N/A*	N/A*	N/A*
	27	0	N/A*	N/A*	N/A*	N/A*	20.5	20.4	20.52	2

*16QAM modulation and bandwidths of 10MHz and higher are measured using resource block size of 1 and 27, as 27 is the maximum supported amount.

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4. TEST EQUIPMENT

Dasy52 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.

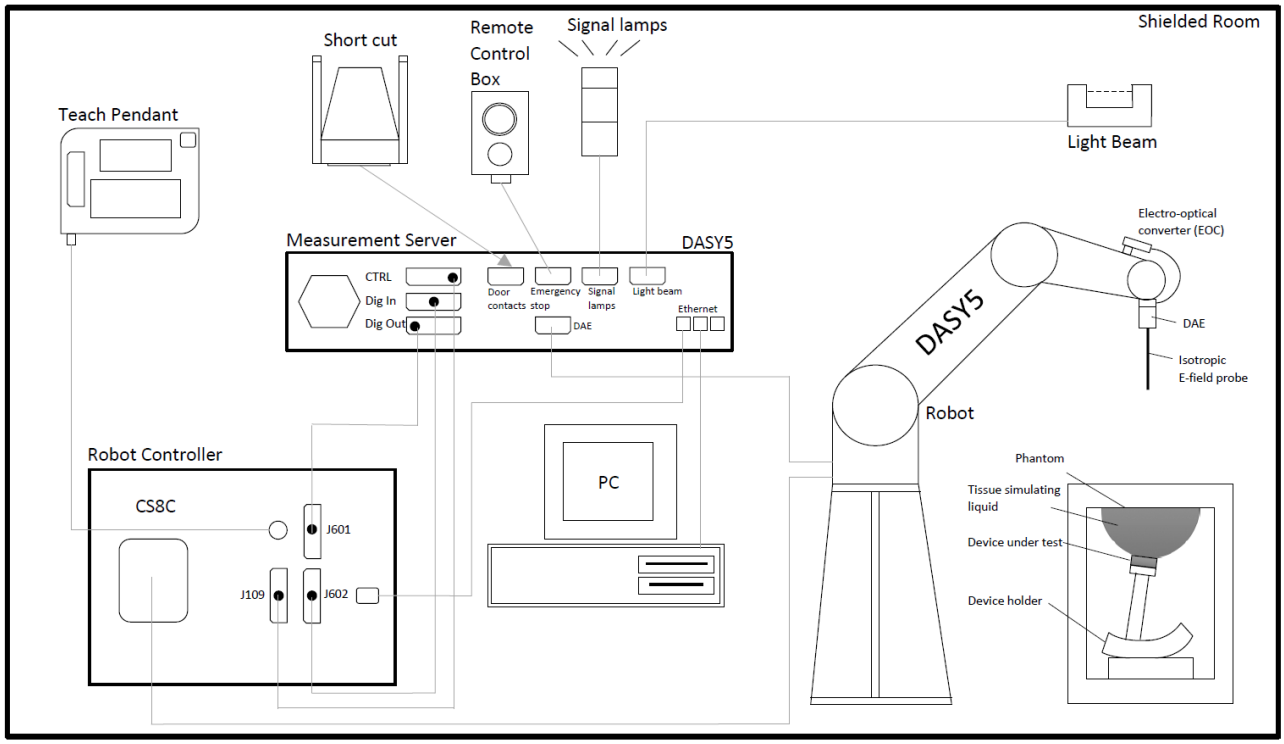

Figure 1 Schematic Laboratory Picture

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4.1 Test Equipment List

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

Test Equipment	Model	Serial Number	Calibration Date
DAE	DAE4	1332	10.2020
Probe	EX3DV4	7447	03.2020
Probe	EX3DV4	3892	04.2020
Dipole	DIP 0G750	454	12.2018
Dipole	D835V2	448	03.2020
Dipole	D1800V2	249	03.2020
Dipole	D1900V2	511	03.2020
Dipole	DIP 2G600	474	12.2018
DASY5 Software	52.8.8.1258	-	NA
Signal Generator	Agilent E4438C	MY42082527	NA
Amplifier	Ophir 5163F	1022	NA
Power Reflection Meter	R&S NRT	835065/049	02.2020
Power Meter	R&S NRT-Z44	102766	02.2020
Power Meter	R&S NRT-Z44	107780	03.2020
Radio Communication Tester	Anritsu MT8820C	6200883099	09.2020
Radio Communication Tester	Anritsu MT8820C	6200951734	11.2020
Radio Communication Tester	Anritsu MT8820C	6200930942	12.2020
Radio Communication Tester	R&S CMW500	1201.002K50-159661-pb	03.2020

Dipole calibration period supporting data:

		Measured on 09/2020			Calibrated		
Dipole and serial number	Frequency (MHz)	Return loss (dB)	Impedance (Ω)		Return loss (dB)	Impedance (Ω)	
42/17 DIP 0G750-454	750	-22.8	52.9	-6.9	-27.76	52.5	-3.3
51/18 DIP 2G600-474	2600	-23.4	43.7	-0.2	-27.62	48.5	3.9

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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	10 MHz to >6 GHz (dosimetry); Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	10 µW/g to > 100 mW/g, Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm Tip length: 10 mm Body diameter: 12 mm Tip diameter: 2.5 mm Distance from probe tip to dipole centers: 1.0 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 30 MHz to 6 GHz. The phantom conforms to the requirements of IEEE 1528 and FCC published RF Exposure KDB Procedures.

4.3 Tissue Simulants

Recommended values for the dielectric parameters of the tissue simulants are given in IEEE 1528 and FCC published RF Exposure KDB Procedures. The dielectric parameters of the used tissue simulants were within ±10% of the recommended values. A liquid compensation algorithm was used in DASY5 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.

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4.4 System Validation Status

Frequency [MHz]	Dipole Type / SN	Probe Type / SN	Calibrated Signal Type	DAE Unit / SN	ε tissue simulant	σ [S/m] tissue simulant	Validation Done
750	DIP 0G750 SN: 454	EX3DV4 SN: 3892	CW / FDD	DAE 4 / 705	42.3	0.9	05.2020
750	DIP 0G750 SN: 454	EX3DV4 SN: 7447	CW / FDD	DAE 4 / 756	41.2	0.9	04.2020
835	D835V2 SN:448	EX3DV4 SN: 3892	CW/GMSK	DAE 4 / 705	42.0	0.9	05.2020
835	DIP 0G835 SN: 473	EX3DV4 SN: 7447	CW / GMSK	DAE 4 / 756	41.0	0.9	04.2020
1800	D1800V2 SN:249	EX3DV4 SN: 3892	CW/GMSK	DAE 4 / 705	40.1	1.4	05.2020
1800	D1800V2 SN: 2D075	EX3DV4 SN: 7447	CW / GMSK	DAE 4 / 756	39.8	1.4	04.2020
1900	D1900V2 SN:511	EX3DV4 SN: 3892	CW/FDD	DAE 4 / 705	40.0	1.4	05.2020
2600	51/18 DIP 2G600-474	EX3DV4 SN: 3892	CW	DAE 4 / 705	39.0	2.0	05.2020

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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 #
01.12.2020	**HBBL600-6000V6**	22	1800	250	9.31	**39.21**	37.24	-5.0	1
03.12.2020	**HBBL600-6000V6**	22	750	250	2.02	**8.52**	8.08	-5.2	2
07.12.2020	**HBBL600-6000V6**	22	835	250	2.35	**9.38**	9.52	1.5	3
08.12.2020	**HBBL600-6000V6**	22	750	250	2.19	**8.52**	8.76	2.8	4
11.12.2020	**HBBL600-6000V6**	22	1800	250	9.49	**39.21**	37.96	-3.2	5
14.12.2020	**HBBL600-6000V6**	22	1800	250	9.23	**39.21**	36.92	-5.8	6
14.12.2020	**HBBL600-6000V6**	22	1900	250	10.1	**37.1**	40.4	8.9	7
15.12.2020	**HBBL600-6000V6**	22	2600	250	14.0	**55.08**	56.0	1.7	8

4.5.1 Tissue Simulant Verification

Date	Tissue Type	Tissue Temp [°C]	Frequency [MHz]	Target		Measured		Deviation	
				Dielectric Constant [ε] Target	Conductivity σ [S/m] Target	Dielectric Constant [ε]	Conductivity σ [S/m]	ε (%)	σ (%)
01.12.2020	WB Head	22	1713	40.14	1.35	37.91	1.37	-5.5	1.9
01.12.2020	WB Head	22	1733	40.11	1.36	37.87	1.39	-5.6	1.8
01.12.2020	WB Head	22	1753	40.07	1.37	37.82	1.4	-5.6	2.0
01.12.2020	WB Head	22	1800	40	1.4	37.75	1.43	-5.6	1.9
03.12.2020	WB Head	22	750	41.94	0.89	38.93	0.91	-7.2	2.1
03.12.2020	WB Head	22	779.5	41.79	0.9	38.85	0.92	-7.0	2.9
03.12.2020	WB Head	22	782	41.78	0.9	38.85	0.92	-7.0	3.0
03.12.2020	WB Head	22	784.5	41.76	0.9	38.83	0.92	-7.0	3.1
07.12.2020	WB Head	22	821.5	41.6	0.91	38.96	0.96	-6.4	5.7
07.12.2020	WB Head	22	824	41.59	0.91	38.97	0.96	-6.3	5.6
07.12.2020	WB Head	22	826	41.59	0.91	38.94	0.96	-6.4	5.6
07.12.2020	WB Head	22	829	41.58	0.91	38.97	0.96	-6.3	5.6
07.12.2020	WB Head	22	831.5	41.57	0.91	38.92	0.96	-6.4	5.7
07.12.2020	WB Head	22	835	41.55	0.91	38.92	0.96	-6.3	5.6
07.12.2020	WB Head	22	836	41.55	0.91	38.9	0.96	-6.4	5.6
07.12.2020	WB Head	22	836.5	41.55	0.91	38.9	0.96	-6.4	5.6
07.12.2020	WB Head	22	837	41.55	0.91	38.9	0.96	-6.4	5.5
07.12.2020	WB Head	22	841.5	41.53	0.91	38.9	0.96	-6.3	5.5
07.12.2020	WB Head	22	844	41.52	0.91	38.87	0.97	-6.4	5.7
07.12.2020	WB Head	22	847	41.51	0.92	38.88	0.97	-6.3	5.7
07.12.2020	WB Head	22	849	41.5	0.92	38.85	0.97	-6.4	5.6
08.12.2020	WB Head	22	704	42.18	0.89	38.65	0.92	-8.4	3.2
08.12.2020	WB Head	22	707	42.16	0.89	38.65	0.92	-8.3	3.3
08.12.2020	WB Head	22	707.5	42.16	0.89	38.65	0.92	-8.3	3.3
08.12.2020	WB Head	22	711	42.14	0.89	38.62	0.92	-8.4	3.4
08.12.2020	WB Head	22	750	41.94	0.89	38.48	0.93	-8.2	4.5
08.12.2020	WB Head	22	779.5	41.79	0.9	38.4	0.94	-8.1	5.3
08.12.2020	WB Head	22	782	41.78	0.9	38.41	0.94	-8.0	5.4
08.12.2020	WB Head	22	784.5	41.76	0.9	38.39	0.94	-8.1	5.4
08.12.2020	WB Head	22	821.5	41.6	0.91	38.27	0.96	-8.0	5.8
08.12.2020	WB Head	22	824	41.59	0.91	38.28	0.96	-8.0	5.7
08.12.2020	WB Head	22	826	41.59	0.91	38.25	0.96	-8.0	5.7
08.12.2020	WB Head	22	829	41.58	0.91	38.24	0.96	-8.0	5.8
08.12.2020	WB Head	22	831.5	41.57	0.91	38.24	0.96	-8.0	5.7

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08.12.2020	WB Head	22	835	41.55	0.91	38.24	0.96	-8.0	5.7
08.12.2020	WB Head	22	836	41.55	0.91	38.21	0.96	-8.0	5.6
08.12.2020	WB Head	22	836.5	41.55	0.91	38.22	0.96	-8.0	5.6
08.12.2020	WB Head	22	837	41.55	0.91	38.22	0.96	-8.0	5.6
08.12.2020	WB Head	22	841.5	41.53	0.91	38.2	0.96	-8.0	5.6
08.12.2020	WB Head	22	844	41.52	0.91	38.22	0.97	-7.9	5.6
08.12.2020	WB Head	22	847	41.51	0.92	38.19	0.97	-8.0	5.6
08.12.2020	WB Head	22	849	41.5	0.92	38.2	0.97	-8.0	5.6
11.12.2020	WB Head	22	1713	40.14	1.35	37.66	1.35	-6.2	-0.1
11.12.2020	WB Head	22	1720	40.13	1.35	37.66	1.35	-6.2	-0.1
11.12.2020	WB Head	22	1732.5	40.11	1.36	37.65	1.36	-6.1	-0.1
11.12.2020	WB Head	22	1733	40.11	1.36	37.64	1.36	-6.2	-0.0
11.12.2020	WB Head	22	1745	40.09	1.37	37.62	1.37	-6.2	-0.2
11.12.2020	WB Head	22	1753	40.07	1.37	37.61	1.37	-6.1	-0.2
11.12.2020	WB Head	22	1800	40	1.4	37.55	1.4	-6.1	-0.2
11.12.2020	WB Head	22	1850.2	40	1.4	37.48	1.43	-6.3	2.0
11.12.2020	WB Head	22	1860	40	1.4	37.46	1.43	-6.3	2.3
11.12.2020	WB Head	22	1880	40	1.4	37.42	1.44	-6.4	3.1
11.12.2020	WB Head	22	1900	40	1.4	37.39	1.46	-6.5	4.1
14.12.2020	WB Head	22	1720	40.13	1.35	37.65	1.34	-6.2	-0.7
14.12.2020	WB Head	22	1732.5	40.11	1.36	37.64	1.35	-6.1	-0.6
14.12.2020	WB Head	22	1745	40.09	1.37	37.62	1.36	-6.1	-0.5
14.12.2020	WB Head	22	1800	40	1.4	37.52	1.39	-6.2	-0.6
14.12.2020	WB Head	22	1850	40	1.4	37.43	1.42	-6.4	1.4
14.12.2020	WB Head	22	1852	40	1.4	37.43	1.42	-6.4	1.6
14.12.2020	WB Head	22	1860	40	1.4	37.41	1.43	-6.5	2.1
14.12.2020	WB Head	22	1880	40	1.4	37.39	1.44	-6.5	2.8
14.12.2020	WB Head	22	1882.5	40	1.4	37.37	1.44	-6.6	2.9
14.12.2020	WB Head	22	1900	40	1.4	37.36	1.45	-6.6	3.6
14.12.2020	WB Head	22	1905	40	1.4	37.35	1.45	-6.6	3.8
14.12.2020	WB Head	22	1908	40	1.4	37.34	1.46	-6.6	4.0
14.12.2020	WB Head	22	1910	40	1.4	37.34	1.46	-6.6	3.9
15.12.2020	WB Head	22	2506	39.13	1.86	37.67	1.87	-3.7	0.5
15.12.2020	WB Head	22	2510	39.12	1.87	37.66	1.87	-3.7	0.5
15.12.2020	WB Head	22	2535	39.09	1.89	37.63	1.9	-3.7	0.2
15.12.2020	WB Head	22	2560	39.06	1.92	37.59	1.91	-3.8	-0.3
15.12.2020	WB Head	22	2593	39.02	1.96	37.54	1.94	-3.8	-0.9
15.12.2020	WB Head	22	2600	39.01	1.96	37.52	1.94	-3.8	-1.0
15.12.2020	WB Head	22	2680	38.91	2.05	37.4	2.01	-3.9	-2.1

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5. TEST PROCEDURE

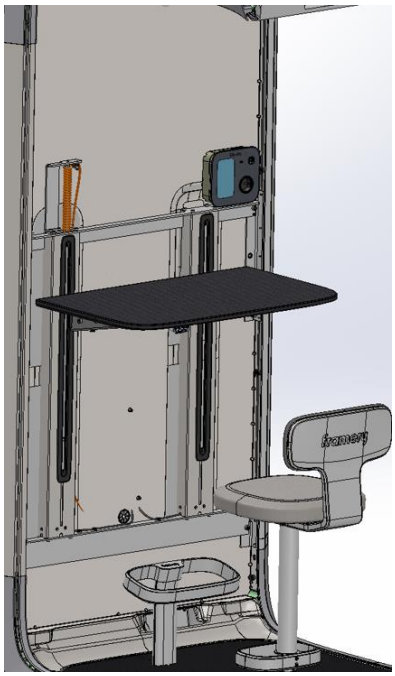
Testing was carried out in accordance with FCC KDB Publication 447498 D01. KDB 941225 D05 was used to select LTE test modes for testing.

For the cellular technologies, the device was set to transmit using maximum power with a communication tester.

The DUT is LTE Cat 1 device and has limited data rate up to 5 Mb/s in uplink, for this reason the 16QAM modulation and bandwidths of 10MHz and higher are measured using resource block size of 1 and 27, as 27 is the maximum supported amount.

5.1 Test Positions

The user has access to the front side of the DUT. Since the device has a touch screen, limb SAR was tested using separation distance of 0 mm. Typically, the table in the booth prevents the body of the user to come close to the DUT. For a conservative body SAR estimation, 10 mm separation distance was used for body SAR testing.



5.1.1 Extremity Exposure Condition, 0 mm separation distance

The device was placed a ROHACELL support structure and lifted against the flat phantom. The distance between the device and the phantom was kept at 0 mm. The front side of the device was facing the phantom during SAR testing.

Photos of the test positions are presented in appendix A.

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5.1.2 Body-worn Exposure Condition, 10 mm separation distance

The device was placed on a ROHACELL support structure and placed below the flat phantom. The distance between the device and the phantom was kept at 10 mm using a separate flat spacer that was removed before the start of the measurements. The front side of the device was facing the phantom during SAR testing.

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 Dasy52 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.

5.4 IEC 62209-2 AMD1:2019

According to IEC 62209-2 AMD1:2019, 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%.

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Zoom scan compliance according to IEC 62209-2 AMD1:2019 is automatically verified by DASY5 software and all zoom scans in this test report do pass the criteria. The smallest horizontal distance and Ratio between measurement points M2 and M1 of the highest SAR results is available in Appendix C.

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6. MEASUREMENT UNCERTAINTY

Uncertainty Budget IEEE 1528-2013								
Error Description	Uncert. value	Prob. Dist.	Div.	(c_i) 1g	(c_i) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(v_i) v_{eff}
Measurement System								
Probe Calibration	±6.0 %	N	1	1	1	±6.0 %	±6.0 %	∞
Axial Isotropy	±4.7 %	R		0.7	0.7	±1.9 %	±1.9 %	∞
Hemispherical Isotropy	±9.6 %	R	1.73	0.7	0.7	±3.9 %	±3.9 %	∞
Boundary Effects	±1.0 %	R	1.73	1	1	±0.6 %	±0.6 %	∞
Linearity	±4.7 %	R	1.73	1	1	±2.7 %	±2.7 %	∞
System Detection Limits	±1.0 %	R	1.73	1	1	±0.6 %	±0.6 %	∞
Modulation Response^m	±2.4 %	R	1.73	1	1	±1.4 %	±1.4 %	∞
Readout Electronics	±0.3 %	N	1	1	1	±0.3 %	±0.3 %	∞
Response Time	±0.8 %	R	1.73	1	1	±0.5 %	±0.5 %	∞
Integration Time	±2.6 %	R	1.73	1	1	±1.5 %	±1.5 %	∞
RF Ambient Noise	±3.0 %	R	1.73	1	1	±1.7 %	±1.7 %	∞
RF Ambient Reflections	±3.0 %	R	1.73	1	1	±1.7 %	±1.7 %	∞
Probe Positioner	±0.4 %	R	1.73	1	1	±0.2 %	±0.2 %	∞
Probe Positioning	±2.9 %	R	1.73	1	1	±1.7 %	±1.7 %	∞
Max. SAR Eval.	±2.0 %	R	1.73	1	1	±1.2 %	±1.2 %	∞
Test Sample Related								
Device Positioning	±2.9 %	N	1	1	1	±2.9 %	±2.9 %	145
Device Holder	±3.6 %	N	1	1	1	±3.6 %	±3.6 %	5
Power Drift	±5.0 %	R	1.73	1	1	±2.9 %	±2.9 %	∞
Power Scaling	±6 %	R	1.73	1	1	±3.5 %	± 3.5%	∞
Phantom and Setup								
Phantom Uncertainty	±6.1 %	R	1.73	1	1	±3.5 %	±3.5 %	∞
SAR correction	±1.9 %	R	1.73	1	0.84	±1.1 %	±0.9 %	∞
Liquid Conductivity (mea.)	±2.5 %	R	1.73	0.78	0.71	±1.1 %	±1.0 %	∞
Liquid Permittivity (mea.)	±2.5 %	R	1.73	0.26	0.26	±0.3 %	±0.4 %	∞
Temp. unc. - Conductivity	±3.4 %	R	1.73	0.78	0.71	±1.5 %	±1.4 %	∞
Temp. unc. - Permittivity	±0.4 %	R	1.73	0.23	0.26	±0.1 %	±0.1 %	∞
Combined Std. Uncertainty						±11.7 %	±11.6 %	361
Expanded STD Uncertainty						**±23.4 %**	**±23.3 %**	

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7. TEST RESULTS

7.1 SAR Results for Extremity Exposure Condition, 0 mm separation

GPRS

Band	Channel	Frequency [MHz]	Tx Slot Configuration	Maximum Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Test Position	Duty Cycle	Measured SAR_{10g} [W/kg]	Scaling factor	Reported SAR_{10g} [W/kg]	Plot #
GPRS 850	190	836.6	3	33.2	28.82	0.13	Front	3/8	0.533	2.74	1.46	-
GPRS 850	128	824.2	3	33.2	29.18	-0.06	Front	3/8	0.412	2.52	1.04	-
GPRS 850	**251**	**848.8**	**3**	**33.2**	**28.98**	**-0.01**	**Front**	3/8	**0.685**	**2.64**	**1.81**	**9**

Band	Channel	Frequency [MHz]	Tx Slot Configuration	Maximum Power [dBm]	Conducted Power [dBm]	Power Drift* [dB]	Test Position	Duty Cycle	Measured SAR_{10g} [W/kg]	Scaling factor	Reported SAR_{10g} [W/kg]	Plot #
GPRS 1900	661	1880	2	32	28.75	-0.35	Front	1/4	0.427	2.29	0.98	-
GPRS 1900	**512**	**1850.2**	**2**	**32**	**28.61**	**-0.22**	**Front**	1/4	**0.459**	**2.30**	**1.05**	**10**
GPRS 1900	810	1909.8	2	32	28.81	-0.47	Front	1/4	0.412	2.32	0.96	-

*Larger than 5% drifts included to scaling factors

WCDMA

Band	Channel	Frequency [MHz]	Mode	Maximum Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Test Position	Duty Cycle	Measured SAR_{10g} [W/kg]	Scaling factor	Reported SAR_{10g} [W/kg]	Plot #
WCDMA 2	9400	1880	RMC 12.2K	25	23.11	-0.2	Front	1:1	0.777	1.55	1.20	-
WCDMA 2	**9262**	**1852.4**	**RMC 12.2K**	**25**	**23.04**	**0.13**	**Front**	**1:1**	**0.912**	**1.57**	**1.43**	**11**
WCDMA 2	9538	1907.6	RMC 12.2K	25	23.14	-0.04	Front	1:1	0.896	1.53	1.38	-

Band	Channel	Frequency [MHz]	Mode	Maximum Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Test Position	Duty Cycle	Measured SAR_{10g} [W/kg]	Scaling factor	Reported SAR_{10g} [W/kg]	Plot #
WCDMA 4	1413	1732.6	RMC 12.2K	25	23.6	0.05	Front	1:1	1.07	1.38	1.48	-
WCDMA 4	**1312**	**1712.4**	**RMC 12.2K**	**25**	**23.4**	**0.03**	**Front**	**1:1**	**1.09**	**1.45**	**1.58**	**12**
WCDMA 4	1513	1752.6	RMC 12.2K	25	23.35	-0.04	Front	1:1	0.89	1.46	1.30	-

Band	Channel	Frequency [MHz]	Mode	Maximum Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Test Position	Duty Cycle	Measured SAR_{10g} [W/kg]	Scaling factor	Reported SAR_{10g} [W/kg]	Plot #
WCDMA 5	4183	836.6	RMC 12.2K	25	23.07	0.11	Front	1:1	0.453	1.56	0.71	-
WCDMA 5	4132	826.4	RMC 12.2K	25	23.08	0.12	Front	1:1	0.433	1.56	0.67	-
WCDMA 5	**4233**	**846.6**	**RMC 12.2K**	**25**	**23.02**	**0.05**	**Front**	**1:1**	**0.473**	**1.58**	**0.75**	**13**

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LTE

Band	Channel	Frequency [MHz]	Modulation / BW [MHz]	RB Size	RB Offset	Maximum Power [dBm]	Conducted Power [dBm]	Power Drift* [dB]	Test Position	Duty Cycle	Measured SAR_{10g} [W/kg]	Scaling Factor	Reported SAR_{10g} [W/kg]	Plot #
LTE 2	18900	1880	QPSK / 20	1	50	25	23.31	-0.15	Front	1:1	0.829	1.48	1.22	-
LTE 2	**18900**	**1880**	**QPSK / 20**	**50**	**25**	**25**	**22.09**	**-0.12**	**Front**	**1:1**	**0.65**	**1.95**	**1.27**	**14**
LTE 2	18700	1860	QPSK / 20	1	50	25	23.06	-0.06	Front	1:1	0.721	1.56	1.13	-
LTE 2	19100	1900	QPSK / 20	1	50	25	23.03	-0.39	Front	1:1	0.387	1.72	0.67	-

*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]	Power Drift* [dB]	Test Position	Duty Cycle	Measured SAR_{10g} [W/kg]	Scaling Factor	Reported SAR_{10g} [W/kg]	Plot #
LTE 4	20300	1745	QPSK / 20	1	99	25	23.98	-0.38	Front	1:1	0.654	1.38	0.90	-
LTE 4	**20300**	**1745**	**QPSK / 20**	**50**	**50**	**25**	**22.71**	**-0.26**	**Front**	**1:1**	**0.818**	**1.80**	**1.47**	**15**
LTE 4	20050	1720	QPSK / 20	1	50	25	23.66	-0.5	Front	1:1	0.678	1.53	1.04	-
LTE 4	20175	1732.5	QPSK / 20	1	50	25	23.8	-0.01	Front	1:1	1.09	1.32	1.44	-

*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]	Power Drift* [dB]	Test Position	Duty Cycle	Measured SAR_{10g} [W/kg]	Scaling Factor	Reported SAR_{10g} [W/kg]	Plot #
LTE 5	20450	829	QPSK / 10	1	24	25	23.29	0.07	Front	1:1	0.477	1.48	0.71	-
LTE 5	20450	829	QPSK / 10	25	0	25	22.27	0.03	Front	1:1	0.374	1.87	0.70	-
LTE 5	**20525**	**836.5**	**QPSK / 10**	**1**	**24**	**25**	**23.23**	**0.58**	**Front**	**1:1**	**0.478**	**1.72**	**0.82**	**16**
LTE 5	20600	844	QPSK / 10	1	24	25	23.12	-0.07	Front	1:1	0.458	1.54	0.71	-

*Larger than 5% drifts included to scaling factors

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Band	Channel	Frequency [MHz]	Modulation / BW [MHz]	RB Size	RB Offset	Maximum Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Test Position	Duty Cycle	Measured SAR_{10g} [W/kg]	Scaling Factor	Reported SAR_{10g} [W/kg]	Plot #
LTE 7	21350	2560	QPSK / 20	1	50	25	22.85	0.05	Front	1:1	1.06	1.64	1.74	-
LTE 7	21350	2560	QPSK / 20	50	50	25	21.56	-0.18	Front	1:1	0.81	2.21	1.79	-
LTE 7	20850	2510	QPSK / 20	1	50	25	22.42	-0.08	Front	1:1	1.37	1.81	2.48	-
LTE 7	20850	2510	QPSK / 20	50	0	25	21.47	-0.01	Front	1:1	1.16	2.25	2.61	-
LTE 7	**20850**	**2510**	**QPSK / 20**	**100**	**0**	**25**	**21.37**	**0.01**	**Front**	**1:1**	**1.14**	**2.31**	**2.63**	**17**
LTE 7	21100	2535	QPSK / 20	1	50	25	22.6	0.09	Front	1:1	1.21	1.74	2.10	-
LTE 7	21100	2535	QPSK / 20	50	25	25	21.52	-0.08	Front	1:1	0.974	2.23	2.17	-
LTE 7	21100	2535	QPSK / 20	100	0	25	21.4	-0.08	Front	1:1	0.973	2.29	2.23	-

Band	Channel	Frequency [MHz]	Modulation / BW [MHz]	RB Size	RB Offset	Maximum Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Test Position	Duty Cycle	Measured SAR_{10g} [W/kg]	Scaling Factor	Reported SAR_{10g} [W/kg]	Plot #
LTE 12	23060	704	QPSK / 10	1	24	25	23.44	-0.05	Front	1:1	0.663	1.43	0.95	-
LTE 12	23060	704	QPSK / 10	25	12	25	22.04	-0.05	Front	1:1	0.549	1.98	1.09	-
LTE 12	**23095**	**707.5**	**QPSK / 10**	**1**	**24**	**25**	**23.14**	**0.1**	**Front**	**1:1**	**0.721**	**1.53**	**1.11**	**18**
LTE 12	23130	711	QPSK / 10	1	24	25	23.08	0.12	Front	1:1	0.683	1.56	1.06	-

Band	Channel	Frequency [MHz]	Modulation / BW [MHz]	RB Size	RB Offset	Maximum Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Test Position	Duty Cycle	Measured SAR_{10g} [W/kg]	Scaling Factor	Reported SAR_{10g} [W/kg]	Plot #
LTE 13	**23230**	**782**	**QPSK / 10**	**1**	**0**	**25**	**23.36**	**-0.14**	**Front**	**1:1**	**0.422**	**1.46**	**0.62**	**19**
LTE 13	23230	782	QPSK / 10	25	12	25	22.41	0.01	Front	1:1	0.329	1.82	0.60	-
LTE 13	23205	779.5	QPSK / 5	1	24	25	23.48	0.21	Front	1:1	0.401	1.42	0.57	-
LTE 13	23255	784.5	QPSK / 5	1	12	25	23.72	0.17	Front	1:1	0.436	1.34	0.59	-

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Band	Channel	Frequency [MHz]	Modulation / BW [MHz]	RB Size	RB Offset	Maximum Power [dBm]	Conducted Power [dBm]	Power Drift* [dB]	Test Position	Duty Cycle	Measured SAR_{10g} [W/kg]	Scaling Factor	Reported SAR_{10g} [W/kg]	Plot #
LTE 25	**26365**	**1882.5**	**QPSK / 20**	**1**	**50**	**25**	**23.57**	**0.57**	**Front**	**1:1**	**0.932**	**1.58**	**1.48**	**20**
LTE 25	26365	1882.5	QPSK / 20	50	25	25	22.65	0.23	Front	1:1	0.793	1.81	1.44	-
LTE 25	26140	1860	QPSK / 20	1	50	25	23.33	-0.65	Front	1:1	0.7	1.71	1.19	-
LTE 25	26590	1905	QPSK / 20	1	50	25	23.39	-0.06	Front	1:1	0.587	1.45	0.85	-

*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]	Power Drift* [dB]	Test Position	Duty Cycle	Measured SAR_{10g} [W/kg]	Scaling Factor	Reported SAR_{10g} [W/kg]	Plot #
LTE 26	**26865**	**831.5**	**QPSK / 15**	**1**	**37**	**25**	**23.5**	**0.67**	**Front**	**1:1**	**0.463**	**1.65**	**0.76**	**21**
LTE 26	26865	831.5	QPSK / 15	36	19	25	22.34	-0.03	Front	1:1	0.367	1.85	0.68	-
LTE 26	26765	821.5	QPSK / 15	1	37	25	23.22	-0.09	Front	1:1	0.277	1.51	0.42	-
LTE 26	26965	841.5	QPSK / 15	1	37	25	23.46	-0.49	Front	1:1	0.444	1.60	0.71	-

*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]	Power Drift* [dB]	Test Position	Duty Cycle	Measured SAR_{10g} [W/kg]	Scaling Factor	Reported SAR_{10g} [W/kg]	Plot #
LTE 41	41490	2680	QPSK / 20	1	50	25	22.98	0.68	Front	1:1	0.293	1.86	0.55	-
LTE 41	41490	2680	QPSK / 20	50	25	25	21.77	-0.05	Front	1:1	0.234	2.10	0.49	-
LTE 41	**39750**	**2506**	**QPSK / 20**	**1**	**50**	**25**	**22.72**	**-0.26**	**Front**	**1:1**	**0.776**	**1.79**	**1.39**	**22**
LTE 41	40620	2593	QPSK / 20	1	0	25	22.57	-0.04	Front	1:1	0.455	1.75	0.80	-

*Larger than 5% drifts included to scaling factors

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7.2 SAR Results for Body-worn Exposure Condition, 10 mm separation

GPRS

Band	Channel	Frequency [MHz]	Tx Slot Configuration	Maximum Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Test Position	Duty Cycle	Measured SAR_{10g} [W/kg]	Scaling factor	Reported SAR_{10g} [W/kg]	Plot #
GPRS 850	190	836.6	3	33.2	28.82	-0.09	Front	3:8	0.3	2.74	0.82	-
GPRS 850	128	824.2	3	33.2	29.18	-0.03	Front	3:8	0.217	2.52	0.55	-
GPRS 850	**251**	**848.8**	**3**	**33.2**	**28.98**	**0.09**	**Front**	3:8	**0.389**	**2.64**	**1.03**	**23**

Band	Channel	Frequency [MHz]	Tx Slot Configuration	Maximum Power [dBm]	Conducted Power [dBm]	Power Drift* [dB]	Test Position	Duty Cycle	Measured SAR_{10g} [W/kg]	Scaling factor	Reported SAR_{10g} [W/kg]	Plot #
GPRS 1900	661	1880	2	32	28.75	-0.06	Front	1:4	0.139	2.11	0.29	-
GPRS 1900	**512**	**1850.2**	**2**	**32**	**28.61**	**-0.07**	**Front**	1:4	**0.172**	**2.18**	**0.38**	**24**
GPRS 1900	810	1909.8	2	32	28.81	-0.45	Front	1:4	0.155	2.31	0.36	-

*Larger than 5% drifts included to scaling factors

WCDMA

Band	Channel	Frequency [MHz]	Mode	Maximum Power [dBm]	Conducted Power [dBm]	Power Drift* [dB]	Test Position	Duty Cycle	Measured SAR_{10g} [W/kg]	Scaling factor	Reported SAR_{10g} [W/kg]	Plot #
WCDMA 2	9400	1880	RMC 12.2K	25	23.11	-0.34	Front	1:1	0.268	1.67	0.45	-
WCDMA 2	**9262**	**1852.4**	**RMC 12.2K**	**25**	**23.04**	**-0.27**	**Front**	**1:1**	**0.357**	**1.67**	**0.60**	**25**
WCDMA 2	9538	1907.6	RMC 12.2K	25	23.14	0.01	Front	1:1	0.356	1.53	0.55	-

*Larger than 5% drifts included to scaling factors

Band	Channel	Frequency [MHz]	Mode	Maximum Power [dBm]	Conducted Power [dBm]	Power Drift* [dB]	Test Position	Duty Cycle	Measured SAR_{10g} [W/kg]	Scaling factor	Reported SAR_{10g} [W/kg]	Plot #
WCDMA 4	1413	1732.6	RMC 12.2K	25	23.6	-0.28	Front	1:1	0.812	1.47	1.20	-
WCDMA 4	**1312**	**1712.4**	**RMC 12.2K**	**25**	**23.4**	**-0.15**	**Front**	**1:1**	**0.834**	**1.45**	**1.21**	**26**
WCDMA 4	1513	1752.6	RMC 12.2K	25	23.35	-0.19	Front	1:1	0.653	1.46	0.95	-
WCDMA 4	1312	1712.4	RMC 12.2K	25	23.4	-0.09	Front	1:1	0.832	1.45	1.20	-

*Larger than 5% drifts included to scaling factors

Band	Channel	Frequency [MHz]	Mode	Maximum Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Test Position	Duty Cycle	Measured SAR_{10g} [W/kg]	Scaling factor	Reported SAR_{10g} [W/kg]	Plot #
WCDMA 5	4183	836.6	RMC 12.2K	25	23.07	-0.02	Front	1:1	0.217	1.56	0.34	-
WCDMA 5	4132	826.4	RMC 12.2K	25	23.08	-0.03	Front	1:1	0.207	1.56	0.32	-
WCDMA 5	**4233**	**846.6**	**RMC 12.2K**	**25**	**23.02**	**-0.09**	**Front**	**1:1**	**0.223**	**1.58**	**0.35**	**27**

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LTE

Band	Channel	Frequency [MHz]	Modulation / BW [MHz]	RB Size	RB Offset	Maximum Power [dBm]	Conducted Power [dBm]	Power Drift* [dB]	Test Position	Duty Cycle	Measured SAR_{1g} [W/kg]	Scaling Factor	Reported SAR_{1g} [W/kg]	Plot #
LTE 2	18900	1880	QPSK / 20	1	50	25	23.31	-0.38	Front	1:1	0.275	1.61	0.44	-
LTE 2	**18900**	**1880**	**QPSK / 20**	**50**	**25**	**25**	**22.09**	**-0.13**	**Front**	**1:1**	**0.236**	**1.95**	**0.46**	**28**
LTE 2	18700	1860	QPSK / 20	1	50	25	23.06	0	Front	1:1	0.244	1.56	0.38	-
LTE 2	19100	1900	QPSK / 20	1	50	25	23.03	-0.2	Front	1:1	0.124	1.57	0.20	-

*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]	Power Drift* [dB]	Test Position	Duty Cycle	Measured SAR_{1g} [W/kg]	Scaling Factor	Reported SAR_{1g} [W/kg]	Plot #
LTE 4	20300	1745	QPSK / 20	1	99	25	23.98	0.2	Front	1:1	0.384	1.26	0.49	-
LTE 4	20300	1745	QPSK / 20	50	50	25	22.71	-0.01	Front	1:1	0.5	1.69	0.85	-
LTE 4	20300	1745	QPSK / 20	100	0	25	22.64	-0.23	Front	1:1	0.549	1.82	1.00	-
LTE 4	20050	1720	QPSK / 20	1	50	25	23.66	-0.51	Front	1:1	0.478	1.53	0.73	-
LTE 4	20050	1720	QPSK / 20	50	50	25	22.7	-0.57	Front	1:1	0.492	1.94	0.95	-
LTE 4	**20050**	**1720**	**QPSK / 20**	**100**	**0**	**25**	**22.57**	**-0.69**	**Front**	**1:1**	**0.564**	**2.05**	**1.16**	**29**
LTE 4	20175	1732.5	QPSK / 20	1	50	25	23.8	-0.05	Front	1:1	0.725	1.32	0.96	-
LTE 4	20175	1732.5	QPSK / 20	50	0	25	22.57	0	Front	1:1	0.587	1.75	1.03	-
LTE 4	20175	1732.5	QPSK / 20	100	0	25	22.44	-0.08	Front	1:1	0.581	1.80	1.05	-

*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]	Power Drift [dB]	Test Position	Duty Cycle	Measured SAR_{1g} [W/kg]	Scaling Factor	Reported SAR_{1g} [W/kg]	Plot #
LTE 5	**20450**	**829**	**QPSK / 10**	**1**	**24**	**25**	**23.29**	**0.11**	**Front**	**1:1**	**0.33**	**1.48**	**0.49**	**30**
LTE 5	20450	829	QPSK / 10	25	0	25	22.27	0.02	Front	1:1	0.26	1.87	0.49	-
LTE 5	20525	836.5	QPSK / 10	1	24	25	23.23	-0.02	Front	1:1	0.317	1.50	0.48	-
LTE 5	20600	844	QPSK / 10	1	24	25	23.12	0.03	Front	1:1	0.266	1.54	0.41	-

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Band	Channel	Frequency [MHz]	Modulation / BW [MHz]	RB Size	RB Offset	Maximum Power [dBm]	Conducted Power [dBm]	Power Drift* [dB]	Test Position	Duty Cycle	Measured SAR_{1g} [W/kg]	Scaling Factor	Reported SAR_{1g} [W/kg]	Plot #
LTE 7	21350	2560	QPSK / 20	1	50	25	22.85	0.39	Front	1:1	0.608	1.79	1.09	-
LTE 7	21350	2560	QPSK / 20	50	50	25	21.56	0.56	Front	1:1	0.433	2.51	1.09	-
LTE 7	21350	2560	QPSK / 20	100	0	25	21.45	0.16	Front	1:1	0.473	2.26	1.07	-
LTE 7	20850	2510	QPSK / 20	1	50	25	22.42	-0.12	Front	1:1	0.757	1.81	1.37	-
LTE 7	20850	2510	QPSK / 20	50	0	25	21.47	-0.07	Front	1:1	0.627	2.25	1.41	-
LTE 7	**20850**	**2510**	**QPSK / 20**	**100**	**0**	**25**	**21.37**	**-0.08**	**Front**	**1:1**	**0.625**	**2.31**	**1.44**	**31**
LTE 7	21100	2535	QPSK / 20	1	50	25	22.6	0.01	Front	1:1	0.672	1.74	1.17	-
LTE 7	21100	2535	QPSK / 20	50	25	25	21.52	-0.03	Front	1:1	0.541	2.23	1.21	-
LTE 7	21100	2535	QPSK / 20	100	0	25	21.4	-0.2	Front	1:1	0.539	2.29	1.23	-

*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]	Power Drift* [dB]	Test Position	Duty Cycle	Measured SAR_{1g} [W/kg]	Scaling Factor	Reported SAR_{1g} [W/kg]	Plot #
LTE 12	23060	704	QPSK / 10	1	24	25	23.44	-0.06	Front	1:1	0.512	1.43	0.73	-
LTE 12	23060	704	QPSK / 10	25	12	25	22.04	0.01	Front	1:1	0.424	1.98	0.84	-
LTE 12	**23060**	**704**	**QPSK / 10**	**50**	**0**	**25**	**21.93**	**-0.12**	**Front**	**1:1**	**0.43**	**2.03**	**0.87**	**32**
LTE 12	23095	707.5	QPSK / 10	1	24	25	23.14	0.17	Front	1:1	0.544	1.53	0.83	-
LTE 12	23095	707.5	QPSK / 10	25	12	25	22.03	-0.03	Front	1:1	0.414	1.98	0.82	-
LTE 12	23095	707.5	QPSK / 10	50	0	25	21.99	0.01	Front	1:1	0.418	2.00	0.84	-
LTE 12	23130	711	QPSK / 10	1	24	25	23.08	-0.42	Front	1:1	0.44	1.71	0.75	-
LTE 12	23130	711	QPSK / 10	25	25	25	21.94	-0.02	Front	1:1	0.347	2.02	0.70	-
LTE 12	23130	711	QPSK / 10	50	0	25	21.97	-0.01	Front	1:1	0.372	2.01	0.75	-

*Larger than 5% drifts included to scaling factors

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Band	Channel	Frequency [MHz]	Modulation / BW [MHz]	RB Size	RB Offset	Maximum Power [dBm]	Conducted Power [dBm]	Power Drift* [dB]	Test Position	Duty Cycle	Measured SAR_{1g} [W/kg]	Scaling Factor	Reported SAR_{1g} [W/kg]	Plot #
LTE 13	**23230**	**782**	**QPSK / 10**	**1**	**0**	**25**	**23.36**	**-0.15**	**Front**	**1:1**	**0.276**	**1.46**	**0.40**	**33**
LTE 13	23230	782	QPSK / 10	25	12	25	22.41	-0.01	Front	1:1	0.182	1.82	0.33	-
LTE 13	23205	779.5	QPSK / 5	1	24	25	23.48	0.21	Front	1:1	0.223	1.42	0.32	-
LTE 13	23255	784.5	QPSK / 5	1	12	25	23.72	-0.34	Front	1:1	0.216	1.45	0.31	-

*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]	Power Drift [dB]	Test Position	Duty Cycle	Measured SAR_{1g} [W/kg]	Scaling Factor	Reported SAR_{1g} [W/kg]	Plot #
LTE 25	26365	1882.5	QPSK / 20	1	50	25	23.57	0.09	Front	1:1	0.36	1.39	0.50	-
LTE 25	**26365**	**1882.5**	**QPSK / 20**	**50**	**25**	**25**	**22.65**	**-0.17**	**Front**	**1:1**	**0.299**	**1.72**	**0.51**	**34**
LTE 25	26140	1860	QPSK / 20	1	50	25	23.33	-0.04	Front	1:1	0.252	1.47	0.37	-
LTE 25	26590	1905	QPSK / 20	1	50	25	23.39	-0.01	Front	1:1	0.209	1.45	0.30	-

Band	Channel	Frequency [MHz]	Modulation / BW [MHz]	RB Size	RB Offset	Maximum Power [dBm]	Conducted Power [dBm]	Power Drift* [dB]	Test Position	Duty Cycle	Measured SAR_{1g} [W/kg]	Scaling Factor	Reported SAR_{1g} [W/kg]	Plot #
LTE 26	26865	831.5	QPSK / 15	1	37	25	23.5	-0.12	Front	1:1	0.318	1.41	0.45	-
LTE 26	**26865**	**831.5**	**QPSK / 15**	**36**	**19**	**25**	**22.34**	**-0.11**	**Front**	**1:1**	**0.258**	**1.85**	**0.48**	**35**
LTE 26	26765	821.5	QPSK / 15	1	37	25	23.22	-0.41	Front	1:1	0.182	1.66	0.30	-
LTE 26	26965	841.5	QPSK / 15	1	37	25	23.46	0.08	Front	1:1	0.271	1.43	0.39	-

*Larger than 5% drifts included to scaling factors

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Band	Channel	Frequency [MHz]	Modulation / BW [MHz]	RB Size	RB Offset	Maximum Power [dBm]	Conducted Power [dBm]	Power Drift* [dB]	Test Position	Duty Cycle	Measured SAR_{1g} [W/kg]	Scaling Factor	Reported SAR_{1g} [W/kg]	Plot #
LTE 41	41490	2680	QPSK / 20	1	50	25	22.98	-0.01	Front	1:1	0.19	1.59	0.30	-
LTE 41	41490	2680	QPSK / 20	50	25	25	21.77	0.07	Front	1:1	0.151	2.10	0.32	-
LTE 41	**39750**	**2506**	**QPSK / 20**	**1**	**50**	**25**	**22.72**	**-0.11**	**Front**	**1:1**	**0.432**	**1.69**	**0.73**	**36**
LTE 41	40620	2593	QPSK / 20	1	0	25	22.57	-0.04	Front	1:1	0.261	1.75	0.46	-

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7.3 Calculated Bluetooth SAR Results

The distance between the Bluetooth antenna and the screen of the device is 11.18 mm, thus a separation distance of 20 mm was used in Bluetooth SAR calculations for 1g-SAR and 10 mm for 10g-SAR.

For simultaneous transmission evaluation the Bluetooth standalone SAR value is estimated according to the following equation:

[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)]·[√f(GHz)/x] W/kg, where x = 7.5 for 1-g SAR and 18.75 for 10-g SAR.

Bluetooth SAR_{1g}= (1.8mW/20mm)*$(2.4835GHz)^{1/2}$/7.5=0.02 W/kg
Bluetooth SAR_{10g}= (1.8mW/10mm)*$(2.4835GHz)^{1/2}$/18.75=0.02 W/kg

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7.4 Simultaneous Transmission Analysis

Simultaneous transmission analysis for maximum cellular SAR and maximum Bluetooth SAR is in a table below. Direct summation of SAR results is performed.

	Exposure Condition	Extremity SAR_{10g} [W/kg]	Body SAR_{1g} [W/kg]
	Test Position	Front	Front
Cellular	GSM 850	1.81	1.03
	GSM 1900	1.05	0.38
	WCDMA 2	1.43	0.60
	WCDMA 4	1.58	1.21
	WCDMA 5	0.75	0.35
	LTE 2	1.27	0.46
	LTE 4	1.47	1.16
	LTE 5	0.82	0.49
	LTE 7	2.63	1.44
	LTE 12	1.11	0.87
	LTE 13	0.62	0.40
	LTE 25	1.48	0.51
	LTE 26	0.76	0.48
	LTE 41	1.39	0.73
	Bluetooth	0.02	0.02
Maximum Cellular SAR:		2.63	1.44
Bluetooth:		0.02	0.02
SAR Summation:		2.65	1.46

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APPENDIX A: PHOTOS OF THE DUT

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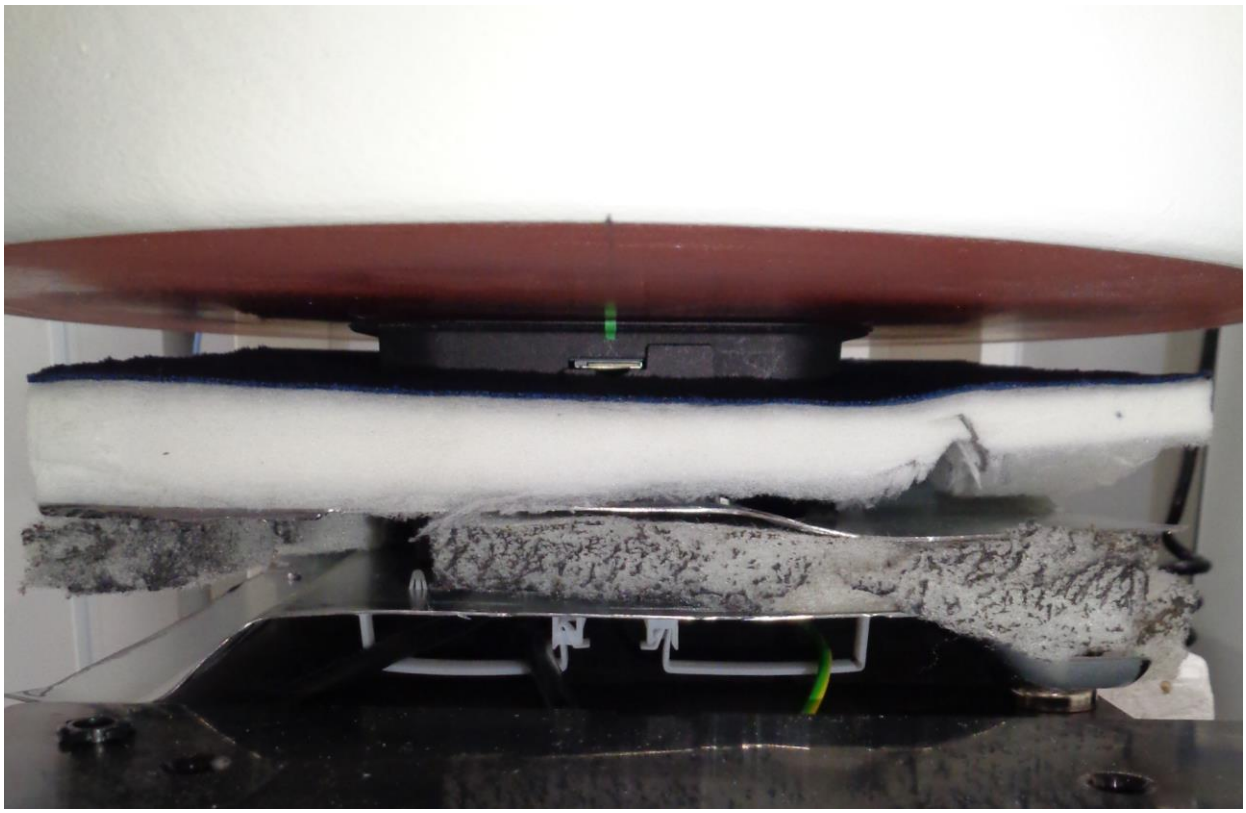

Front side of the DUT towards the phantom with 0 mm separation distance.

Front side of the DUT towards the phantom with 10 mm separation distance.

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APPENDIX B: SYSTEM CHECK SCAN

Plot 1

Date/Time: 1.12.2020 13:12:43

Test Laboratory: Verkotan Oy

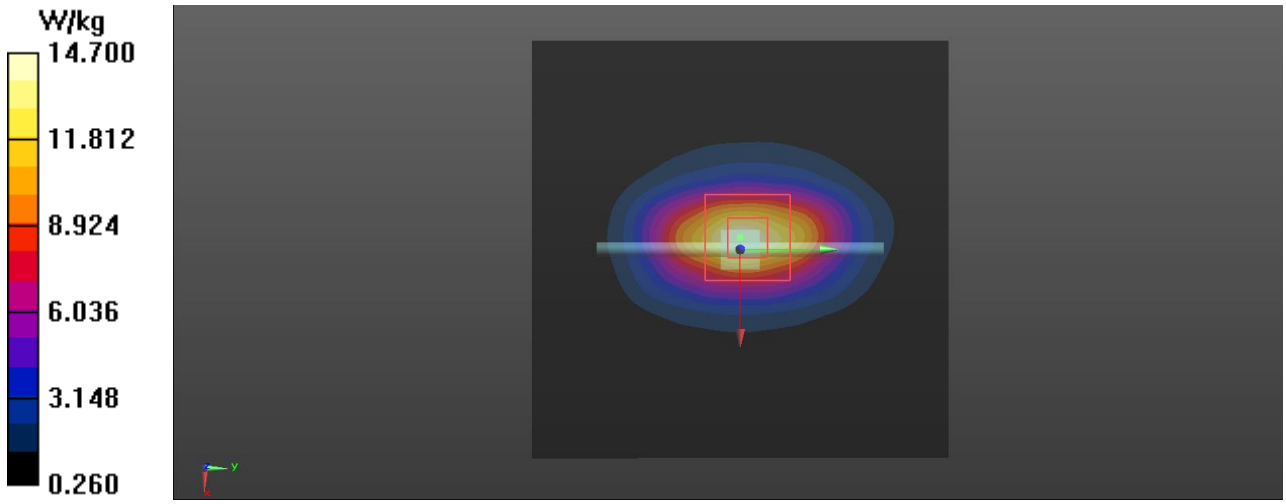
DUT: Dipole 1800 MHz D1800V2; Type: D1800V2; Serial: D1800V2 - SN:249

Communication System: UID 0, CW (0); Communication System Band: D1800 (1800.0 MHz); Frequency: 1800 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (extrapolated): f = 1800 MHz; σ = 1.425 S/m; ε_r = 37.748; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(8.65, 8.65, 8.65) @ 1800 MHz; Calibrated: 25.3.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 31.0, -4.0
- Electronics: DAE4 Sn1332; Calibrated: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

System check/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 107.9 V/m; Power Drift = -0.42 dB
Peak SAR (extrapolated) = 17.6 W/kg
SAR(1 g) = 9.31 W/kg; SAR(10 g) = 4.94 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 10.5 mm
Ratio of SAR at M2 to SAR at M1 = 54%
Maximum value of SAR (measured) = 14.7 W/kg
System check/Area Scan (71x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 14.6 W/kg



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Plot 2

Date/Time: 3.12.2020 15:06:31

Test Laboratory: Verkotan Oy

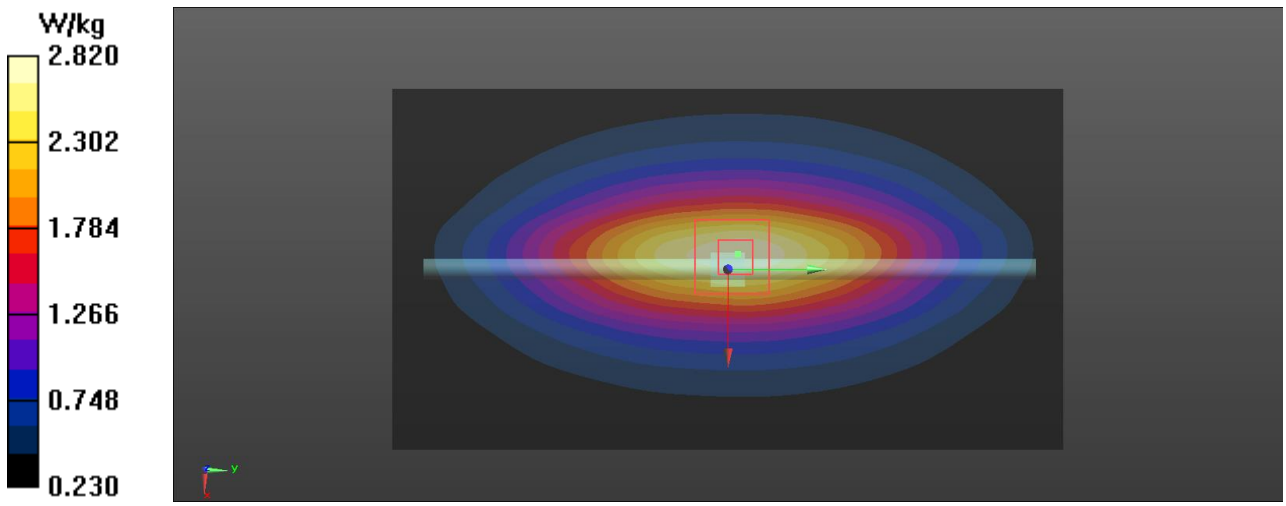
DUT: Dipole 750 MHz D750V3; Type: D750V3; Serial: D750V3 - SN:454

Communication System: UID 0, CW (0); Communication System Band: D750 (750.0 MHz); Frequency: 750 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 750 MHz; σ = 0.912 S/m; ε_r = 38.93; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(10.38, 10.38, 10.38) @ 750 MHz; Calibrated: 25.3.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 31.0, -4.0
- Electronics: DAE4 Sn1332; Calibrated: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

System check/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 58.62 V/m; Power Drift = -0.22 dB
Peak SAR (extrapolated) = 3.18 W/kg
SAR(1 g) = 2.02 W/kg; SAR(10 g) = 1.32 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 20.2 mm
Ratio of SAR at M2 to SAR at M1 = 65.1%
Maximum value of SAR (measured) = 2.82 W/kg
System check/Area Scan (71x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.75 W/kg



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Plot 3

Date/Time: 7.12.2020 9:18:40

Test Laboratory: Verkotan Oy

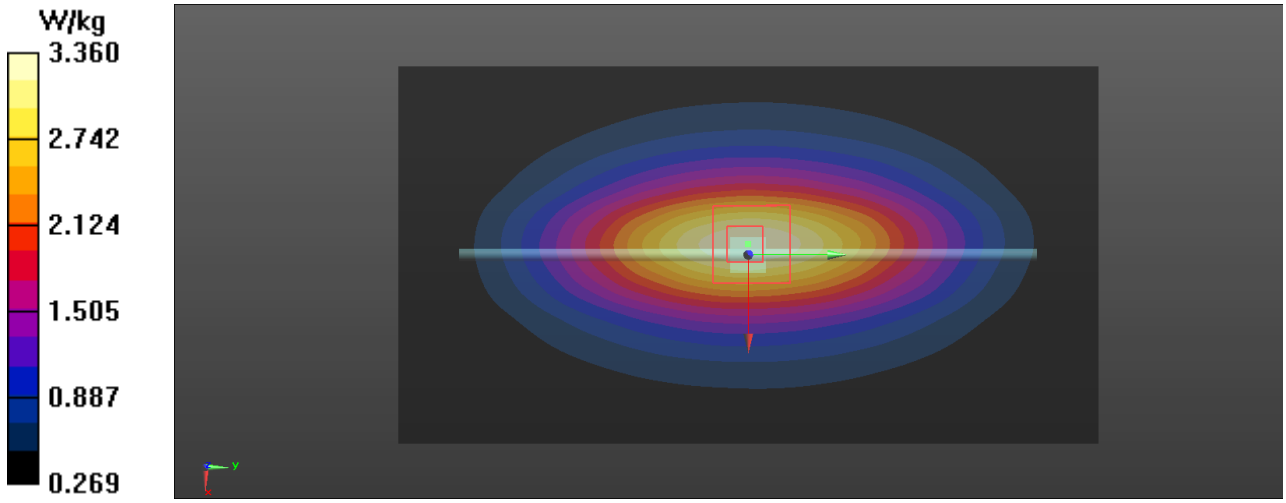
DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:448

Communication System: UID 0, CW (0); Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 835 MHz; σ = 0.961 S/m; ε_r = 38.923; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(9.97, 9.97, 9.97) @ 835 MHz; Calibrated: 25.3.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 31.0, -4.0
- Electronics: DAE4 Sn1332; Calibrated: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/system check/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 61.84 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 3.81 W/kg
SAR(1 g) = 2.35 W/kg; SAR(10 g) = 1.54 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 17.5 mm
Ratio of SAR at M2 to SAR at M1 = 65.4%
Maximum value of SAR (measured) = 3.36 W/kg
Configuration/system check/Area Scan (71x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.34 W/kg
Configuration/system check/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 61.84 V/m; Power Drift = -0.11 dB



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Plot 4

Date/Time: 8.12.2020 13:14:38

Test Laboratory: Verkotan Oy

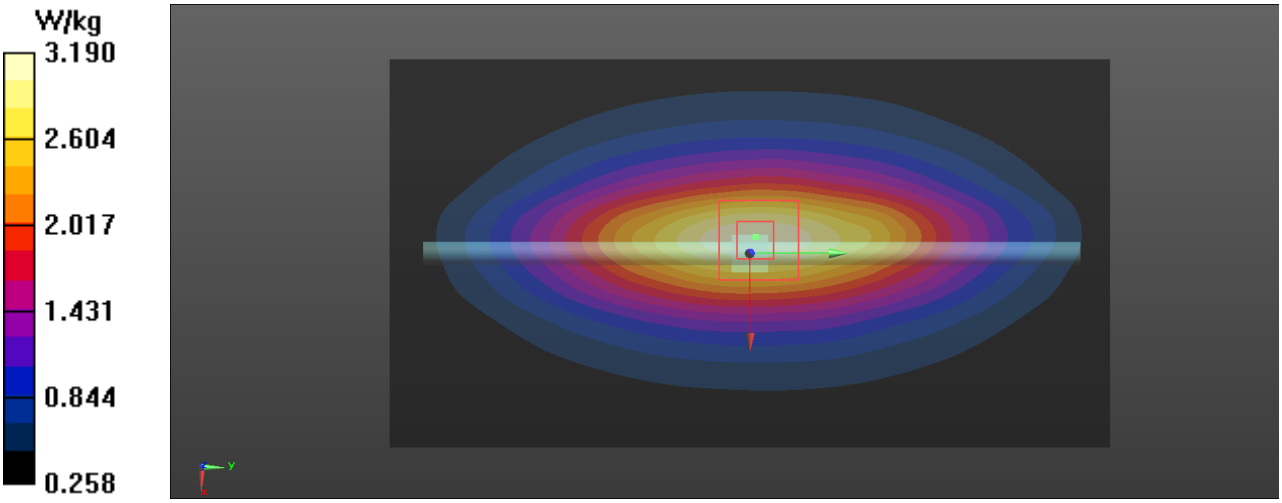
DUT: Dipole 750 MHz D750V3; Type: D750V3; Serial: D750V3 - SN:454

Communication System: UID 0, CW (0); Communication System Band: D750 (750.0 MHz); Frequency: 750 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 750 MHz; σ = 0.933 S/m; ε_r = 38.482; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(10.21, 10.21, 10.21) @ 750 MHz; Calibrated: 28.4.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 31.0, -4.0
- Electronics: DAE4 Sn1332; Calibrated: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/system check/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 60.38 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 3.67 W/kg
SAR(1 g) = 2.19 W/kg; SAR(10 g) = 1.43 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 16.5 mm
Ratio of SAR at M2 to SAR at M1 = 62.6%
Maximum value of SAR (measured) = 3.19 W/kg
Configuration/system check/Area Scan (71x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.09 W/kg



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Plot 5

Date/Time: 11.12.2020 9:08:40

Test Laboratory: Verkotan Oy

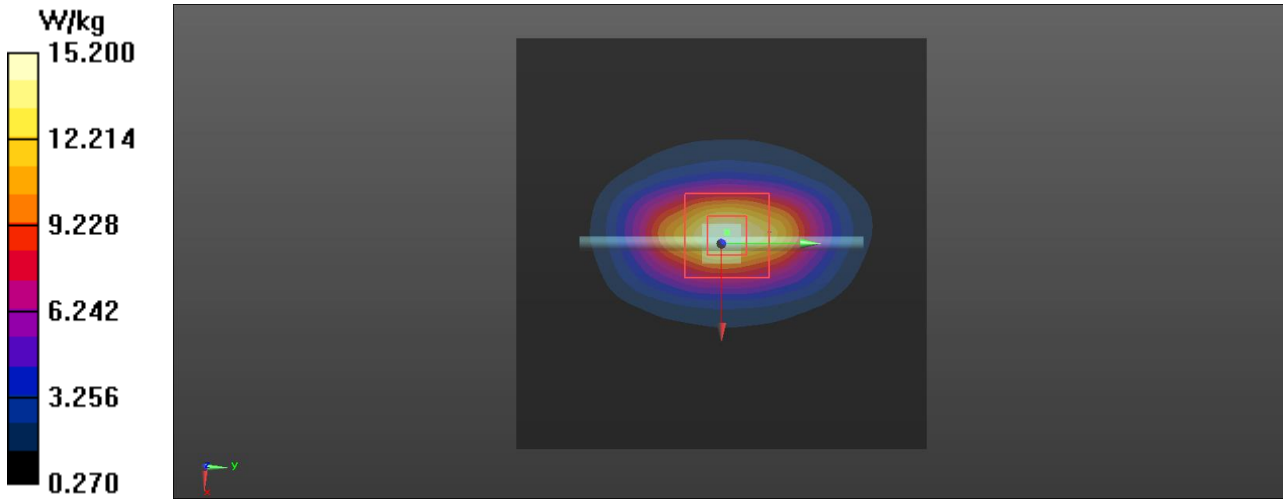
DUT: Dipole 1800 MHz D1800V2; Type: D1800V2; Serial: D1800V2 - SN:249

Communication System: UID 0, CW (0); Communication System Band: D1800 (1800.0 MHz); Frequency: 1800 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 1800 MHz; σ = 1.398 S/m; ε_r = 37.547; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.52, 8.52, 8.52) @ 1800 MHz; Calibrated: 28.4.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 31.0, -4.0
- Electronics: DAE4 Sn1332; Calibrated: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

System check/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 106.2 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 18.4 W/kg
SAR(1 g) = 9.49 W/kg; SAR(10 g) = 4.94 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 10.5 mm
Ratio of SAR at M2 to SAR at M1 = 52.3%
Maximum value of SAR (measured) = 15.2 W/kg
System check/Area Scan (71x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 15.0 W/kg



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Plot 6

Date/Time: 14.12.2020 8:35:22

Test Laboratory: Verkotan Oy

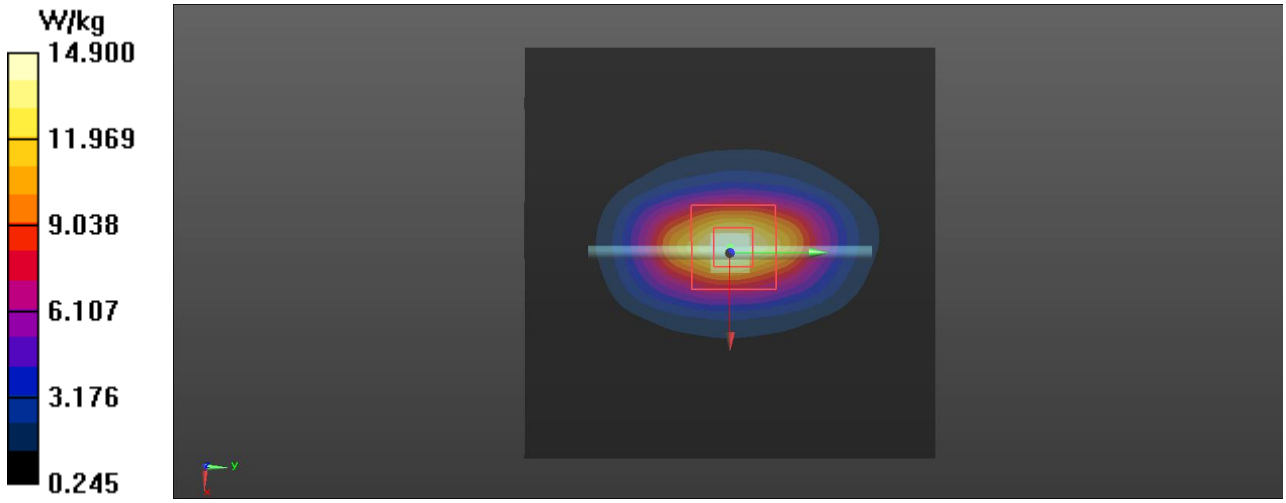
DUT: Dipole 1800 MHz D1800V2; Type: D1800V2; Serial: D1800V2 - SN:249

Communication System: UID 0, CW (0); Communication System Band: D1800 (1800.0 MHz); Frequency: 1800 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 1800 MHz; σ = 1.392 S/m; ε_r = 37.519; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.52, 8.52, 8.52) @ 1800 MHz; Calibrated: 28.4.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 31.0, -4.0
- Electronics: DAE4 Sn1332; Calibrated: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

System check/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 106.5 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 18.0 W/kg
SAR(1 g) = 9.23 W/kg; SAR(10 g) = 4.8 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 10.5 mm
Ratio of SAR at M2 to SAR at M1 = 51.9%
Maximum value of SAR (measured) = 14.9 W/kg
System check/Area Scan (71x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 14.1 W/kg



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Plot 7

Date/Time: 14.12.2020 13:29:41

Test Laboratory: Verkotan Oy

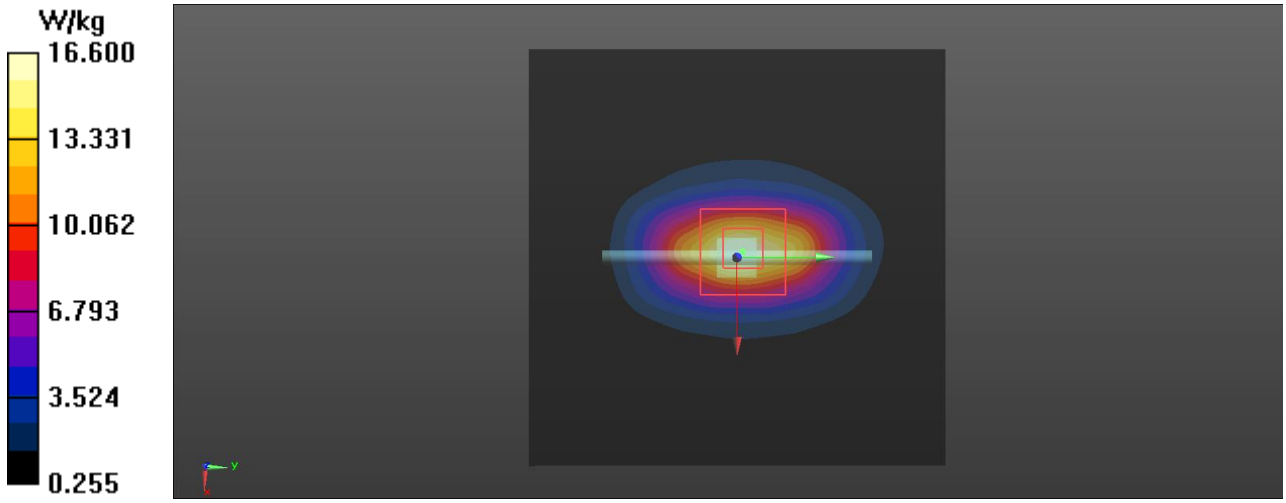
DUT: Dipole 1900 MHz D1900V2; Type: D1900V2; Serial: D1900V2 - SN:511

Communication System: UID 0, CW (0); Communication System Band: D1900 (1900.0 MHz); Frequency: 1900 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 1900 MHz; σ = 1.451 S/m; ε_r = 37.357; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.26, 8.26, 8.26) @ 1900 MHz; Calibrated: 28.4.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 31.0, -4.0
- Electronics: DAE4 Sn1332; Calibrated: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

System check/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 107.1 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 19.9 W/kg
SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.24 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 10.5 mm
Ratio of SAR at M2 to SAR at M1 = 52.5%
Maximum value of SAR (measured) = 16.6 W/kg
System check/Area Scan (71x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 15.9 W/kg



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Plot 8

Date/Time: 15.12.2020 15:28:57

Test Laboratory: Verkotan Oy

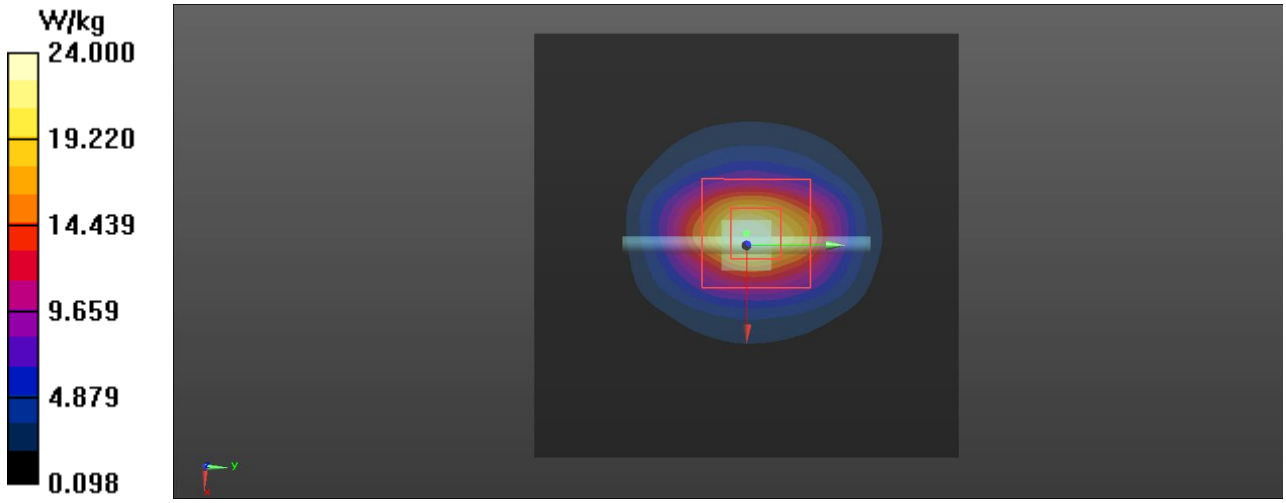
DUT: Dipole 2600 MHz D2600V2; Type: D2600V2; Serial: D2600V2 - SN:474

Communication System: UID 0, CW (0); Communication System Band: D2600 (2600.0 MHz); Frequency: 2600 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 2600 MHz; σ = 1.944 S/m; ε_r = 37.52; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(7.33, 7.33, 7.33) @ 2600 MHz; Calibrated: 28.4.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 31.0, -4.0
- Electronics: DAE4 Sn1332; Calibrated: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

System check/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 115.8 V/m; Power Drift = -0.20 dB
Peak SAR (extrapolated) = 30.5 W/kg
SAR(1 g) = 14 W/kg; SAR(10 g) = 6.27 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 = 46.6%
Maximum value of SAR (measured) = 24.0 W/kg
System check/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 25.9 W/kg



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APPENDIX C: MEASUREMENT SCANS

Plot 9

Date/Time: 7.12.2020 12:05:07

Test Laboratory: Verkotan Oy

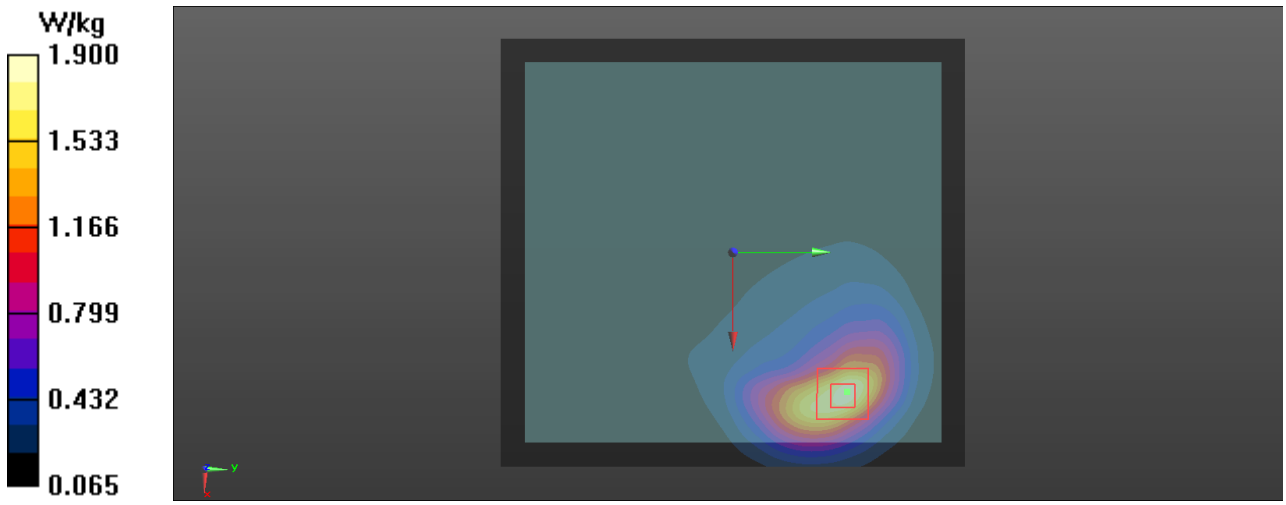
DUT: Framery Control Unit

Communication System: UID 0, GPRS850 3 Slot (0); Communication System Band: GPRS 850; Frequency: 848.8 MHz;Communication System PAR: 4.265 dB
Medium parameters used: f = 849 MHz; σ = 0.967 S/m; ε_r = 38.852; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(9.97, 9.97, 9.97) @ 848.8 MHz; Calibrated: 25.3.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/Extremity, GPRS 850, 3 slots, high/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 8.278 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 2.31 W/kg
SAR(1 g) = 1.18 W/kg; SAR(10 g) = 0.685 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 12.1 mm
Ratio of SAR at M2 to SAR at M1 = 54%
Maximum value of SAR (measured) = 1.90 W/kg
Configuration/Extremity, GPRS 850, 3 slots, high/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.84 W/kg



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Plot 10

Date/Time: 15.12.2020 12:07:30

Test Laboratory: Verkotan Oy

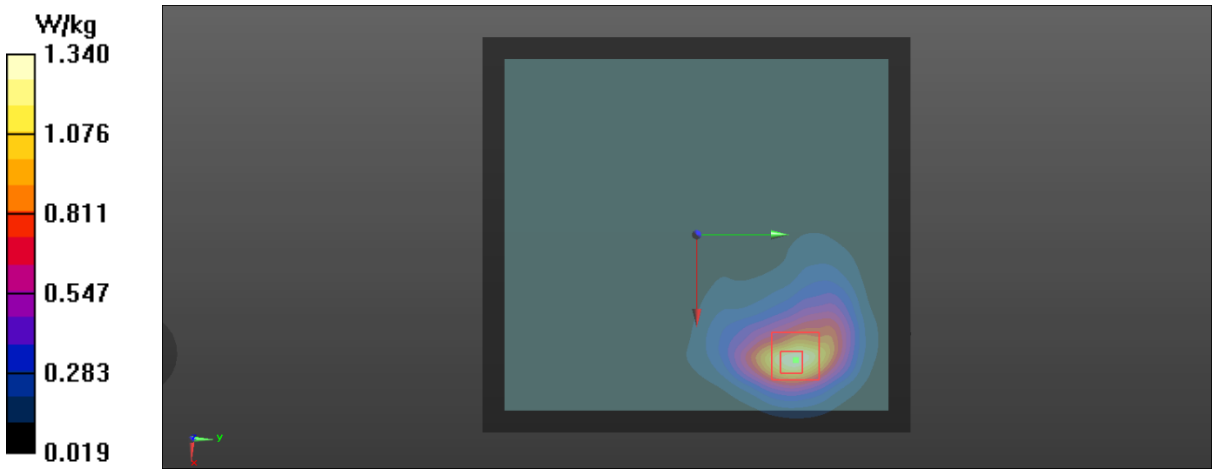
DUT: Framery Control Unit

Communication System: UID 0, GPRS 2 slots (0); Communication System Band: GPRS 1900; Frequency: 1850.2 MHz;Communication System PAR: 6.335 dB
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.421 S/m; ε_r = 37.43; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.26, 8.26, 8.26) @ 1850.2 MHz; Calibrated: 28.4.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration 3/Extremity, GPRS 1900, 2 slots, low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 2.412 V/m; Power Drift = -0.22 dB
Peak SAR (extrapolated) = 1.67 W/kg
SAR(1 g) = 0.837 W/kg; SAR(10 g) = 0.459 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 10.9 mm
Ratio of SAR at M2 to SAR at M1 = 50.7%
Maximum value of SAR (measured) = 1.34 W/kg
Configuration 3/Extremity, GPRS 1900, 2 slots, low/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.41 W/kg



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Plot 11

Date/Time: 15.12.2020 9:41:08

Test Laboratory: Verkotan Oy

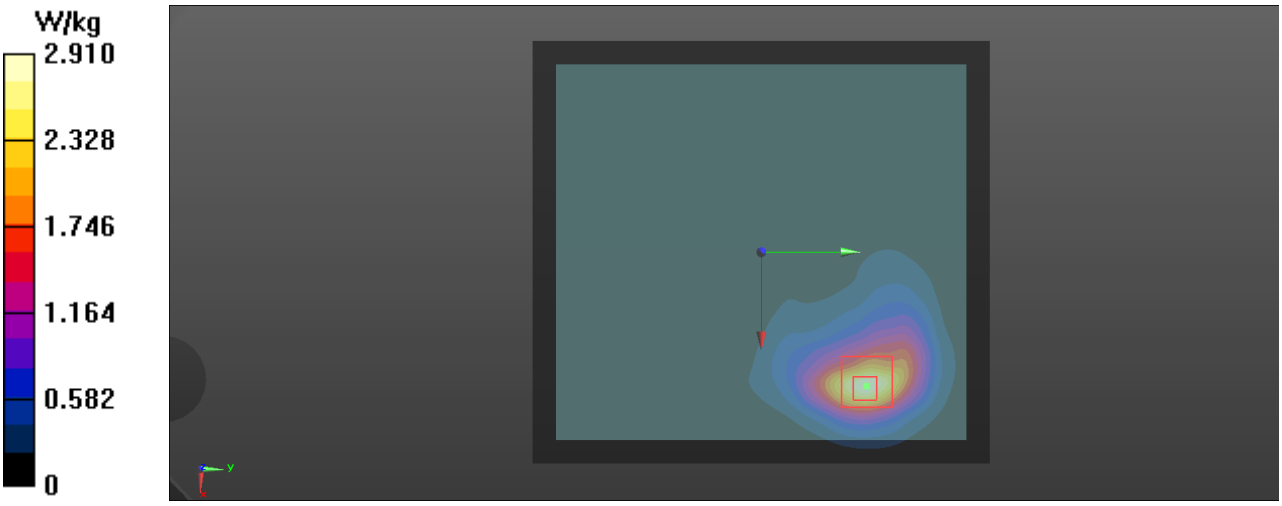
DUT: Framery Control Unit

Communication System: UID 0, WCDMA (0); Communication System Band: Band 2; Frequency: 1852.5 MHz;Communication System PAR: 0 dB; PMF: 1.12202e-005
Medium parameters used: f = 1853 MHz; σ = 1.423 S/m; ε_r = 37.425; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.26, 8.26, 8.26) @ 1852.5 MHz; Calibrated: 28.4.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration 3/Extremity, WCDMA 2, low/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.91 W/kg
Configuration 3/Extremity, WCDMA 2, low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 3.368 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 3.36 W/kg
SAR(1 g) = 1.67 W/kg; SAR(10 g) = 0.912 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 = 49.7%
Maximum value of SAR (measured) = 2.73 W/kg



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Plot 12

Date/Time: 2.12.2020 10:11:26

Test Laboratory: Verkotan Oy

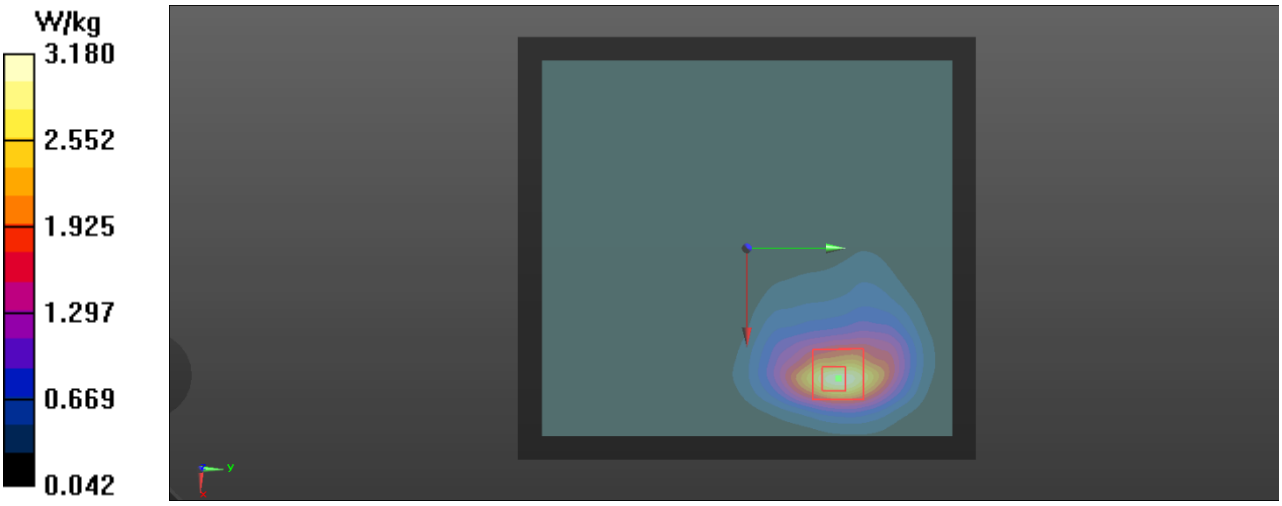
DUT: Framery Control Unit

Communication System: UID 0, WCDMA (0); Communication System Band: Band 4; Frequency: 1712.4 MHz;Communication System PAR: 0 dB; PMF: 1.12202e-005
Medium parameters used (interpolated): f = 1712.4 MHz; σ = 1.374 S/m; ε_r = 37.909; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(8.65, 8.65, 8.65) @ 1712.4 MHz; Calibrated: 25.3.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/Extremity, WCDMA 4, low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 4.749 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.84 W/kg
SAR(1 g) = 2 W/kg; SAR(10 g) = 1.09 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 12.1 mm
Ratio of SAR at M2 to SAR at M1 = 53.1%
Maximum value of SAR (measured) = 3.18 W/kg
Configuration/Extremity, WCDMA 4, low/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.35 W/kg



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Plot 13

Date/Time: 7.12.2020 12:55:00

Test Laboratory: Verkotan Oy

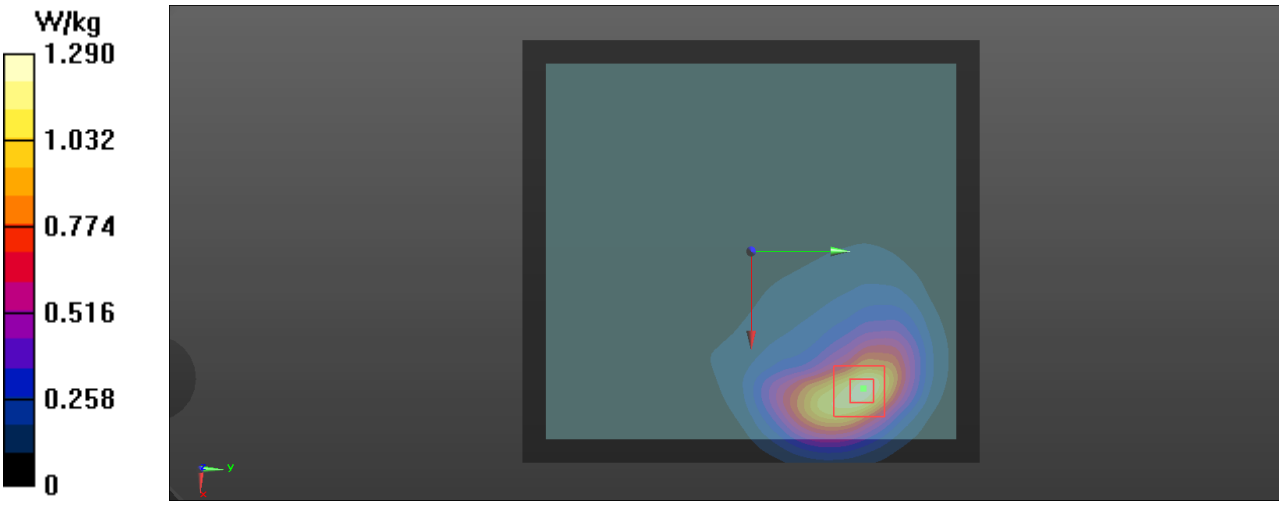
DUT: Framery Control Unit

Communication System: UID 0, WCDMA (0); Communication System Band: Band 5; Frequency: 846.6 MHz;Communication System PAR: 0 dB; PMF: 1.12202e-005
Medium parameters used: f = 847 MHz; σ = 0.967 S/m; ε_r = 38.877; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(9.97, 9.97, 9.97) @ 846.6 MHz; Calibrated: 25.3.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/Extremity, WCDMA 5, high/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.29 W/kg
Configuration/Extremity, WCDMA 5, high/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 6.721 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.64 W/kg
SAR(1 g) = 0.822 W/kg; SAR(10 g) = 0.473 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 12.7 mm
Ratio of SAR at M2 to SAR at M1 = 53%
Maximum value of SAR (measured) = 1.35 W/kg



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Plot 14

Date/Time: 14.12.2020 10:07:07

Test Laboratory: Verkotan Oy

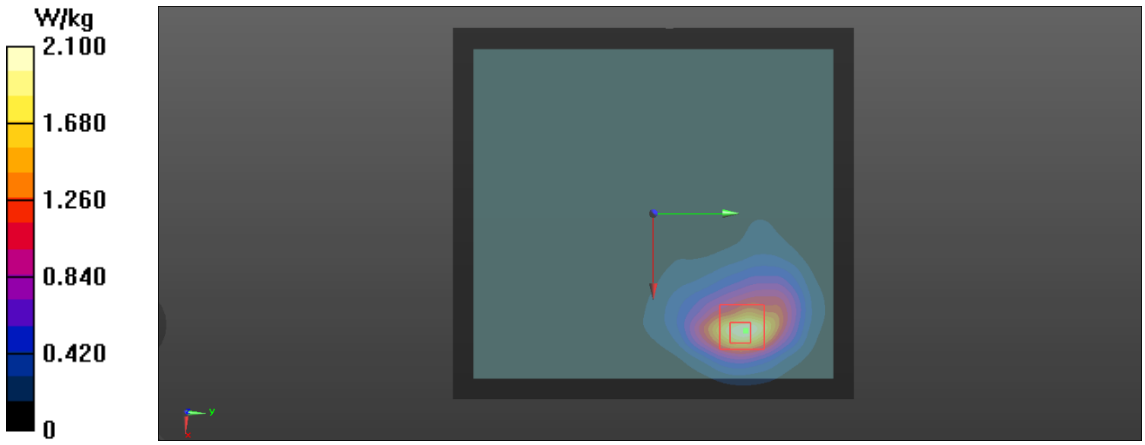
DUT: Framery Control Unit

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 2, E-UTRA/FDD (1850.0 - 1910.0 MHz); Frequency: 1880 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 1880 MHz; σ = 1.439 S/m; ε_r = 37.386; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.26, 8.26, 8.26) @ 1880 MHz; Calibrated: 28.4.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/Extremity, LTE 2, mid, BW20, QPSK, RB50, Offset25/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.10 W/kg
Configuration/Extremity, LTE 2, mid, BW20, QPSK, RB50, Offset25/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 3.585 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 2.46 W/kg
SAR(1 g) = 1.21 W/kg; SAR(10 g) = 0.650 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 12 mm
Ratio of SAR at M2 to SAR at M1 = 49.2%
Maximum value of SAR (measured) = 1.99 W/kg



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Plot 15

Date/Time: 14.12.2020 11:33:45

Test Laboratory: Verkotan Oy

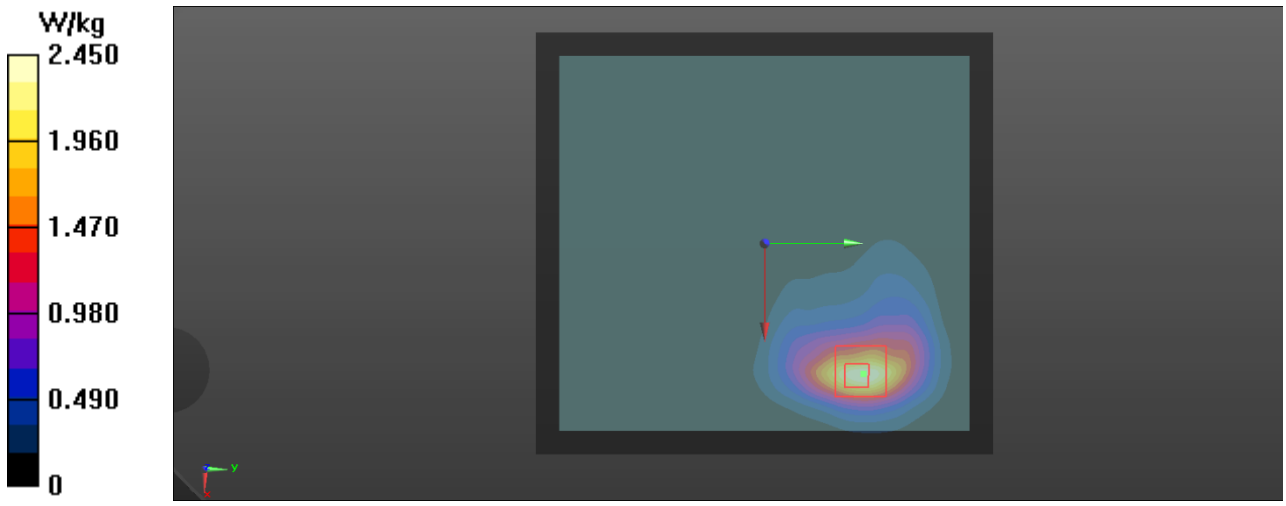
DUT: Framery Control Unit

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 4, E-UTRA/FDD (1710.0 - 1755.0 MHz); Frequency: 1745 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 1745 MHz; σ = 1.361 S/m; ε_r = 37.624; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.52, 8.52, 8.52) @ 1745 MHz; Calibrated: 28.4.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/Extremity, LTE 4, high, BW20, QPSK, RB50, Offset50/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.45 W/kg
Configuration/Extremity, LTE 4, high, BW20, QPSK, RB50, Offset50/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 3.405 V/m; Power Drift = -0.26 dB
Peak SAR (extrapolated) = 2.99 W/kg
SAR(1 g) = 1.51 W/kg; SAR(10 g) = 0.818 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 10.5 mm
Ratio of SAR at M2 to SAR at M1 = 50.5%
Maximum value of SAR (measured) = 2.39 W/kg



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Plot 16

Date/Time: 7.12.2020 13:59:50

Test Laboratory: Verkotan Oy

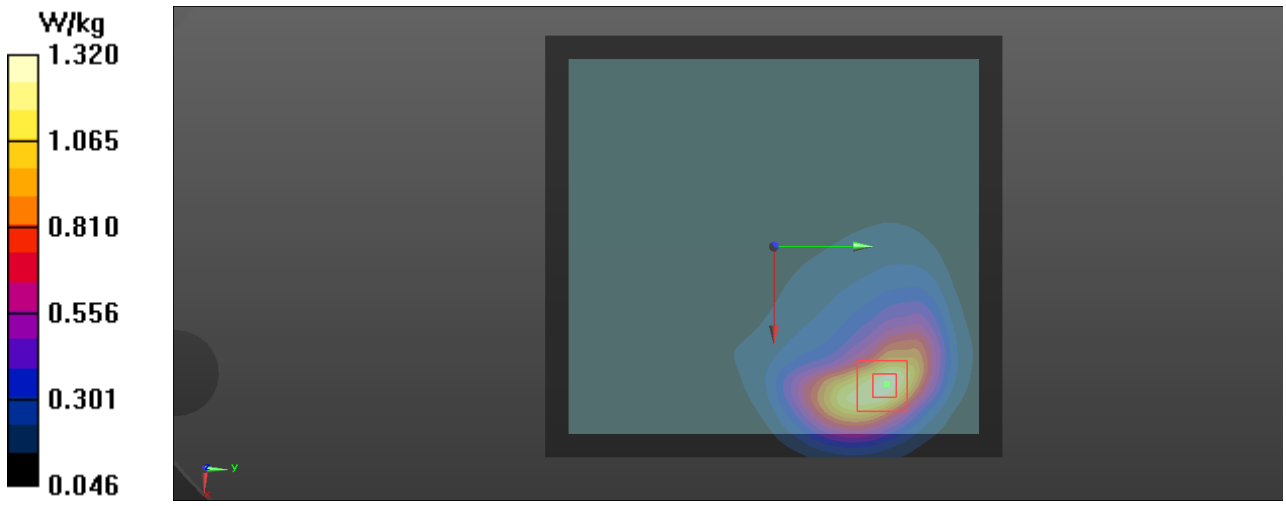
DUT: Framery Control Unit

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; PMF: 1
Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.962 S/m; ε_r = 38.904; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(9.97, 9.97, 9.97) @ 836.5 MHz; Calibrated: 25.3.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/Extremity, LTE 5, mid, BW10, QPSK, RB1, Offset24/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 6.454 V/m; Power Drift = 0.58 dB
Peak SAR (extrapolated) = 1.61 W/kg
SAR(1 g) = 0.818 W/kg; SAR(10 g) = 0.478 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 12.9 mm
Ratio of SAR at M2 to SAR at M1 = 54.9%
Maximum value of SAR (measured) = 1.32 W/kg
Configuration/Extremity, LTE 5, mid, BW10, QPSK, RB1, Offset24/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm.
Maximum value of SAR (interpolated) = 1.26 W/kg



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Plot 17

Date/Time: 17.12.2020 16:00:27

Test Laboratory: Verkotan Oy

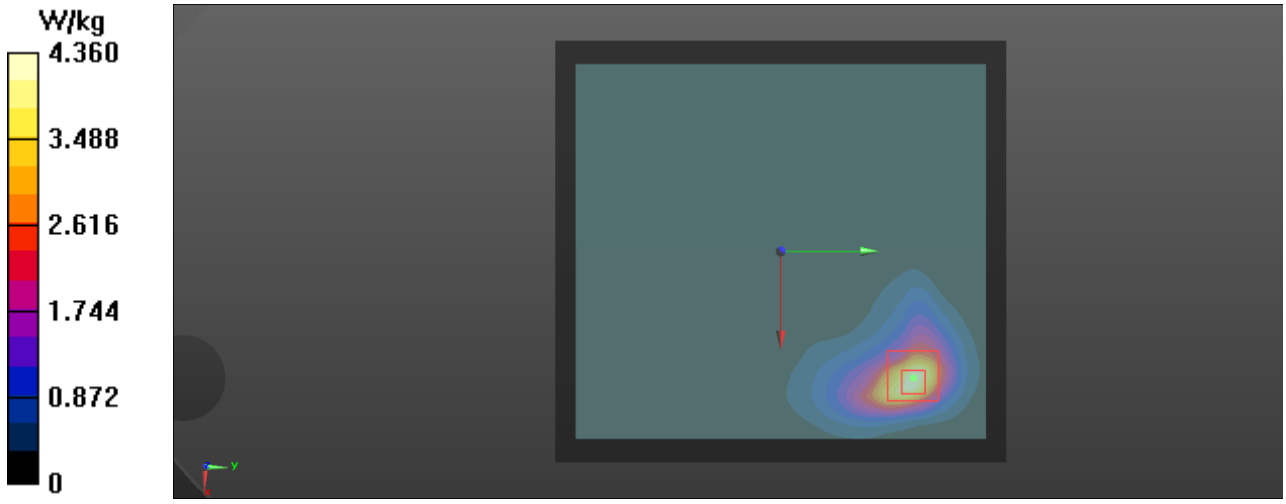
DUT: Framery Control Unit

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 7, E-UTRA/FDD (2500.0 - 2570.0 MHz); Frequency: 2510 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 2510 MHz; σ = 1.875 S/m; ε_r = 37.665; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(7.33, 7.33, 7.33) @ 2510 MHz; Calibrated: 28.4.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration 3/Extremity, LTE 7, low, BW20, QPSK, RB100, Offset0/Area Scan (151x161x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 4.36 W/kg
Configuration 3/Extremity, LTE 7, low, BW20, QPSK, RB100, Offset0/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 47.94 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 5.54 W/kg
SAR(1 g) = 2.41 W/kg; SAR(10 g) = 1.14 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 9.8 mm
Ratio of SAR at M2 to SAR at M1 = 44.2%
Maximum value of SAR (measured) = 4.20 W/kg



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Plot 18

Date/Time: 9.12.2020 9:50:25

Test Laboratory: Verkotan Oy

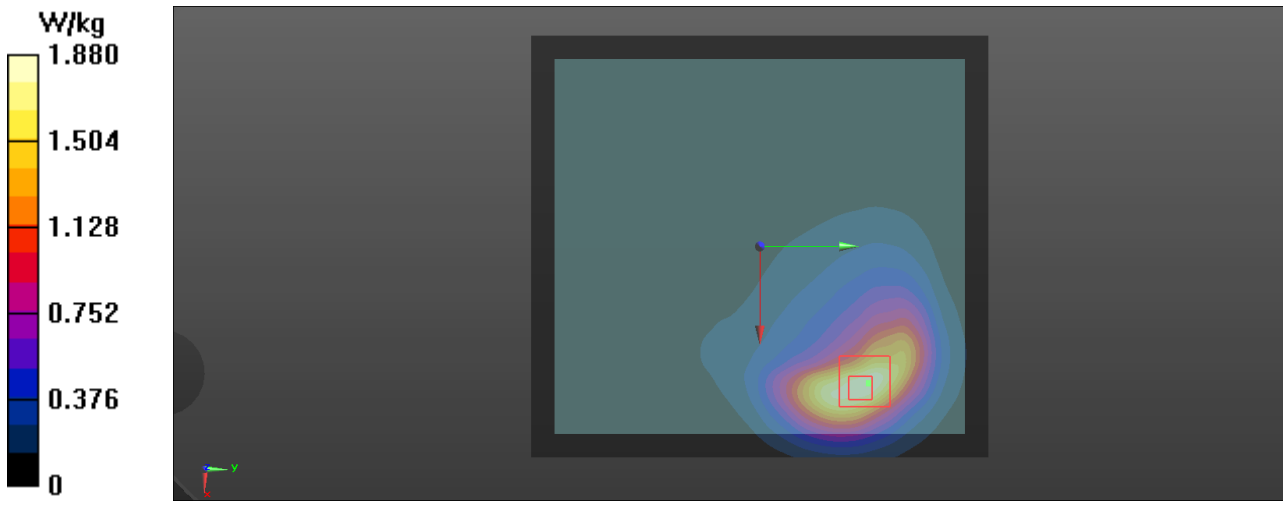
DUT: Framery Control Unit

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 12, E-UTRA/FDD (698.0 - 716.0 MHz); Frequency: 707.5 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 707.5 MHz; σ = 0.919 S/m; ε_r = 38.649; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(10.21, 10.21, 10.21) @ 707.5 MHz; Calibrated: 28.4.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/Extremity, LTE 12, mid, BW10, QPSK, RB1, Offset24/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.88 W/kg
Configuration/Extremity, LTE 12, mid, BW10, QPSK, RB1, Offset24/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 9.974 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 2.36 W/kg
SAR(1 g) = 1.19 W/kg; SAR(10 g) = 0.721 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 12.9 mm
Ratio of SAR at M2 to SAR at M1 = 52.2%
Maximum value of SAR (measured) = 1.84 W/kg



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Plot 19

Date/Time: 4.12.2020 13:10:24

Test Laboratory: Verkotan Oy

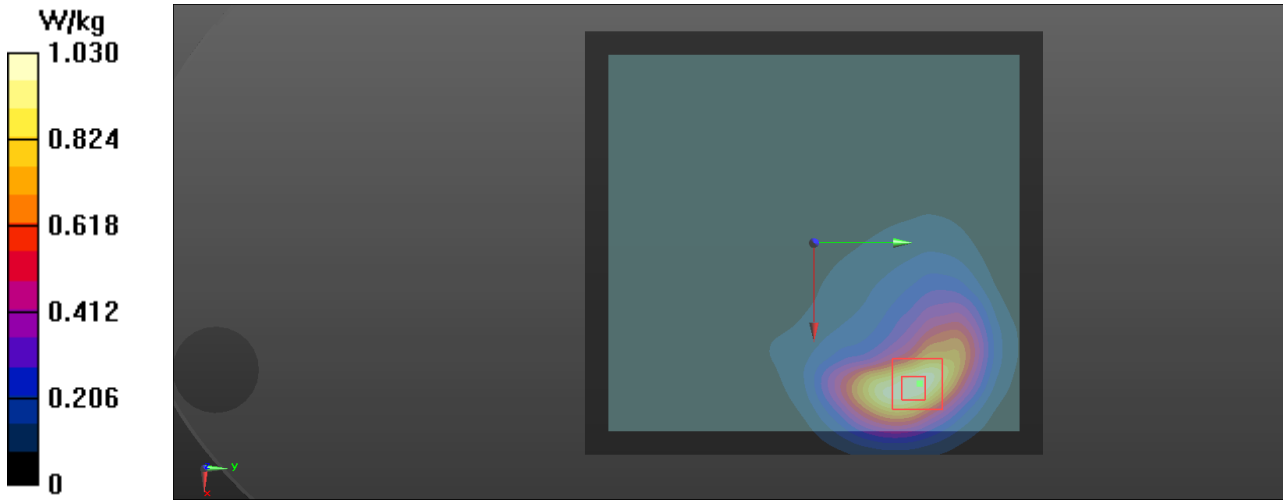
DUT: Framery Control Unit

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 13, E-UTRA/FDD (777.0 - 787.0 MHz); Frequency: 782 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 782 MHz; σ = 0.923 S/m; ε_r = 38.847; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(10.38, 10.38, 10.38) @ 782 MHz; Calibrated: 25.3.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = -4.0, 31.0
- Electronics: DAE4 Sn1332; Calibrated: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/Extremity, LTE 13, mid, BW10, QPSK, RB1, Offset0/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.03 W/kg
Configuration/Extremity, LTE 13, mid, BW10, QPSK, RB1, Offset0/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 6.502 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 1.36 W/kg
SAR(1 g) = 0.719 W/kg; SAR(10 g) = 0.422 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 = 56%
Maximum value of SAR (measured) = 1.10 W/kg



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Plot 20

Date/Time: 15.12.2020 12:43:38

Test Laboratory: Verkotan Oy

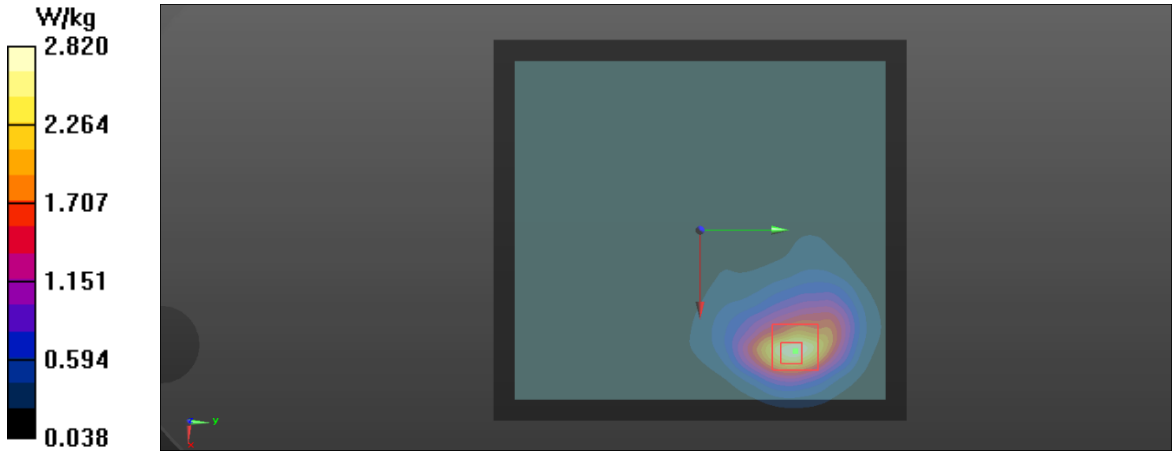
DUT: Framery Control Unit

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 25, E-UTRA/FDD (1850.0 - 1915.0 MHz); Frequency: 1882.5 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.44 S/m; ε_r = 37.375; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.26, 8.26, 8.26) @ 1882.5 MHz; Calibrated: 28.4.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration 3/Extremity, LTE 25, mid, BW20, QPSK, RB1, Offset 50/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 4.029 V/m; Power Drift = 0.57 dB
Peak SAR (extrapolated) = 3.49 W/kg
SAR(1 g) = 1.72 W/kg; SAR(10 g) = 0.932 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 = 49.6%
Maximum value of SAR (measured) = 2.82 W/kg
Configuration 3/Extremity, LTE 25, mid, BW20, QPSK, RB1, Offset 50/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.79 W/kg



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Plot 21

Date/Time: 7.12.2020 14:41:51

Test Laboratory: Verkotan Oy

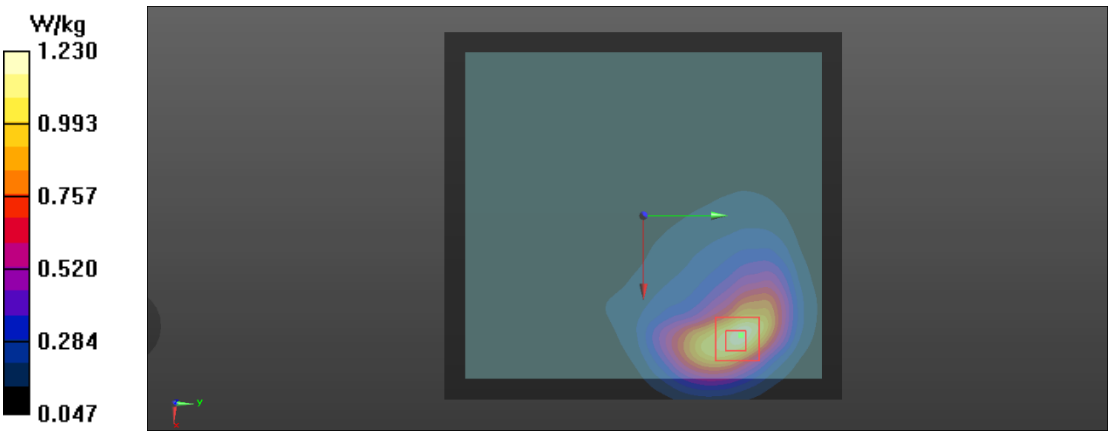
DUT: Framery Control Unit

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 26; Frequency: 831.5 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 831.5 MHz; σ = 0.961 S/m; ε_r = 38.919; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN7447; ConvF(9.97, 9.97, 9.97) @ 831.5 MHz; Calibrated: 25.3.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/Extremity, LTE 26, mid, BW15, QPSK, RB1, Offset37/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 6.521 V/m; Power Drift = 0.67 dB
Peak SAR (extrapolated) = 1.54 W/kg
SAR(1 g) = 0.787 W/kg; SAR(10 g) = 0.463 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 12.1 mm
Ratio of SAR at M2 to SAR at M1 = 54.1%
Maximum value of SAR (measured) = 1.23 W/kg
Configuration/Extremity, LTE 26, mid, BW15, QPSK, RB1, Offset37/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.20 W/kg



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Plot 22

Date/Time: 16.12.2020 12:12:45

Test Laboratory: Verkotan Oy

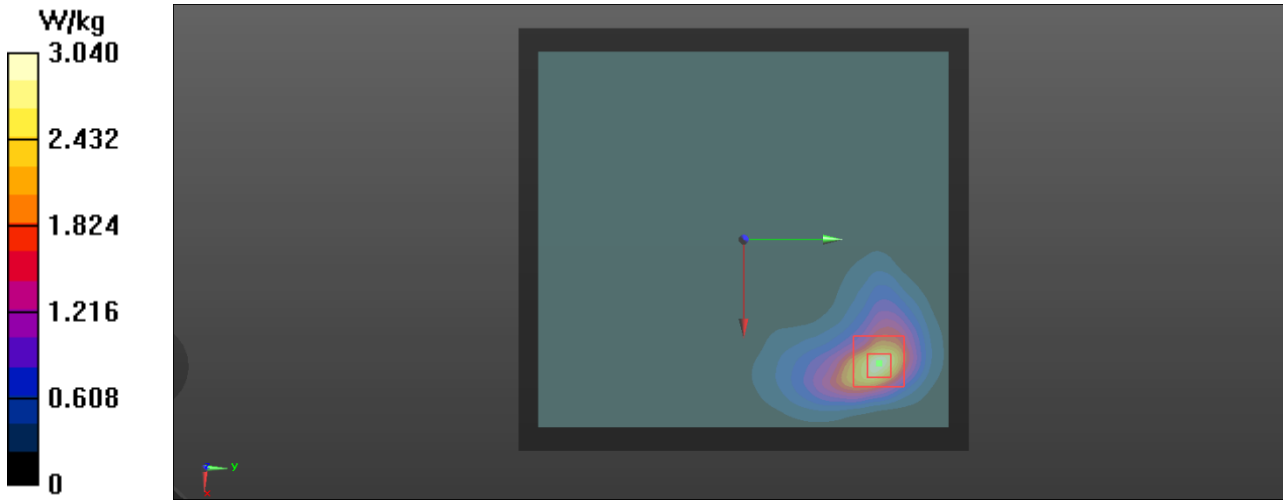
DUT: Framery Control Unit

Communication System: UID 0, LTE TDD (0); Communication System Band: LTE 41; Frequency: 2506 MHz;Communication System PAR: 2.017 dB; PMF: 1
Medium parameters used (interpolated): f = 2506 MHz; σ = 1.871 S/m; ε_r = 37.672; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(7.33, 7.33, 7.33) @ 2506 MHz; Calibrated: 28.4.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = -4.0, 31.0
- Electronics: DAE4 Sn1332; Calibrated: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/Extremity, LTE 41, low, BW20, QPSK, RB1, Offset50/Area Scan (151x161x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 3.04 W/kg
Configuration/Extremity, LTE 41, low, BW20, QPSK, RB1, Offset50/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 40.63 V/m; Power Drift = -0.26 dB
Peak SAR (extrapolated) = 3.52 W/kg
SAR(1 g) = 1.61 W/kg; SAR(10 g) = 0.776 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 9.2 mm
Ratio of SAR at M2 to SAR at M1 = 46.5%
Maximum value of SAR (measured) = 2.72 W/kg



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Plot 23

Date/Time: 9.12.2020 14:39:51

Test Laboratory: Verkotan Oy

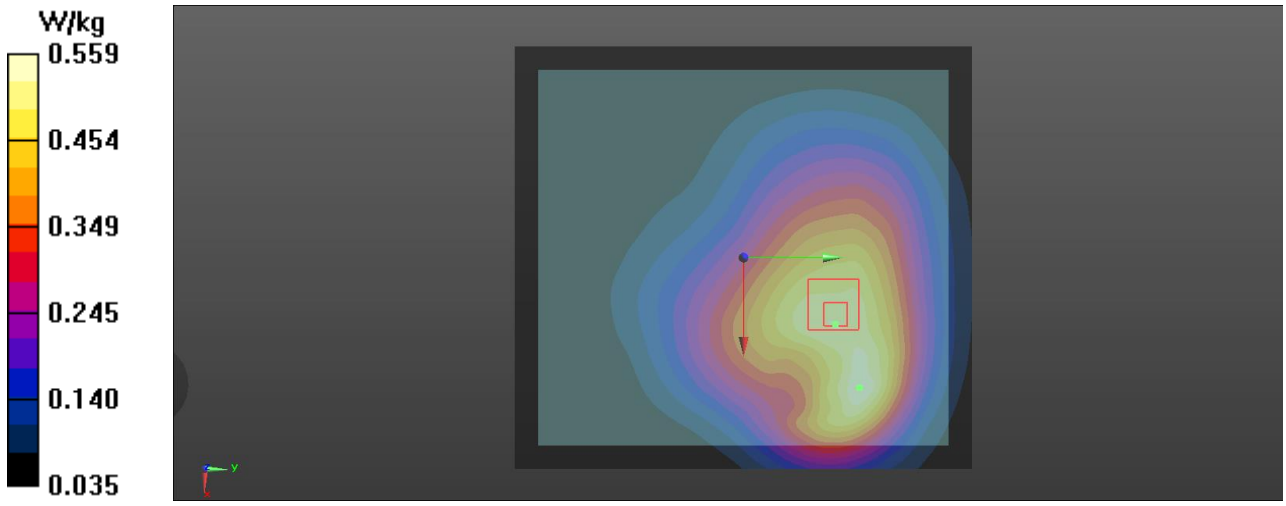
DUT: Framery Control Unit

Communication System: UID 0, GPRS850 3 Slot (0); Communication System Band: GPRS 850; Frequency: 848.8 MHz;Communication System PAR: 4.265 dB
Medium parameters used: f = 849 MHz; σ = 0.967 S/m; ε_r = 38.196; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(9.95, 9.95, 9.95) @ 848.8 MHz; Calibrated: 28.4.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 31.0, -4.0
- Electronics: DAE4 Sn1332; Calibrated: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Body 10mm/Body 10mm, GPRS 850, 3 slots, high/Zoom Scan (10x7x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 16.34 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.644 W/kg
SAR(1 g) = 0.389 W/kg; SAR(10 g) = 0.289 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 20.2 mm
Ratio of SAR at M2 to SAR at M1 = 62.3%
Maximum value of SAR (measured) = 0.559 W/kg
Body 10mm/Body 10mm, GPRS 850, 3 slots, high/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.549 W/kg



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Plot 24

Date/Time: 11.12.2020 10:52:45

Test Laboratory: Verkotan Oy

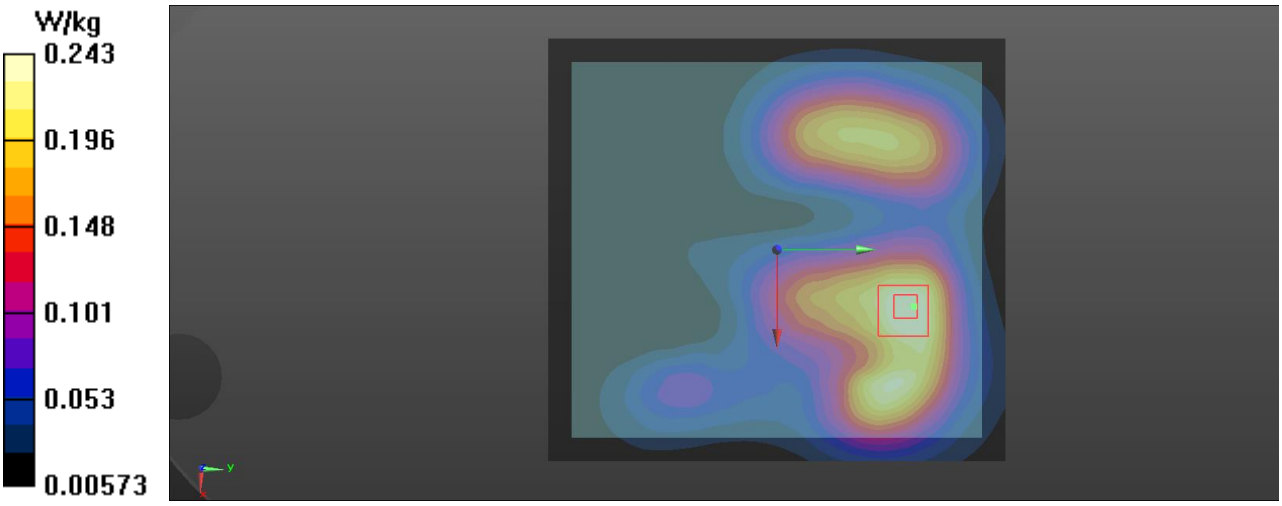
DUT: Framery Control Unit

Communication System: UID 0, GPRS 2 slots (0); Communication System Band: GPRS 1900; Frequency: 1850.2 MHz;Communication System PAR: 6.335 dB
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.428 S/m; ε_r = 37.479; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.26, 8.26, 8.26) @ 1850.2 MHz; Calibrated: 28.4.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/Body 10mm, GPRS 1900, mid 2/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 6.072 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.286 W/kg
SAR(1 g) = 0.172 W/kg; SAR(10 g) = 0.109 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 18.8 mm
Ratio of SAR at M2 to SAR at M1 = 60.7%
Maximum value of SAR (measured) = 0.243 W/kg
Configuration/Body 10mm, GPRS 1900, mid 2/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.240 W/kg



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Plot 25

Date/Time: 15.12.2020 8:35:23

Test Laboratory: Verkotan Oy

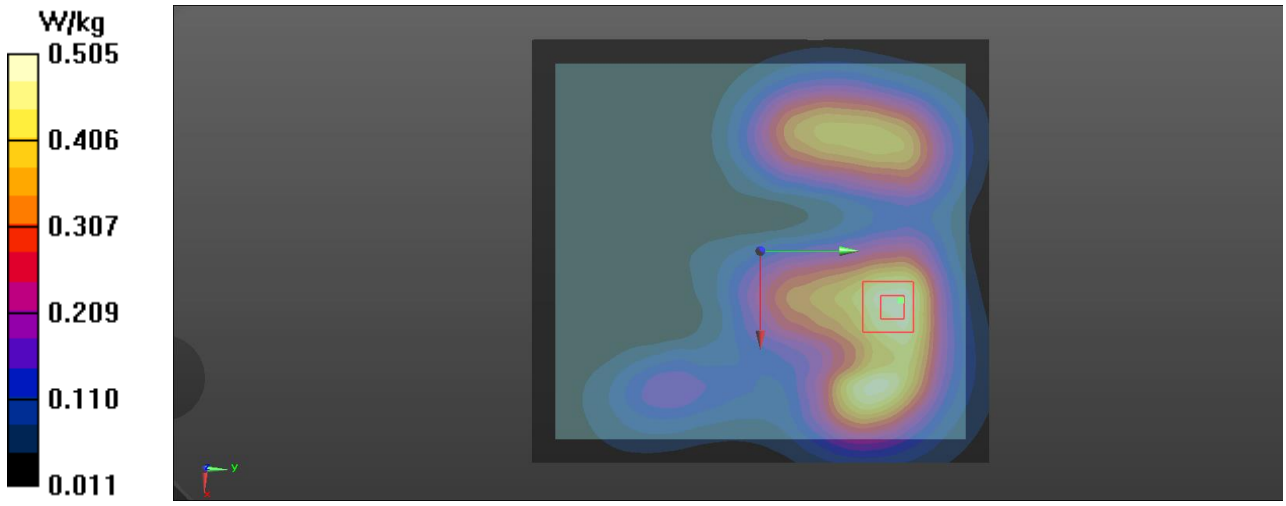
DUT: Framery Control Unit

Communication System: UID 0, WCDMA (0); Communication System Band: Band 2; Frequency: 1852.5 MHz;Communication System PAR: 0 dB; PMF: 1.12202e-005
Medium parameters used: f = 1853 MHz; σ = 1.423 S/m; ε_r = 37.425; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.26, 8.26, 8.26) @ 1852.5 MHz; Calibrated: 28.4.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration 2/Body 10mm, WCDMA 2, low/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 8.933 V/m; Power Drift = -0.27 dB
Peak SAR (extrapolated) = 0.597 W/kg
SAR(1 g) = 0.357 W/kg; SAR(10 g) = 0.226 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 16.8 mm
Ratio of SAR at M2 to SAR at M1 = 60.4%
Maximum value of SAR (measured) = 0.505 W/kg
Configuration 2/Body 10mm, WCDMA 2, low/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.514 W/kg



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Plot 26

Date/Time: 11.12.2020 12:16:51

Test Laboratory: Verkotan Oy

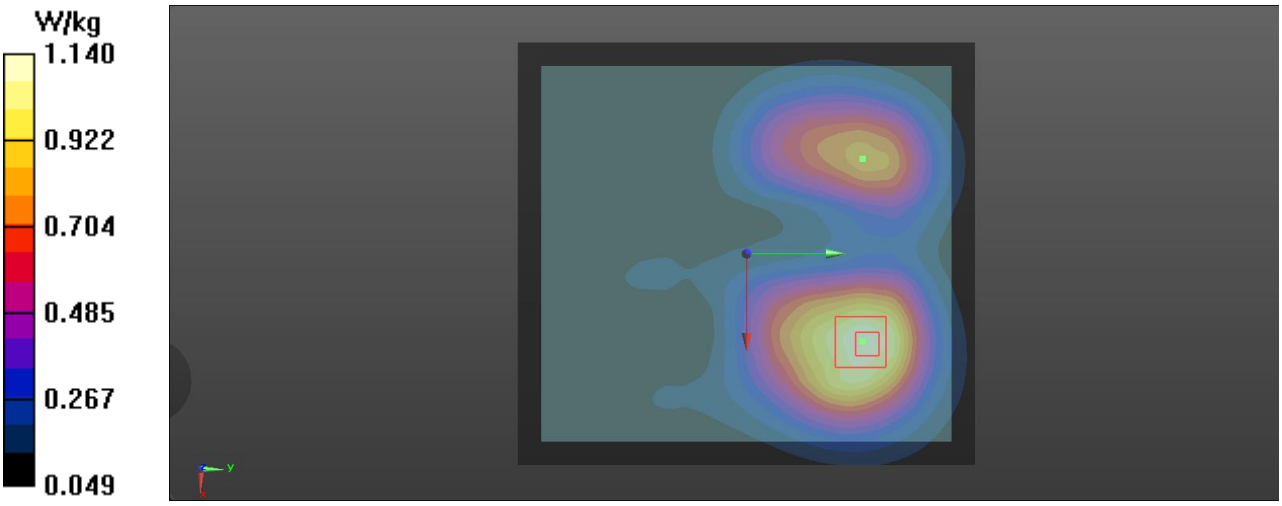
DUT: Framery Control Unit

Communication System: UID 0, WCDMA (0); Communication System Band: Band 4; Frequency: 1712.4 MHz;Communication System PAR: 0 dB; PMF: 1.12202e-005
Medium parameters used (interpolated): f = 1712.4 MHz; σ = 1.349 S/m; ε_r = 37.658; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.52, 8.52, 8.52) @ 1712.4 MHz; Calibrated: 28.4.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/Body 10mm, WCDMA 4, low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 8.866 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 1.33 W/kg
SAR(1 g) = 0.834 W/kg; SAR(10 g) = 0.548 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 = 61.1%
Maximum value of SAR (measured) = 1.14 W/kg
Configuration/Body 10mm, WCDMA 4, low/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.16 W/kg



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Plot 27

Date/Time: 10.12.2020 9:10:07

Test Laboratory: Verkotan Oy

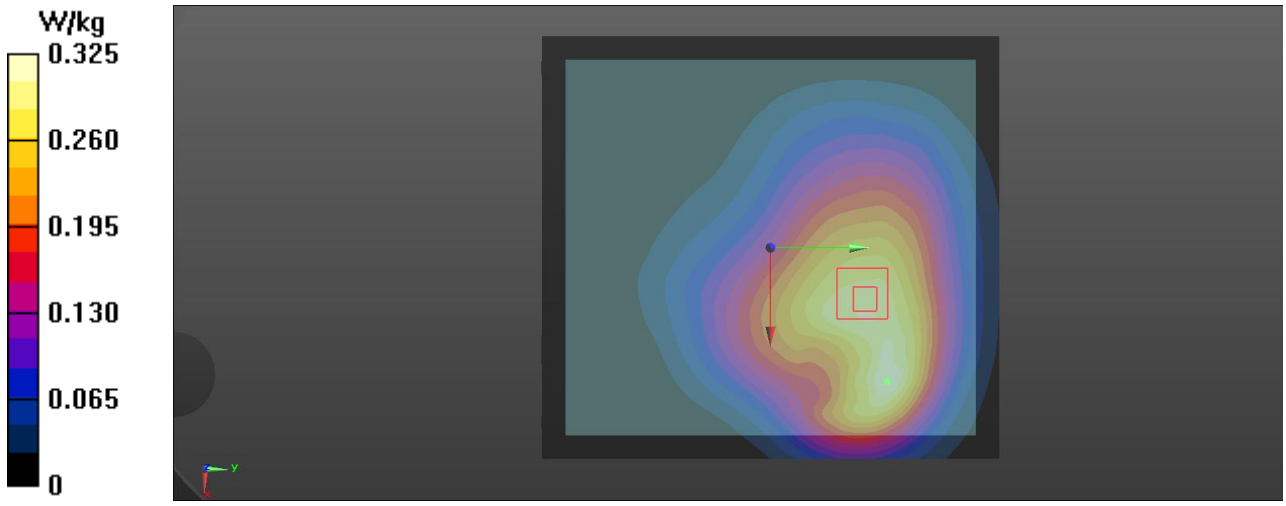
DUT: Framery Control Unit

Communication System: UID 0, WCDMA (0); Communication System Band: Band 5; Frequency: 846.6 MHz;Communication System PAR: 0 dB; PMF: 1.12202e-005
Medium parameters used: f = 847 MHz; σ = 0.966 S/m; ε_r = 38.194; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(9.95, 9.95, 9.95) @ 846.6 MHz; Calibrated: 28.4.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Body 10mm/Body 10mm, WCDMA 5, high/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.325 W/kg
Body 10mm/Body 10mm, WCDMA 5, high/Zoom Scan (10x7x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 18.29 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.374 W/kg
SAR(1 g) = 0.223 W/kg; SAR(10 g) = 0.165 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 19.1 mm
Ratio of SAR at M2 to SAR at M1 = 61.8%
Maximum value of SAR (measured) = 0.322 W/kg



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Plot 28

Date/Time: 11.12.2020 13:05:20

Test Laboratory: Verkotan Oy

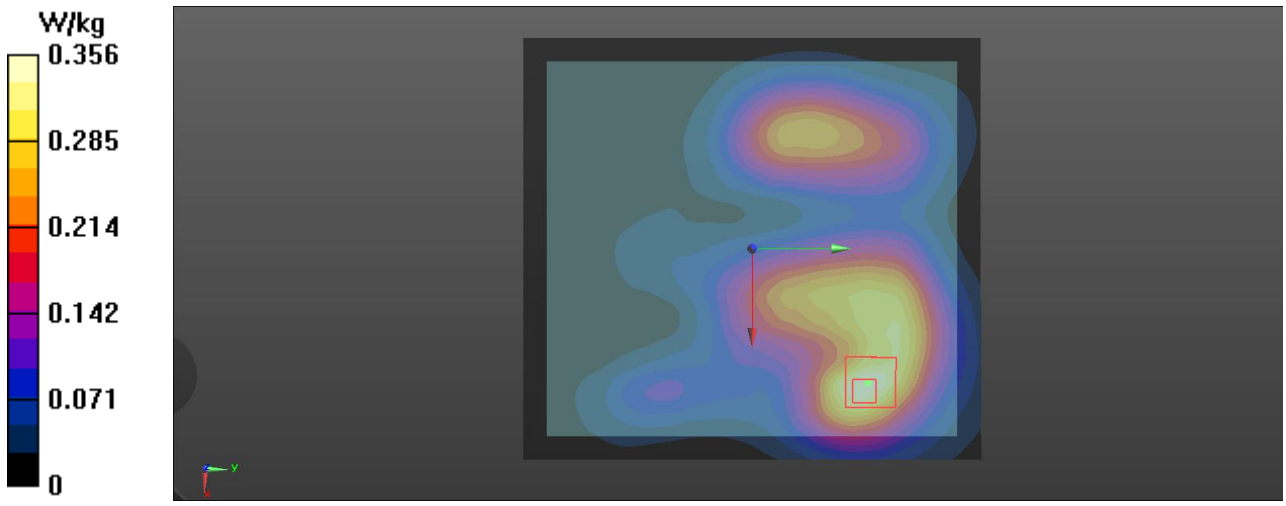
DUT: Framery Control Unit

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 2, E-UTRA/FDD (1850.0 - 1910.0 MHz); Frequency: 1880 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 1880 MHz; σ = 1.443 S/m; ε_r = 37.422; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.26, 8.26, 8.26) @ 1880 MHz; Calibrated: 28.4.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/Body 10mm, LTE 2, mid, BW20, QPSK, RB50, Offset25/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.356 W/kg
Configuration/Body 10mm, LTE 2, mid, BW20, QPSK, RB50, Offset25/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 7.803 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 0.432 W/kg
SAR(1 g) = 0.236 W/kg; SAR(10 g) = 0.141 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 18.3 mm
Ratio of SAR at M2 to SAR at M1 = 55.6%
Maximum value of SAR (measured) = 0.352 W/kg



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Plot 29

Date/Time: 11.12.2020 17:22:21

Test Laboratory: Verkotan Oy

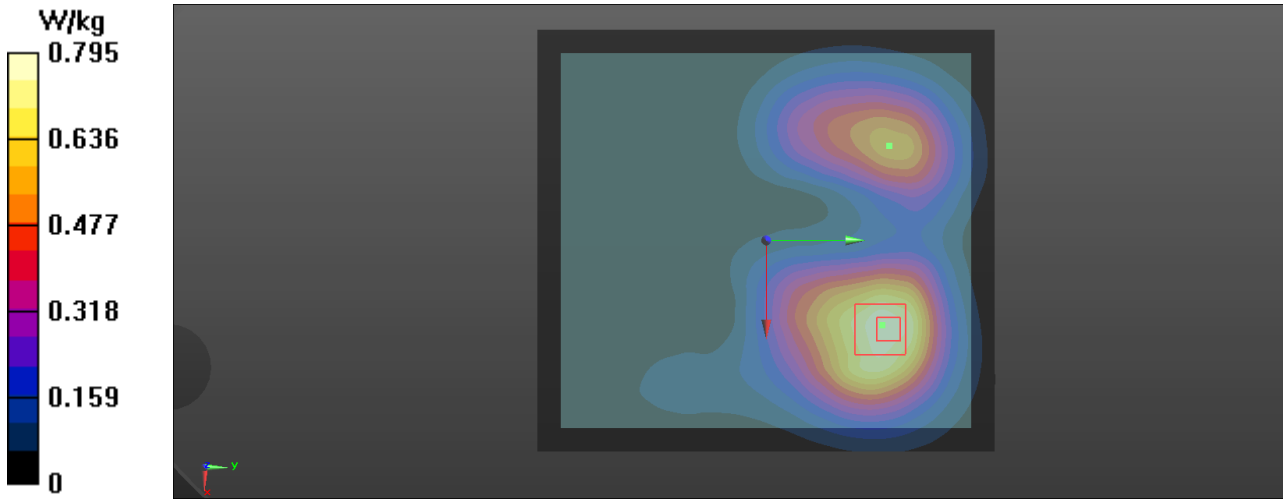
DUT: Framery Control Unit

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 4, E-UTRA/FDD (1710.0 - 1755.0 MHz); Frequency: 1720 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 1720 MHz; σ = 1.353 S/m; ε_r = 37.658; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.52, 8.52, 8.52) @ 1720 MHz; Calibrated: 28.4.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/Body 10mm, LTE 4, low, BW20, QPSK, RB100, Offset1/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.795 W/kg
Configuration/Body 10mm, LTE 4, low, BW20, QPSK, RB100, Offset1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 7.834 V/m; Power Drift = -0.69 dB
Peak SAR (extrapolated) = 0.906 W/kg
SAR(1 g) = 0.564 W/kg; SAR(10 g) = 0.369 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 = 62.3%
Maximum value of SAR (measured) = 0.771 W/kg



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Plot 30

Date/Time: 10.12.2020 9:55:36

Test Laboratory: Verkotan Oy

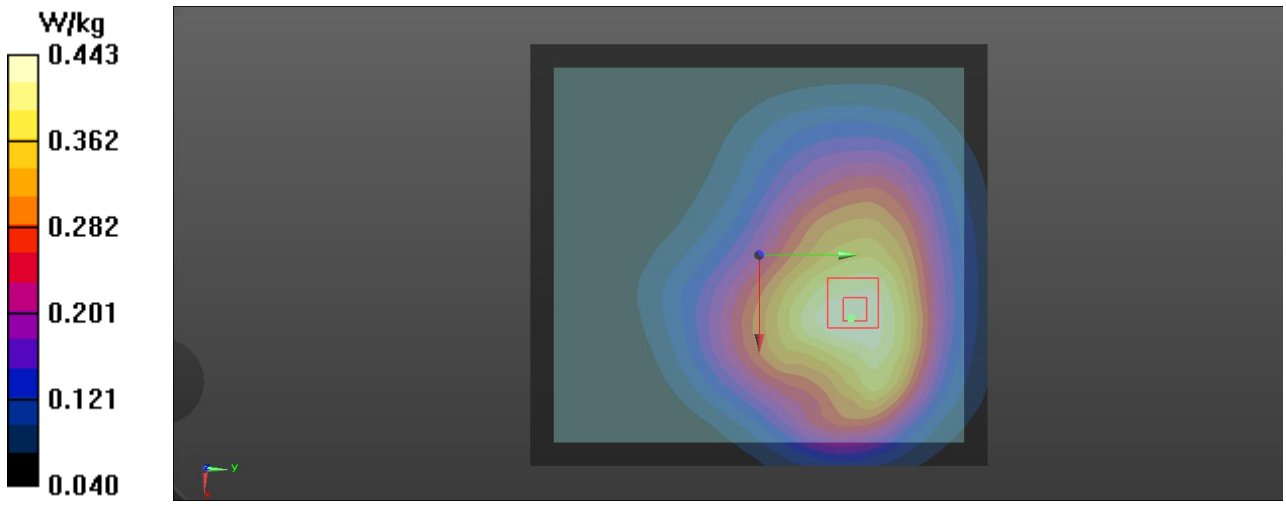
DUT: Framery Control Unit

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 5, E-UTRA/FDD (824.0 - 849.0 MHz); Frequency: 829 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 829 MHz; σ = 0.961 S/m; ε_r = 38.243; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(9.95, 9.95, 9.95) @ 829 MHz; Calibrated: 28.4.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Body 10mm/Body 10mm, LTE 5, low, BW10, QPSK, RB1, Offset24/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 21.92 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.492 W/kg
SAR(1 g) = 0.330 W/kg; SAR(10 g) = 0.244 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 = 70.8%
Maximum value of SAR (measured) = 0.443 W/kg
Body 10mm/Body 10mm, LTE 5, low, BW10, QPSK, RB1, Offset24/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.456 W/kg



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Plot 31

Date/Time: 17.12.2020 10:12:02

Test Laboratory: Verkotan Oy

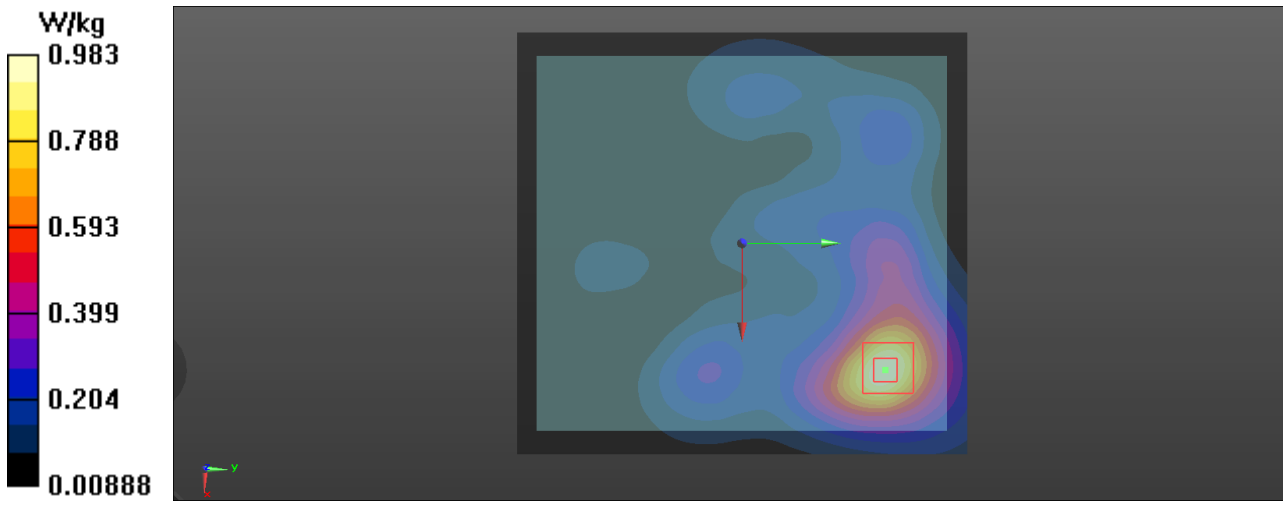
DUT: Framery Control Unit

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 7, E-UTRA/FDD (2500.0 - 2570.0 MHz); Frequency: 2510 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 2510 MHz; σ = 1.875 S/m; ε_r = 37.665; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(7.33, 7.33, 7.33) @ 2510 MHz; Calibrated: 28.4.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration 2/Body 10mm, LTE 7, low, BW20, QPSK, RB100, Offset0/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.41 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.21 W/kg
SAR(1 g) = 0.625 W/kg; SAR(10 g) = 0.340 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 17.7 mm
Ratio of SAR at M2 to SAR at M1 = 50.6%
Maximum value of SAR (measured) = 0.983 W/kg
Configuration 2/Body 10mm, LTE 7, low, BW20, QPSK, RB100, Offset0/Area Scan (151x161x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.946 W/kg



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Plot 32

Date/Time: 10.12.2020 14:56:06

Test Laboratory: Verkotan Oy

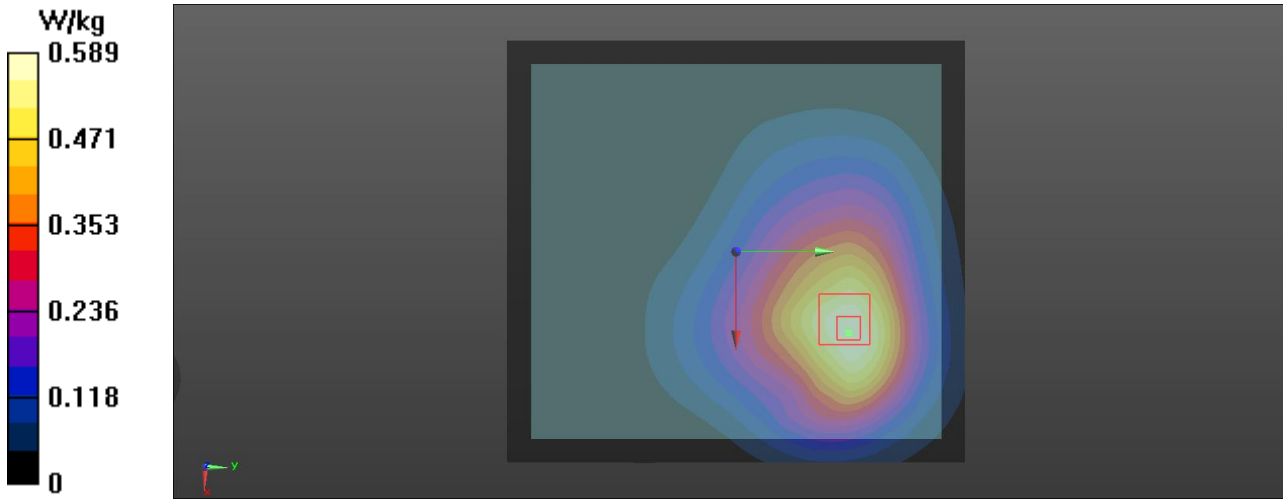
DUT: Framery Control Unit

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 12, E-UTRA/FDD (698.0 - 716.0 MHz); Frequency: 704 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 704 MHz; σ = 0.918 S/m; ε_r = 38.652; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(10.21, 10.21, 10.21) @ 704 MHz; Calibrated: 28.4.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Body 10mm/Body 10mm, LTE 12, low, BW10, QPSK, RB50, Offset0/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.589 W/kg
Body 10mm/Body 10mm, LTE 12, low, BW10, QPSK, RB50, Offset0/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 25.74 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.644 W/kg
SAR(1 g) = 0.430 W/kg; SAR(10 g) = 0.308 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 = 69.4%
Maximum value of SAR (measured) = 0.572 W/kg



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Plot 33

Date/Time: 10.12.2020 13:10:00

Test Laboratory: Verkotan Oy

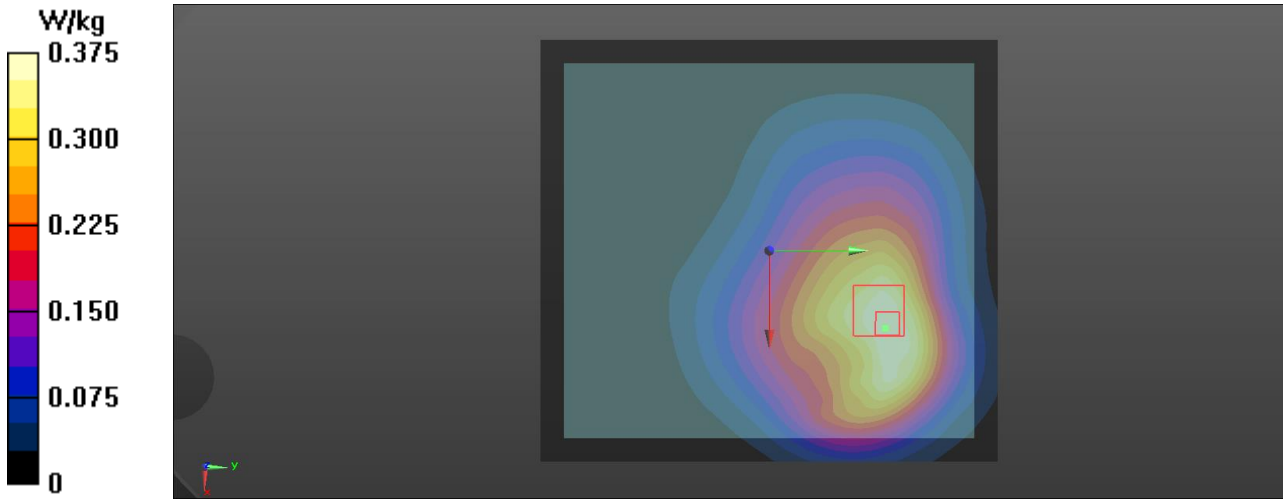
DUT: Framery Control Unit

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 13, E-UTRA/FDD (777.0 - 787.0 MHz); Frequency: 782 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 782 MHz; σ = 0.944 S/m; ε_r = 38.413; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(10.21, 10.21, 10.21) @ 782 MHz; Calibrated: 28.4.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Body 10mm/Body 10mm, LTE 13, mid, BW10, QPSK, RB1, Offset0/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.375 W/kg
Body 10mm/Body 10mm, LTE 13, mid, BW10, QPSK, RB1, Offset0/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 20.86 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 0.416 W/kg
SAR(1 g) = 0.276 W/kg; SAR(10 g) = 0.199 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 = 70.2%
Maximum value of SAR (measured) = 0.374 W/kg



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Plot 34

Date/Time: 14.12.2020 15:05:40

Test Laboratory: Verkotan Oy

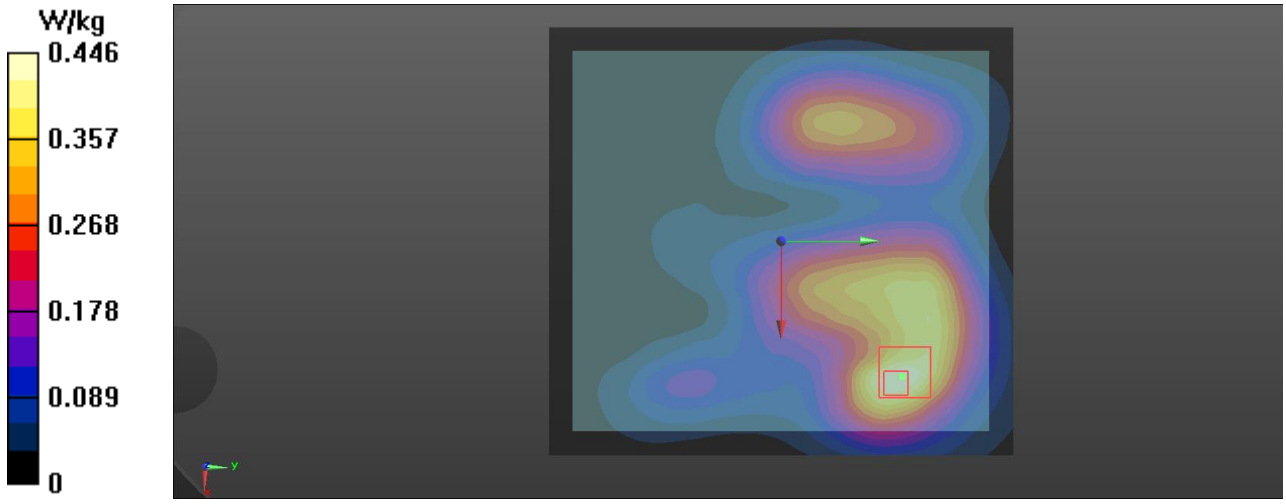
DUT: Framery Control Unit

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 25, E-UTRA/FDD (1850.0 - 1915.0 MHz); Frequency: 1882.5 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.44 S/m; ε_r = 37.375; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(8.26, 8.26, 8.26) @ 1882.5 MHz; Calibrated: 28.4.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration 2/Body 10mm, LTE 25, mid, BW20, QPSK, RB50, Offset25/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.446 W/kg
Configuration 2/Body 10mm, LTE 25, mid, BW20, QPSK, RB50, Offset25/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 8.795 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 0.542 W/kg
SAR(1 g) = 0.299 W/kg; SAR(10 g) = 0.179 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 19.2 mm
Ratio of SAR at M2 to SAR at M1 = 55.9%
Maximum value of SAR (measured) = 0.447 W/kg



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Plot 35

Date/Time: 10.12.2020 17:25:31

Test Laboratory: Verkotan Oy

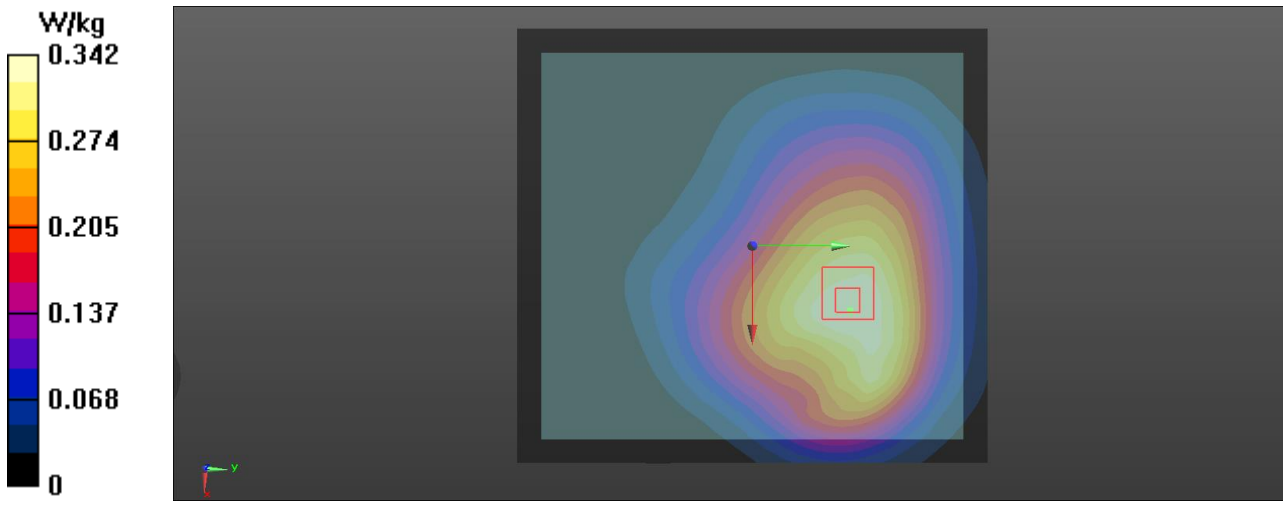
DUT: Framery Control Unit

Communication System: UID 0, Generic LTE (0); Communication System Band: Band 26; Frequency: 831.5 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 831.5 MHz; σ = 0.961 S/m; ε_r = 38.244; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(9.95, 9.95, 9.95) @ 831.5 MHz; Calibrated: 28.4.2020
- 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: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Body 10mm/Body 10mm, LTE 26, mid, BW15, QPSK, RB36, Offset19/Area Scan (121x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.342 W/kg
Body 10mm/Body 10mm, LTE 26, mid, BW15, QPSK, RB36, Offset19/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 19.62 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.383 W/kg
SAR(1 g) = 0.258 W/kg; SAR(10 g) = 0.189 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 = 72.3%
Maximum value of SAR (measured) = 0.345 W/kg



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Plot 36

Date/Time: 16.12.2020 13:28:53

Test Laboratory: Verkotan Oy

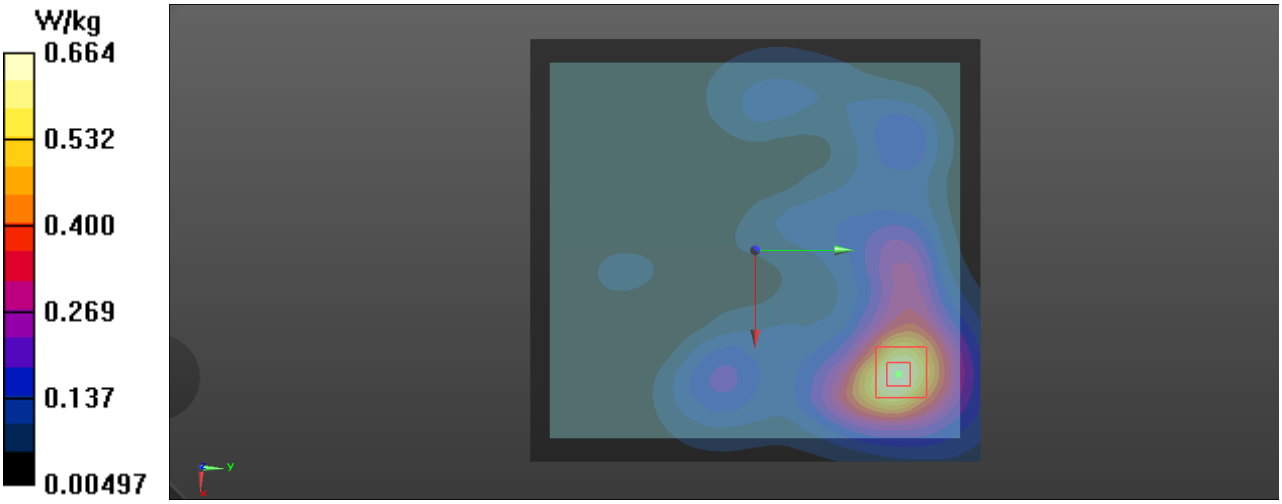
DUT: Framery Control Unit

Communication System: UID 0, LTE TDD (0); Communication System Band: LTE 41; Frequency: 2506 MHz;Communication System PAR: 2.017 dB; PMF: 1
Medium parameters used (interpolated): f = 2506 MHz; σ = 1.871 S/m; ε_r = 37.672; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY Configuration:

- Probe: EX3DV4 - SN3892; ConvF(7.33, 7.33, 7.33) @ 2506 MHz; Calibrated: 28.4.2020
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 31.0, -4.0
- Electronics: DAE4 Sn1332; Calibrated: 12.10.2020
- Phantom: SAR1_Phantom1_ELI; Type: QD OVA 002 AA; Serial: 29-March-2017
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration 2/Body 10mm, LTE 41, low, BW20, QPSK, RB1, Offset50/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.770 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.815 W/kg
SAR(1 g) = 0.432 W/kg; SAR(10 g) = 0.237 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 18.4 mm
Ratio of SAR at M2 to SAR at M1 = 52.2%
Maximum value of SAR (measured) = 0.664 W/kg
Configuration 2/Body 10mm, LTE 41, low, BW20, QPSK, RB1, Offset50/Area Scan (151x161x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.668 W/kg



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APPENDIX D: RELEVANT PAGES FROM PROBE CALIBRATION REPORTS

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
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

Certificate No: EX3-3892_Apr20

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:3892
Calibration procedure(s)	QA CAL-01.v9, QA CAL-12.v9, QA CAL-14.v5, QA CAL-23.v5, QA CAL-25.v7 Calibration procedure for dosimetric E-field probes
Calibration date:	April 28, 2020

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	01-Apr-20 (No. 217-03100/03101)	Apr-21
Power sensor NRP-Z91	SN: 103244	01-Apr-20 (No. 217-03100)	Apr-21
Power sensor NRP-Z91	SN: 103245	01-Apr-20 (No. 217-03101)	Apr-21
Reference 20 dB Attenuator	SN: CC2552 (20x)	31-Mar-20 (No. 217-03106)	Apr-21
DAE4	SN: 660	27-Dec-19 (No. DAE4-660_Dec19)	Dec-20
Reference Probe ES3DV2	SN: 3013	31-Dec-19 (No. ES3-3013_Dec19)	Dec-20
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-18)	In house check: Jun-20
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-19)	In house check: Oct-20

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: April 28, 2020

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Certificate No: EX3-3892_Apr20 Page 1 of 9

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3892

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
600	42.7	0.88	10.46	10.46	10.46	0.10	1.20	± 13.3 %
750	41.9	0.89	10.21	10.21	10.21	0.39	0.96	± 12.0 %
900	41.5	0.97	9.95	9.95	9.95	0.38	0.92	± 12.0 %
1750	40.1	1.37	8.52	8.52	8.52	0.28	0.80	± 12.0 %
1900	40.0	1.40	8.26	8.26	8.26	0.36	0.80	± 12.0 %
2450	39.2	1.80	7.48	7.48	7.48	0.33	0.90	± 12.0 %
2600	39.0	1.96	7.33	7.33	7.33	0.34	0.90	± 12.0 %
4400	36.9	3.84	5.98	5.98	5.98	0.40	1.60	± 13.1 %
4600	36.7	4.04	5.77	5.77	5.77	0.35	1.80	± 13.1 %
4800	36.4	4.25	5.51	5.51	5.51	0.40	1.80	± 13.1 %

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

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

ilac-MRA

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

Certificate No: EX3-7447_Mar20

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:7447
Calibration procedure(s)	QA CAL-01.v9, QA CAL-14.v5, QA CAL-23.v5, QA CAL-25.v7 Calibration procedure for dosimetric E-field probes
Calibration date:	March 25, 2020

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	03-Apr-19 (No. 217-02892/02893)	Apr-20
Power sensor NRP-Z91	SN: 103244	03-Apr-19 (No. 217-02892)	Apr-20
Power sensor NRP-Z91	SN: 103245	03-Apr-19 (No. 217-02893)	Apr-20
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-19 (No. 217-02894)	Apr-20
DAE4	SN: 660	27-Dec-19 (No. DAE4-660_Dec19)	Dec-20
Reference Probe ES3DV2	SN: 3013	31-Dec-19 (No. ES3-3013_Dec19)	Dec-20
Secondary Standards	**ID**	**Check Date (in house)**	**Scheduled Check**
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-18)	In house check: Jun-20
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-19)	In house check: Oct-20

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: March 27, 2020

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:7447

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (µV/(V/m)^2)[A]	0.41	0.42	0.42	± 10.1 %
DCP (mV)[B]	98.5	91.0	100.2	

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B dB√µV	C	D dB	VR mV	Max dev.	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	197.2	± 2.7 %	± 4.7 %
		Y	0.0	0.0	1.0		185.8		
		Z	0.0	0.0	1.0		172.3		

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] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:7447

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	41.9	0.89	10.38	10.38	10.38	0.52	0.88	± 12.0 %
900	41.5	0.97	9.97	9.97	9.97	0.31	1.05	± 12.0 %
1750	40.1	1.37	8.65	8.65	8.65	0.29	0.88	± 12.0 %
1950	40.0	1.40	8.29	8.29	8.29	0.23	0.98	± 12.0 %
2150	39.7	1.53	8.21	8.21	8.21	0.29	0.88	± 12.0 %
2300	39.5	1.67	8.05	8.05	8.05	0.30	1.00	± 12.0 %
2450	39.2	1.80	7.83	7.83	7.83	0.29	1.00	± 12.0 %
2600	39.0	1.96	7.64	7.64	7.64	0.19	1.20	± 12.0 %
3300	38.2	2.71	7.00	7.00	7.00	0.30	1.30	± 13.1 %
5250	35.9	4.71	5.18	5.18	5.18	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.56	4.56	4.56	0.40	1.80	± 13.1 %
5750	35.4	5.22	4.70	4.70	4.70	0.40	1.80	± 13.1 %

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

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APPENDIX E: RELEVANT PAGES FROM DIPOLE CALIBRATION REPORTS

mvg

SAR Reference Dipole Calibration Report

Ref : ACR.353.1.18.SATU.A

VERKOTAN LTD.
ELEKTRONIIKKATIE 17
90590, OULU, FINLAND
MVG COMOSAR REFERENCE DIPOLE
FREQUENCY: 750 MHZ
SERIAL NO.: SN 42/17 DIP 0G750-454

Calibrated at MVG US
2105 Barrett Park Dr. - Kennesaw, GA 30144

ilac-MRA ACCREDITED

Calibration Date: 12/19/18

Summary:

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

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1800	40.0 ±5 %		1.40 ±5 %	
1900	40.0 ±5 %		1.40 ±5 %	
1950	40.0 ±5 %		1.40 ±5 %	
2000	40.0 ±5 %		1.40 ±5 %	
2100	39.8 ±5 %		1.49 ±5 %	
2300	39.5 ±5 %		1.67 ±5 %	
2450	39.2 ±5 %		1.80 ±5 %	
2600	39.0 ±5 %		1.96 ±5 %	
3000	38.5 ±5 %		2.40 ±5 %	
3500	37.9 ±5 %		2.91 ±5 %	

7.2 SAR MEASUREMENT RESULT WITH HEAD LIQUID

The IEEE Std. 1528 and CEI/IEC 62209 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 V4
Phantom	SN 20/09 SAM71
Probe	SN 18/11 EPG122
Liquid	Head Liquid Values: eps' : 40.0 sigma : 0.93
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	21 °C
Lab Temperature	21 °C
Lab Humidity	45 %

Frequency MHz	1 g SAR (W/kg/W)		10 g SAR (W/kg/W)	
	required	measured	required	measured
300	2.85		1.94	
450	4.58		3.06	
750	8.49	8.52 (0.85)	5.55	5.62 (0.56)
835	9.56		6.22	
900	10.9		6.99	
1450	29		16	
1500	30.5		16.8	
1640	34.2		18.4	
1750	36.4		19.3	
1800	38.4		20.1	

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SAR Reference Dipole Calibration Report

Ref : ACR.84.3.20.MVGB.A

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

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

Calibration date: 03/23/2020

ilac-MRA cofrac ETALONNAGE

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

Summary:

This document presents the method and results from an accredited SAR reference dipole calibration performed at MVG, using the COMOSAR test bench. The test results covered by accreditation are traceable to the International System of Units (SI).

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2300	39.5 ±10 %		1.67 ±10 %	
2450	39.2 ±10 %		1.80 ±10 %	
2600	39.0 ±10 %		1.96 ±10 %	
3000	38.5 ±10 %		2.40 ±10 %	
3500	37.9 ±10 %		2.91 ±10 %	

7.3 MEASUREMENT RESULT

The IEEE Std. 1528 and CEI/IEC 62209 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.

Frequency MHz	1 g SAR (W/kg/W)		10 g SAR (W/kg/W)	
	required	measured	required	measured
300	2.85		1.94	
450	4.58		3.06	
750	8.49		5.55	
835	9.56	9.38 (0.94)	6.22	5.94 (0.59)
900	10.9		6.99	
1450	29		16	
1500	30.5		16.8	
1640	34.2		18.4	
1750	36.4		19.3	
1800	38.4		20.1	
1900	39.7		20.5	
1950	40.5		20.9	
2000	41.1		21.1	
2100	43.6		21.9	
2300	48.7		23.3	
2450	52.4		24	
2600	55.3		24.6	
3000	63.8		25.7	
3500	67.1		25	

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SAR Reference Dipole Calibration Report

Ref : ACR.84.4.20.MVGB.A

VERKOTAN LTD.
ELEKTRONIIKKATIE 17
90590, OULU, FINLAND
SAR REFERENCE DIPOLE
FREQUENCY: 1800 MHZ
SERIAL NO.: SN 249

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

Calibration date: 03/23/2020

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

Summary:

This document presents the method and results from an accredited SAR reference dipole calibration performed at MVG, using the COMOSAR test bench. The test results covered by accreditation are traceable to the International System of Units (SI).

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3000	41.5 ±1 %.		25.0 ±1 %.		3.6 ±1 %.	
3500	37.0±1 %.		26.4 ±1 %.		3.6 ±1 %.	
3700	34.7±1 %.		26.4 ±1 %.		3.6 ±1 %.	

7 VALIDATION MEASUREMENT

The IEEE Std. 1528, FCC KDBs and CEI/IEC 62209 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.

7.1 MEASUREMENT CONDITION

Software	OPENSAR V5
Phantom	SN 13/09 SAM68
Probe	SN 41/18 EPGO333
Liquid	Head Liquid Values: eps' : 41.7 sigma : 1.46
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 dBm
Liquid Temperature	20 +/- 1 °C
Lab Temperature	20 +/- 1 °C
Lab Humidity	30-80 %

7.2 HEAD LIQUID MEASUREMENT

Frequency MHz	Relative permittivity (ε_r')		Conductivity (σ) S/m	
	required	measured	required	measured
300	45.3 ±10 %		0.87 ±10 %	
450	43.5 ±10 %		0.87 ±10 %	
750	41.9 ±10 %		0.89 ±10 %	
835	41.5 ±10 %		0.90 ±10 %	
900	41.5 ±10 %		0.97 ±10 %	
1450	40.5 ±10 %		1.20 ±10 %	
1500	40.4 ±10 %		1.23 ±10 %	
1640	40.2 ±10 %		1.31 ±10 %	
1750	40.1 ±10 %		1.37 ±10 %	
1800	40.0 ±10 %	41.7	1.40 ±10 %	1.46
1900	40.0 ±10 %		1.40 ±10 %	
1950	40.0 ±10 %		1.40 ±10 %	
2000	40.0 ±10 %		1.40 ±10 %	
2100	39.8 ±10 %		1.49 ±10 %	

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2300	39.5 ±10 %		1.67 ±10 %	
2450	39.2 ±10 %		1.80 ±10 %	
2600	39.0 ±10 %		1.96 ±10 %	
3000	38.5 ±10 %		2.40 ±10 %	
3500	37.9 ±10 %		2.91 ±10 %	

7.3 MEASUREMENT RESULT

The IEEE Std. 1528 and CEI/IEC 62209 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.

Frequency MHz	1 g SAR (W/kg/W)		10 g SAR (W/kg/W)	
	required	measured	required	measured
300	2.85		1.94	
450	4.58		3.06	
750	8.49		5.55	
835	9.56		6.22	
900	10.9		6.99	
1450	29		16	
1500	30.5		16.8	
1640	34.2		18.4	
1750	36.4		19.3	
1800	38.4	39.21 (3.92)	20.1	20.96 (2.10)
1900	39.7		20.5	
1950	40.5		20.9	
2000	41.1		21.1	
2100	43.6		21.9	
2300	48.7		23.3	
2450	52.4		24	
2600	55.3		24.6	
3000	63.8		25.7	
3500	67.1		25	

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SAR Reference Dipole Calibration Report

Ref : ACR.84.5.20.MVGB.A

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

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

Calibration date: 03/23/2020

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

Summary:

This document presents the method and results from an accredited SAR reference dipole calibration performed at MVG, using the COMOSAR test bench. The test results covered by accreditation are traceable to the International System of Units (SI).

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3000	41.5 ±1 %.		25.0 ±1 %.		3.6 ±1 %.	
3500	37.0±1 %.		26.4 ±1 %.		3.6 ±1 %.	
3700	34.7±1 %.		26.4 ±1 %.		3.6 ±1 %.	

7 VALIDATION MEASUREMENT

The IEEE Std. 1528, FCC KDBs and CEI/IEC 62209 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.

7.1 MEASUREMENT CONDITION

Software	OPENSAR V5
Phantom	SN 13/09 SAM68
Probe	SN 41/18 EPGO333
Liquid	Head Liquid Values: eps' : 38.5 sigma : 1.45
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	1900 MHz
Input power	20 dBm
Liquid Temperature	20 +/- 1 °C
Lab Temperature	20 +/- 1 °C
Lab Humidity	30-80 %

7.2 HEAD LIQUID MEASUREMENT

Frequency MHz	Relative permittivity (ε_r')		Conductivity (σ) S/m	
	required	measured	required	measured
300	45.3 ±10 %		0.87 ±10 %	
450	43.5 ±10 %		0.87 ±10 %	
750	41.9 ±10 %		0.89 ±10 %	
835	41.5 ±10 %		0.90 ±10 %	
900	41.5 ±10 %		0.97 ±10 %	
1450	40.5 ±10 %		1.20 ±10 %	
1500	40.4 ±10 %		1.23 ±10 %	
1640	40.2 ±10 %		1.31 ±10 %	
1750	40.1 ±10 %		1.37 ±10 %	
1800	40.0 ±10 %		1.40 ±10 %	
1900	40.0 ±10 %	38.5	1.40 ±10 %	1.45
1950	40.0 ±10 %		1.40 ±10 %	
2000	40.0 ±10 %		1.40 ±10 %	
2100	39.8 ±10 %		1.49 ±10 %	

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2300	39.5 ±10 %		1.67 ±10 %	
2450	39.2 ±10 %		1.80 ±10 %	
2600	39.0 ±10 %		1.96 ±10 %	
3000	38.5 ±10 %		2.40 ±10 %	
3500	37.9 ±10 %		2.91 ±10 %	

7.3 MEASUREMENT RESULT

The IEEE Std. 1528 and CEI/IEC 62209 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.

Frequency MHz	1 g SAR (W/kg/W)		10 g SAR (W/kg/W)	
	required	measured	required	measured
300	2.85		1.94	
450	4.58		3.06	
750	8.49		5.55	
835	9.56		6.22	
900	10.9		6.99	
1450	29		16	
1500	30.5		16.8	
1640	34.2		18.4	
1750	36.4		19.3	
1800	38.4		20.1	
1900	39.7	37.10 (3.71)	20.5	19.14 (1.91)
1950	40.5		20.9	
2000	41.1		21.1	
2100	43.6		21.9	
2300	48.7		23.3	
2450	52.4		24	
2600	55.3		24.6	
3000	63.8		25.7	
3500	67.1		25	

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SAR Reference Dipole Calibration Report

Ref : ACR.353.3.18.SATU.A

VERKOTAN LTD.
ELEKTRONIIKKATIE 17
90590, OULU, FINLAND
MVG COMOSAR REFERENCE DIPOLE
FREQUENCY: 2600 MHZ
SERIAL NO.: SN 51/18 DIP 2G600-474

Calibrated at MVG US
2105 Barrett Park Dr. - Kennesaw, GA 30144

ilac-MRA
ACCREDITED
Calibration CERT #2246-01

Calibration Date: 12/19/18

Summary:

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

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1800	40.0 ±5 %		1.40 ±5 %	
1900	40.0 ±5 %		1.40 ±5 %	
1950	40.0 ±5 %		1.40 ±5 %	
2000	40.0 ±5 %		1.40 ±5 %	
2100	39.8 ±5 %		1.49 ±5 %	
2300	39.5 ±5 %		1.67 ±5 %	
2450	39.2 ±5 %		1.80 ±5 %	
2600	39.0 ±5 %	PASS	1.96 ±5 %	PASS
3000	38.5 ±5 %		2.40 ±5 %	
3500	37.9 ±5 %		2.91 ±5 %	

7.2 SAR MEASUREMENT RESULT WITH HEAD LIQUID

The IEEE Std. 1528 and CEI/IEC 62209 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 V4
Phantom	SN 20/09 SAM71
Probe	SN 18/11 EPG122
Liquid	Head Liquid Values: eps' : 39.8 sigma : 1.99
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	21 °C
Lab Temperature	21 °C
Lab Humidity	45 %

Frequency MHz	1 g SAR (W/kg/W)		10 g SAR (W/kg/W)	
	required	measured	required	measured
300	2.85		1.94	
450	4.58		3.06	
750	8.49		5.55	
835	9.56		6.22	
900	10.9		6.99	
1450	29		16	
1500	30.5		16.8	
1640	34.2		18.4	
1750	36.4		19.3	
1800	38.4		20.1	

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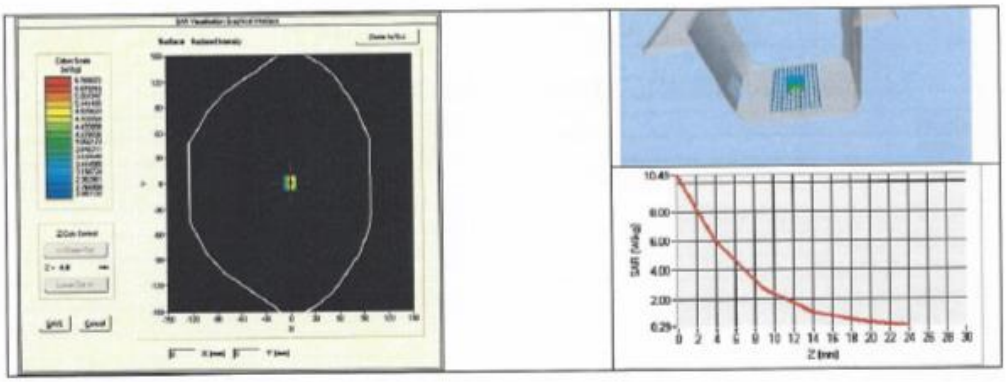
1900	39.7		20.5	
1950	40.5		20.9	
2000	41.1		21.1	
2100	43.6		21.9	
2300	48.7		23.3	
2450	52.4		24	
2600	55.3	55.08 (5.51)	24.6	24.14 (2.41)
3000	63.8		25.7	
3500	67.1		25	
3700	67.4		24.2	



7.3 BODY LIQUID MEASUREMENT

Frequency MHz	Relative permittivity (ε')		Conductivity (σ) S/m	
	required	measured	required	measured
150	61.9 ±5 %		0.80 ±5 %	
300	58.2 ±5 %		0.92 ±5 %	
450	56.7 ±5 %		0.94 ±5 %	
750	55.5 ±5 %		0.96 ±5 %	
835	55.2 ±5 %		0.97 ±5 %	
900	55.0 ±5 %		1.05 ±5 %	
915	55.0 ±5 %		1.06 ±5 %	
1450	54.0 ±5 %		1.30 ±5 %	
1610	53.8 ±5 %		1.40 ±5 %	
1800	53.3 ±5 %		1.52 ±5 %	
1900	53.3 ±5 %		1.52 ±5 %	
2000	53.3 ±5 %		1.52 ±5 %	
2100	53.2 ±5 %		1.62 ±5 %	

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