



TTI-P-G 158



Appendix for the Report

**Dosimetric Assessment of the
MSA EVOLUTION 5000 Transmitter
(FCC ID: RPNE5KTX1004634)
According to the FCC Requirements**

SAR Distribution Plots

January 22, 2004
IMST GmbH
Carl-Friedrich-Gauß-Str. 2
D-47475 Kamp-Lintfort

Customer
MSA AUER
Thielemannstraße 1
12059-Berlin
Germany

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

SAR DISTRIBUTION PLOTS	3
SAR Z-AXIS SCAN	9

SAR Distribution Plots

Test Laboratory: IMST; File Name: [hl_1.da4](#)

DUT: Evolution 5000;

Program: Unnamed Program

Communication System: 2450; Frequency: 2458 MHz;Duty Cycle: 1:1

Medium: Body 2450 MHz ($\sigma = 2.01$ mho/m, $\epsilon_r = 50.7$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1579; ConvF(4.4, 4.4, 4.4); Calibrated: 15.05.2003

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

- Electronics: DAE3 Sn335; Calibrated: 05.05.2003

- Phantom: SAM TP:1176; ;

- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Unnamed procedure/Area Scan (15x11x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 2.76 V/m

Power Drift = 0.1 dB

Maximum value of SAR = 0.546 mW/g

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

Peak SAR (extrapolated) = 0.927 W/kg

SAR(1 g) = 0.496 mW/g; SAR(10 g) = 0.275 mW/g

Reference Value = 2.76 V/m

Power Drift = 0.1 dB

Maximum value of SAR = 0.521 mW/g

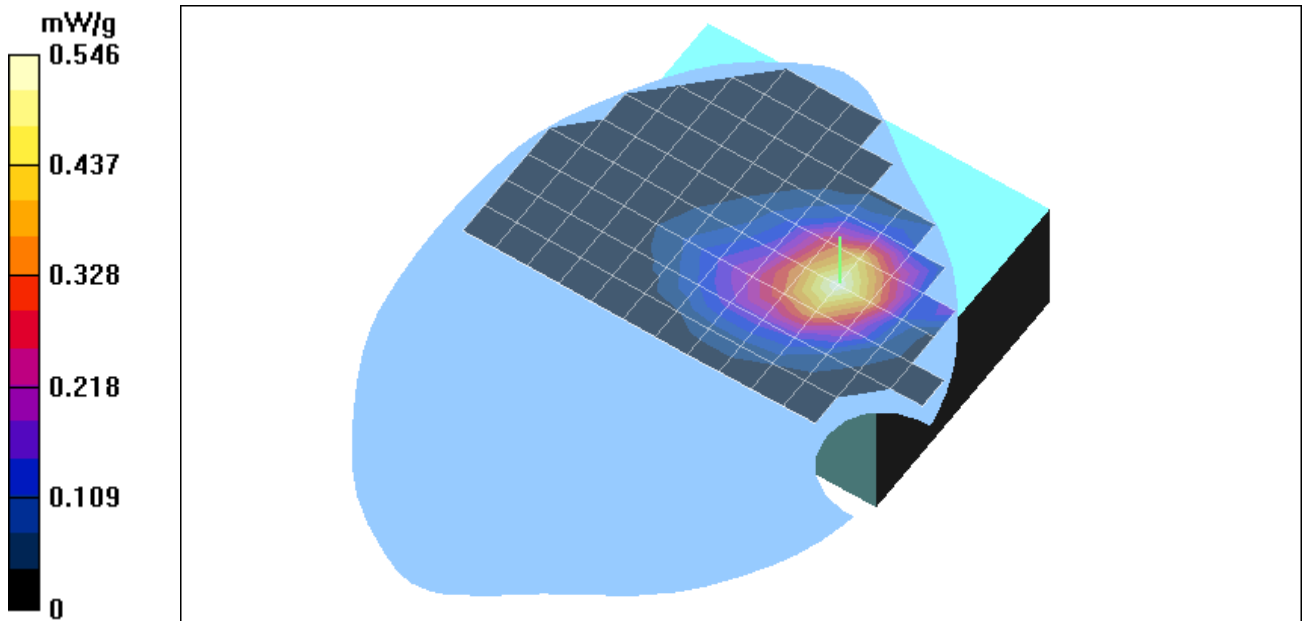


Fig. 1: SAR distribution, 2458 MHz, Position 1, (November 07; 2003; Ambient Temperature: 22.5 °C; Liquid Temperature: 21.7 °C).

Test Laboratory: IMST; File Name: [hb_1.da4](#)

DUT: Evolution 5000;

Program: Unnamed Program

Communication System: 2450; Frequency: 2474 MHz; Duty Cycle: 1:1

Medium: Body 2450 MHz ($\sigma = 2.01$ mho/m, $\epsilon_r = 50.7$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1579; ConvF(4.4, 4.4, 4.4); Calibrated: 15.05.2003

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

- Electronics: DAE3 Sn335; Calibrated: 05.05.2003

- Phantom: SAM TP:1176; ;

- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Unnamed procedure/Area Scan (15x11x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 2.79 V/m

Power Drift = 0.15 dB

Maximum value of SAR = 0.435 mW/g

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

Peak SAR (extrapolated) = 0.854 W/kg

SAR(1 g) = 0.442 mW/g; SAR(10 g) = 0.243 mW/g

Reference Value = 2.79 V/m

Power Drift = 0.15 dB

Maximum value of SAR = 0.457 mW/g

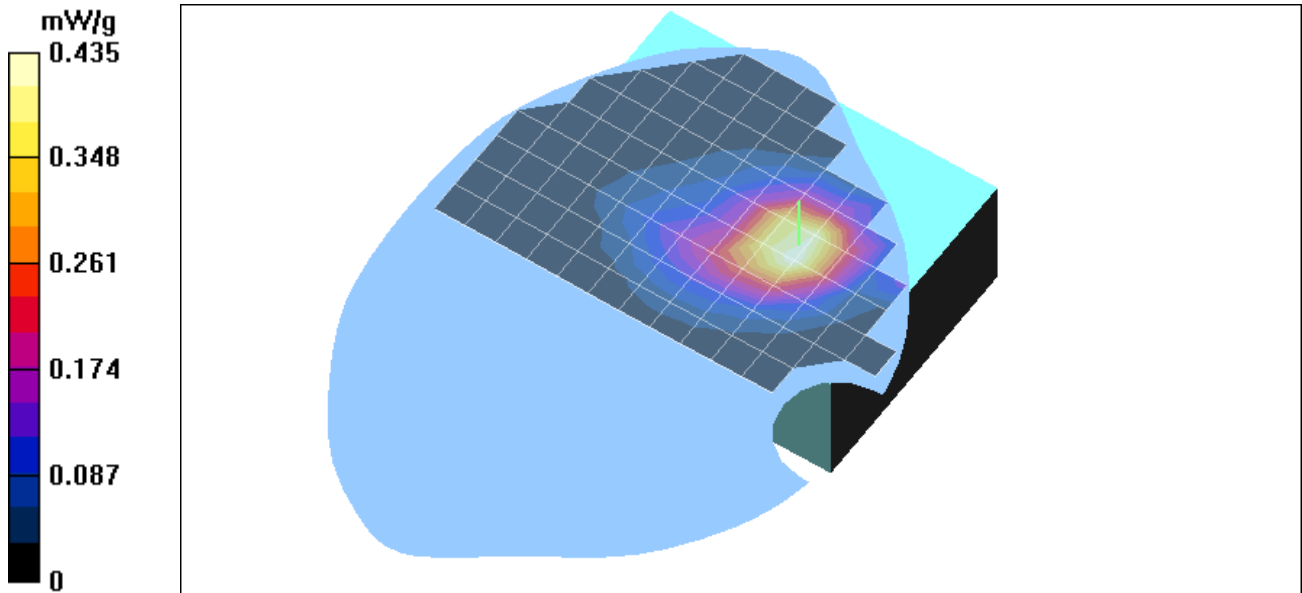


Fig. 2: SAR distribution, 2474 MHz, Position 1, (November 07; 2003; Ambient Temperature: 22.5 °C; Liquid Temperature: 21.7 °C).

Test Laboratory: IMST; File Name: [hl_2.da4](#)

DUT: Evolution 5000;

Program: Unnamed Program

Communication System: 2450; Frequency: 2458 MHz;Duty Cycle: 1:1

Medium: Body 2450 MHz ($\sigma = 2.01$ mho/m, $\epsilon_r = 50.7$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1579; ConvF(4.4, 4.4, 4.4); Calibrated: 15.05.2003

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

- Electronics: DAE3 Sn335; Calibrated: 05.05.2003

- Phantom: SAM TP:1176; ;

- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Unnamed procedure/Area Scan (15x14x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 1.9 V/m

Power Drift = -0.18 dB

Maximum value of SAR = 0.329 mW/g

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

Peak SAR (extrapolated) = 0.732 W/kg

SAR(1 g) = 0.351 mW/g; SAR(10 g) = 0.187 mW/g

Reference Value = 1.9 V/m

Power Drift = -0.18 dB

Maximum value of SAR = 0.361 mW/g

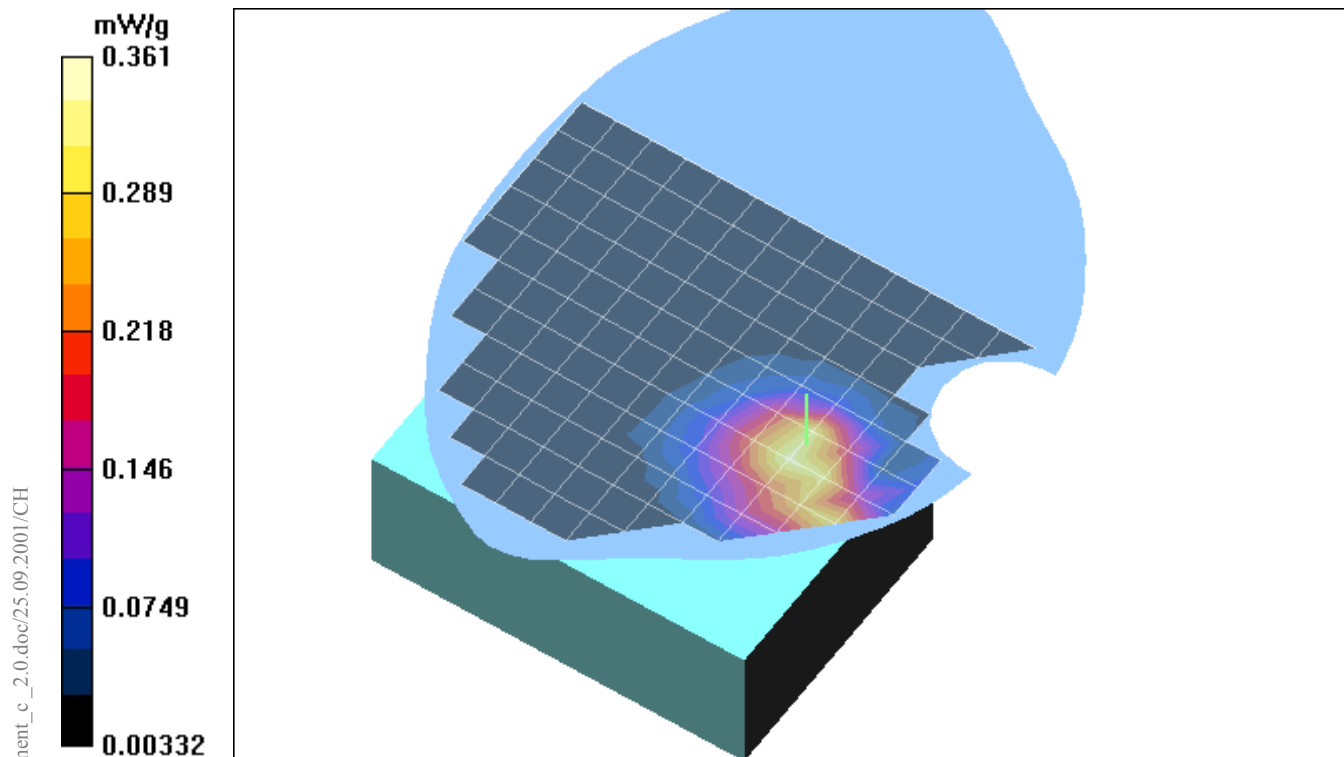


Fig. 3: SAR distribution, 2458 MHz, Position 2, (November 07; 2003; Ambient Temperature: 22.6 °C; Liquid Temperature: 21.7 °C).

Test Laboratory: IMST; File Name: [hb_2.da4](#)

DUT: Evolution 5000;

Program: Unnamed Program

Communication System: 2450; Frequency: 2474 MHz; Duty Cycle: 1:1

Medium: Body 2450 MHz ($\sigma = 2.01$ mho/m, $\epsilon_r = 50.7$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1579; ConvF(4.4, 4.4, 4.4); Calibrated: 15.05.2003

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

- Electronics: DAE3 Sn335; Calibrated: 05.05.2003

- Phantom: SAM TP:1176; ;

- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Unnamed procedure/Area Scan (12x13x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 1.67 V/m

Power Drift = 0.2 dB

Maximum value of SAR = 0.351 mW/g

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

Peak SAR (extrapolated) = 0.773 W/kg

SAR(1 g) = 0.368 mW/g; SAR(10 g) = 0.193 mW/g

Reference Value = 1.67 V/m

Power Drift = 0.2 dB

Maximum value of SAR = 0.385 mW/g

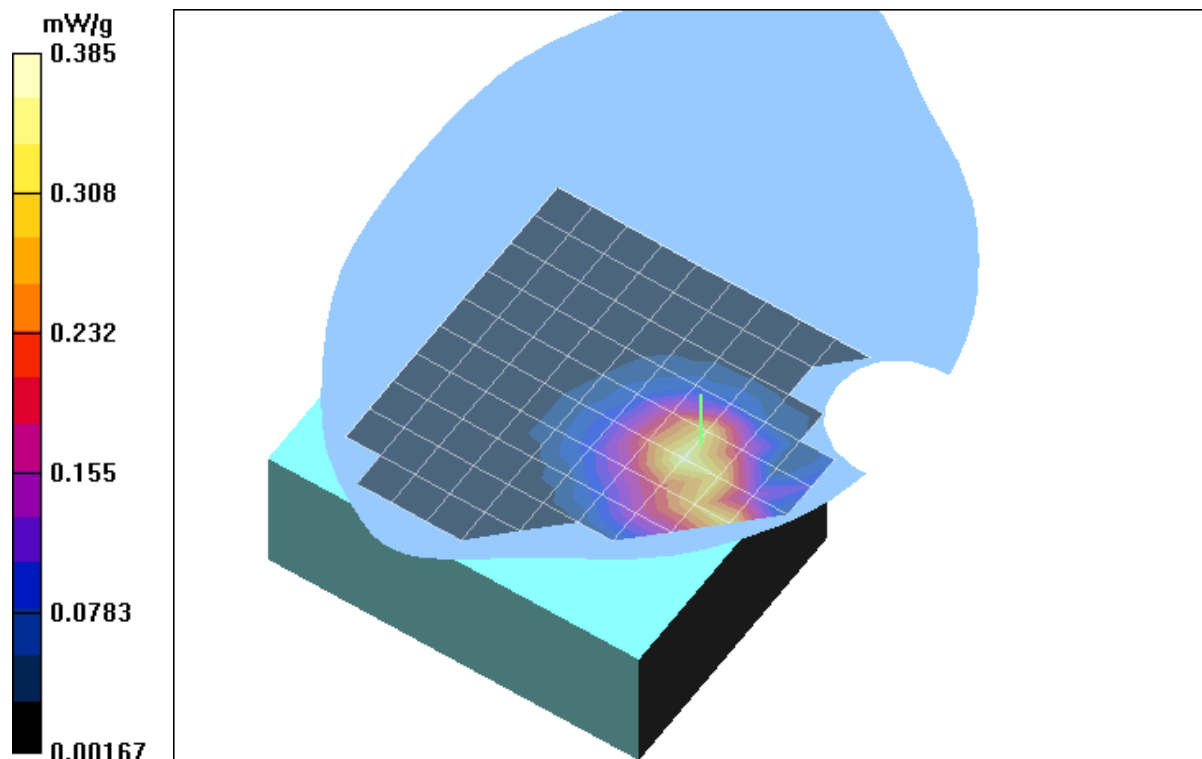


Fig. 4: SAR distribution, 2474 MHz, Position 2, (November 07; 2003; Ambient Temperature: 22.7 °C; Liquid Temperature: 21.7 °C).

Test Laboratory: IMST; File Name: [hl_3.da4](#)

DUT: Evolution 5000;

Program: Unnamed Program

Communication System: 2450; Frequency: 2458 MHz;Duty Cycle: 1:1

Medium: Body 2450 MHz ($\sigma = 2.01$ mho/m, $\epsilon_r = 50.7$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1579; ConvF(4.4, 4.4, 4.4); Calibrated: 15.05.2003

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

- Electronics: DAE3 Sn335; Calibrated: 05.05.2003

- Phantom: SAM TP:1176; ;

- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Unnamed procedure/Area Scan (11x15x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 8.83 V/m

Power Drift = -0.04 dB

Maximum value of SAR = 0.396 mW/g

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

Peak SAR (extrapolated) = 0.798 W/kg

SAR(1 g) = 0.401 mW/g; SAR(10 g) = 0.223 mW/g

Reference Value = 8.83 V/m

Power Drift = -0.04 dB

Maximum value of SAR = 0.415 mW/g

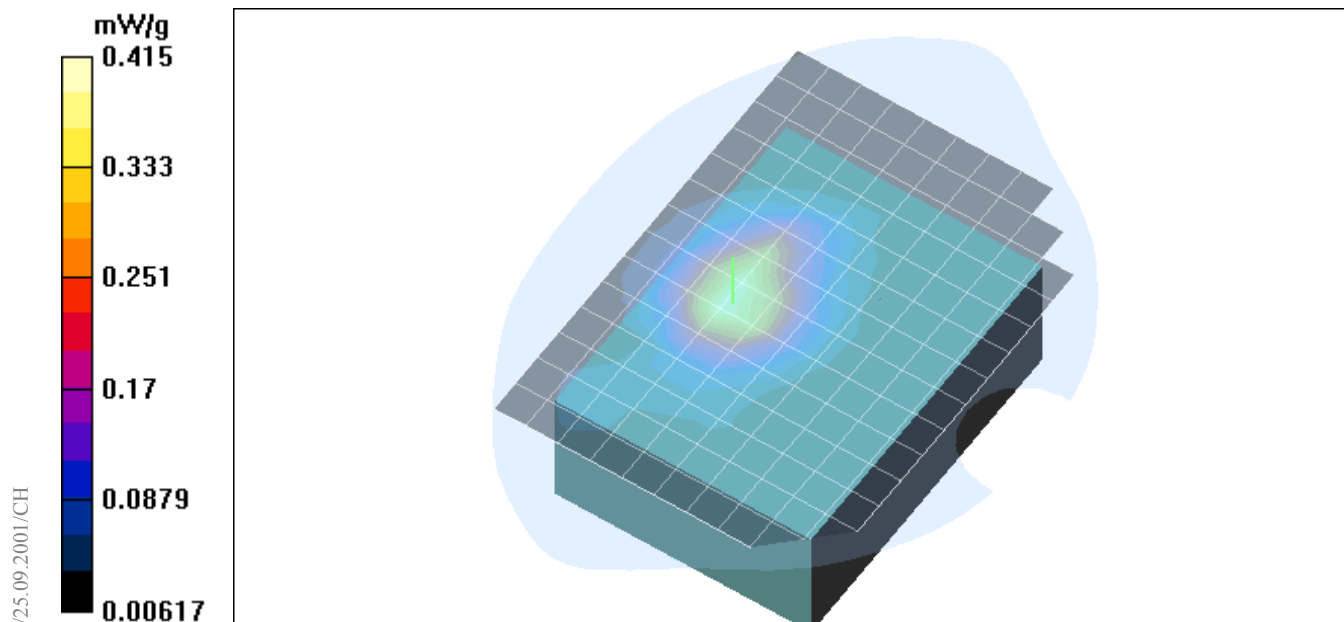


Fig. 5: SAR distribution, 2458 MHz, Position 3, (November 07; 2003; Ambient Temperature: 22.8 °C; Liquid Temperature: 21.7 °C).

Test Laboratory: IMST; File Name: [hb_4.da4](#)

DUT: Evolution 5000;

Program: Unnamed Program

Communication System: 2450; Frequency: 2474 MHz;Duty Cycle: 1:1

Medium: Body 2450 MHz ($\sigma = 2.01$ mho/m, $\epsilon_r = 50.7$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1579; ConvF(4.4, 4.4, 4.4); Calibrated: 15.05.2003

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

- Electronics: DAE3 Sn335; Calibrated: 05.05.2003

- Phantom: SAM TP:1176; ;

- Measurement SW: DASY4, V4.1 Build 47; Postprocessing SW: SEMCAD, V1.6 Build 115

Unnamed procedure/Area Scan (11x15x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 9.75 V/m

Power Drift = -0.1 dB

Maximum value of SAR = 0.178 mW/g

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

Peak SAR (extrapolated) = 0.351 W/kg

SAR(1 g) = 0.177 mW/g; SAR(10 g) = 0.101 mW/g

Reference Value = 9.75 V/m

Power Drift = -0.1 dB

Maximum value of SAR = 0.18 mW/g

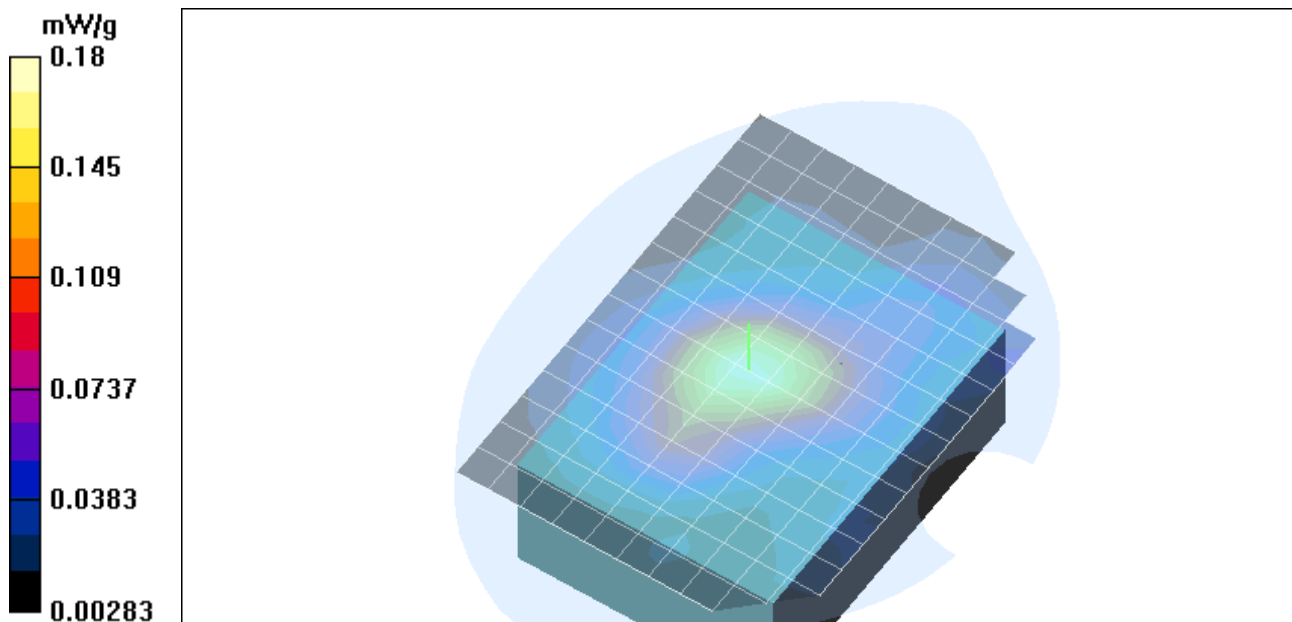


Fig. 6: SAR distribution, 2474 MHz, Position 4, (November 07; 2003; Ambient Temperature: 22.9 °C; Liquid Temperature: 21.7 °C).

SAR z-axis scan

The following pictures show the plots of SAR versus liquid depth.

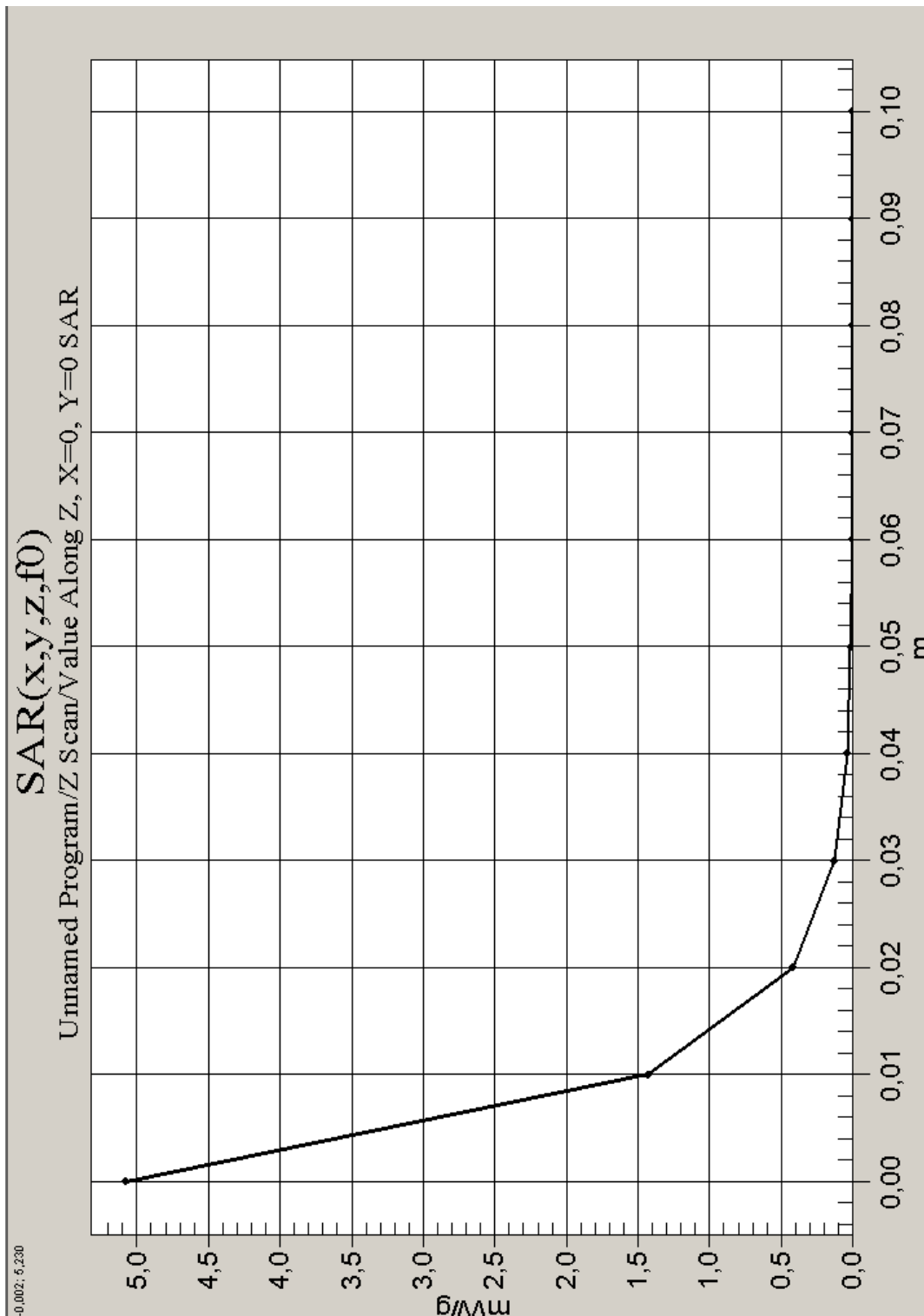


Fig. 7: SAR versus liquid depth, Validation 2450 MHz body, (November 07; 2003; Ambient Temperature: 22.5 °C; Liquid Temperature: 21.7 °C)..

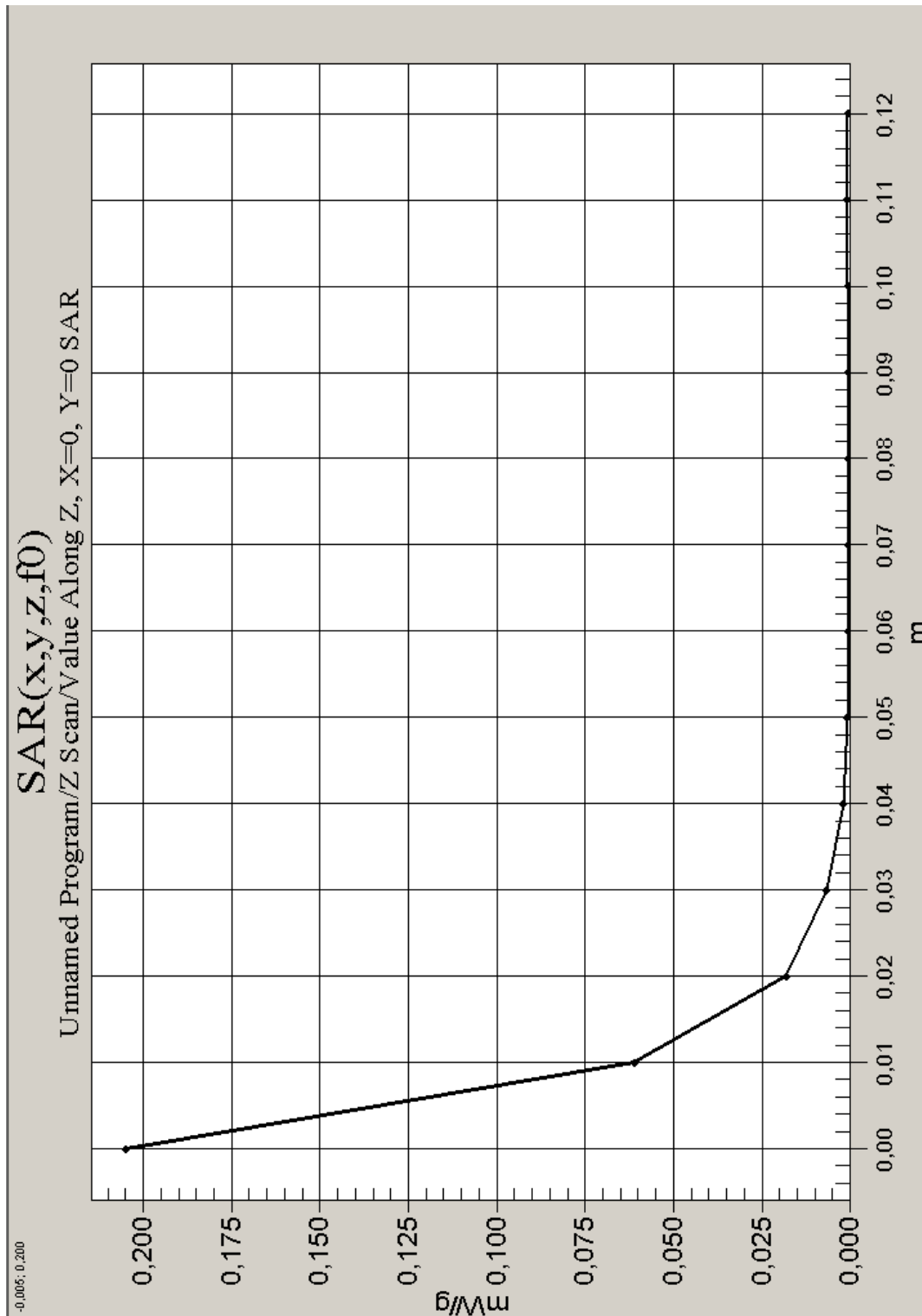


Fig. 8: SAR versus liquid depth, 2458 MHz, Position 1, (November 07; 2003; Ambient Temperature: 22.5 °C; Liquid Temperature: 21.7 °C).