

Appendix for the Report

Dosimetric Assessment of the Portable Device Cognex MD9500 (Contains FCC ID: TXH-DM9500) (IC: 6315A-DM9500)

According to the FCC and IC Requirements

SAR Distribution Plots

October 17, 2012

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The test results only relate to the items tested. This report shall not be reproduced except in full without the written approval of the testing laboratory.

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2 SAR Distribution Plots, IEEE 802.11 b/g

Test Laboratory: Imst GmbH, DASY Yellow (II); File Name:

[DM9500_ywhm_CH6_b_holster_Is_0mm_ant1.da4](#)

DUT: COGNEX; Type: DM9500; Serial: V2

Program Name: IEEE 802.11 b

Communication System: WLAN 2450; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2437$ MHz; $\sigma = 1.94$ mho/m; $\epsilon_r = 53.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3860; ConvF(7.6, 7.6, 7.6); Calibrated: 19.07.2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn335; Calibrated: 20.02.2012
- Phantom: SAM Glycol 1340; Type: QD 000 P40 CB; Serial: TP-1340
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Worn/Area Scan (8x15x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.022 mW/g

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

Reference Value = 2.92 V/m; Power Drift = 0.131 dB

Peak SAR (extrapolated) = 0.042 W/kg

SAR(1 g) = 0.021 mW/g; SAR(10 g) = 0.00927 mW/g

Maximum value of SAR (measured) = 0.026 mW/g

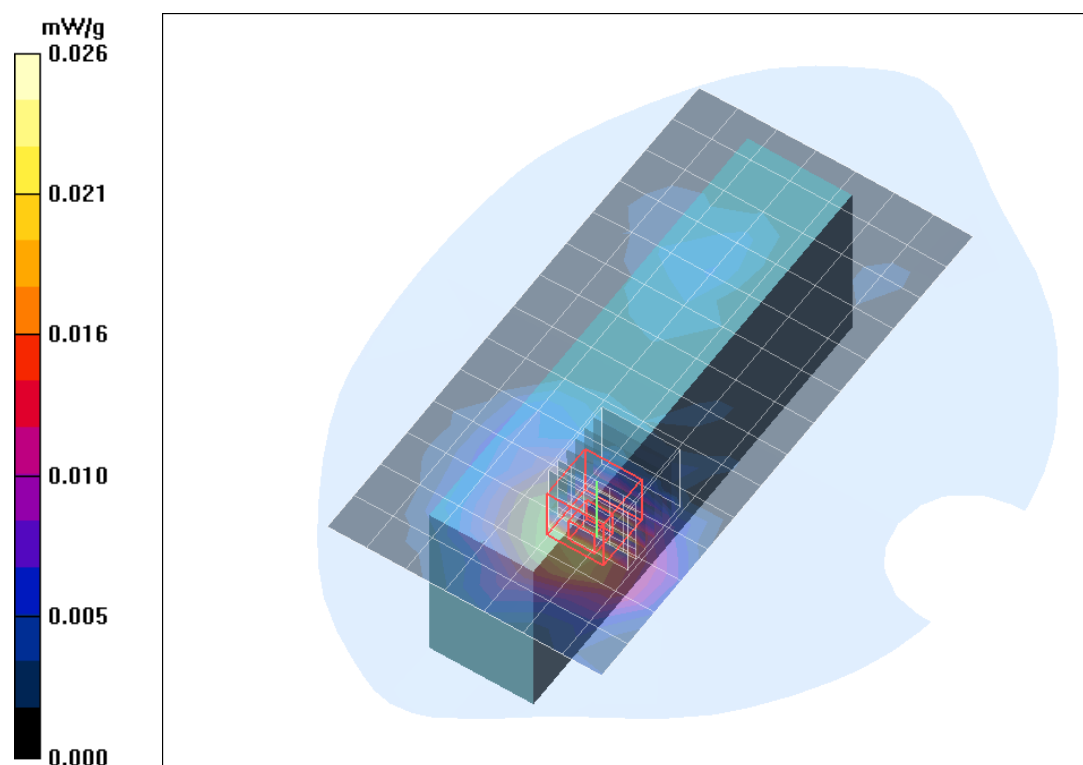


Fig. 1: SAR distribution for IEEE 802.11 b, channel 6, body worn configuration, position 1, antenna 1 (September 21, 2012; Ambient Temperature: 22.2° C; Liquid Temperature: 22.0° C).

Test Laboratory: Imst GmbH, DASY Yellow (II); **File Name:**

[DM9500_ywhm_CH6_b_holster_rs_0mm_ant1.da4](#)

DUT: COGNEX; **Type:** DM9500; **Serial:** V2

Program Name: IEEE 802.11 b

Communication System: WLAN 2450; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2437$ MHz; $\sigma = 1.94$ mho/m; $\epsilon_r = 53.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3860; ConvF(7.6, 7.6, 7.6); Calibrated: 19.07.2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn335; Calibrated: 20.02.2012
- Phantom: SAM Glycol 1340; Type: QD 000 P40 CB; Serial: TP-1340
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Worn/Area Scan (8x16x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.020 mW/g

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

Reference Value = 3.27 V/m; Power Drift = 0.103 dB

Peak SAR (extrapolated) = 0.068 W/kg

SAR(1 g) = 0.018 mW/g; SAR(10 g) = 0.00747 mW/g

Maximum value of SAR (measured) = 0.022 mW/g

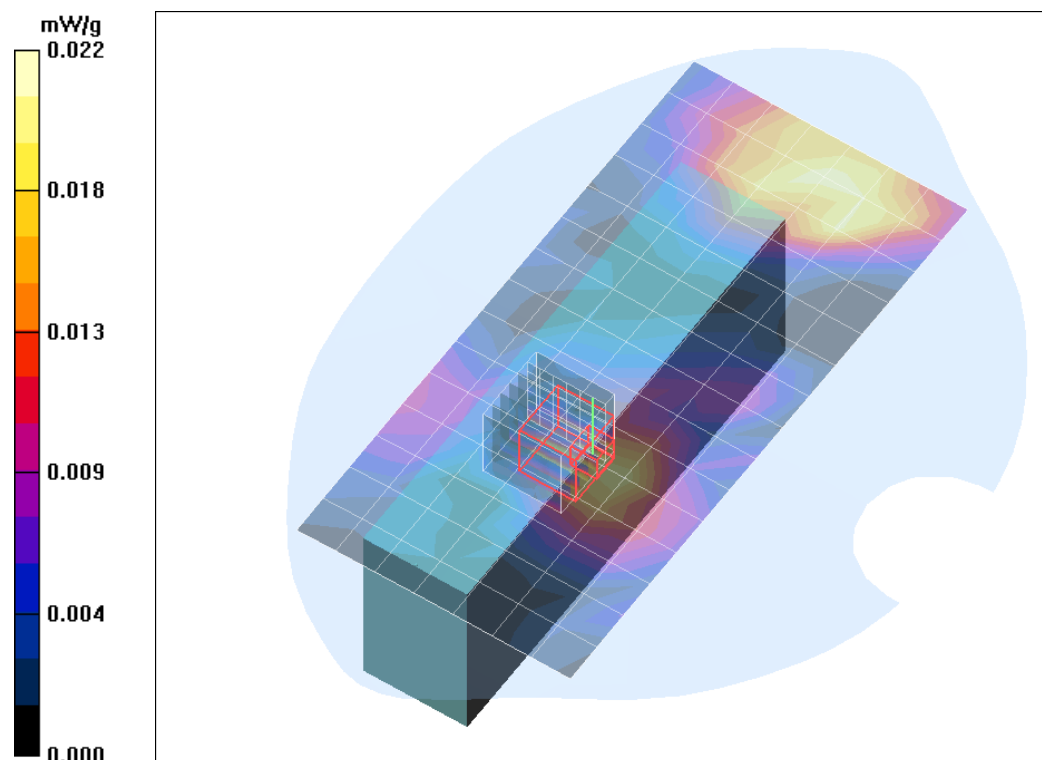


Fig. 2: SAR distribution for IEEE 802.11 b, channel 6, body worn configuration, position 2, antenna 1 (September 21, 2012; Ambient Temperature: 22.2° C; Liquid Temperature: 22.0° C).

Test Laboratory: Imst GmbH, DASY Yellow (II); File Name:

[DM9500_ywhm_CH6_g_holster_Is_0mm_ant1.da4](#)

DUT: COGNEX; Type: DM9500; Serial: V2

Program Name: IEEE 802.11 g

Communication System: WLAN 2450; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2437$ MHz; $\sigma = 1.94$ mho/m; $\epsilon_r = 53.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3860; ConvF(7.6, 7.6, 7.6); Calibrated: 19.07.2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn335; Calibrated: 20.02.2012

- Phantom: SAM Glycol 1340; Type: QD 000 P40 CB; Serial: TP-1340

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Worn/Area Scan (8x15x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.029 mW/g

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

Reference Value = 3.67 V/m; Power Drift = -0.139 dB

Peak SAR (extrapolated) = 0.047 W/kg

SAR(1 g) = 0.024 mW/g; SAR(10 g) = 0.0099 mW/g

Maximum value of SAR (measured) = 0.030 mW/g

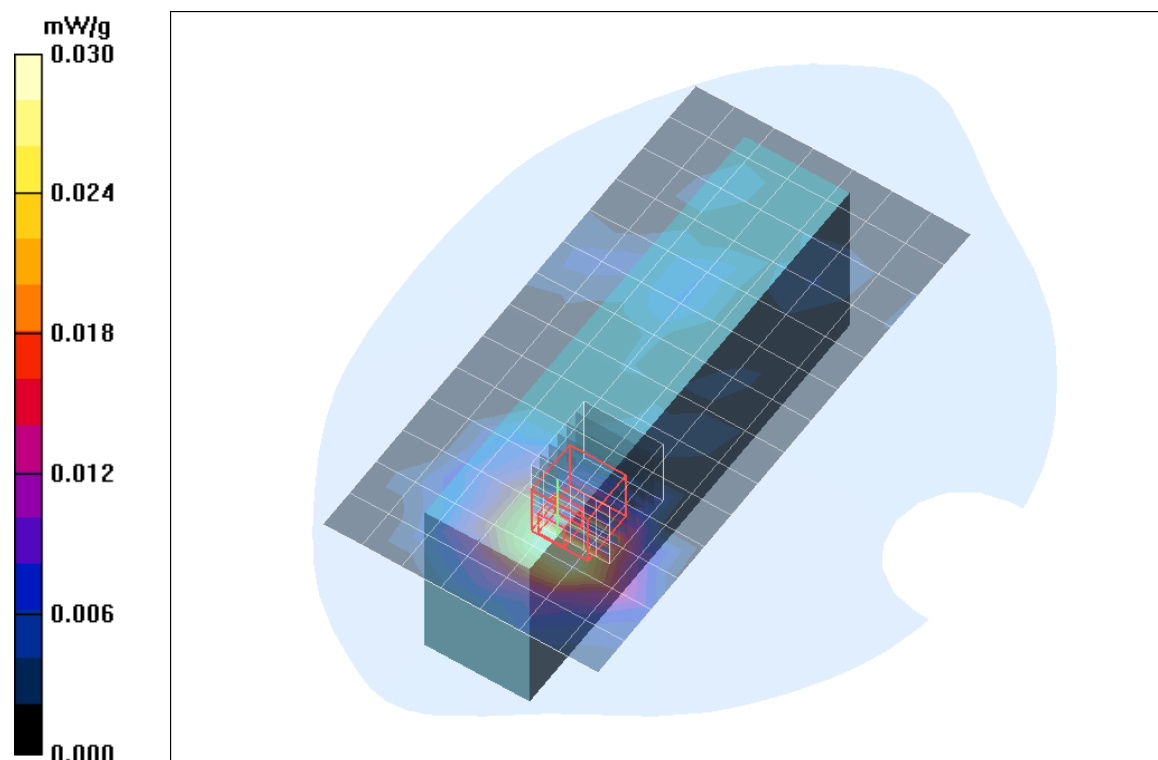


Fig. 3: SAR distribution for IEEE 802.11 g, channel 6, body worn configuration, position 1, antenna 1 (September 21, 2012; Ambient Temperature: 22.2° C; Liquid Temperature: 22.0° C).

Test Laboratory: Imst GmbH, DASY Yellow (II); **File Name:**

[DM9500_ywhm_CH6_g_holster_rs_0mm_ant1.da4](#)

DUT: COGNEX; **Type:** DM9500; **Serial:** V2

Program Name: IEEE 802.11 g

Communication System: WLAN 2450; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2437$ MHz; $\sigma = 1.94$ mho/m; $\epsilon_r = 53.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3860; ConvF(7.6, 7.6, 7.6); Calibrated: 19.07.2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn335; Calibrated: 20.02.2012
- Phantom: SAM Glycol 1340; Type: QD 000 P40 CB; Serial: TP-1340
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Worn/Area Scan (8x16x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.017 mW/g

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

Reference Value = 2.71 V/m; Power Drift = 0.134 dB

Peak SAR (extrapolated) = 0.105 W/kg

SAR(1 g) = 0.022 mW/g; SAR(10 g) = 0.00895 mW/g

Maximum value of SAR (measured) = 0.020 mW/g

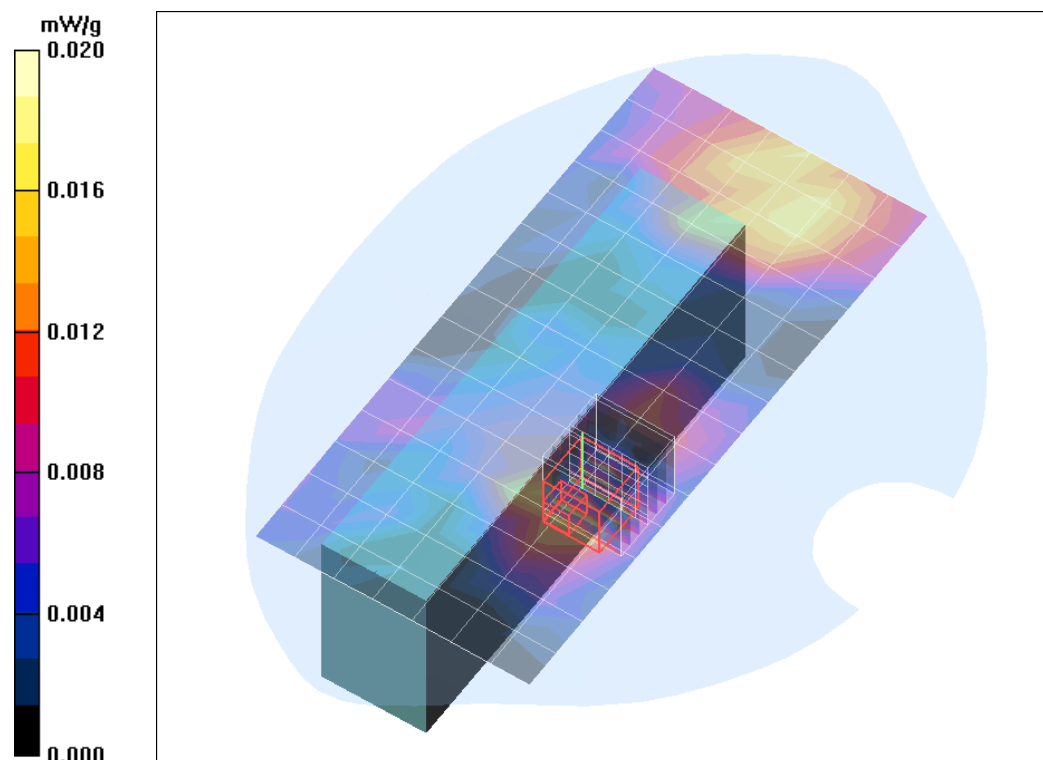


Fig. 4: SAR distribution for IEEE 802.11 g, channel 6, body worn configuration, position 2, antenna 1 (September 21, 2012; Ambient Temperature: 22.2° C; Liquid Temperature: 22.0° C).

Test Laboratory: Imst GmbH, DASY Yellow (II); File Name:

[DM9500_ywhm_CH1_g_holster_Is_0mm_ant1.da4](#)

DUT: COGNEX; Type: DM9500; Serial: V2

Program Name: IEEE 802.11 g

Communication System: WLAN 2450; Frequency: 2412 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2412$ MHz; $\sigma = 1.89$ mho/m; $\epsilon_r = 53.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3860; ConvF(7.6, 7.6, 7.6); Calibrated: 19.07.2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn335; Calibrated: 20.02.2012
- Phantom: SAM Glycol 1340; Type: QD 000 P40 CB; Serial: TP-1340
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Worn/Area Scan (8x15x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.024 mW/g

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

Reference Value = 2.94 V/m; Power Drift = 0.137 dB

Peak SAR (extrapolated) = 0.064 W/kg

SAR(1 g) = 0.017 mW/g; SAR(10 g) = 0.0076 mW/g

Maximum value of SAR (measured) = 0.021 mW/g

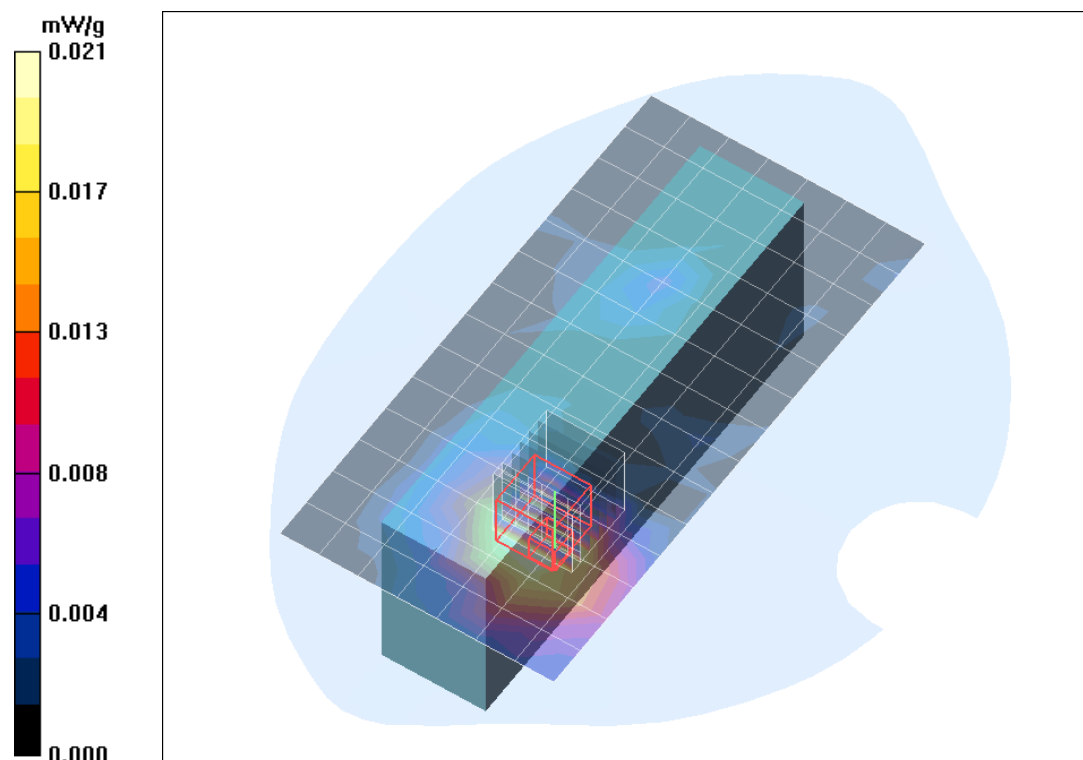


Fig. 5: SAR distribution for IEEE 802.11 g, channel 1, body worn configuration, position 1, antenna 1 (September 21, 2012; Ambient Temperature: 22.2° C; Liquid Temperature: 22.0° C).

Test Laboratory: Imst GmbH, DASY Yellow (II); **File Name:**

[DM9500_ywhm_CH11_g_holster_ls_0mm_ant1.da4](#)

DUT: COGNEX; **Type:** DM9500; **Serial:** V2

Program Name: IEEE 802.11 g

Communication System: WLAN 2450; Frequency: 2462 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2462$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 53.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3860; ConvF(7.6, 7.6, 7.6); Calibrated: 19.07.2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn335; Calibrated: 20.02.2012

- Phantom: SAM Glycol 1340; Type: QD 000 P40 CB; Serial: TP-1340

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Worn/Area Scan (8x15x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (measured) = 0.014 mW/g

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

Reference Value = 2.57 V/m; Power Drift = 0.187 dB

Peak SAR (extrapolated) = 0.070 W/kg

SAR(1 g) = 0.015 mW/g; SAR(10 g) = 0.00624 mW/g

Maximum value of SAR (measured) = 0.015 mW/g

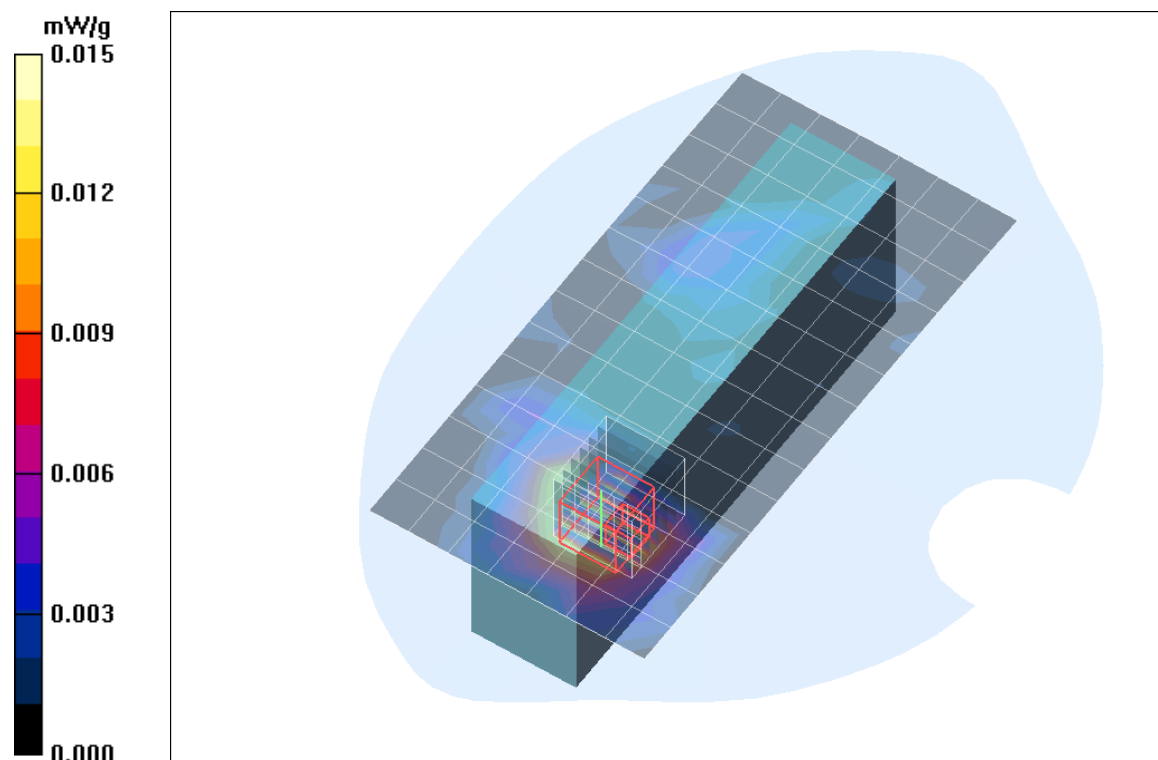


Fig. 6: SAR distribution for IEEE 802.11 g, channel 11, body worn configuration, position 1, antenna 1 (September 21, 2012; Ambient Temperature: 22.2° C; Liquid Temperature: 22.0° C).

3 SAR Distribution Plots, IEEE 802.11 a Body

Test Laboratory: IMST GmbH, DASY Blue (I); File Name:

[DM9500 bwhm CH36 a holster Is 0mm ant1.da4](#)

DUT: COGNEX; Type: DM9500; Serial: V2

Program Name: IEEE 802.11 a

Communication System: 5 GHz ; Frequency: 5180 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5180$ MHz; $\sigma = 5.17$ mho/m; $\epsilon_r = 48$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(4.87, 4.87, 4.87); Calibrated: 24.09.2012
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn631; Calibrated: 20.09.2012
- Phantom: SAM Glycol 1176; Type: Speag; Serial: 1176
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Worn/Area Scan (12x22x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.054 mW/g

Body Worn/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 2.13 V/m; Power Drift = 0.139 dB

Peak SAR (extrapolated) = 0.082 W/kg

SAR(1 g) = 0.021 mW/g; SAR(10 g) = 0.00569 mW/g

Maximum value of SAR (measured) = 0.050 mW/g

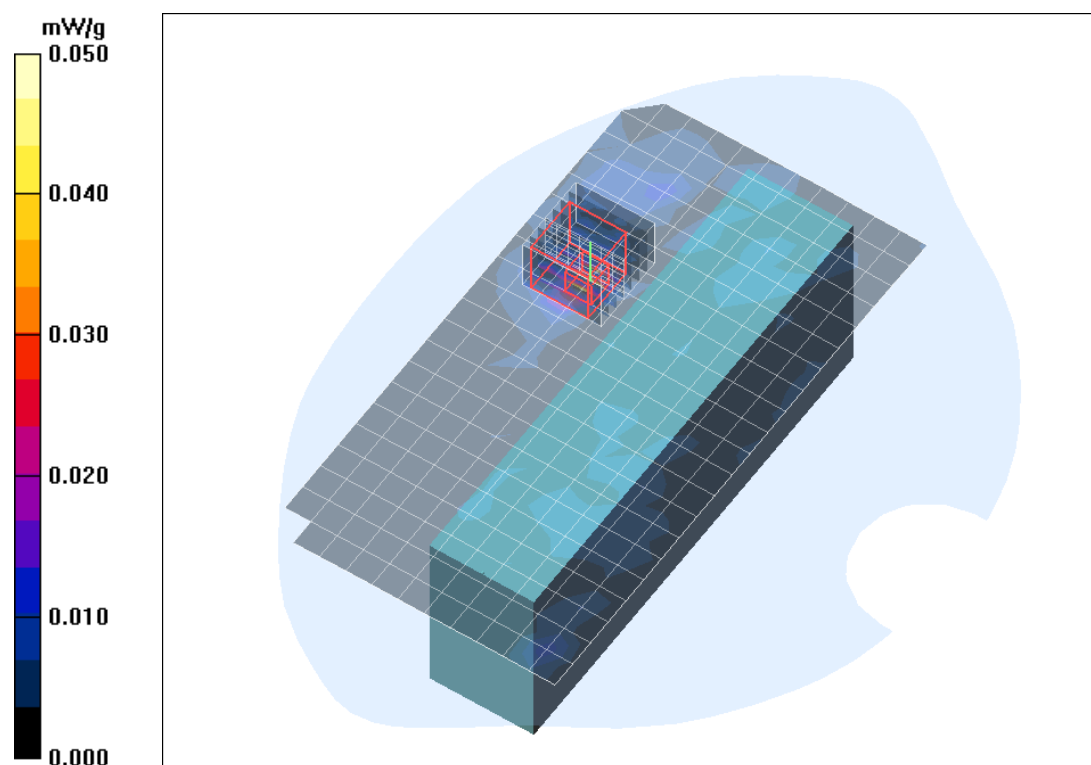


Fig. 7: SAR distribution for IEEE 802.11 a, channel 36, body worn configuration, position 1, antenna 1 (October 17, 2012; Ambient Temperature: 21.9° C; Liquid Temperature: 21.6° C).

Test Laboratory: IMST GmbH, DASY Blue (I); **File Name:**

[DM9500_bwhm_CH36_a_holster_rs_0mm_ant1.da4](#)

DUT: COGNEX; **Type:** DM9500; **Serial:** V2

Program Name: IEEE 802.11 a

Communication System: 5 GHz ; Frequency: 5180 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5180$ MHz; $\sigma = 5.17$ mho/m; $\epsilon_r = 48$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(4.87, 4.87, 4.87); Calibrated: 24.09.2012
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn631; Calibrated: 20.09.2012
- Phantom: SAM Glycol 1176; Type: Speag; Serial: 1176
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Worn/Area Scan (12x22x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.107 mW/g

Body Worn/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 3.58 V/m; Power Drift = 0.179 dB

Peak SAR (extrapolated) = 0.156 W/kg

SAR(1 g) = 0.055 mW/g; SAR(10 g) = 0.023 mW/g

Maximum value of SAR (measured) = 0.105 mW/g

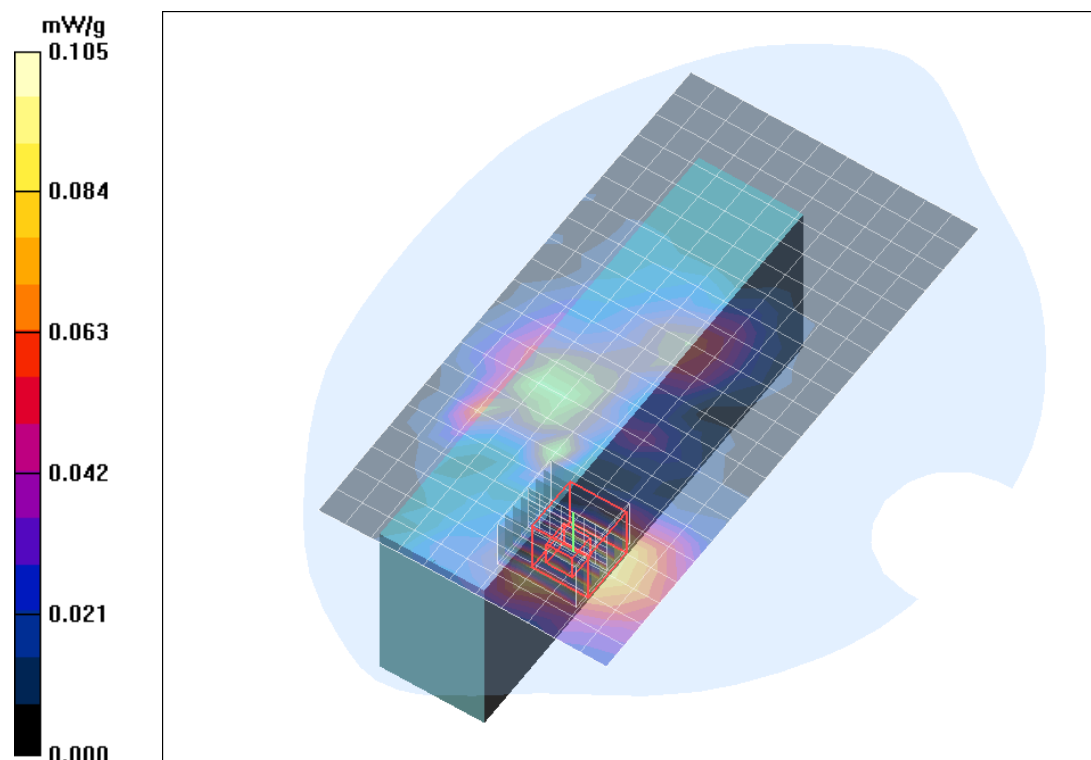


Fig. 8: SAR distribution for IEEE 802.11 a, channel 36, body worn configuration, position 2, antenna 1 (October 17, 2012; Ambient Temperature: 21.9° C; Liquid Temperature: 21.6° C).

Test Laboratory: IMST GmbH, DASY Blue (I); **File Name:**

[DM9500_bwhm_CH40_a_holster_rs_0mm_ant1.da4](#)

DUT: COGNEX; **Type:** DM9500; **Serial:** V2

Program Name: IEEE 802.11 a

Communication System: 5 GHz ; Frequency: 5200 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5200$ MHz; $\sigma = 5.19$ mho/m; $\epsilon_r = 48$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(4.87, 4.87, 4.87); Calibrated: 24.09.2012
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn631; Calibrated: 20.09.2012
- Phantom: SAM Glycol 1176; Type: Speag; Serial: 1176
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Worn/Area Scan (12x22x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.087 mW/g

Body Worn/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 3.25 V/m; Power Drift = -0.190 dB

Peak SAR (extrapolated) = 0.200 W/kg

SAR(1 g) = 0.041 mW/g; SAR(10 g) = 0.018 mW/g

Maximum value of SAR (measured) = 0.090 mW/g

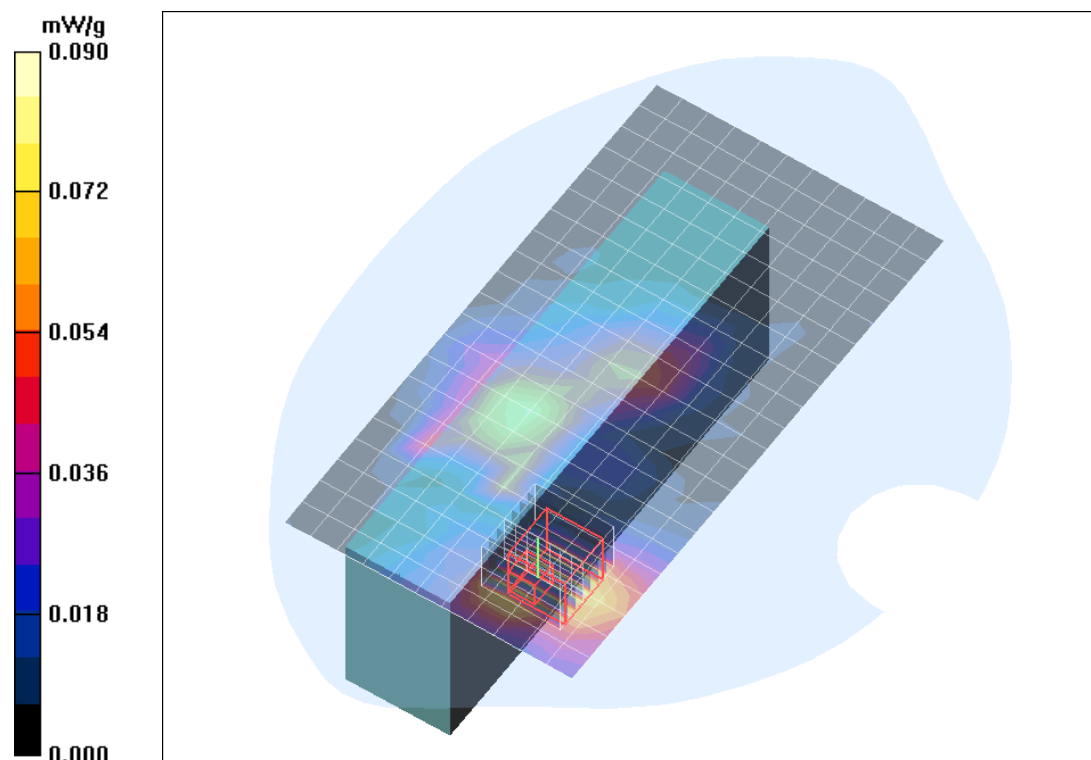


Fig. 9: SAR distribution for IEEE 802.11 a, channel 40, body worn configuration, position 2, antenna 1 (October 17, 2012; Ambient Temperature: 21.9° C; Liquid Temperature: 21.6° C).

Test Laboratory: IMST GmbH, DASY Blue (I); **File Name:**

[DM9500_bwhm_CH44_a_holster_rs_0mm_ant1.da4](#)

DUT: COGNEX; **Type:** DM9500; **Serial:** V2

Program Name: IEEE 802.11 a

Communication System: 5 GHz ; Frequency: 5220 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5220$ MHz; $\sigma = 5.21$ mho/m; $\epsilon_r = 48$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(4.87, 4.87, 4.87); Calibrated: 24.09.2012
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn631; Calibrated: 20.09.2012
- Phantom: SAM Glycol 1176; Type: Speag; Serial: 1176
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Worn/Area Scan (12x22x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.083 mW/g

Body Worn/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 3.24 V/m; Power Drift = -0.042 dB

Peak SAR (extrapolated) = 0.133 W/kg

SAR(1 g) = 0.033 mW/g; SAR(10 g) = 0.012 mW/g

Maximum value of SAR (measured) = 0.081 mW/g

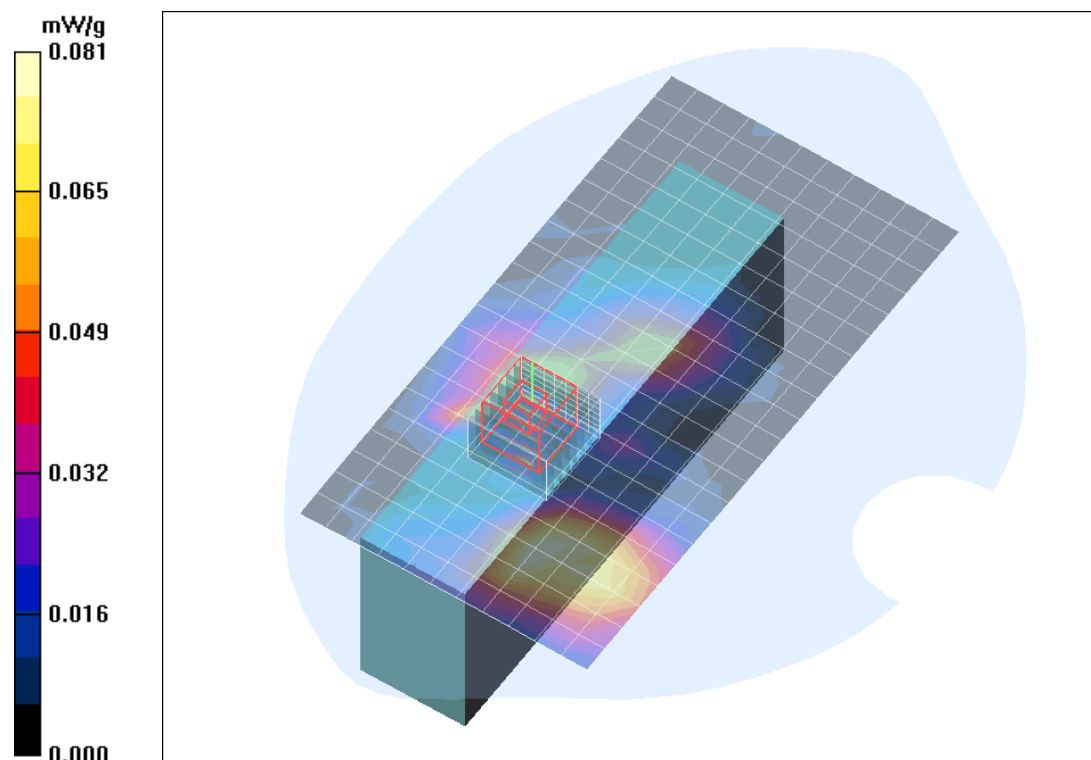


Fig. 10: SAR distribution for IEEE 802.11 a, channel 44, body worn configuration, position 2, antenna 1 (October 17, 2012; Ambient Temperature: 21.9° C; Liquid Temperature: 21.6° C).

Test Laboratory: IMST GmbH, DASY Blue (I); **File Name:**

[DM9500_bwhm_CH48_a_holster_rs_0mm_ant1.da4](#)

DUT: COGNEX; **Type:** DM9500; **Serial:** V2

Program Name: IEEE 802.11 a

Communication System: 5 GHz ; Frequency: 5240 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5240$ MHz; $\sigma = 5.23$ mho/m; $\epsilon_r = 47.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(4.87, 4.87, 4.87); Calibrated: 24.09.2012
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn631; Calibrated: 20.09.2012
- Phantom: SAM Glycol 1176; Type: Speag; Serial: 1176
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Worn/Area Scan (12x22x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.088 mW/g

Body Worn/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 3.09 V/m; Power Drift = -0.013 dB

Peak SAR (extrapolated) = 0.144 W/kg

SAR(1 g) = 0.044 mW/g; SAR(10 g) = 0.017 mW/g

Maximum value of SAR (measured) = 0.094 mW/g

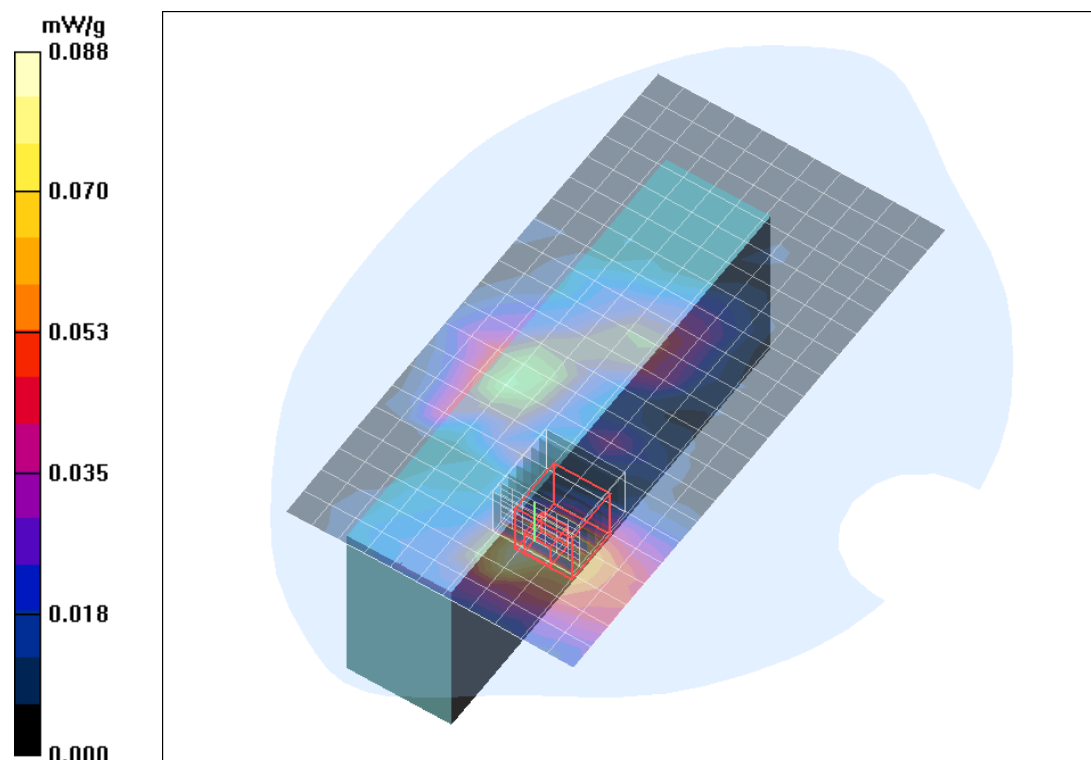


Fig. 11: SAR distribution for IEEE 802.11 a, channel 48, body worn configuration, position 2, antenna 1 (October 17, 2012; Ambient Temperature: 21.9° C; Liquid Temperature: 21.6° C).

4 SAR Z-axis Scans (Validation)

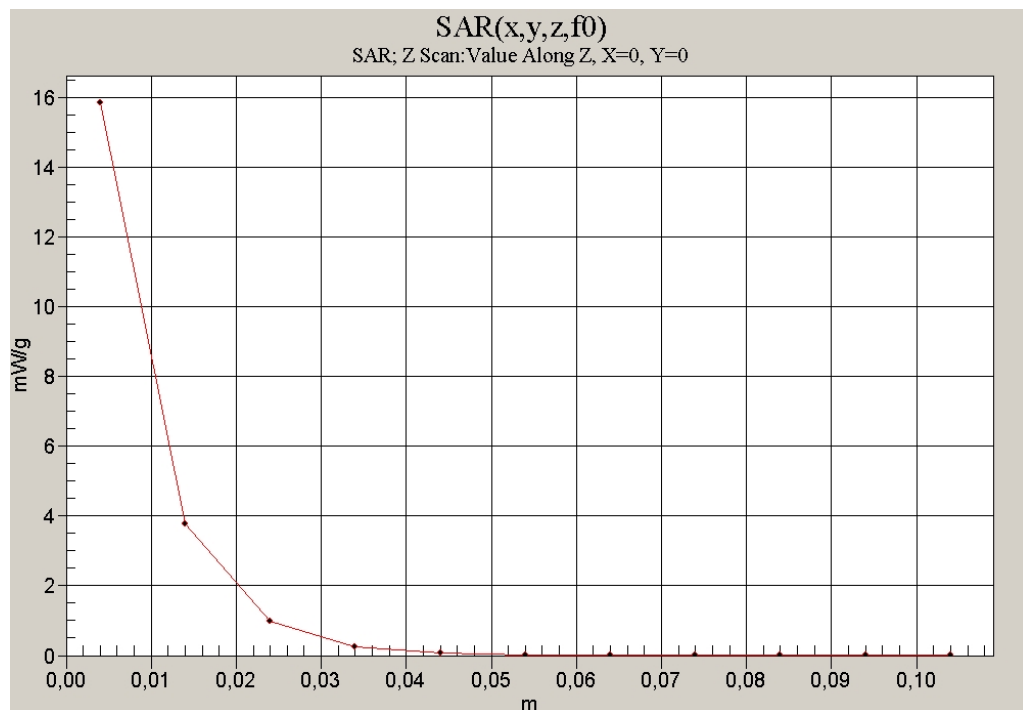


Fig. 12: SAR versus liquid depth, 2450 MHz, body (September 21, 2012; Ambient Temperature: 22.0° C; Liquid Temperature: 21.9° C).

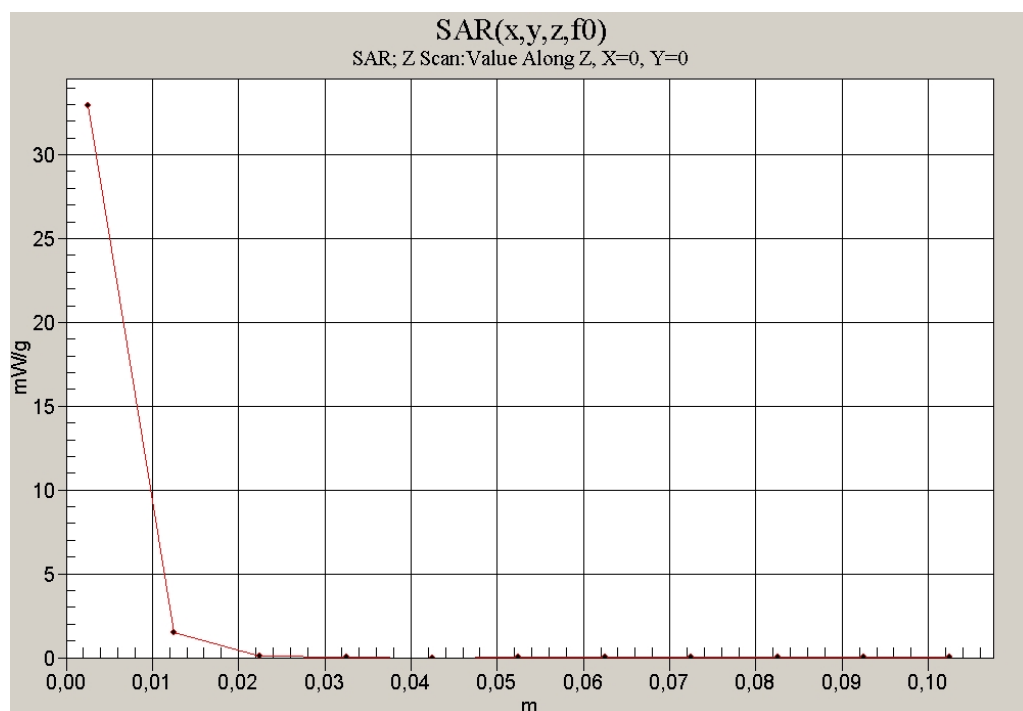


Fig. 13: SAR versus liquid depth, 5200 MHz, body (October 17, 2012; Ambient Temperature: 21.8° C; Liquid Temperature: 21.6° C).

5 SAR Z-axis Scans (Measurements)

The following pictures show the plots of SAR versus liquid depth for the worst case values.

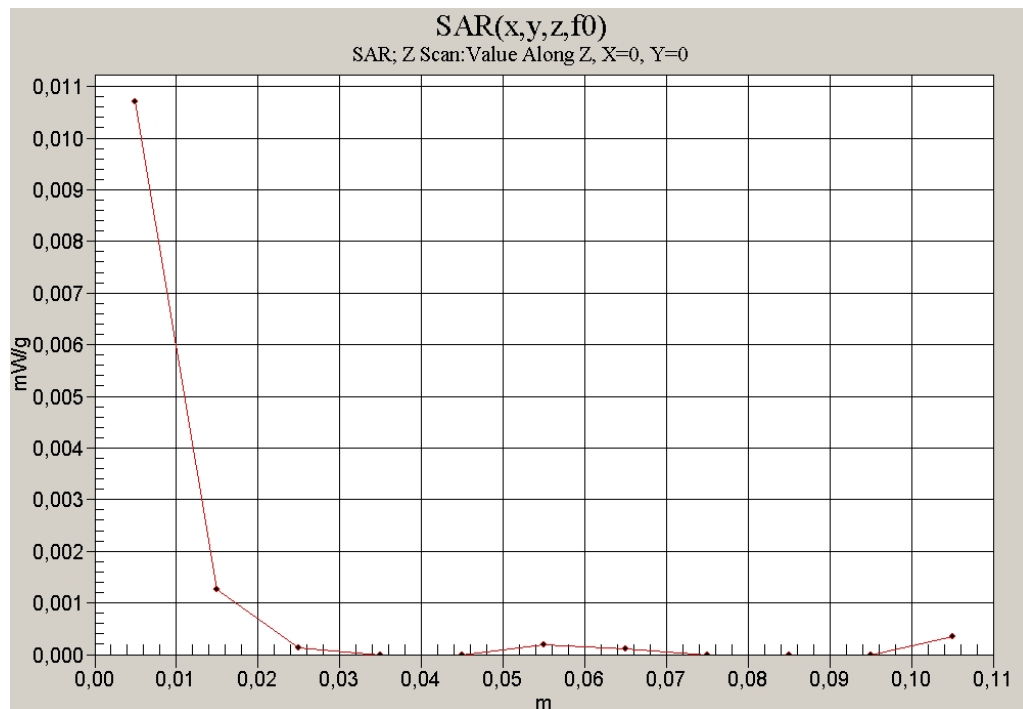


Fig. 14: SAR versus liquid depth, body: IEEE 802.11 g, channel 6, position 1, antenna 1 (September 21, 2012; Ambient Temperature: 22.2° C; Liquid Temperature: 22.0° C).

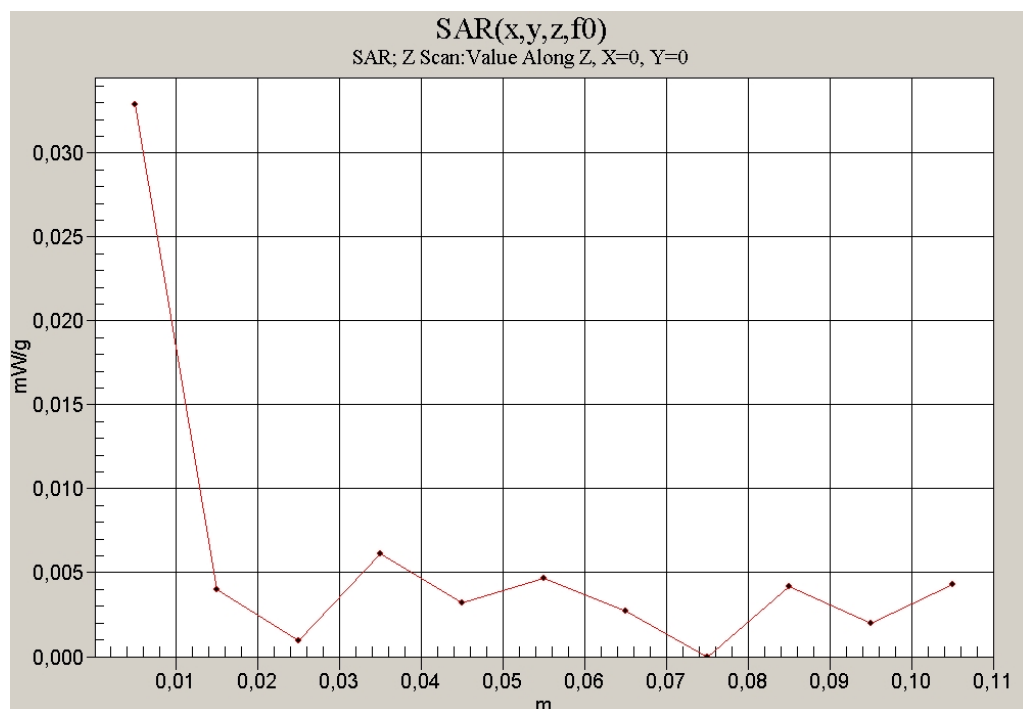


Fig. 15: SAR versus liquid depth, body: IEEE 802.11 a, channel 36, position 2, antenna 1 (October 17, 2012; Ambient Temperature: 21.9°C; Liquid Temperature: 21.6°C).