

---

# **Appendix for the Report**

## **Dosimetric Assessment of the Twig TGP81 (FCC ID: YBKTGP81EU)**

### **According to the FCC Requirements**

### **SAR Distribution Plots**

April 12, 2010  
**IMST GmbH**  
**Carl-Friedrich-Gauß-Str. 2**  
**D-47475 Kamp-Lintfort**

Customer  
7layers AG  
Borsigstrasse 11  
D-40880 Ratingen

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.

## Table of Contents

1	SAR DISTRIBUTION PLOTS, GSM 850 HEAD.....	3
2	SAR DISTRIBUTION PLOTS, PCS 1900 HEAD .....	7
3	SAR DISTRIBUTION PLOTS, GSM 850 BODY IN GSM MODE .....	11
4	SAR DISTRIBUTION PLOTS, PCS 1900 BODY IN GSM MODE.....	13
5	SAR Z-AXIS SCANS (VALIDATION) .....	15
6	SAR Z-AXIS SCANS (MEASUREMENTS).....	17

## 1 SAR Distribution Plots, GSM 850 Head

Test Laboratory: Imst GmbH, DASY Yellow (II); File Name: [MC55i\\_569\\_valm\\_1.da4](#)

DUT: twig; Type: Protector MC55i; Serial: 357749032866569

Program Name: GSM 850

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 836.6$  MHz;  $\sigma = 0.92$  mho/m;  $\epsilon_r = 41.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6R - SN1579; ConvF(6.34, 6.34, 6.34); Calibrated: 20.01.2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn631; Calibrated: 14.09.2009
- Phantom: SAM Sugar 1341; Type: QD 000 P40 CB; Serial: TP-1341
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Cheek Left/Area Scan (7x11x1):** Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 3.94 V/m; Power Drift = 0.125 dB

Peak SAR (extrapolated) = 0.064 W/kg

**SAR(1 g) = 0.027 mW/g; SAR(10 g) = 0.014 mW/g**

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

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

Reference Value = 3.94 V/m; Power Drift = 0.125 dB

Peak SAR (extrapolated) = 0.024 W/kg

**SAR(1 g) = 0.014 mW/g; SAR(10 g) = 0.00851 mW/g**

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

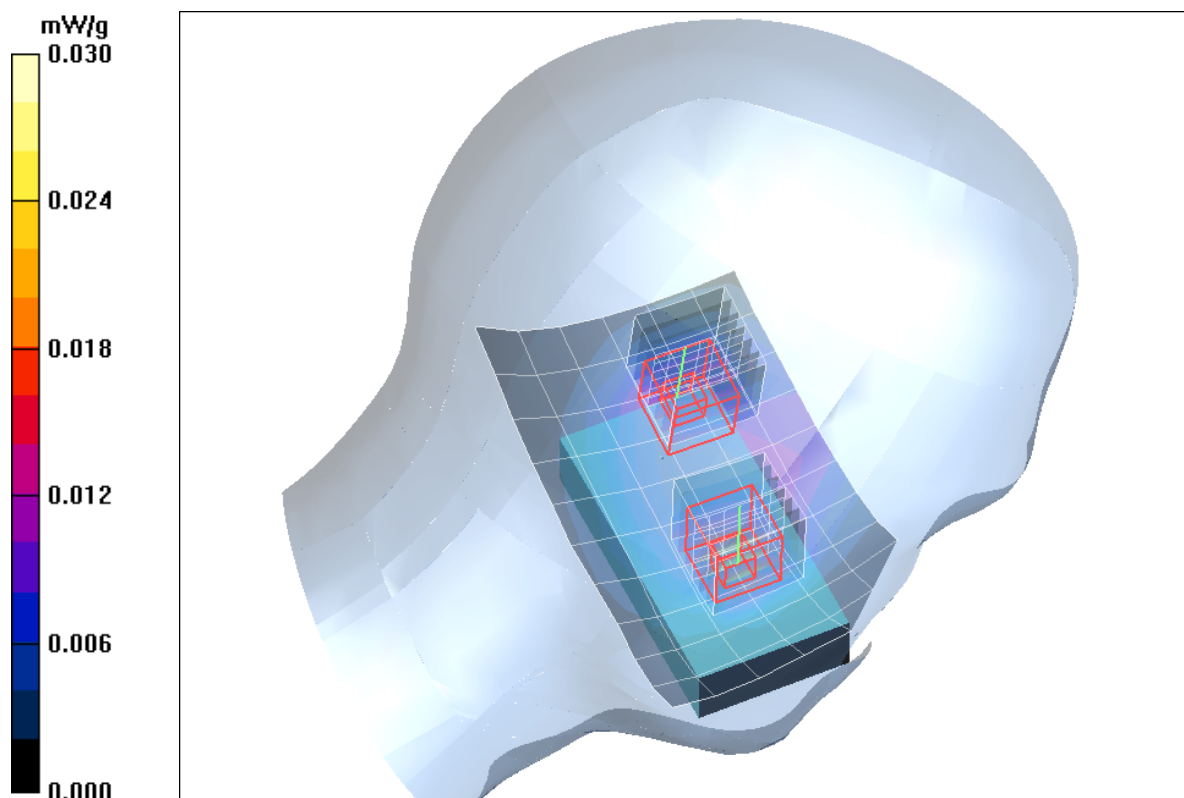


Fig. 1: SAR distribution for GSM 850, channel 190, cheek position, left side of head (April 08, 2010; Ambient Temperature: 21.6° C; Liquid Temperature: 20.7° C).

**Test Laboratory:** Imst GmbH, DASY Yellow (II); **File Name:** [MC55i\\_569\\_yalm\\_2.da4](#)

**DUT:** twig; **Type:** Protector MC55i; **Serial:** 357749032866569

**Program Name:** GSM 850

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 836.6 \text{ MHz}$ ;  $\sigma = 0.92 \text{ mho/m}$ ;  $\epsilon_r = 41.3$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6R - SN1579; ConvF(6.34, 6.34, 6.34); Calibrated: 20.01.2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn631; Calibrated: 14.09.2009
- Phantom: SAM Sugar 1341; Type: QD 000 P40 CB; Serial: TP-1341
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Tilted Left/Area Scan (7x11x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (measured) =  $0.019 \text{ mW/g}$

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

Reference Value =  $4.69 \text{ V/m}$ ; Power Drift =  $-0.177 \text{ dB}$

Peak SAR (extrapolated) =  $0.030 \text{ W/kg}$

**SAR(1 g) =  $0.019 \text{ mW/g}$ ; SAR(10 g) =  $0.012 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.021 \text{ mW/g}$

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

Reference Value =  $4.69 \text{ V/m}$ ; Power Drift =  $-0.177 \text{ dB}$

Peak SAR (extrapolated) =  $0.026 \text{ W/kg}$

**SAR(1 g) =  $0.019 \text{ mW/g}$ ; SAR(10 g) =  $0.013 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.020 \text{ mW/g}$

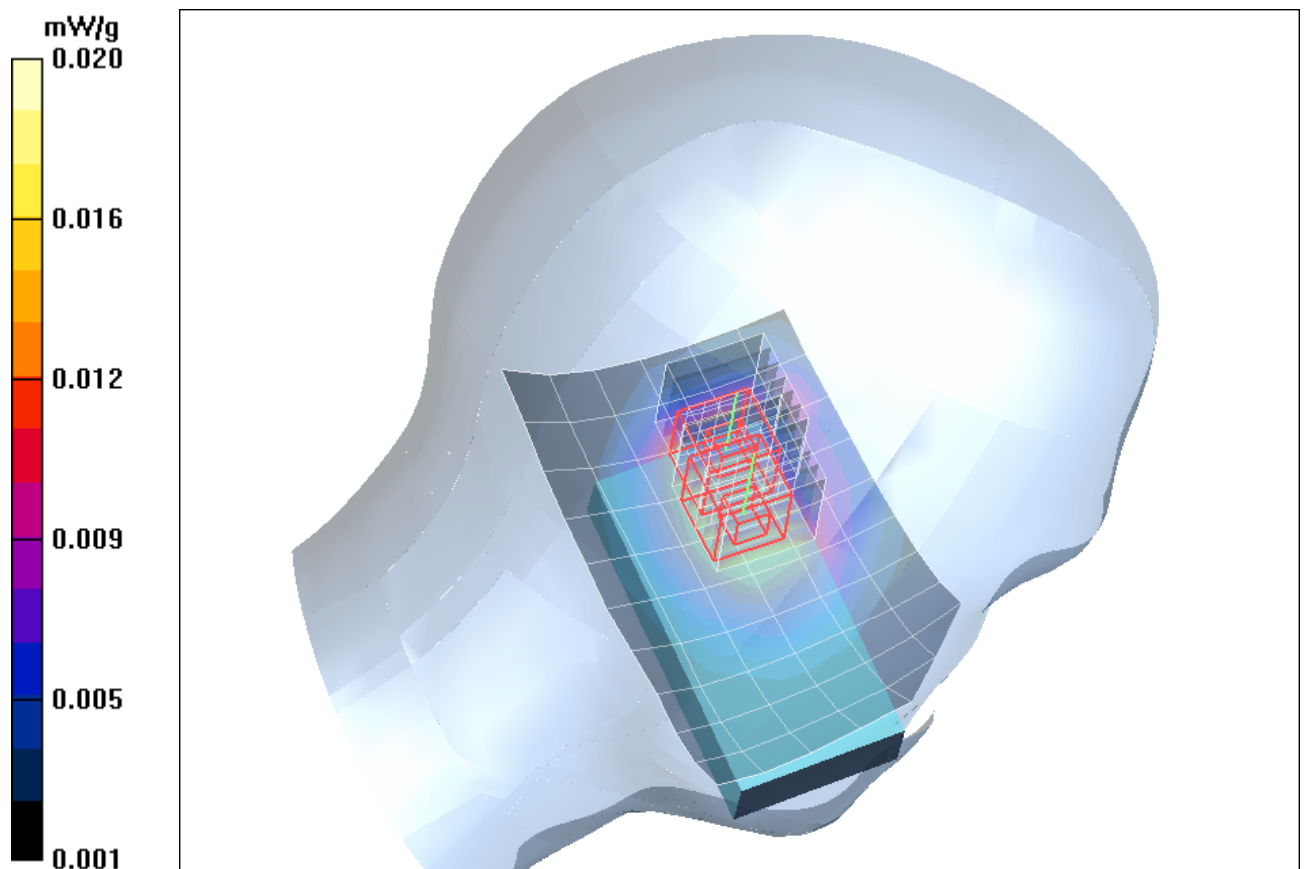


Fig. 2: SAR distribution for GSM 850, channel 190, tilted position, left side of head (April 08, 2010; Ambient Temperature:  $21.6^\circ \text{ C}$ ; Liquid Temperature:  $20.7^\circ \text{ C}$ ).

**Test Laboratory:** Imst GmbH, DASY Yellow (II); **File Name:** [MC55i 569 yarm 1.da4](#)

**DUT:** twig; **Type:** Protector MC55i; **Serial:** 357749032866569

**Program Name:** GSM 850

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 836.6$  MHz;  $\sigma = 0.92$  mho/m;  $\epsilon_r = 41.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6R - SN1579; ConvF(6.34, 6.34, 6.34); Calibrated: 20.01.2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn631; Calibrated: 14.09.2009
- Phantom: SAM Sugar 1341; Type: QD 000 P40 CB; Serial: TP-1341
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Cheek Right/Area Scan (7x11x1):** Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 3.69 V/m; Power Drift = 0.043 dB

Peak SAR (extrapolated) = 0.065 W/kg

**SAR(1 g) = 0.027 mW/g; SAR(10 g) = 0.013 mW/g**

Maximum value of SAR (measured) = 0.031 mW/g

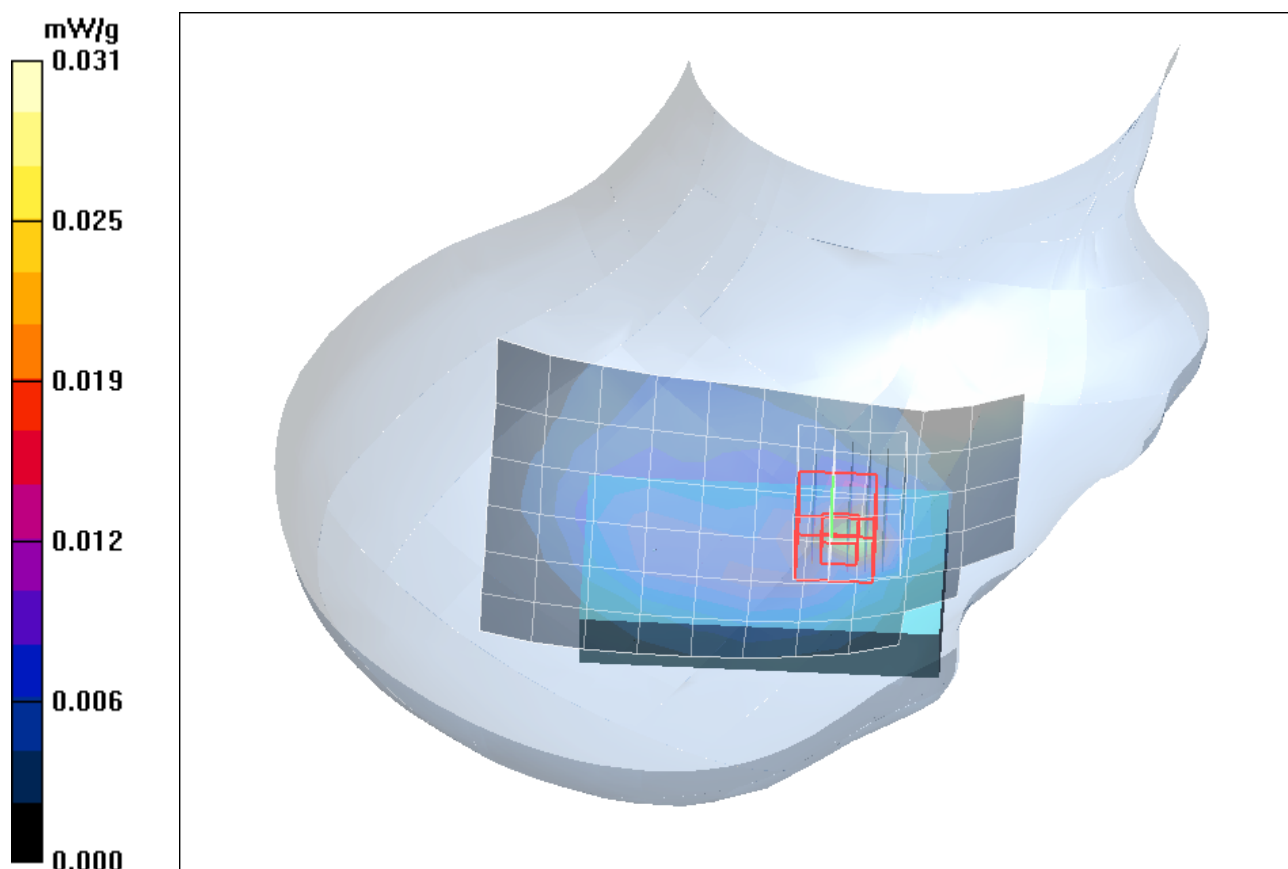


Fig. 3: SAR distribution for GSM 850, channel 190, cheek position, right side of head (April 08, 2010; Ambient Temperature: 21.6° C; Liquid Temperature: 20.7° C).

**Test Laboratory:** Imst GmbH, DASY Yellow (II); **File Name:** [MC55i 569 yarm 2.da4](#)

**DUT:** twig; **Type:** Protector MC55i; **Serial:** 357749032866569

**Program Name:** GSM 850

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 836.6$  MHz;  $\sigma = 0.92$  mho/m;  $\epsilon_r = 41.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6R - SN1579; ConvF(6.34, 6.34, 6.34); Calibrated: 20.01.2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn631; Calibrated: 14.09.2009
- Phantom: SAM Sugar 1341; Type: QD 000 P40 CB; Serial: TP-1341
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Tilted Right/Area Scan (7x11x1):** Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 4.18 V/m; Power Drift = -0.056 dB

Peak SAR (extrapolated) = 0.019 W/kg

**SAR(1 g) = 0.014 mW/g; SAR(10 g) = 0.00988 mW/g**

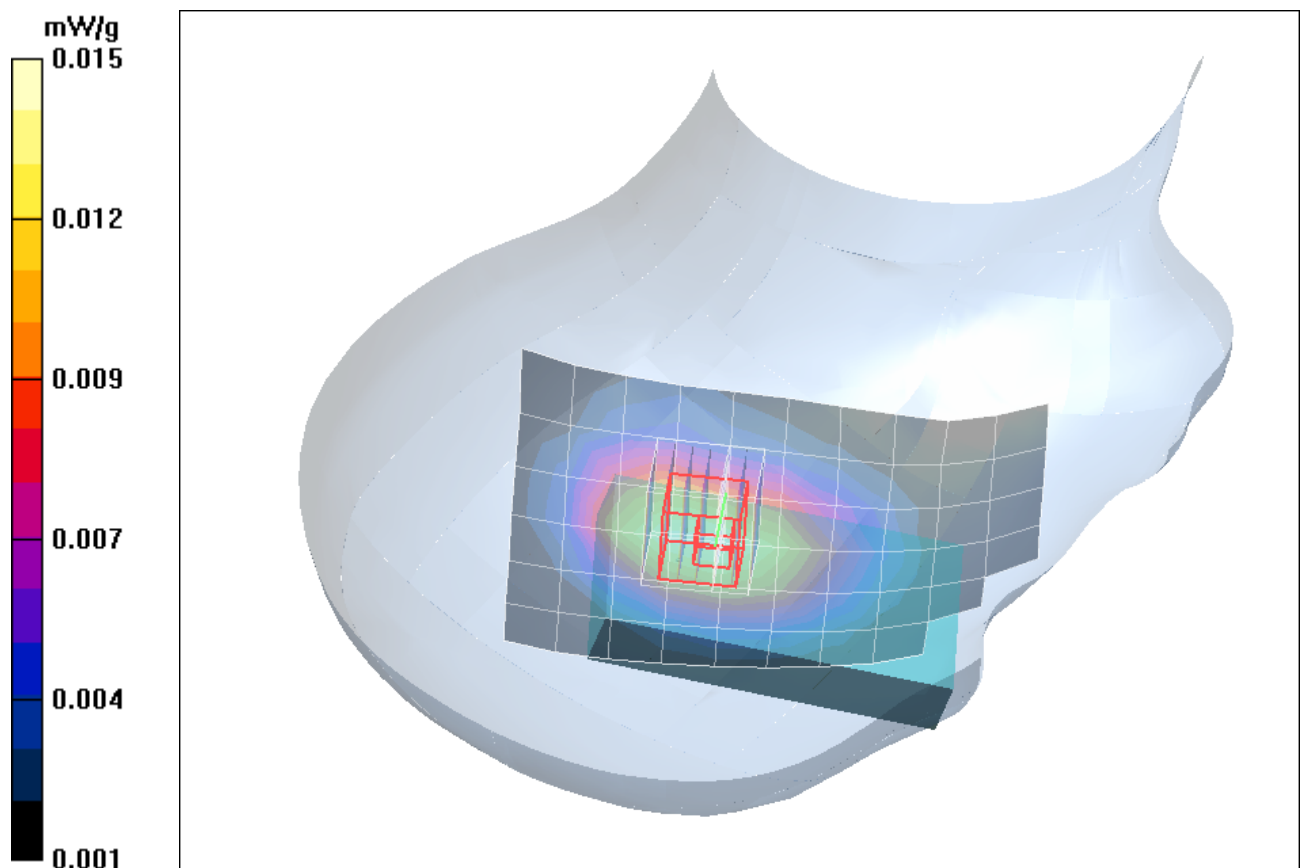


Fig. 4: SAR distribution for GSM 850, channel 190, tilted position, right side of head (April 08, 2010; Ambient Temperature: 21.6° C; Liquid Temperature: 20.7° C).

## 2 SAR Distribution Plots, PCS 1900 Head

Test Laboratory: IMST GmbH, DASY Blue (I); File Name: [MC55i 569 bplm 1.da4](#)

DUT: twig; Type: Protector MC55i; Serial: 357749032866569

Program Name: PCS 1900

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

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(7.95, 7.95, 7.95); Calibrated: 18.09.2009
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn335; Calibrated: 10.02.2010
- Phantom: SAM Glycol 1176; Type: Speag; Serial: 1176
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Cheek Left/Area Scan (7x11x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.233 mW/g

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

Reference Value = 8.21 V/m; Power Drift = -0.081 dB

Peak SAR (extrapolated) = 0.364 W/kg

**SAR(1 g) = 0.209 mW/g; SAR(10 g) = 0.108 mW/g**

Maximum value of SAR (measured) = 0.239 mW/g

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

Reference Value = 8.21 V/m; Power Drift = -0.081 dB

Peak SAR (extrapolated) = 0.179 W/kg

**SAR(1 g) = 0.112 mW/g; SAR(10 g) = 0.069 mW/g**

Maximum value of SAR (measured) = 0.122 mW/g

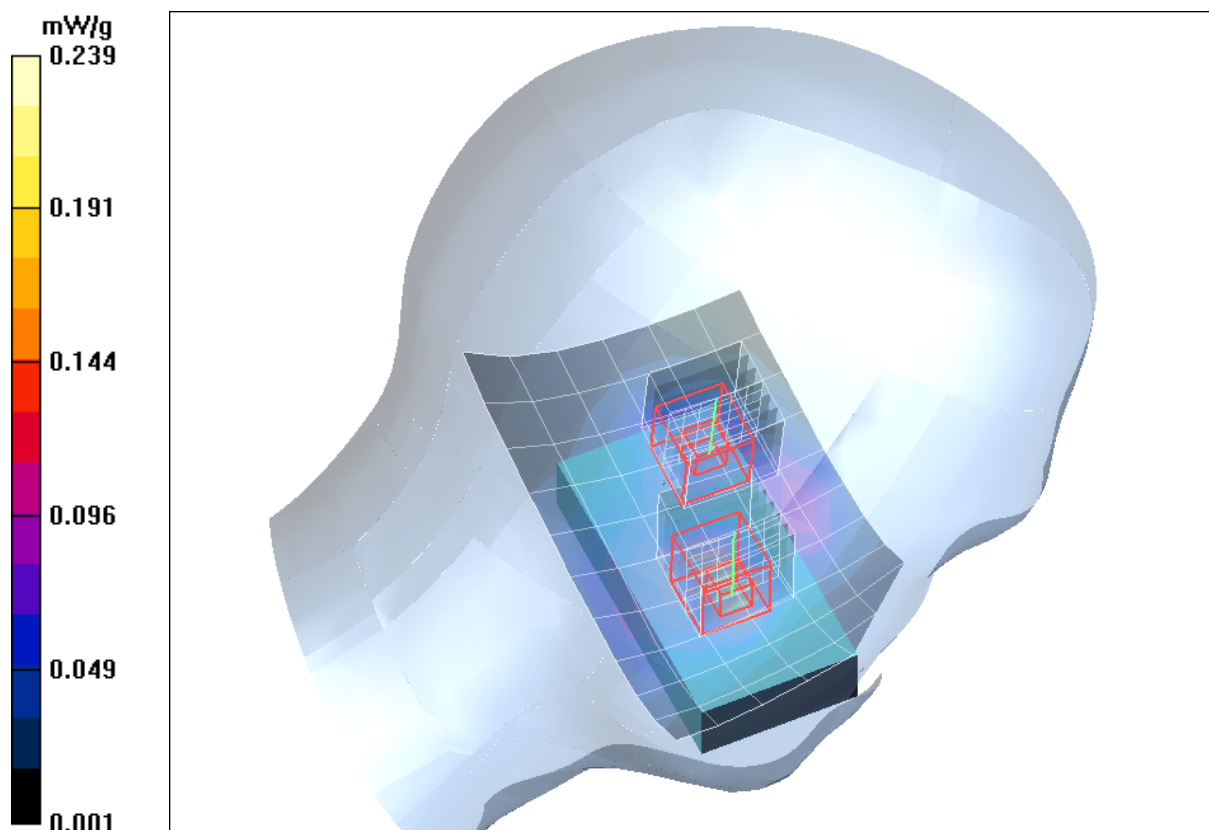


Fig. 5: SAR distribution for PCS 1900, channel 661, cheek position, left side of head (April 06, 2010; Ambient Temperature: 21.3° C; Liquid Temperature : 20.7° C).



**Test Laboratory:** IMST GmbH, DASY Blue (I); **File Name:** [MC55i\\_569\\_bplm\\_2.da4](#)

**DUT:** twig; **Type:** Protector MC55i; **Serial:** 357749032866569

**Program Name:** PCS 1900

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

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(7.95, 7.95, 7.95); Calibrated: 18.09.2009
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn335; Calibrated: 10.02.2010
- Phantom: SAM Glycol 1176; Type: Speag; Serial: 1176
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Tilted Left/Area Scan (7x11x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.084 mW/g

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

Reference Value = 6.63 V/m; Power Drift = 0.004 dB

Peak SAR (extrapolated) = 0.131 W/kg

**SAR(1 g) = 0.083 mW/g; SAR(10 g) = 0.048 mW/g**

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

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

Reference Value = 6.63 V/m; Power Drift = 0.004 dB

Peak SAR (extrapolated) = 0.073 W/kg

**SAR(1 g) = 0.046 mW/g; SAR(10 g) = 0.027 mW/g**

Maximum value of SAR (measured) = 0.051 mW/g

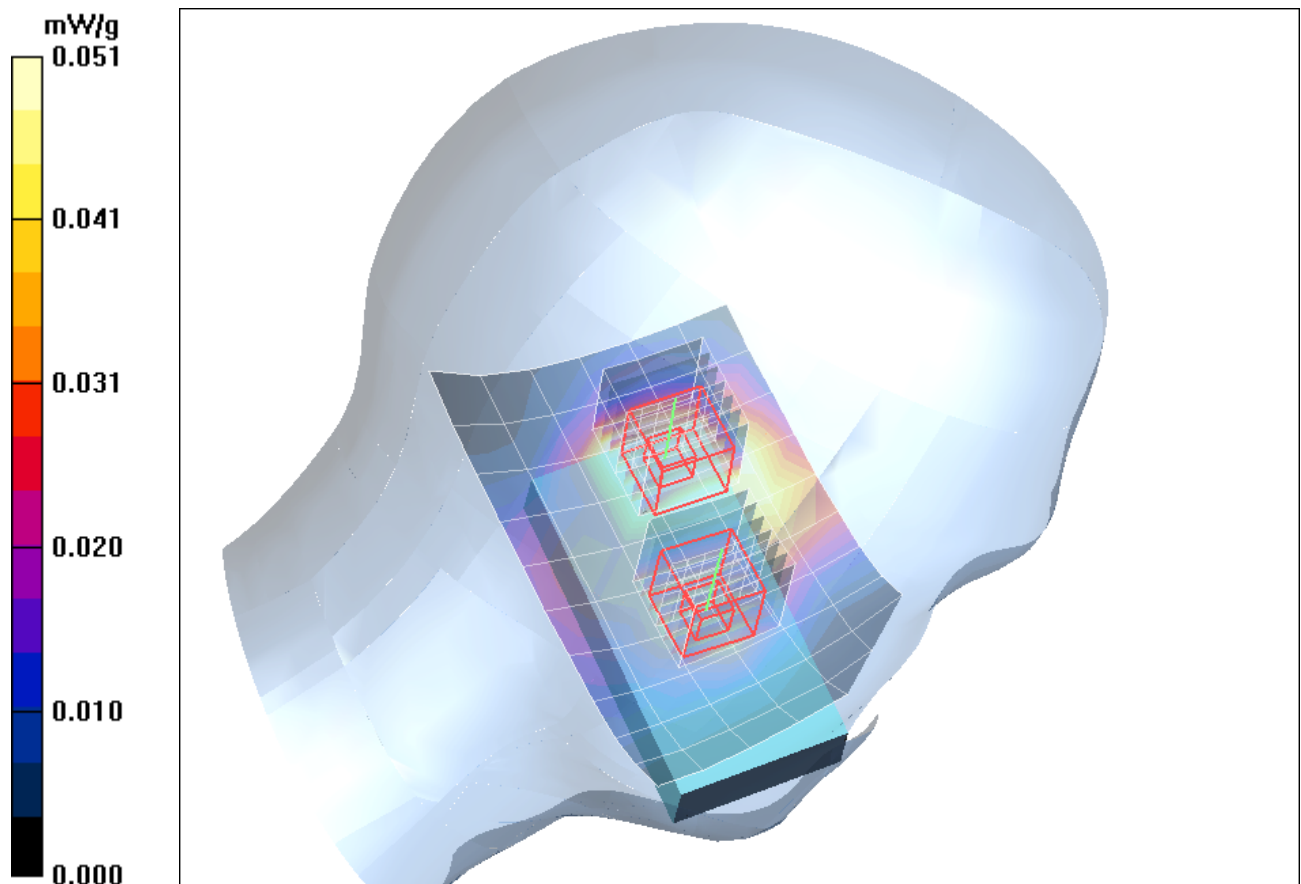


Fig. 6: SAR distribution for PCS 1900, channel 661, tilted position, left side of head (April 06, 2010; Ambient Temperature: 21.3° C; Liquid Temperature : 20.7° C).



**Test Laboratory:** IMST GmbH, DASY Blue (I); **File Name:** [MC55i\\_569\\_bprm\\_1.da4](#)

**DUT:** twig; **Type:** Protector MC55i; **Serial:** 357749032866569

**Program Name:** PCS 1900

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

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(7.95, 7.95, 7.95); Calibrated: 18.09.2009

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

- Electronics: DAE3 Sn335; Calibrated: 10.02.2010

- Phantom: SAM Glycol 1176; Type: Speag; Serial: 1176

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

**Cheek Right/Area Scan (7x11x1):** Measurement grid:  $dx=15$ mm,  $dy=15$ mm

Maximum value of SAR (measured) = 0.183 mW/g

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

Reference Value = 7.69 V/m; Power Drift = -0.124 dB

Peak SAR (extrapolated) = 0.362 W/kg

**SAR(1 g) = 0.212 mW/g; SAR(10 g) = 0.110 mW/g**

Maximum value of SAR (measured) = 0.244 mW/g

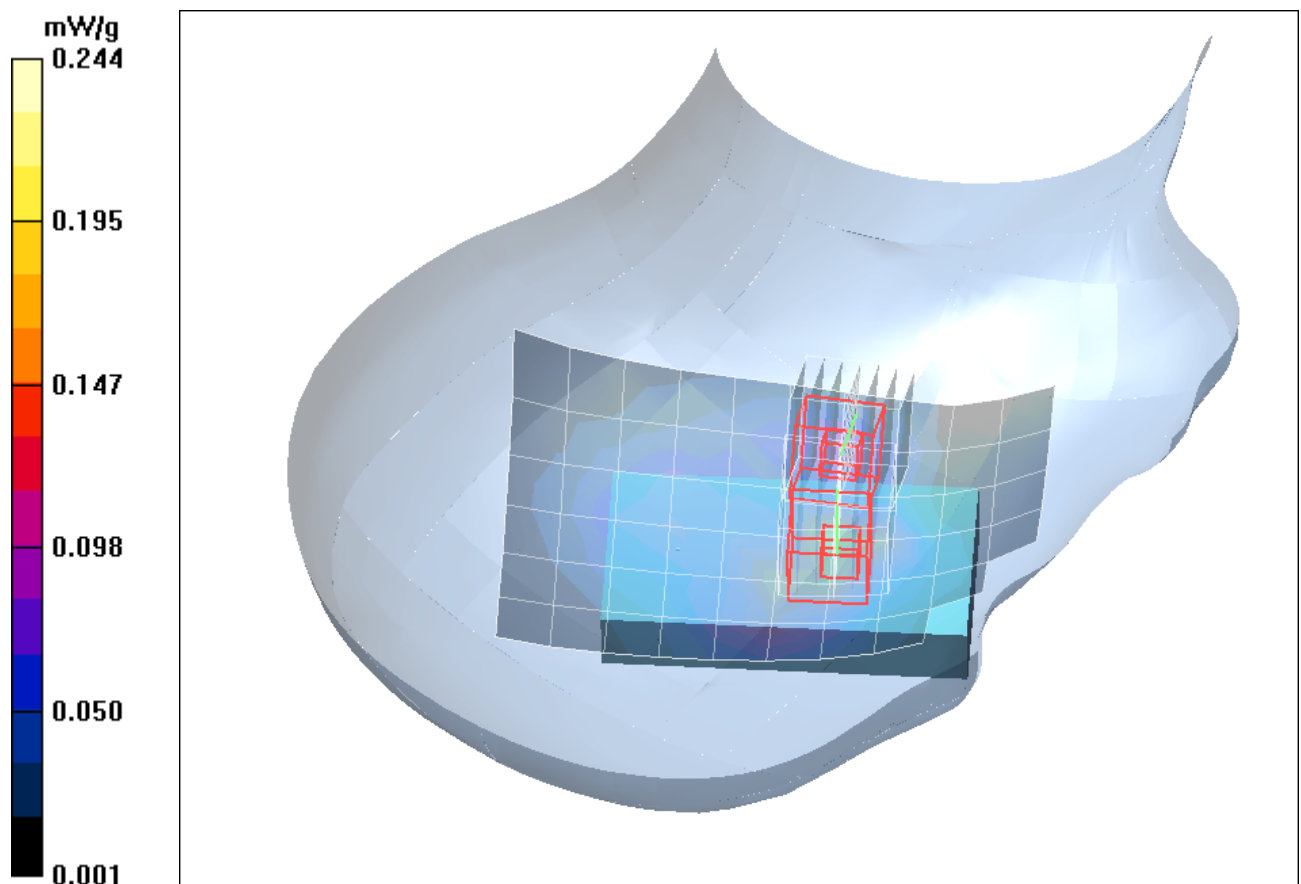
**Cheek Right/Zoom Scan (7x7x7)/Cube 1:** Measurement grid:  $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

Reference Value = 7.69 V/m; Power Drift = -0.124 dB

Peak SAR (extrapolated) = 0.140 W/kg

**SAR(1 g) = 0.091 mW/g; SAR(10 g) = 0.052 mW/g**

Maximum value of SAR (measured) = 0.102 mW/g



**Fig. 7:** SAR distribution for PCS 1900, channel 661, cheek position, right side of head (April 06, 2010; Ambient Temperature: 21.3° C; Liquid Temperature : 20.7° C).

**Test Laboratory:** IMST GmbH, DASY Blue (I); **File Name:** [MC55i\\_569\\_bprm\\_2.da4](#)

**DUT:** twig; **Type:** Protector MC55i; **Serial:** 357749032866569

**Program Name:** PCS 1900

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

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(7.95, 7.95, 7.95); Calibrated: 18.09.2009

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

- Electronics: DAE3 Sn335; Calibrated: 10.02.2010

- Phantom: SAM Glycol 1176; Type: Speag; Serial: 1176

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

**Tilted Right/Area Scan (7x11x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.075 mW/g

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

Reference Value = 6.64 V/m; Power Drift = 0.058 dB

Peak SAR (extrapolated) = 0.130 W/kg

**SAR(1 g) = 0.082 mW/g; SAR(10 g) = 0.048 mW/g**

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

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

Reference Value = 6.64 V/m; Power Drift = 0.058 dB

Peak SAR (extrapolated) = 0.089 W/kg

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

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

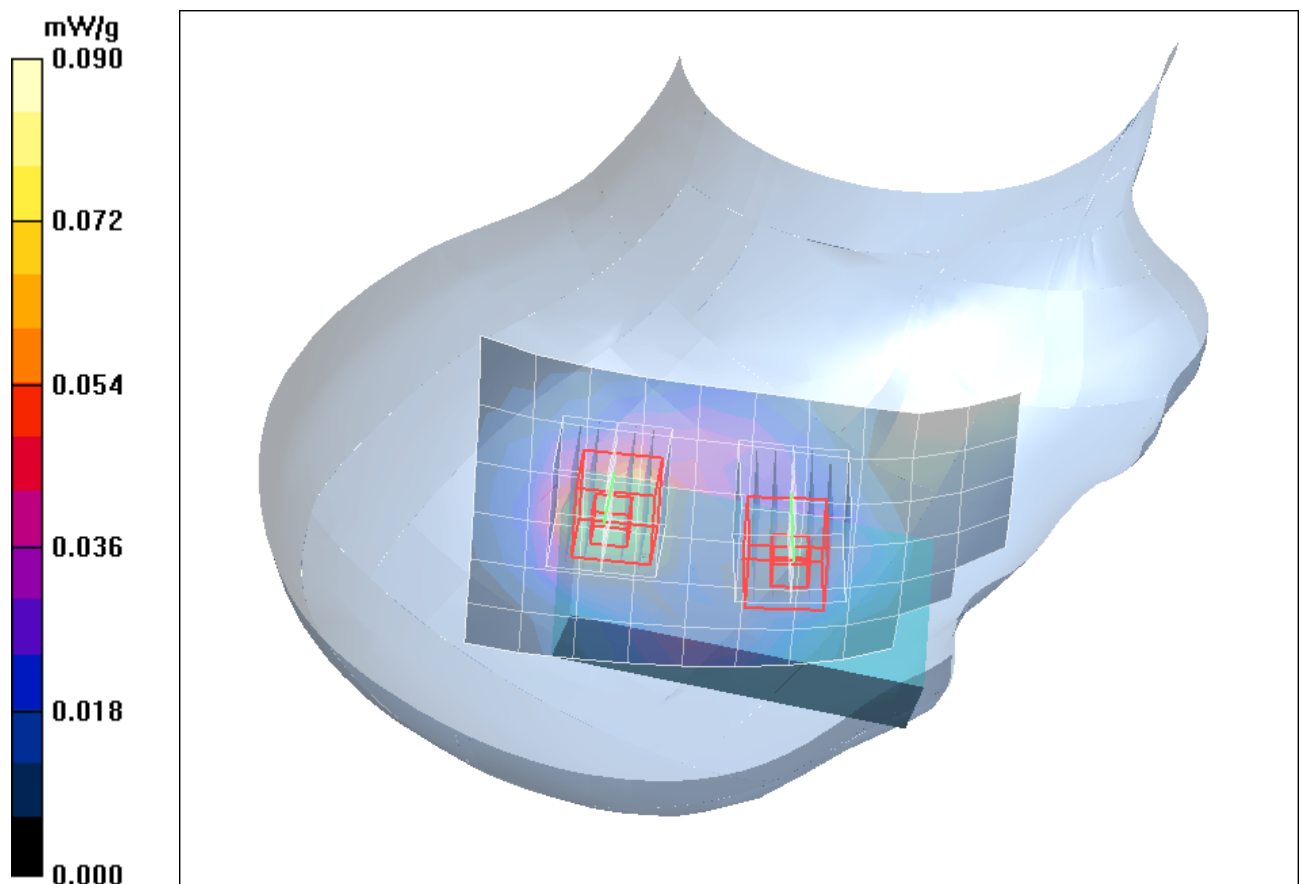


Fig. 8: SAR distribution for PCS 1900, channel 661, tilted position, right side of head (April 06, 2010; Ambient Temperature: 21.3° C; Liquid Temperature : 20.7° C)

### 3 SAR Distribution Plots, GSM 850 Body in GSM mode

Test Laboratory: IMST GmbH, DASY Blue (I); File Name: [MC55i\\_569\\_bahm\\_1\\_dspl\\_up\\_15mm.da4](#)

DUT: twig; Type: Protector MC55i; Serial: 357749032866569

Program Name: GSM 850

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 836.6$  MHz;  $\sigma = 1$  mho/m;  $\epsilon_r = 55.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6R - SN1579; ConvF(6.21, 6.21, 6.21); Calibrated: 20.01.2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn631; Calibrated: 14.09.2009
- Phantom: SAM Sugar 1059; Type: Speag; Serial: 1059
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Body Worn/Area Scan (8x12x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.010 mW/g

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

Reference Value = 3.24 V/m; Power Drift = -0.048 dB

Peak SAR (extrapolated) = 0.014 W/kg

**SAR(1 g) = 0.010 mW/g; SAR(10 g) = 0.00727 mW/g**

Maximum value of SAR (measured) = 0.011 mW/g

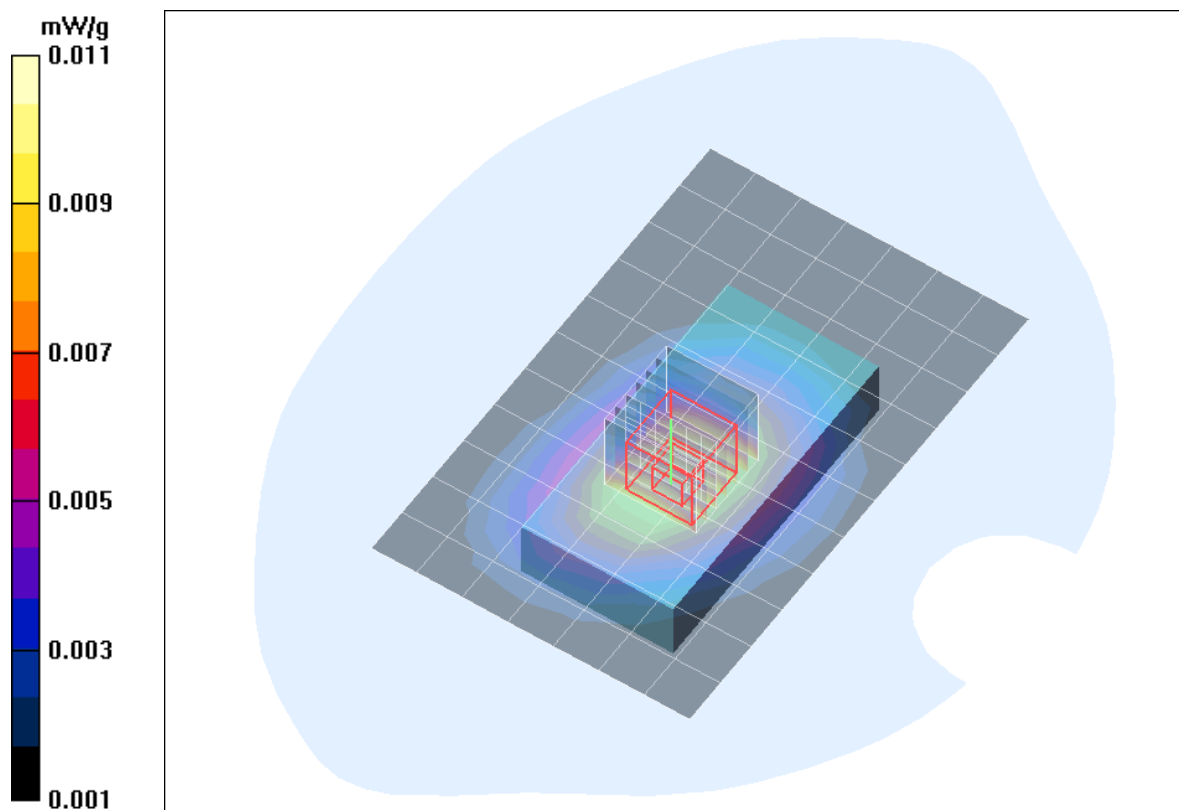


Fig. 9: SAR distribution for GSM 850, channel 190, body worn configuration, display towards the phantom, 15 mm distance (April 09, 2010; Ambient Temperature: 21.3° C; Liquid Temperature: 20.8° C).

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

[MC55i\\_569\\_bahm\\_2\\_dspl\\_down\\_15mm.da4](#)

**DUT:** twig; **Type:** Protector MC55i; **Serial:** 357749032866569

**Program Name:** GSM 850

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 836.6$  MHz;  $\sigma = 1$  mho/m;  $\epsilon_r = 55.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6R - SN1579; ConvF(6.21, 6.21, 6.21); Calibrated: 20.01.2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn631; Calibrated: 14.09.2009
- Phantom: SAM Sugar 1059; Type: Speag; Serial: 1059
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Body Worn/Area Scan (8x12x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.039 mW/g

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

Reference Value = 6.15 V/m; Power Drift = 0.015 dB

Peak SAR (extrapolated) = 0.056 W/kg

**SAR(1 g) = 0.039 mW/g; SAR(10 g) = 0.027 mW/g**

Maximum value of SAR (measured) = 0.041 mW/g

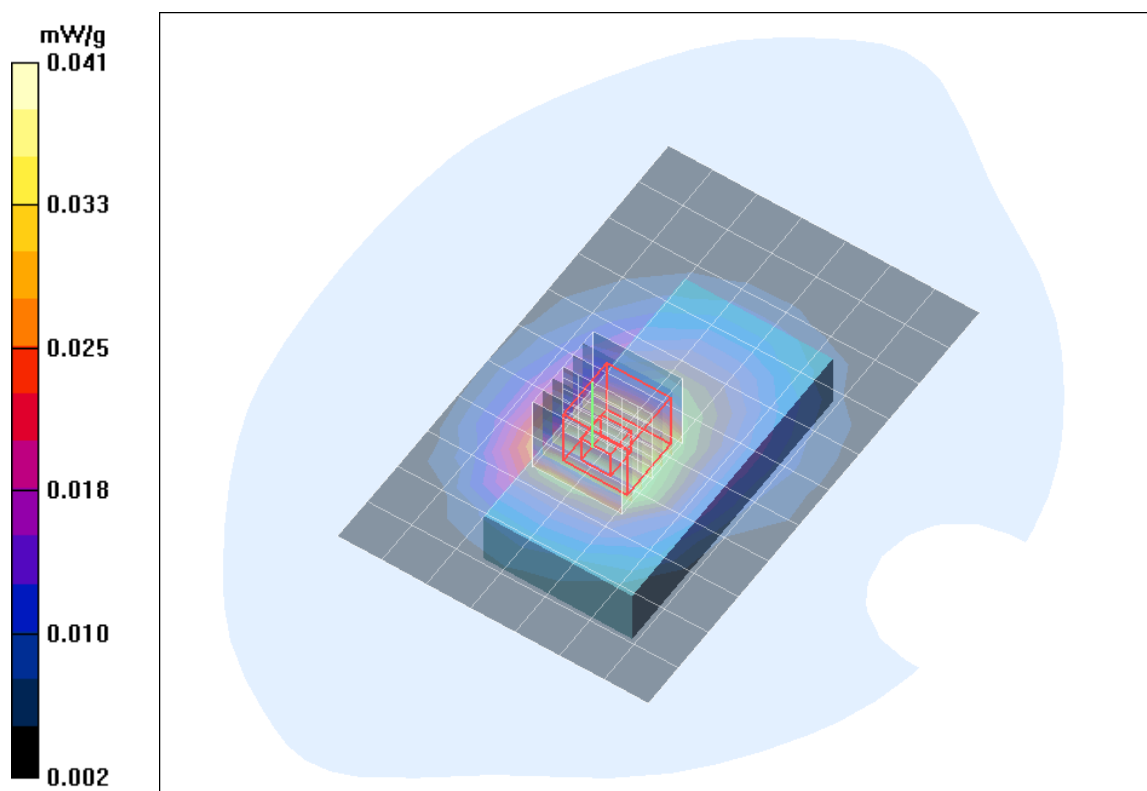


Fig. 10: SAR distribution for GSM 850, channel 190, body worn configuration, display towards the ground, 15 mm distance (April 09, 2010; Ambient Temperature: 21.3° C; Liquid Temperature: 20.8° C).

## 4 SAR Distribution Plots, PCS 1900 body in GSM mode

Test Laboratory: IMST GmbH, DASY Blue (I); File Name: [MC55i\\_569\\_bphm\\_1\\_dspl\\_up\\_15mm.da4](#)

DUT: twig; Type: Protector MC55i; Serial: 357749032866569

Program Name: PCS 1900

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

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.52$  mho/m;  $\epsilon_r = 52.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(8.11, 8.11, 8.11); Calibrated: 18.09.2009
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn335; Calibrated: 10.02.2010
- 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 (8x12x1):** Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 5.59 V/m; Power Drift = -0.010 dB

Peak SAR (extrapolated) = 0.085 W/kg

**SAR(1 g) = 0.054 mW/g; SAR(10 g) = 0.033 mW/g**

Maximum value of SAR (measured) = 0.058 mW/g

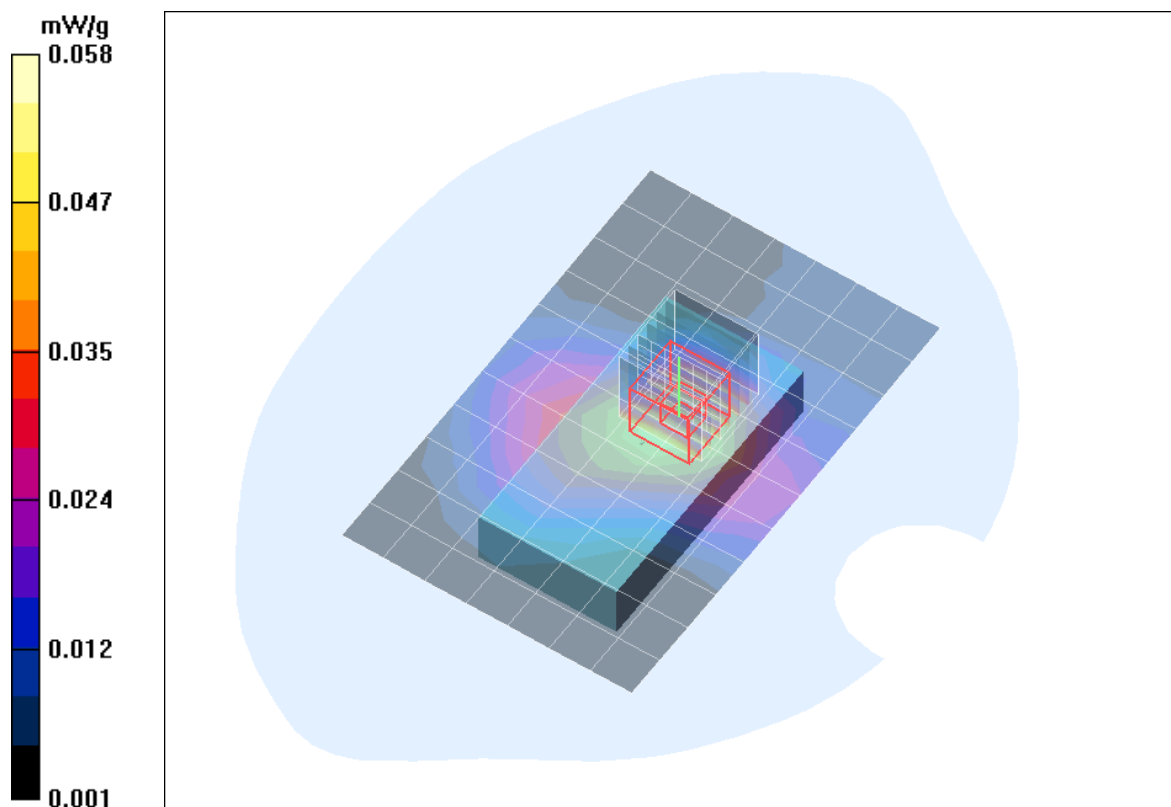


Fig. 11: SAR distribution for PCS 1900, channel 661, body worn configuration, display towards the phantom, 15 mm distance (April 09, 2010; Ambient Temperature: 21.2° C; Liquid Temperature: 20.9° C).

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

[MC55i\\_569\\_bphm\\_2\\_dspl\\_down\\_15mm.da4](#)

**DUT:** twig; **Type:** Protector MC55i; **Serial:** 357749032866569

**Program Name:** PCS 1900

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

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.52$  mho/m;  $\epsilon_r = 52.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(8.11, 8.11, 8.11); Calibrated: 18.09.2009
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn335; Calibrated: 10.02.2010
- 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 (8x12x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.170 mW/g

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

Reference Value = 8.20 V/m; Power Drift = -0.157 dB

Peak SAR (extrapolated) = 0.241 W/kg

**SAR(1 g) = 0.158 mW/g; SAR(10 g) = 0.101 mW/g**

Maximum value of SAR (measured) = 0.168 mW/g

**Body Worn/Zoom Scan (7x7x7)/Cube 1:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.20 V/m; Power Drift = -0.157 dB

Peak SAR (extrapolated) = 0.277 W/kg

**SAR(1 g) = 0.163 mW/g; SAR(10 g) = 0.086 mW/g**

Maximum value of SAR (measured) = 0.181 mW/g

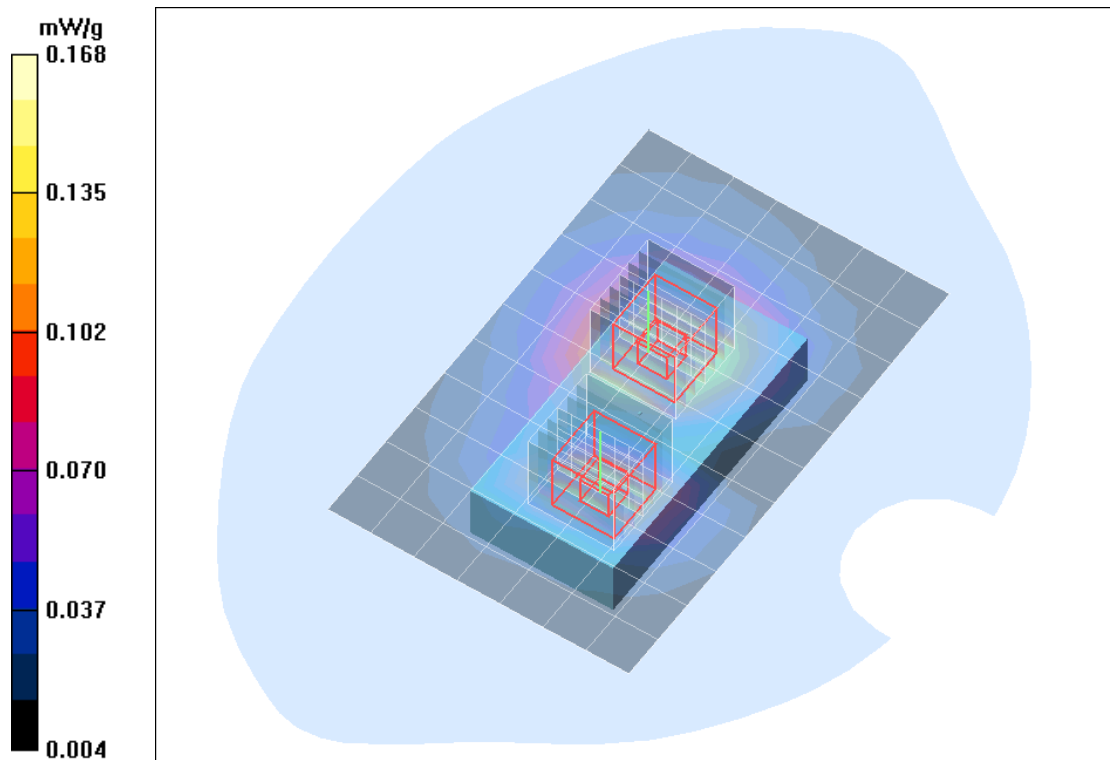


Fig. 12: SAR distribution for PCS 1900, channel 661, body worn configuration, display towards the ground, 15 mm distance (April 09, 2010; Ambient Temperature: 21.2° C; Liquid Temperature: 20.9° C).

## 5 SAR z-axis scans (Validation)

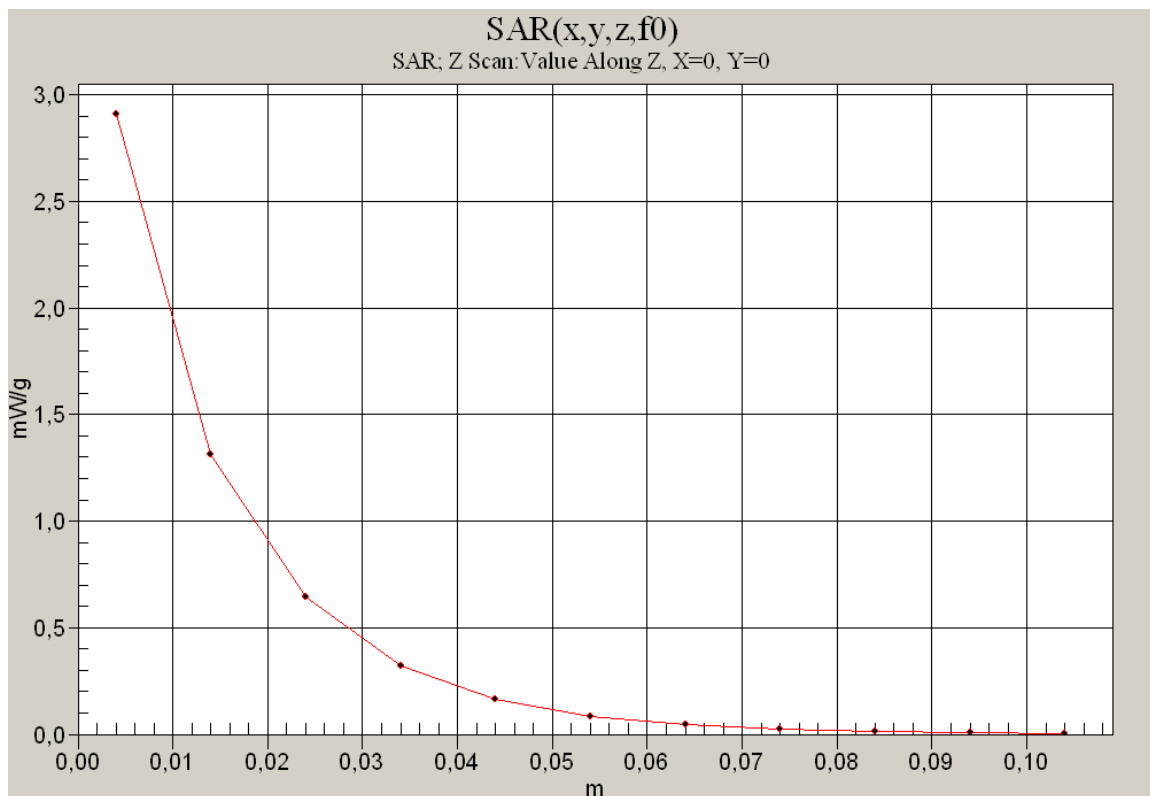


Fig. 13: SAR versus liquid depth, 835 MHz, head (April 08, 2010; Ambient Temperature: 21.5° C; Liquid Temperature : 20.7° C).

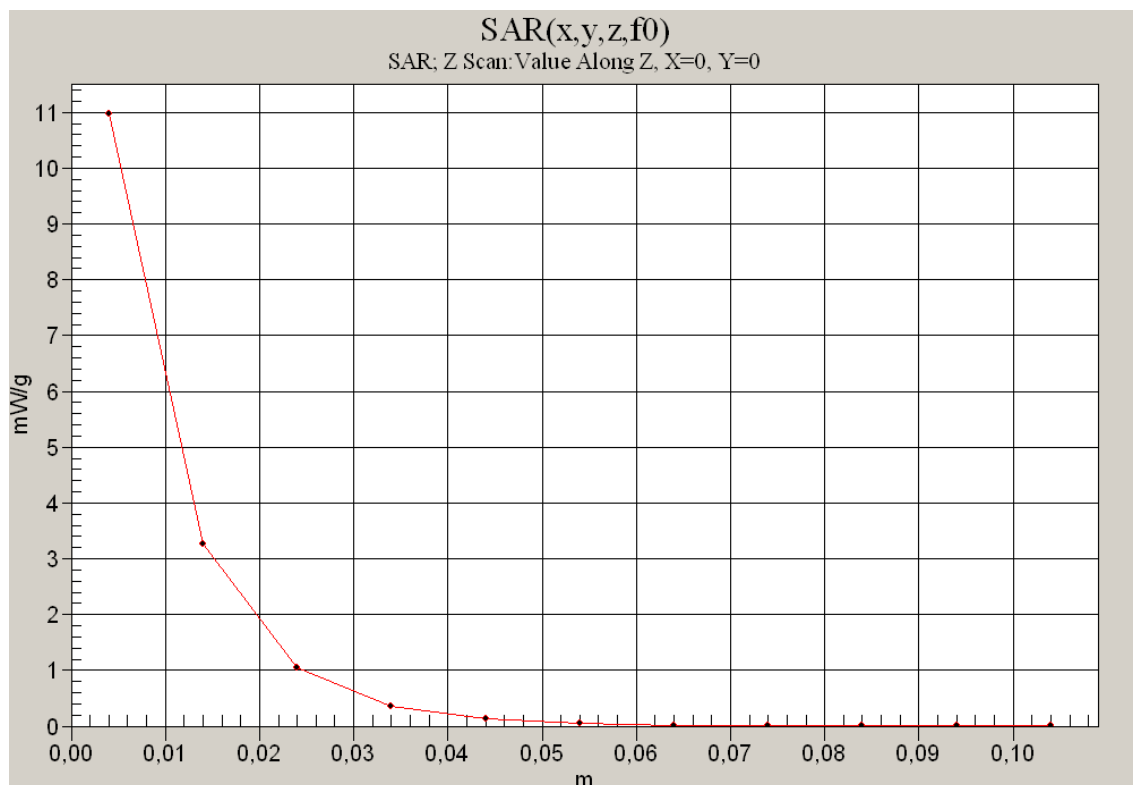


Fig. 14: SAR versus liquid depth, 835 MHz, body (April 09, 2010; Ambient Temperature: 21.3° C; Liquid Temperature : 20.8° C).



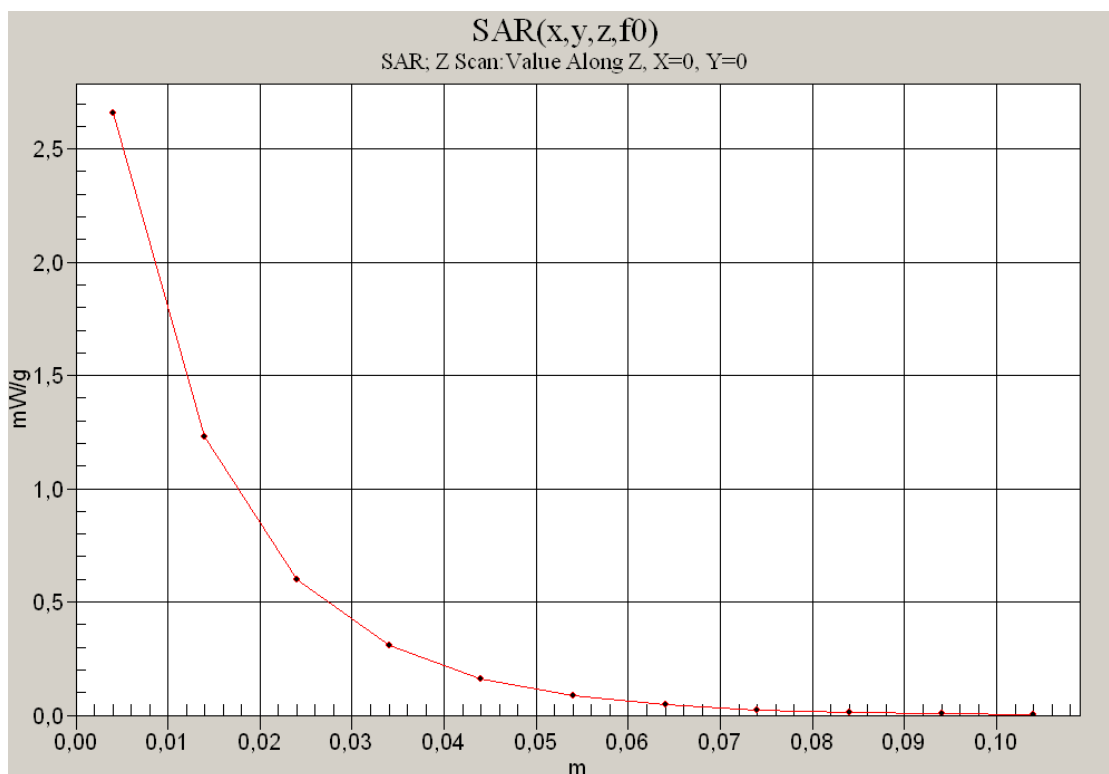


Fig. 15: SAR versus liquid depth, 1900 MHz, head (April 06, 2010; Ambient Temperature: 21.3° C; Liquid Temperature: 20.7° C).

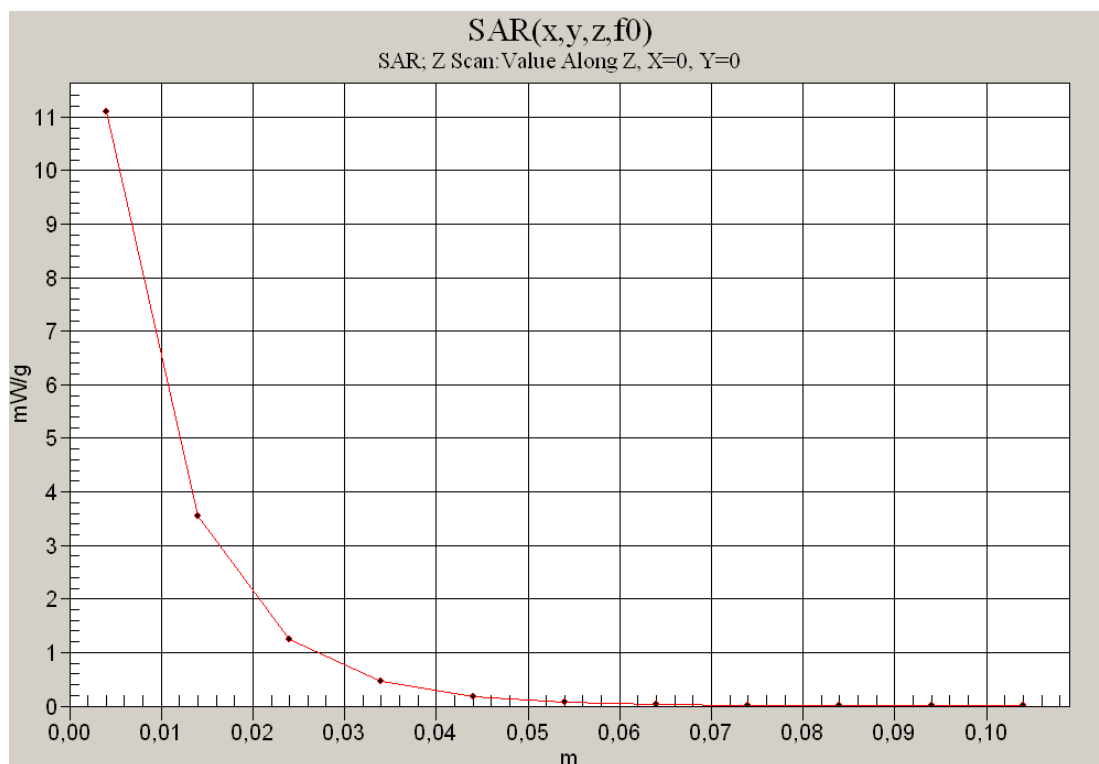


Fig. 16: SAR versus liquid depth, 1900 MHz, body (April 09, 2010; Ambient Temperature: 21.2° C; Liquid Temperature: 20.9° C).

## 6 SAR z-axis scans (Measurements)

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

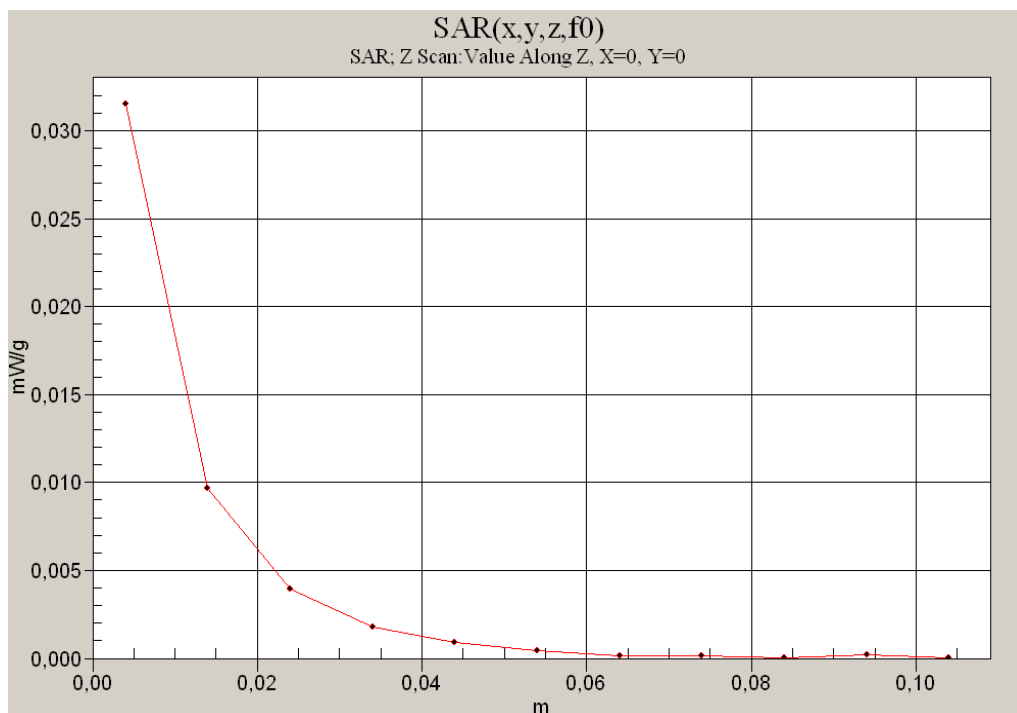


Fig. 17: SAR versus liquid depth, head: GSM 850, channel 190, cheek position, left side of head (April 08, 2010; Ambient Temperature: 21.6° C; Liquid Temperature: 20.7° C).

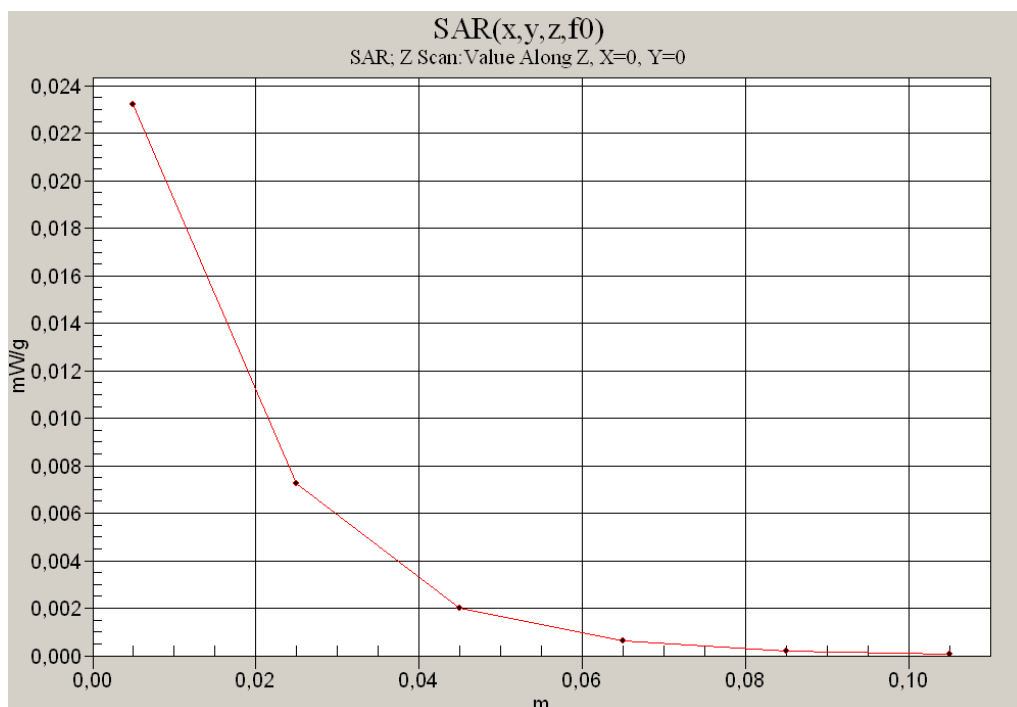


Fig. 18: SAR versus liquid depth, body: GSM 850, channel 190, display towards the ground (April 09, 2010; Ambient Temperature: 21.3° C; Liquid Temperature: 20.8° C).

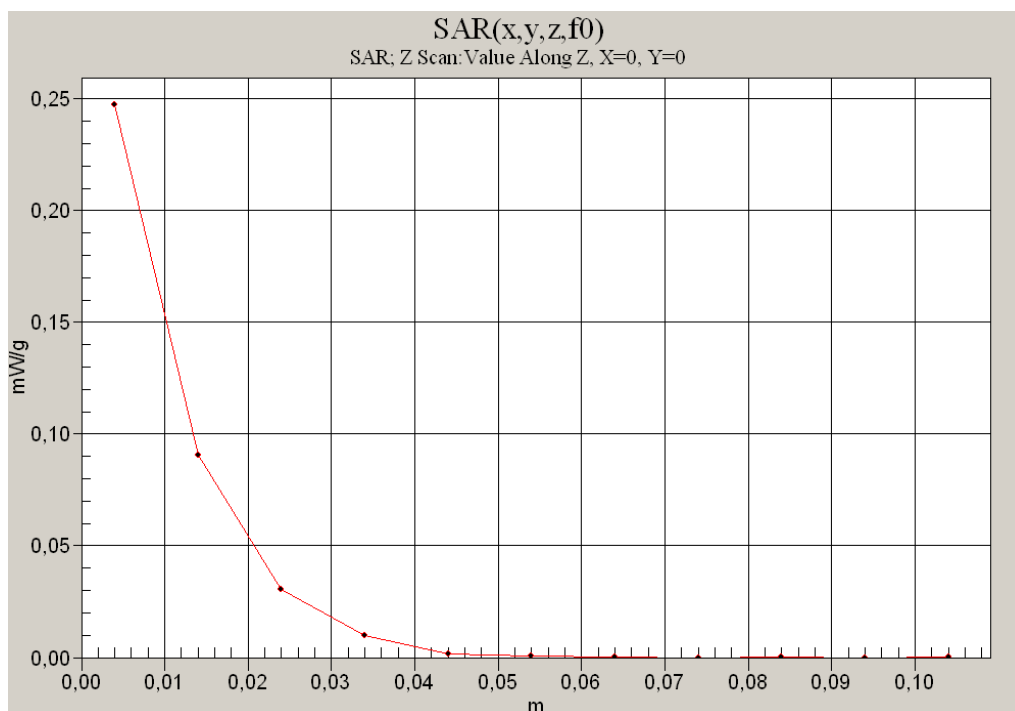


Fig. 19: SAR versus liquid depth, head: PCS 1900, channel 661, cheek position, right side of head (April 06, 2010; Ambient Temperature: 21.3° C; Liquid Temperature : 20.7° C).

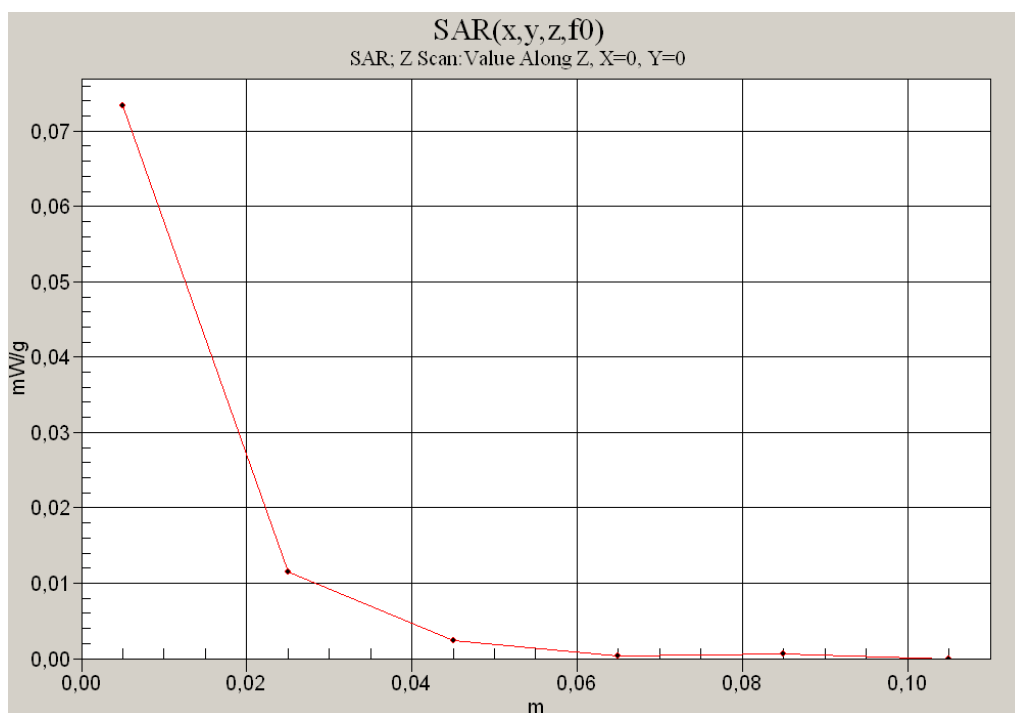


Fig. 20: SAR versus liquid depth, body: PCS 1900, channel 661, display towards the ground (April 09, 2010; Ambient Temperature: 21.2° C; Liquid Temperature: 20.9° C).