
Appendix for the Report

Dosimetric Assessment of the BenQ AF51 (FCC ID: PWX-AF51)

According to the FCC Requirements

SAR Distribution Plots

December 08, 2005
IMST GmbH
Carl-Friedrich-Gauß-Str. 2
D-47475 Kamp-Lintfort

Customer
BenQ Denmark ApS
Siemens Kaj 1
DK-9400 Norresundby

The test results only relate to the items tested.
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1 SAR Distribution Plots, PCS 1900 Head

Test Laboratory: IMST GmbH, DASY Blue (I); File Name: [620bplm_1.da4](#)

DUT: BenQ; Type: AF51; Serial: 004400015939620

Program Name: Cheek Left

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.42$ mho/m; $\epsilon_r = 39.6$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(8.25, 8.25, 8.25); Calibrated: 23.09.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn631; Calibrated: 07.07.2005
- Phantom: SAM Glycol 1176; Type: Speag; Serial: 1176
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

Cheek Left/Area Scan (6x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.678 mW/g

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

Reference Value = 1.43 V/m; Power Drift = 0.028 dB

Peak SAR (extrapolated) = 0.948 W/kg

SAR(1 g) = 0.627 mW/g; SAR(10 g) = 0.383 mW/g

Maximum value of SAR (measured) = 0.676 mW/g

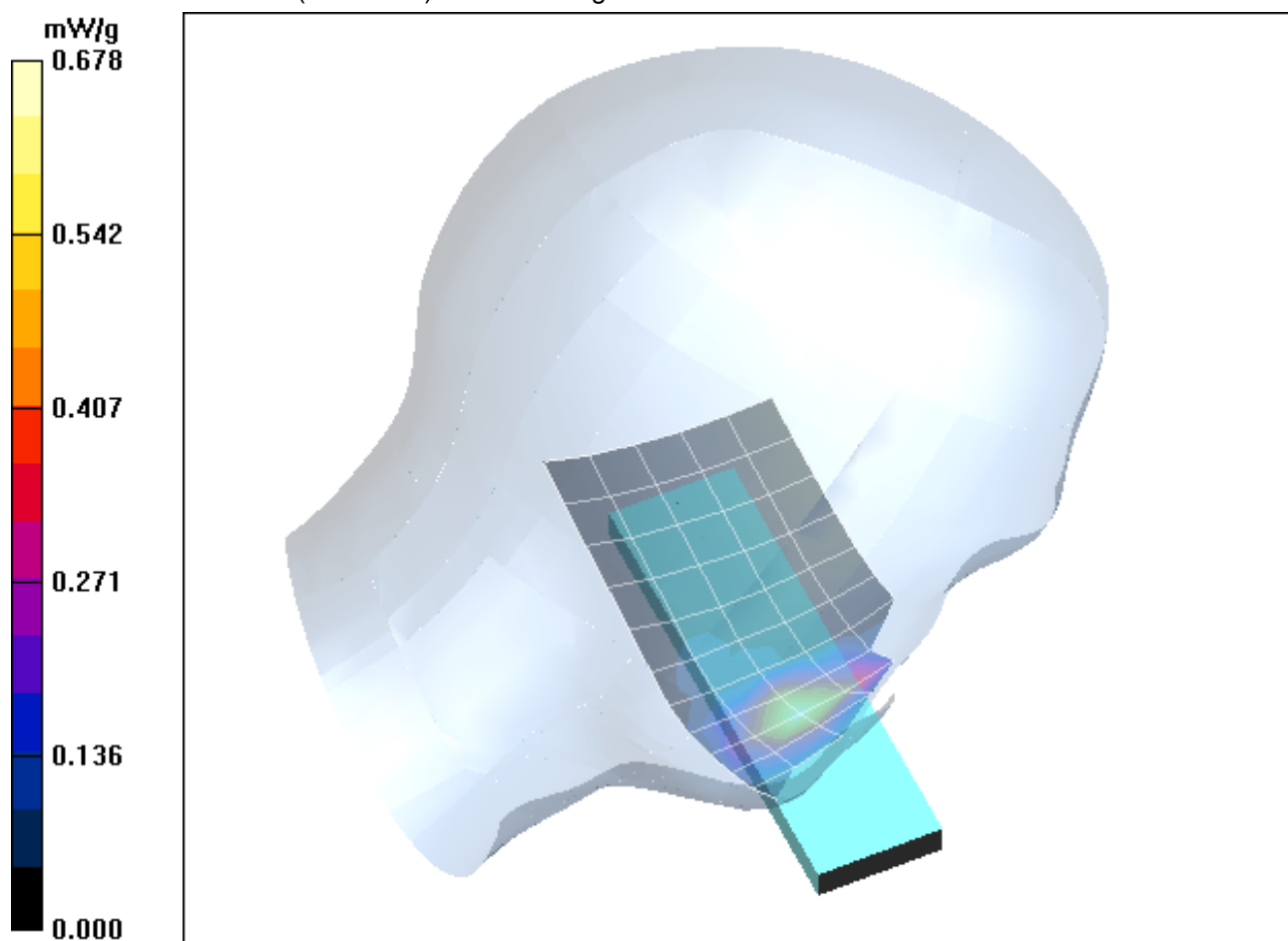


Fig. 1: SAR distribution for PCS 1900, channel 661, cheek position, left side of head (December 05, 2005; Ambient Temperature: 22.3°C; Liquid Temperature: 21.5°C).

Test Laboratory: IMST GmbH, DASY Blue (I); **File Name:** [620bplm_2.da4](#)

DUT: BenQ; **Type:** AF51; **Serial:** 004400015939620

Program Name: Tilted Left

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.42$ mho/m; $\epsilon_r = 39.6$; $\rho = 1000$ kg/m³

Phantom section: Left Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(8.25, 8.25, 8.25); Calibrated: 23.09.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn631; Calibrated: 07.07.2005
- Phantom: SAM Glycol 1176; Type: Speag; Serial: 1176
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

Tilted Left/Area Scan (6x14x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (measured) = 0.073 mW/g

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

Reference Value = 3.67 V/m; Power Drift = 0.071 dB

Peak SAR (extrapolated) = 0.108 W/kg

SAR(1 g) = 0.072 mW/g; SAR(10 g) = 0.046 mW/g

Maximum value of SAR (measured) = 0.076 mW/g

Tilted Left/Zoom Scan (7x7x7)/Cube 1: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 3.67 V/m; Power Drift = 0.071 dB

Peak SAR (extrapolated) = 0.057 W/kg

SAR(1 g) = 0.035 mW/g; SAR(10 g) = 0.022 mW/g

Maximum value of SAR (measured) = 0.038 mW/g

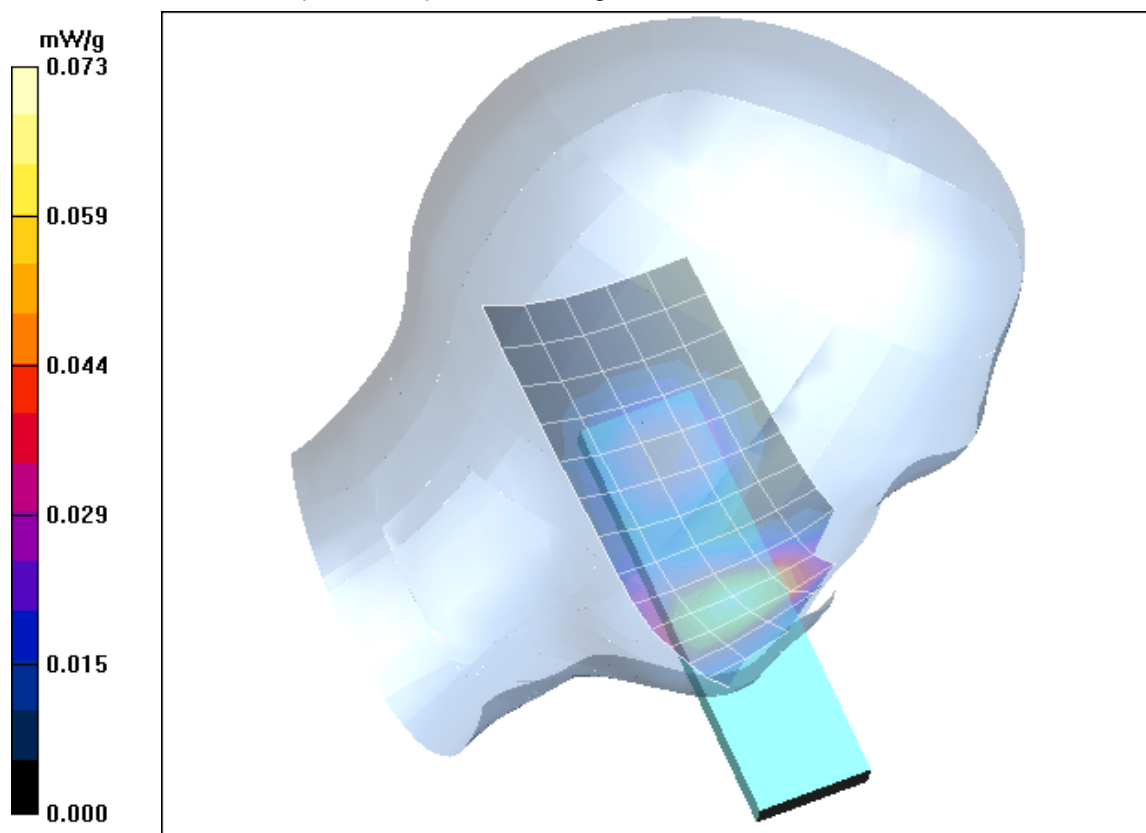


Fig. 2: SAR distribution for PCS 1900, channel 661, tilted position, left side of head (December 05, 2005; Ambient Temperature: 22.2°C; Liquid Temperature: 21.4°C).

Test Laboratory: IMST GmbH, DASY Blue (I); **File Name:** [620bprm 1.da4](#)

DUT: BenQ; **Type:** AF51; **Serial:** 004400015939620

Program Name: Cheek Right

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.42$ mho/m; $\epsilon_r = 39.6$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(8.25, 8.25, 8.25); Calibrated: 23.09.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn631; Calibrated: 07.07.2005
- Phantom: SAM Glycol 1176; Type: Speag; Serial: 1176
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

Cheek Right/Area Scan (6x14x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (measured) = 0.567 mW/g

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

Reference Value = 1.42 V/m; Power Drift = 0.200 dB

Peak SAR (extrapolated) = 0.817 W/kg

SAR(1 g) = 0.577 mW/g; SAR(10 g) = 0.365 mW/g

Maximum value of SAR (measured) = 0.620 mW/g

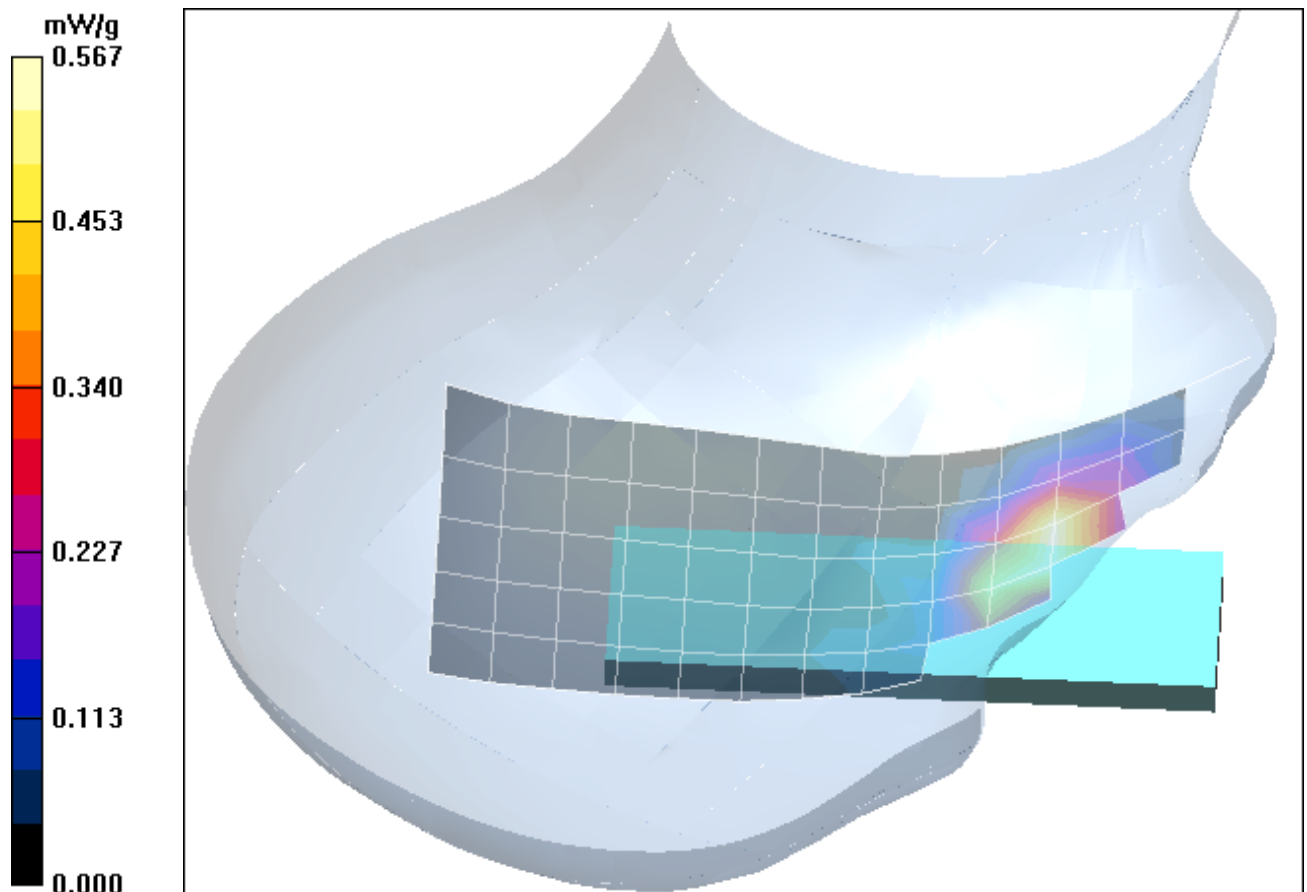


Fig. 3: SAR distribution for PCS 1900, channel 661, cheek position, right side of head (December 05, 2005; Ambient Temperature: 22.4°C; Liquid Temperature: 21.5°C).

Test Laboratory: IMST GmbH, DASY Blue (I); **File Name:** [620bprm_2.da4](#)

DUT: BenQ; **Type:** AF51; **Serial:** 004400015939620

Program Name: Tilted Right

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.42$ mho/m; $\epsilon_r = 39.6$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(8.25, 8.25, 8.25); Calibrated: 23.09.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn631; Calibrated: 07.07.2005
- Phantom: SAM Glycol 1176; Type: Speag; Serial: 1176
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

Tilted Right/Area Scan (6x14x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.059 mW/g

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

Reference Value = 3.83 V/m; Power Drift = 0.152 dB

Peak SAR (extrapolated) = 0.090 W/kg

SAR(1 g) = 0.056 mW/g; SAR(10 g) = 0.033 mW/g

Maximum value of SAR (measured) = 0.061 mW/g

Tilted Right/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.83 V/m; Power Drift = 0.152 dB

Peak SAR (extrapolated) = 0.084 W/kg

SAR(1 g) = 0.055 mW/g; SAR(10 g) = 0.035 mW/g

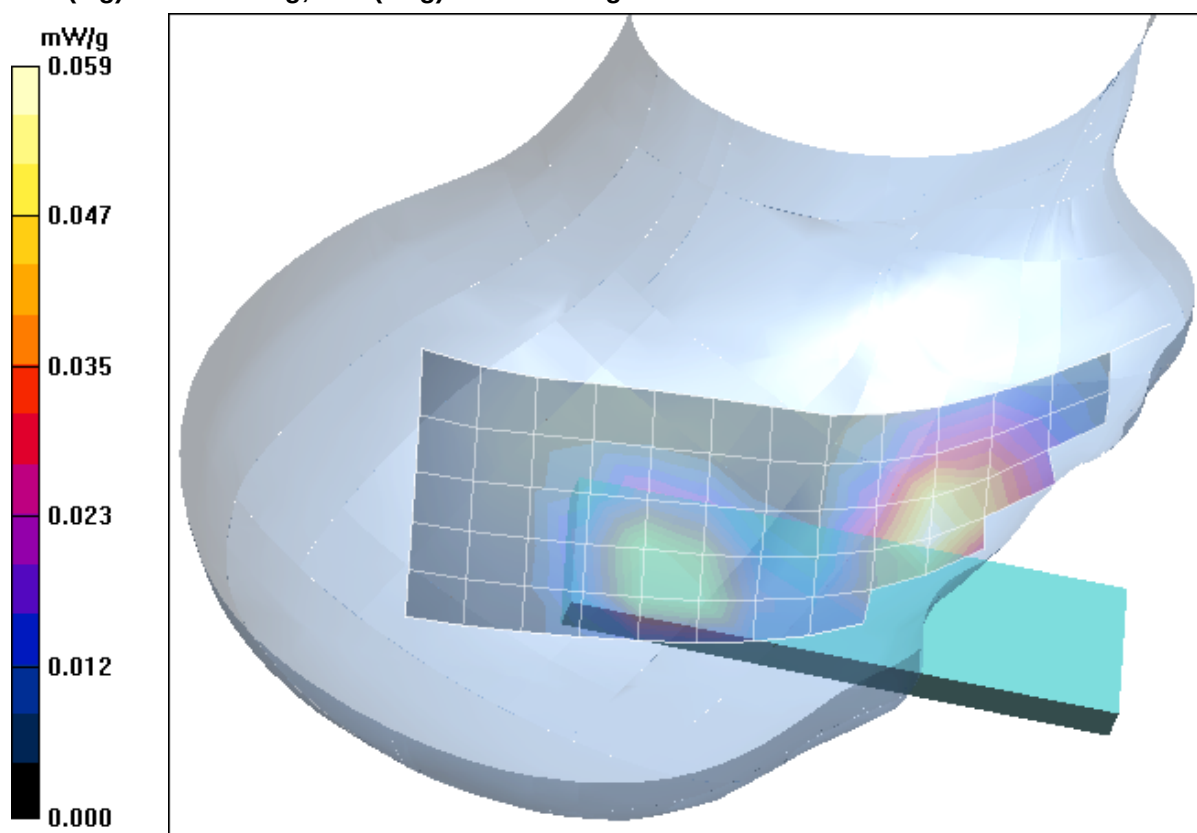


Fig. 4: SAR distribution for PCS 1900, channel 661, tilted position, right side of head (December 05, 2005; Ambient Temperature: 22.4°C; Liquid Temperature: 21.5°C)

2 SAR Distribution Plots, PCS 1900 Body with headset

Test Laboratory: Imst GmbH; File Name: [620yphm_4_headset_6mm.da4](#)

DUT: BenQ; Type: AF51; Serial: 004400015939620

Program Name: Body Worn

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.55$ mho/m; $\epsilon_r = 53.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6R - SN1579; ConvF(4.69, 4.69, 4.69); Calibrated: 13.01.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn335; Calibrated: 17.03.2005
- Phantom: SAM Glycol 1340; Type: QD 000 P40 CB; Serial: TP-1340
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

Body Worn/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.966 mW/g

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

Reference Value = 19.0 V/m; Power Drift = 0.021 dB

Peak SAR (extrapolated) = 1.94 W/kg

SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.552 mW/g

Maximum value of SAR (measured) = 1.20 mW/g

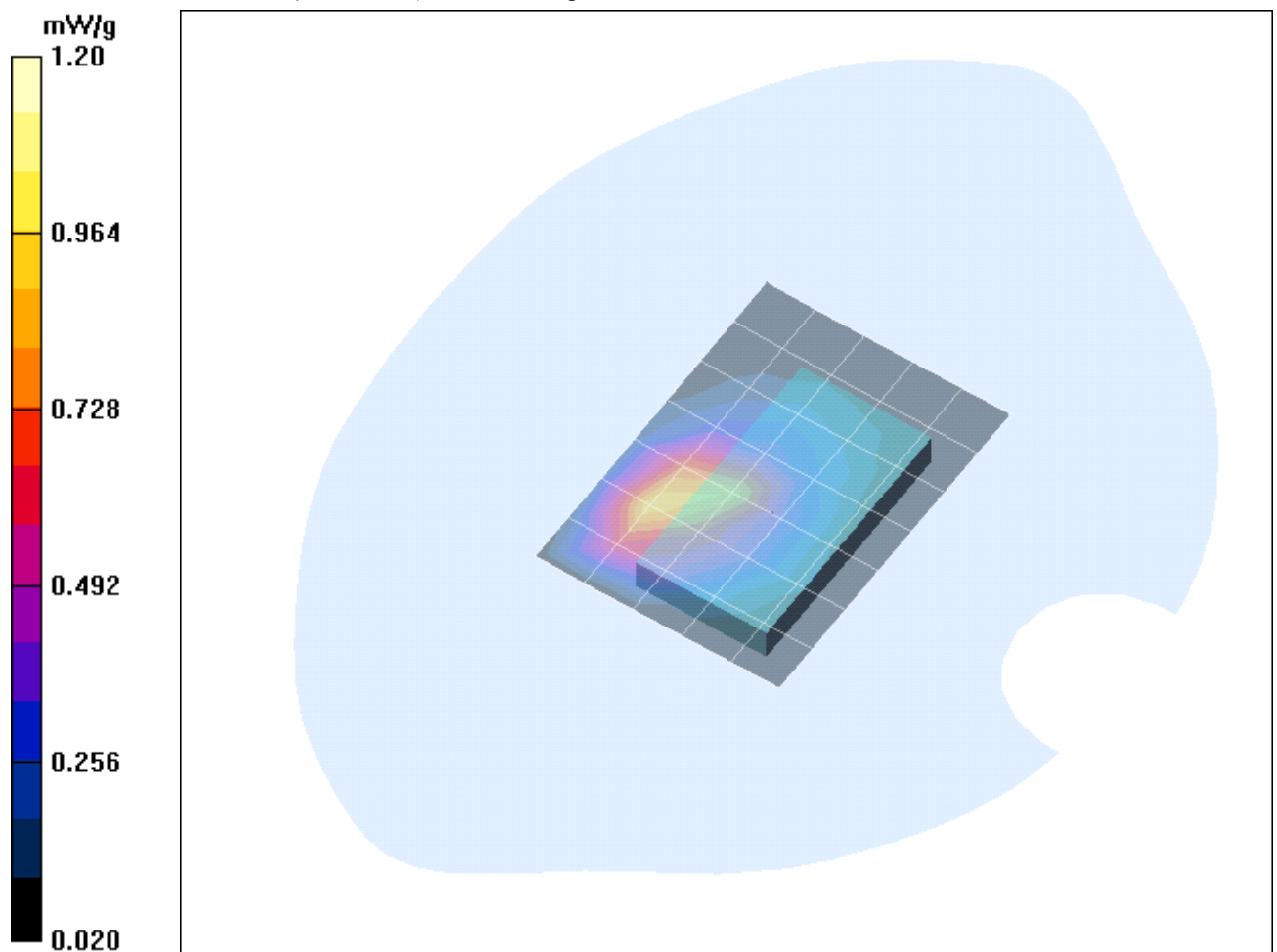


Fig. 5: SAR distribution for PCS 1900, channel 661, body worn configuration, antenna towards the phantom, with headset and 6 mm distance (December 07, 2005; Ambient Temperature: 22.1° C; Liquid Temperature: 21.3° C).

3 SAR Distribution Plots, GPRS 1900 Body with data cable

Test Laboratory: Imst GmbH; File Name: [620yphm_5_data_6mm.da4](#)

DUT: BenQ; Type: AF51; Serial: 004400015939620

Program Name: Body Worn

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.55$ mho/m; $\epsilon_r = 53.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6R - SN1579; ConvF(4.69, 4.69, 4.69); Calibrated: 13.01.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn335; Calibrated: 17.03.2005
- Phantom: SAM Glycol 1340; Type: QD 000 P40 CB; Serial: TP-1340
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

Body Worn/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.903 mW/g

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

Reference Value = 15.5 V/m; Power Drift = -0.139 dB

Peak SAR (extrapolated) = 1.67 W/kg

SAR(1 g) = 0.852 mW/g; SAR(10 g) = 0.444 mW/g

Maximum value of SAR (measured) = 0.951 mW/g

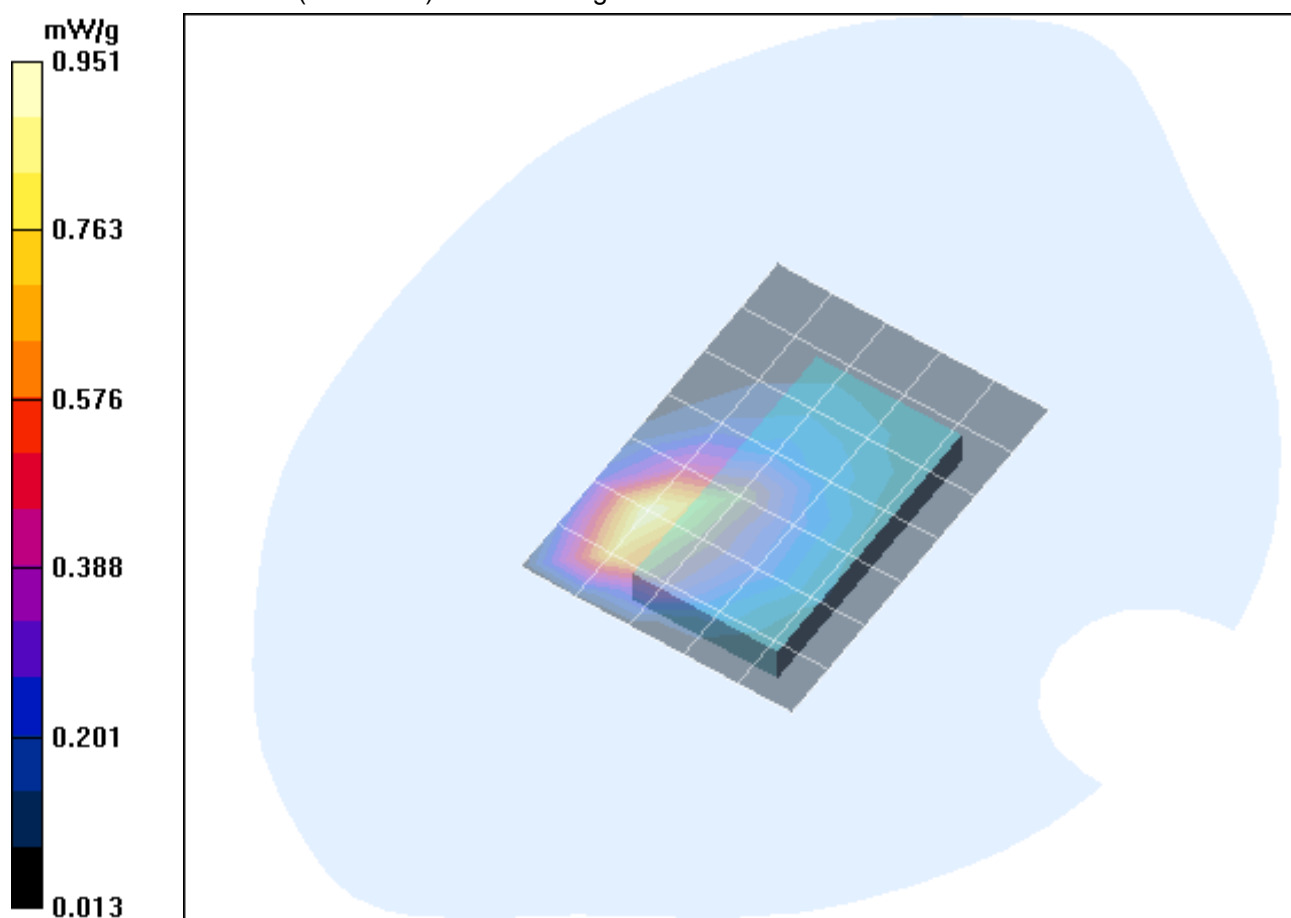


Fig. 6: SAR distribution for GPRS 1900 (Class 8), channel 661, body worn configuration, antenna towards the phantom, with data cable and 6 mm distance (December 07, 2005; Ambient Temperature: 22.0°C; Liquid Temperature: 21.2°C).

4 SAR Distribution Plots, PCS 1900 Body in PTT mode

Test Laboratory: Imst GmbH; File Name: [620bphm_7_PTT_wdh.da4](#)

DUT: BenQ; Type: AF51; Serial: 004400015939620

Program Name: Body Worn

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.55$ mho/m; $\epsilon_r = 53.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6R - SN1579; ConvF(4.69, 4.69, 4.69); Calibrated: 13.01.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn335; Calibrated: 17.03.2005
- Phantom: SAM Glycol 1340; Type: QD 000 P40 CB; Serial: TP-1340
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

Body Worn/Area Scan (6x13x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.091 mW/g

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

Reference Value = 4.86 V/m; Power Drift = -0.071 dB

Peak SAR (extrapolated) = 0.134 W/kg

SAR(1 g) = 0.088 mW/g; SAR(10 g) = 0.057 mW/g

Maximum value of SAR (measured) = 0.095 mW/g

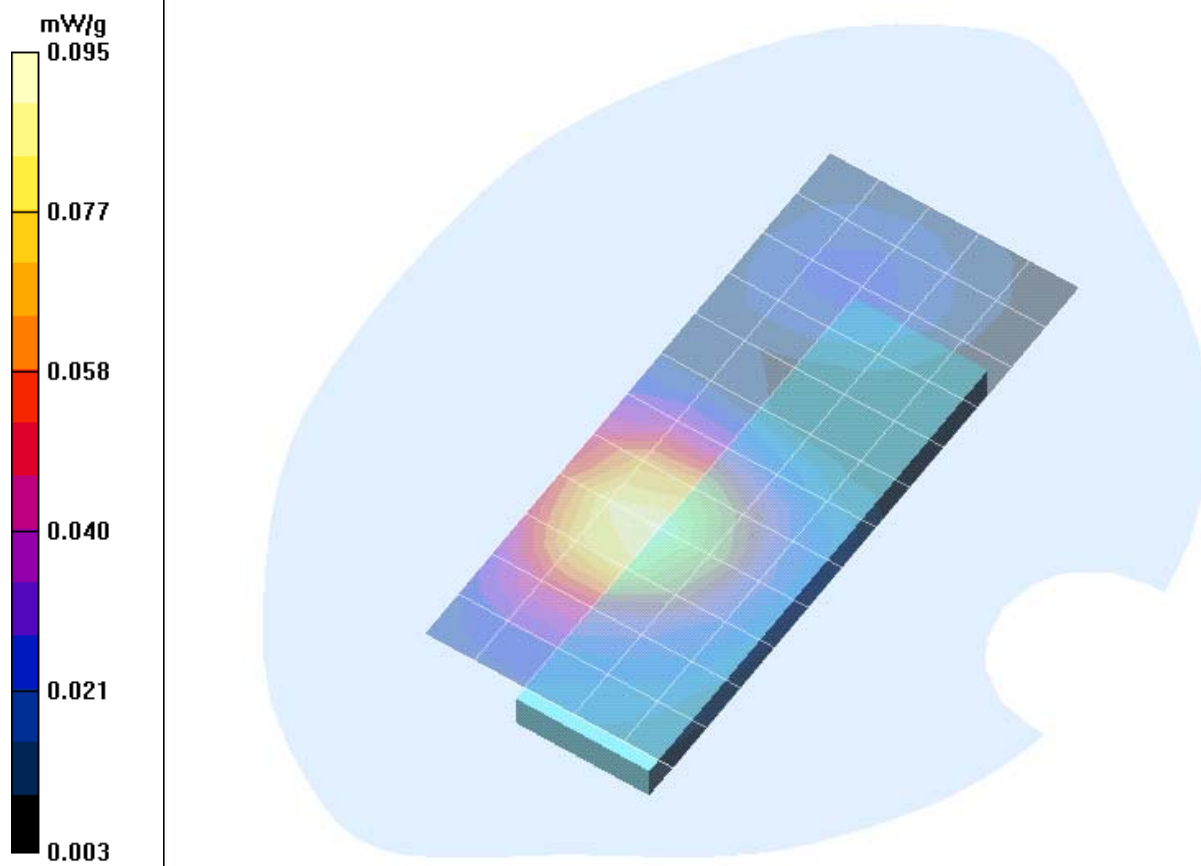


Fig. 7: SAR distribution for GPRS 1900, channel 661, body worn configuration, display towards the phantom with 25 mm distance (December 07, 2005; Ambient Temperature: 22.0° C; Liquid Temperature: 21.2° C).

5 SAR z-axis scans (Validation)

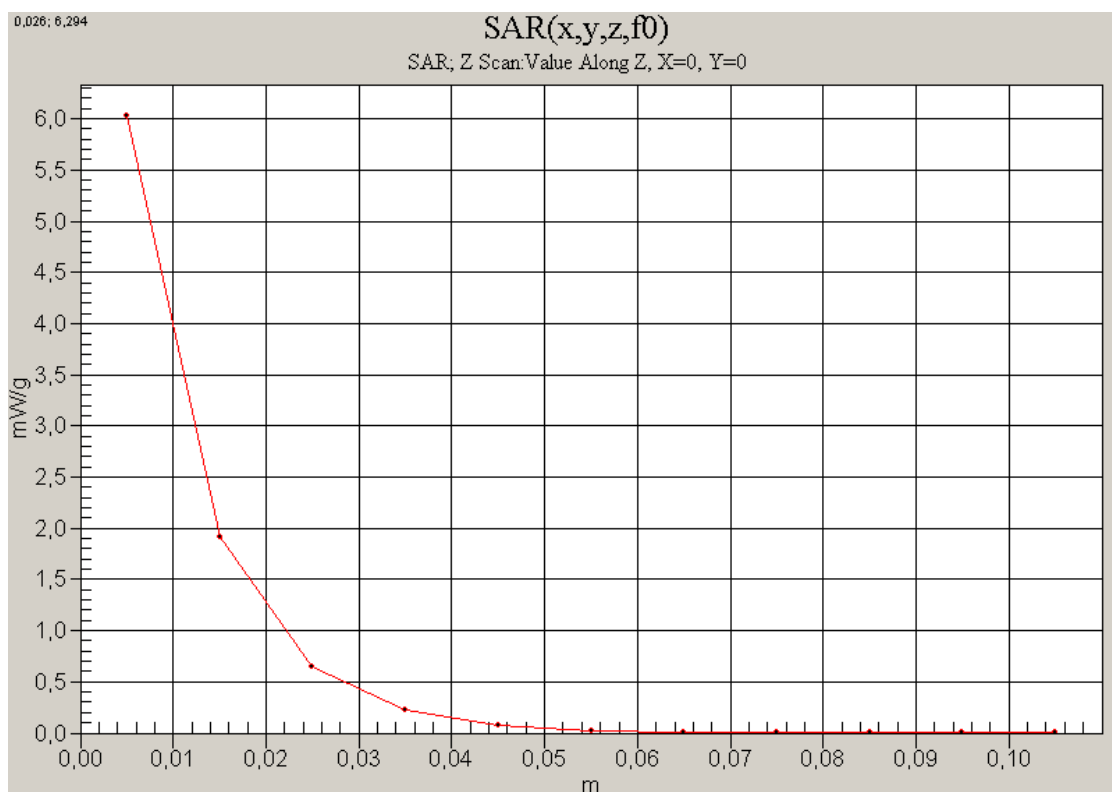


Fig. 8: SAR versus liquid depth, 1900 MHz, head (December 05, 2005; Ambient Temperature: 21.7° C; Liquid Temperature : 21.2° C).

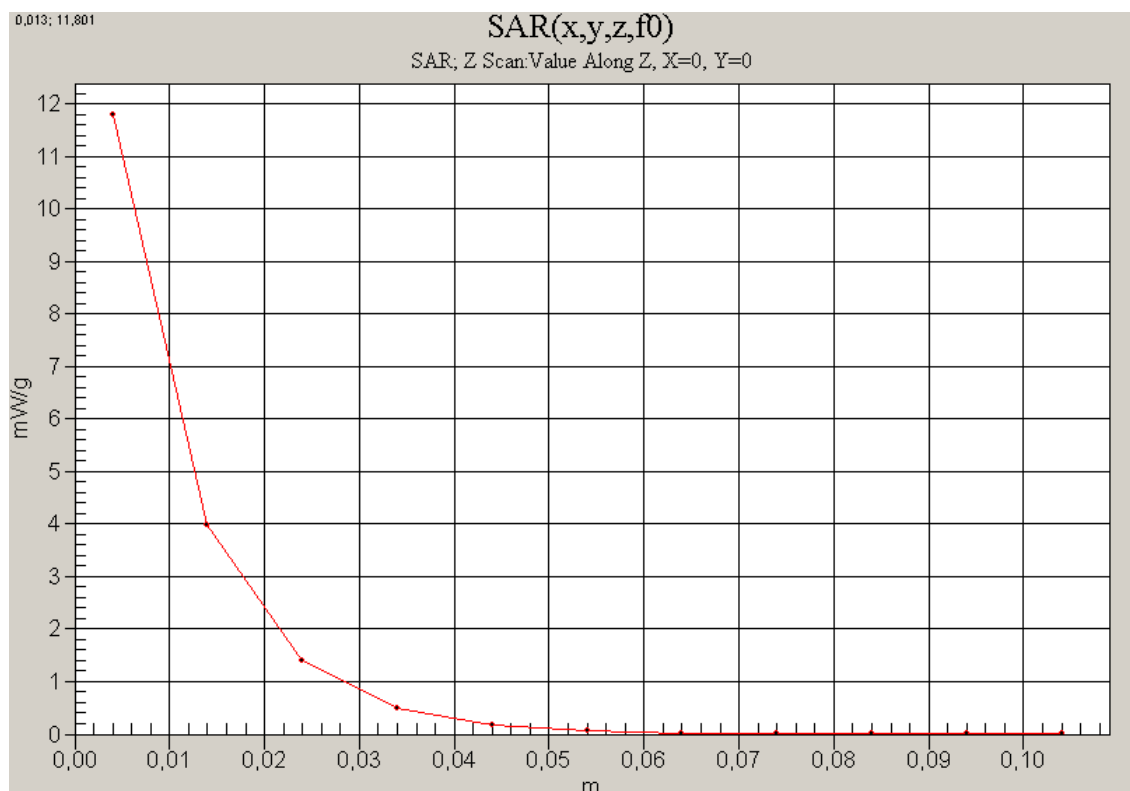


Fig. 9: SAR versus liquid depth, 1900 MHz, body (December 07, 2005; Ambient Temperature: 22.0° C; Liquid Temperature : 21.2° C).

6 SAR z-axis scans (Measurements)

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

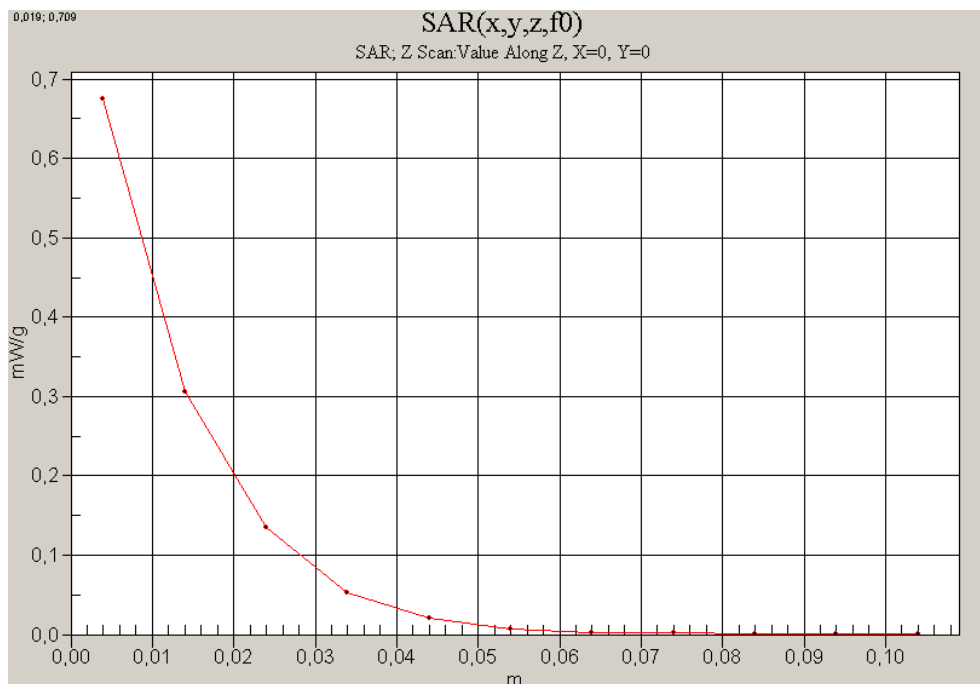


Fig. 10: SAR versus liquid depth, head: PCS 1900, channel 661, cheek position, left side of head (December 05, 2005; Ambient Temperature: 22.3°C; Liquid Temperature : 21.5°C).

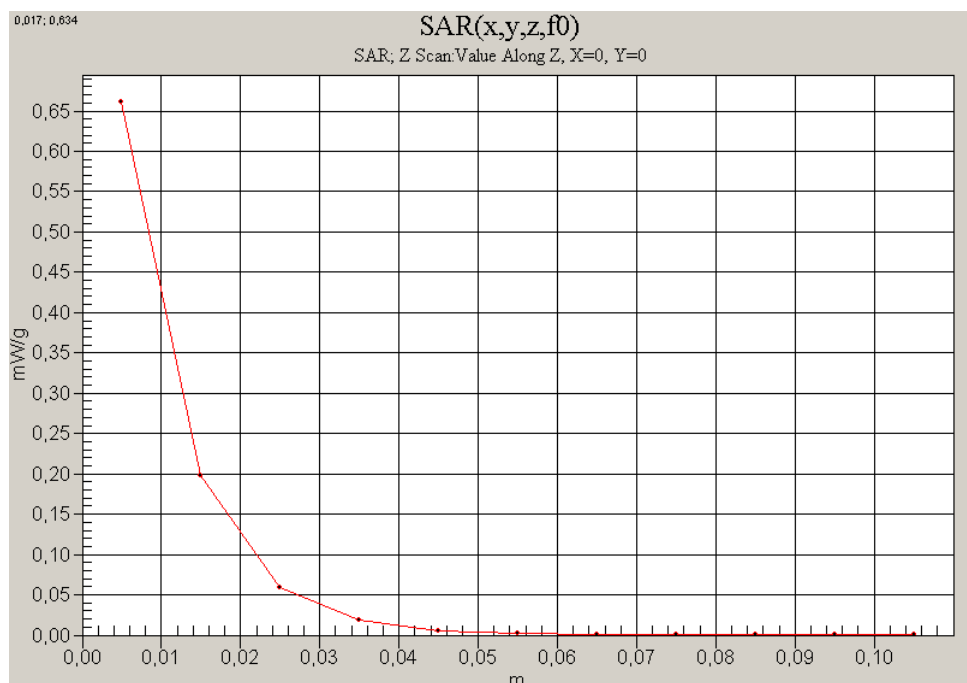


Fig. 11: SAR versus liquid depth, body: PCS 1900, channel 661, headset with 6 mm distance (December 07, 2005; Ambient Temperature: 22.1° C; Liquid Temperature: 21.3° C).