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## Appendix for the Report

# Dosimetric Assessment of the Portable Device Datalogic ELF (FCC ID: U4G0040)

## According to the FCC Requirements SAR Distribution Plots

June 22, 2011

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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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## 1 SAR Distribution Plots, IEEE 802.11 g

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

[Elf\\_ywhm\\_g\\_CH6\\_15mm\\_dspl\\_down.da4](#)

DUT: Datalogic; Type: ELF; Serial: D11D03297

Program Name: IEEE 802.11 g

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

Medium parameters used:  $f = 2437$  MHz;  $\sigma = 2.01$  mho/m;  $\epsilon_r = 52.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(7.39, 7.39, 7.39); Calibrated: 16.09.2010

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

- Electronics: DAE4 Sn631; Calibrated: 17.09.2010

- 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 (16x19x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.033 mW/g

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

Reference Value = 1.90 V/m; Power Drift = 0.121 dB

Peak SAR (extrapolated) = 0.053 W/kg

**SAR(1 g) = 0.030 mW/g; SAR(10 g) = 0.016 mW/g**

Maximum value of SAR (measured) = 0.032 mW/g

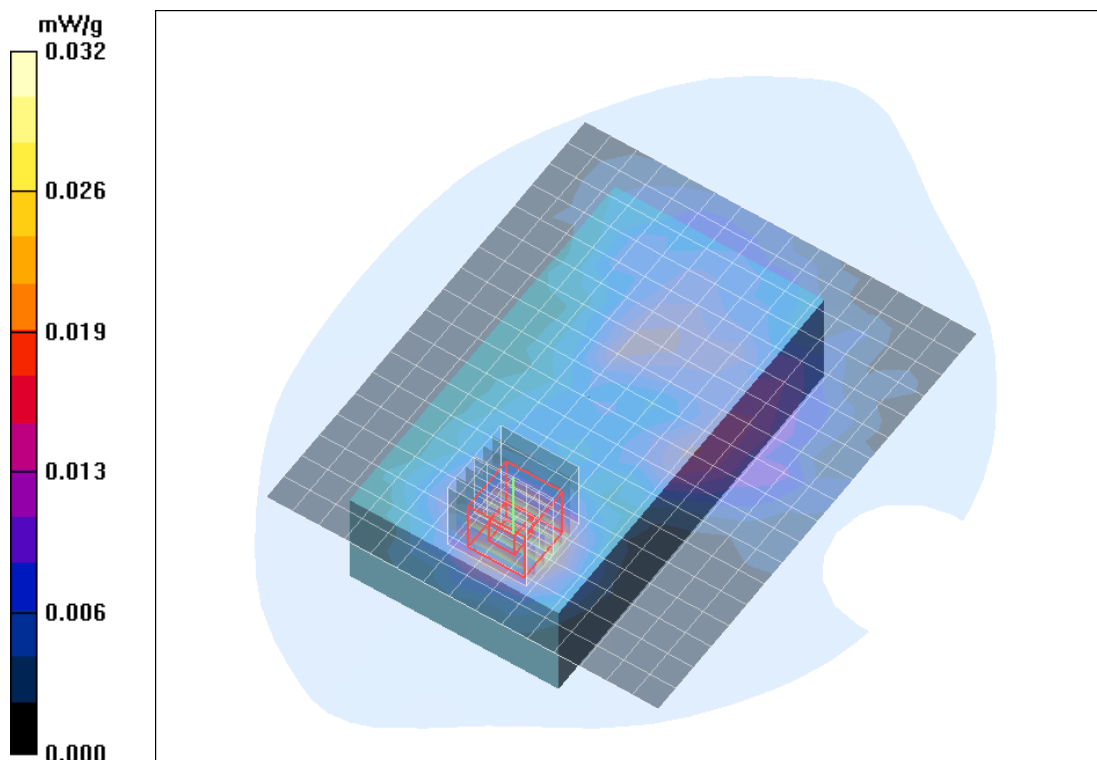


Fig. 1: SAR distribution for IEEE 802.11 g, channel 6, worst case body worn configuration, display towards the ground, 15 mm distance (June 21, 2011; Ambient Temperature: 21.9° C; Liquid Temperature: 21.5° C).

## 2 SAR Distribution Plots, IEEE 802.11 a (5200 MHz Range)

Test Laboratory: IMST GmbH, DASY Blue (I); File Name: [Elf\\_bwhm\\_ch36\\_15mm\\_dspl\\_down.da4](#)

DUT: Datalogic; Type: ELF; Serial: D11D03297

Program Name: IEEE 802.11 a

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

Medium parameters used:  $f = 5180$  MHz;  $\sigma = 5.22$  mho/m;  $\epsilon_r = 48.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(4.36, 4.36, 4.36); Calibrated: 16.09.2010

- Sensor-Surface: 2mm (Mechanical Surface Detection)

- Electronics: DAE4 Sn631; Calibrated: 17.09.2010

- 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 (15x19x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.138 mW/g

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

Reference Value = 2.90 V/m; Power Drift = 0.115 dB

Peak SAR (extrapolated) = 0.240 W/kg

**SAR(1 g) = 0.081 mW/g; SAR(10 g) = 0.037 mW/g**

Maximum value of SAR (measured) = 0.140 mW/g

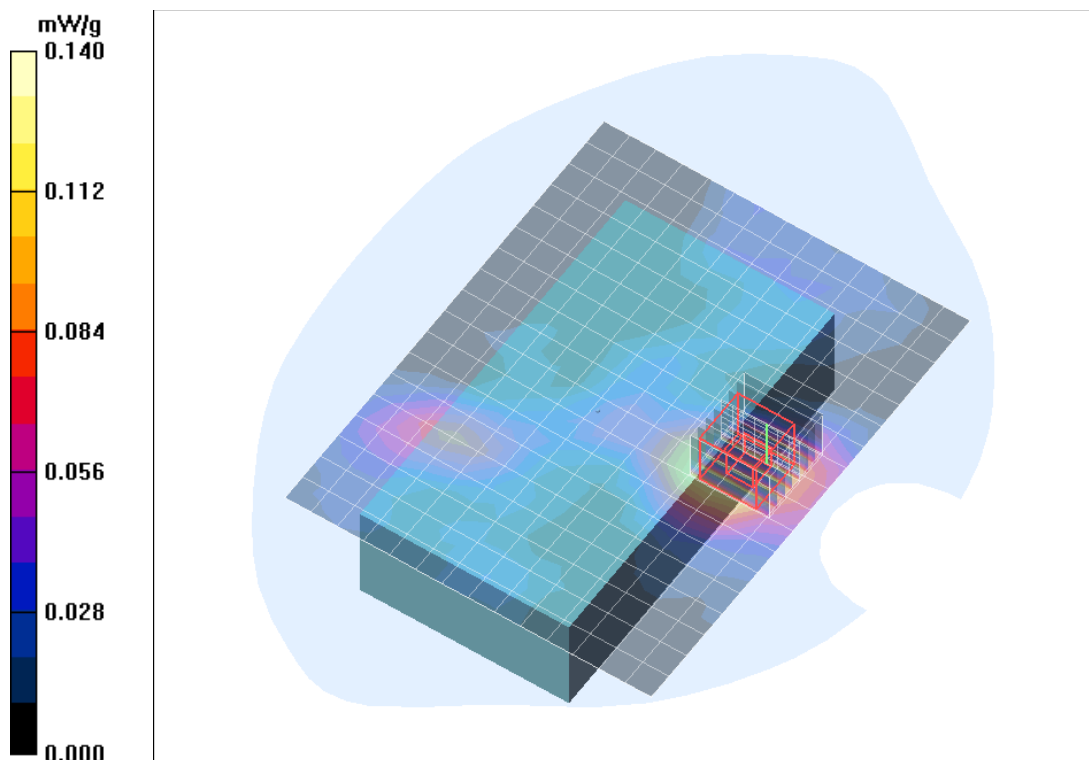


Fig. 2: SAR distribution for IEEE 802.11 a, channel 36, worst case body worn configuration, display towards the ground, 15 mm distance (June 21, 2011; Ambient Temperature: 22.0° C; Liquid Temperature: 21.7° C).

### 3 SAR Distribution Plots, IEEE 802.11 a (5500 MHz Range)

Test Laboratory: IMST GmbH, DASY Blue (I); File Name: [Elf\\_bwhm\\_ch124\\_15mm\\_dspl\\_down.da4](#)

DUT: Datalogic; Type: ELF; Serial: D11D03297

Program Name: IEEE 802.11 a

Communication System: 5 GHz ; Frequency: 5620 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 5620$  MHz;  $\sigma = 5.88$  mho/m;  $\epsilon_r = 47.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(3.9, 3.9, 3.9); Calibrated: 16.09.2010

- Sensor-Surface: 2mm (Mechanical Surface Detection)

- Electronics: DAE4 Sn631; Calibrated: 17.09.2010

- 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 (15x19x1):** Measurement grid: dx=10mm, dy=10mm

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

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

Reference Value = 1.92 V/m; Power Drift = 0.018 dB

Peak SAR (extrapolated) = 0.201 W/kg

**SAR(1 g) = 0.055 mW/g; SAR(10 g) = 0.024 mW/g**

Maximum value of SAR (measured) = 0.099 mW/g

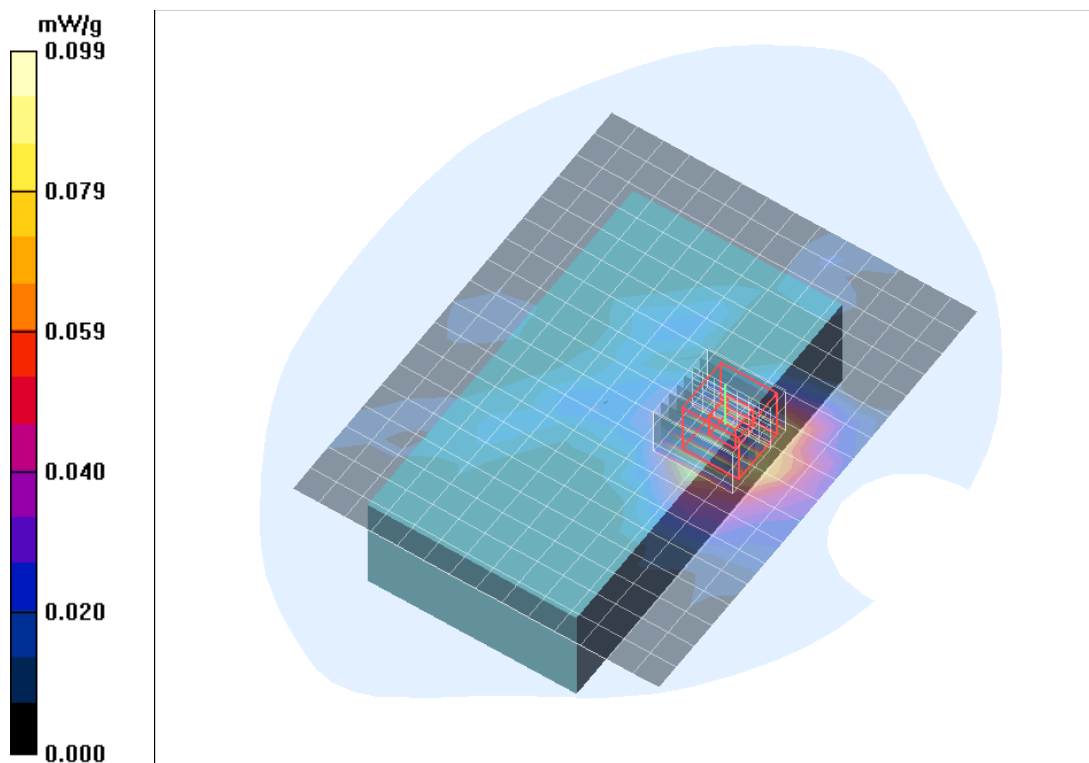


Fig. 3: SAR distribution for IEEE 802.11 a, channel 124, worst case body worn configuration, display towards the ground, 15 mm distance (June 21, 2011; Ambient Temperature: 22.0° C; Liquid Temperature: 21.7° C).

## 4 SAR Distribution Plots, IEEE 802.11 a (5800 MHz Range)

Test Laboratory: IMST GmbH, DASY Blue (I); File Name: [Elf\\_bwhm\\_ch161\\_15mm\\_dspl\\_down.da4](#)

DUT: Datalogic; Type: ELF; Serial: D11D03297

Program Name: IEEE 802.11 a

Communication System: 5 GHz ; Frequency: 5805 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 5805$  MHz;  $\sigma = 6.18$  mho/m;  $\epsilon_r = 47.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(4.1, 4.1, 4.1); Calibrated: 16.09.2010

- Sensor-Surface: 2mm (Mechanical Surface Detection)

- Electronics: DAE4 Sn631; Calibrated: 17.09.2010

- 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 (15x19x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.056 mW/g

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

Reference Value = 1.67 V/m; Power Drift = 0.054 dB

Peak SAR (extrapolated) = 0.108 W/kg

**SAR(1 g) = 0.032 mW/g; SAR(10 g) = 0.013 mW/g**

Maximum value of SAR (measured) = 0.062 mW/g

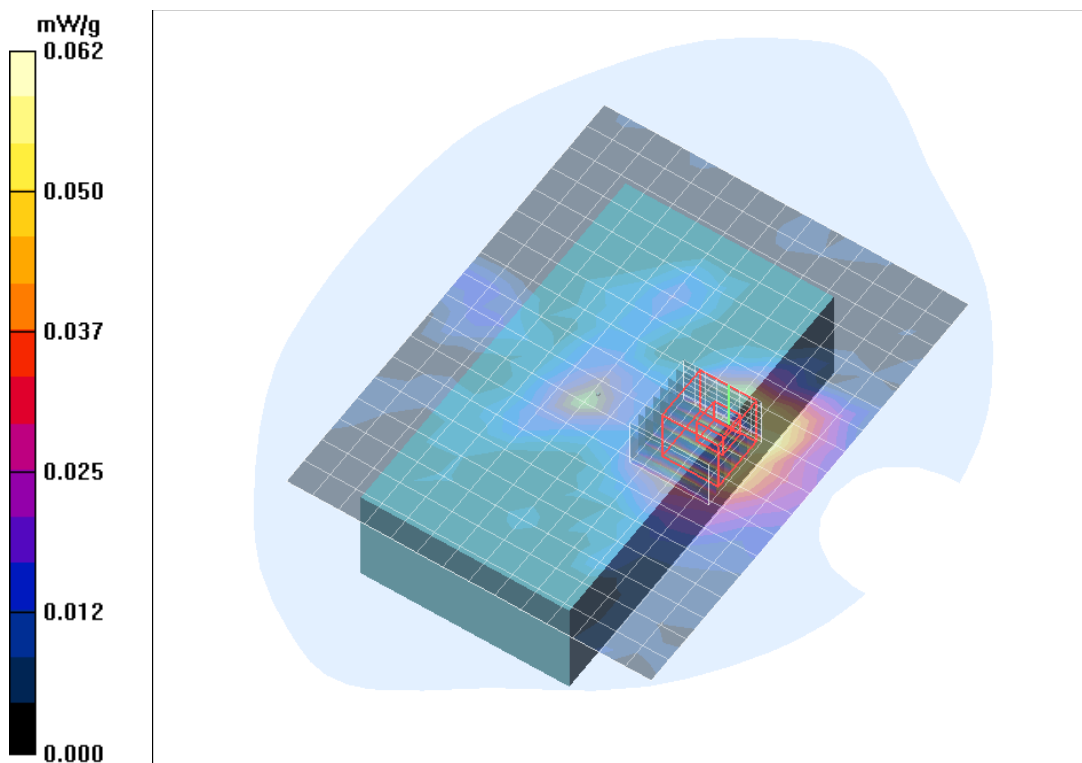


Fig. 4: SAR distribution for IEEE 802.11 a, channel 161, worst case body worn configuration, display towards the ground, 15 mm distance (June 21, 2011; Ambient Temperature: 22.0° C; Liquid Temperature: 21.7° C).

## 5 SAR Z-axis Scans (Validation)

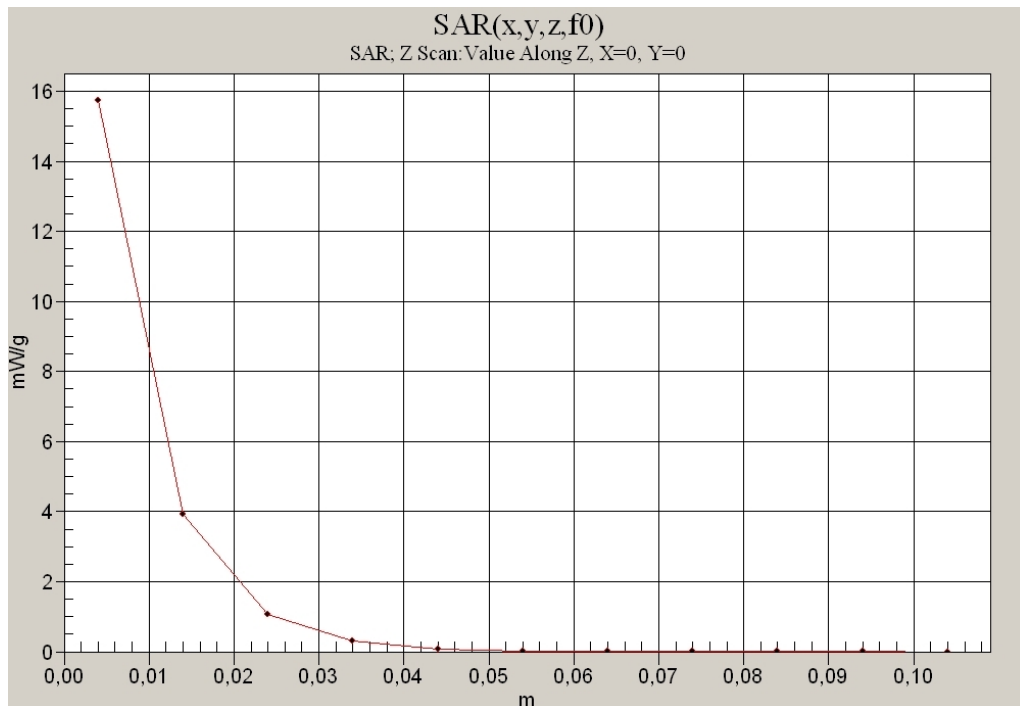


Fig. 5: SAR versus liquid depth, 2450 MHz, body (June 21, 2011; Ambient Temperature: 21.9° C; Liquid Temperature: 21.5° C).

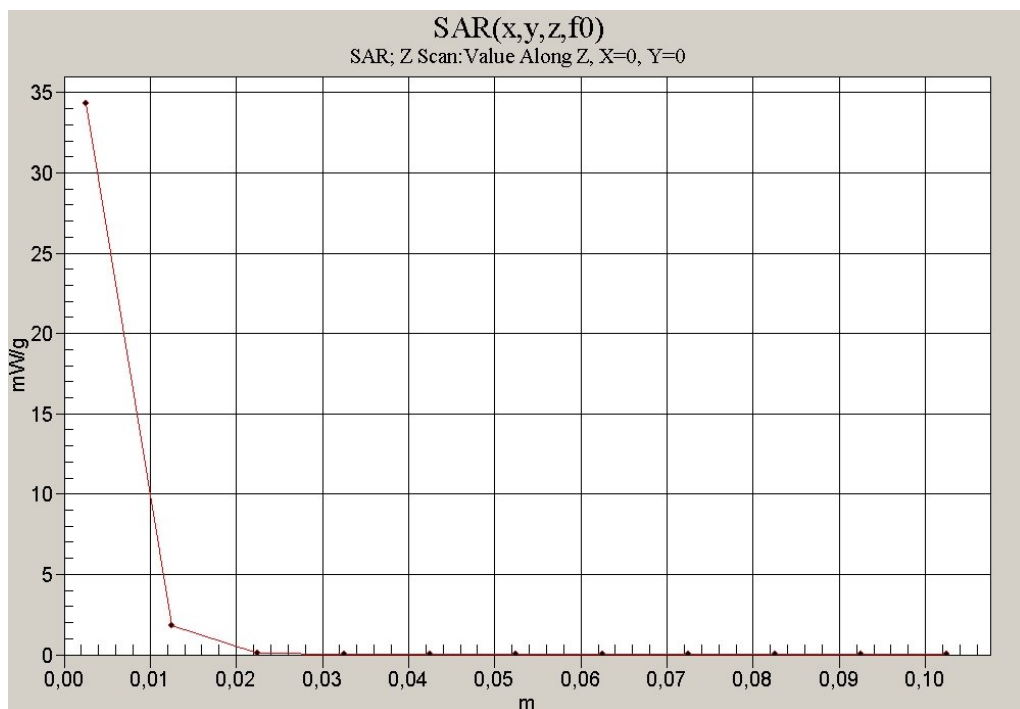


Fig. 6: SAR versus liquid depth, 5200 MHz, body (June 21, 2011; Ambient Temperature: 22.0° C; Liquid Temperature: 21.7° C).

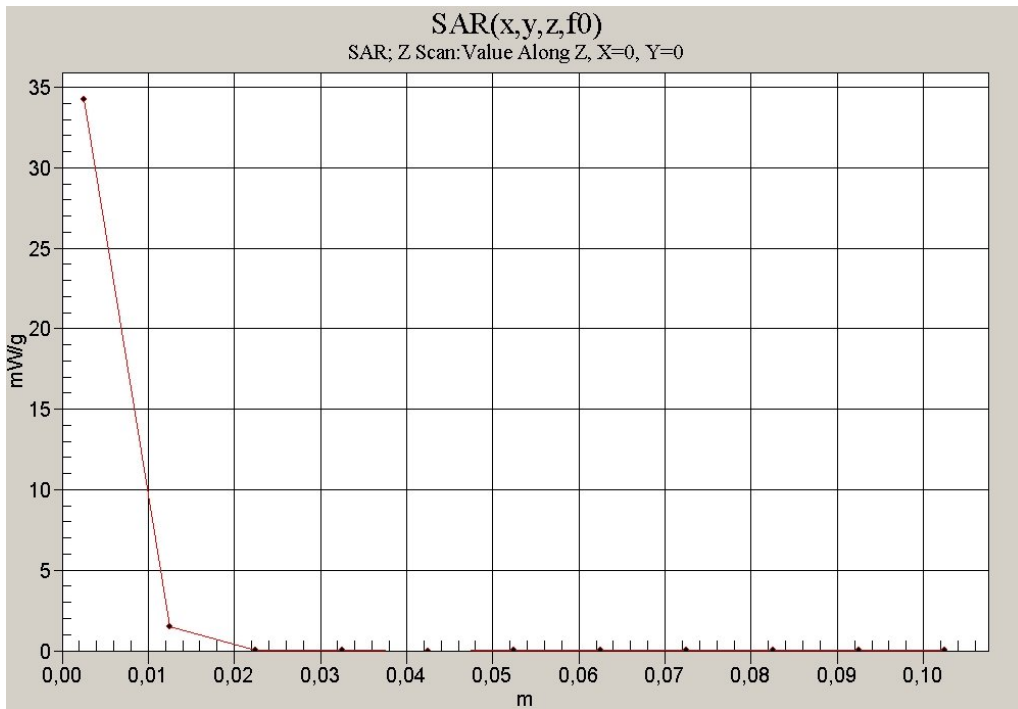


Fig. 7: SAR versus liquid depth, 5500 MHz, body (June 21, 2011; Ambient Temperature: 21.9° C; Liquid Temperature: 21.7° C).

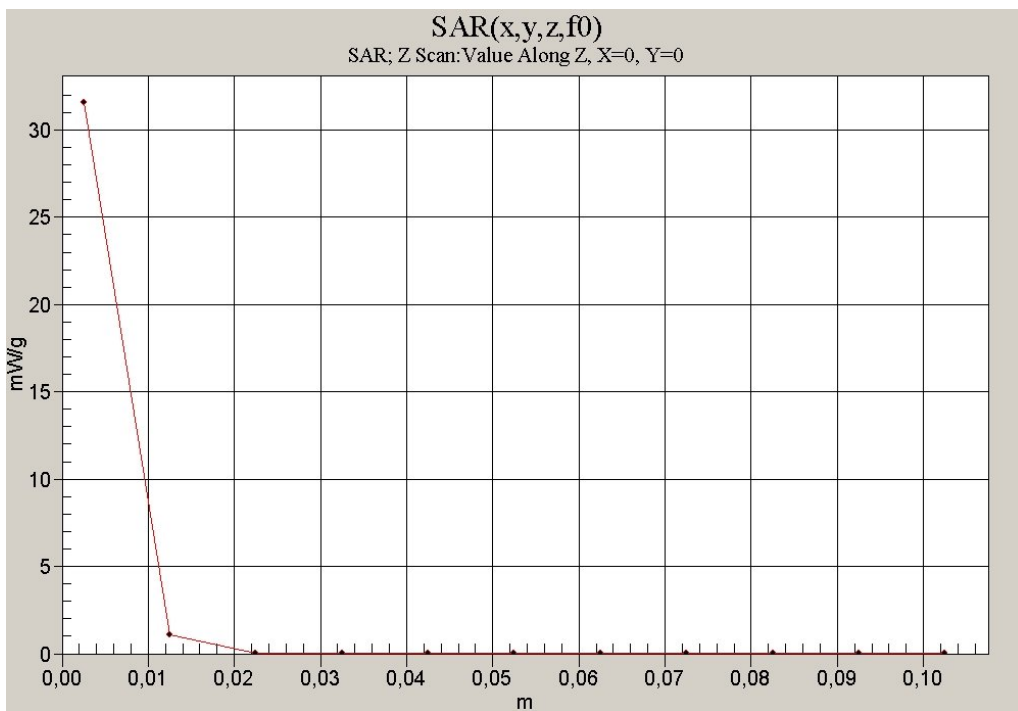


Fig. 8: SAR versus liquid depth, 5800 MHz, body (June 21, 2011; Ambient Temperature: 21.9° C; Liquid Temperature: 21.7° C).



## 6 SAR Z-axis Scans (Measurements)

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

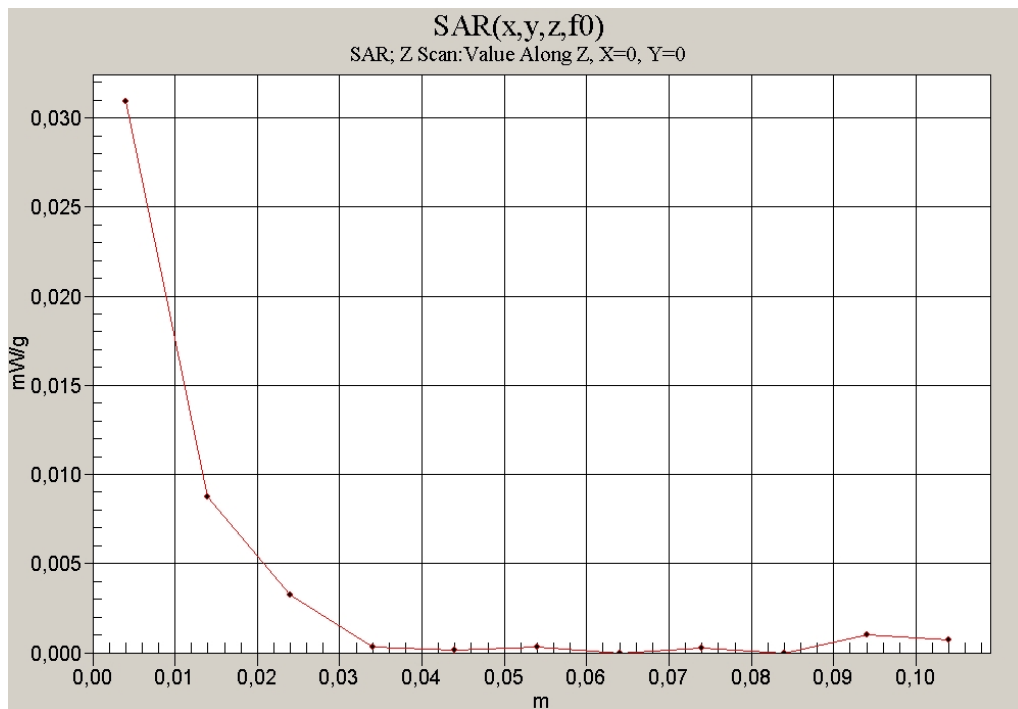


Fig. 9: SAR versus liquid depth, body: IEEE 802.11 g, channel 6, display towards the ground, 15 mm distance (June 21, 2011; Ambient Temperature: 21.9° C; Liquid Temperature: 21.5° C).

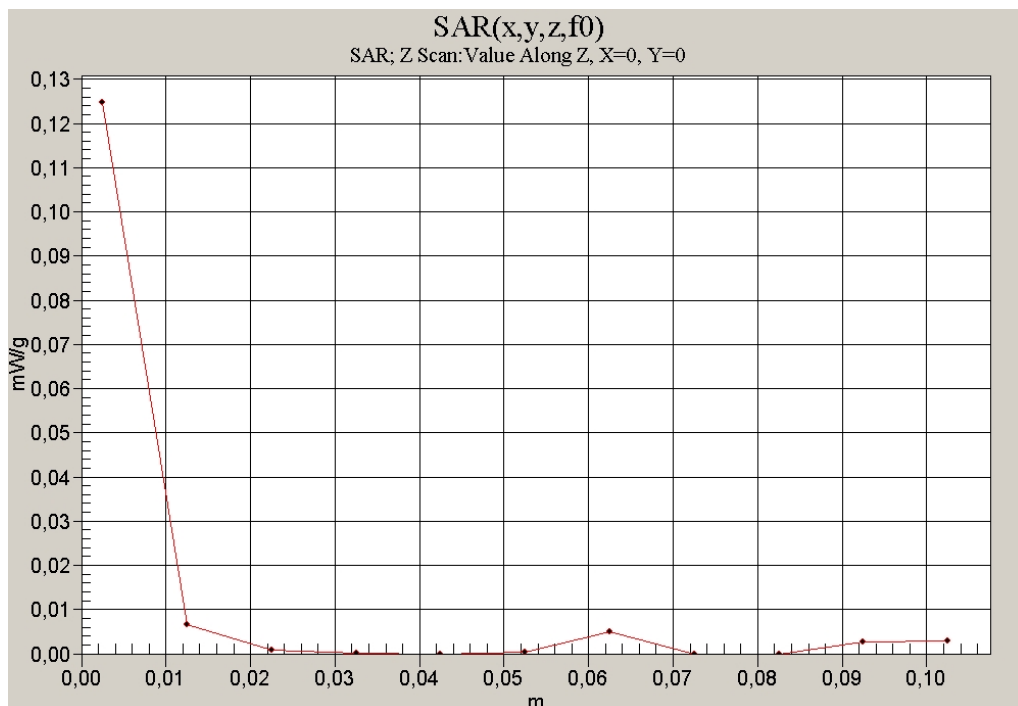


Fig. 10: SAR versus liquid depth, body: IEEE 802.11 a, channel 36, display towards the ground, 15 mm distance (June 21, 2011; Ambient Temperature: 22.0° C; Liquid Temperature: 21.7° C).