

Appendix for SAR Test Report

Dosimetric Assessment of the Spectrometer Bravo Duo from Bruker Optik GmbH

(FCC ID: 2AD88-BRAVO-01)

According to the FCC Requirements

SAR Distribution Plots

April 16, 2015

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The test results only relate to the items tested.
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1 SAR Distribution Plots for Body Exposure for IEEE 802.11 b

Test Laboratory: IMST GmbH, DASY Blue (I); File Name: [Bravo_bwhm_b_ch6_front_0mm.da4](#)

DUT: Bruker; Type: Bravo Duo; Serial: N.A.

Program Name: IEEE 802.11 b

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

Medium parameters used: $f = 2437$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 52.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(7.34, 7.34, 7.34); Calibrated: 24.07.2014
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn631; Calibrated: 23.07.2014
- 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 (9x16x1): Measurement grid: dx=12mm, dy=12mm

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 = 3.41 V/m; Power Drift = 0.134 dB

Peak SAR (extrapolated) = 0.100 W/kg

SAR(1 g) = 0.054 mW/g; SAR(10 g) = 0.030 mW/g

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

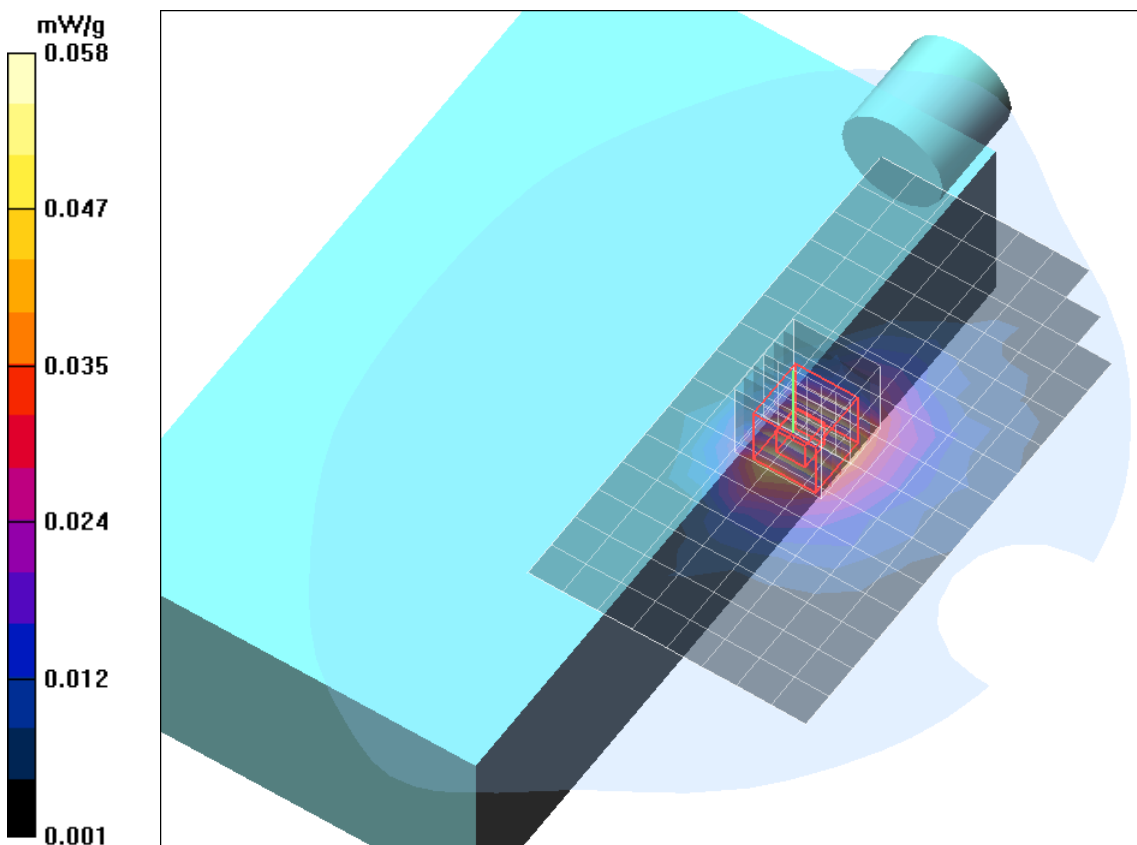


Fig. 1: SAR distribution for IEEE 802.11 b, channel 6, front side towards the phantom, 0 mm distance.

Test Laboratory: IMST GmbH, DASY Blue (I); **File Name:** [Bravo bwhm b ch6 back 0mm.da4](#)

DUT: Bruker; **Type:** Bravo Duo; **Serial:** N.A.

Program Name: IEEE 802.11 b

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

Medium parameters used: $f = 2437$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 52.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(7.34, 7.34, 7.34); Calibrated: 24.07.2014
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn631; Calibrated: 23.07.2014
- 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 (9x16x1): Measurement grid: dx=12mm, dy=12mm

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

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

Reference Value = 6.68 V/m; Power Drift = 0.116 dB

Peak SAR (extrapolated) = 0.169 W/kg

SAR(1 g) = 0.090 mW/g; SAR(10 g) = 0.047 mW/g

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

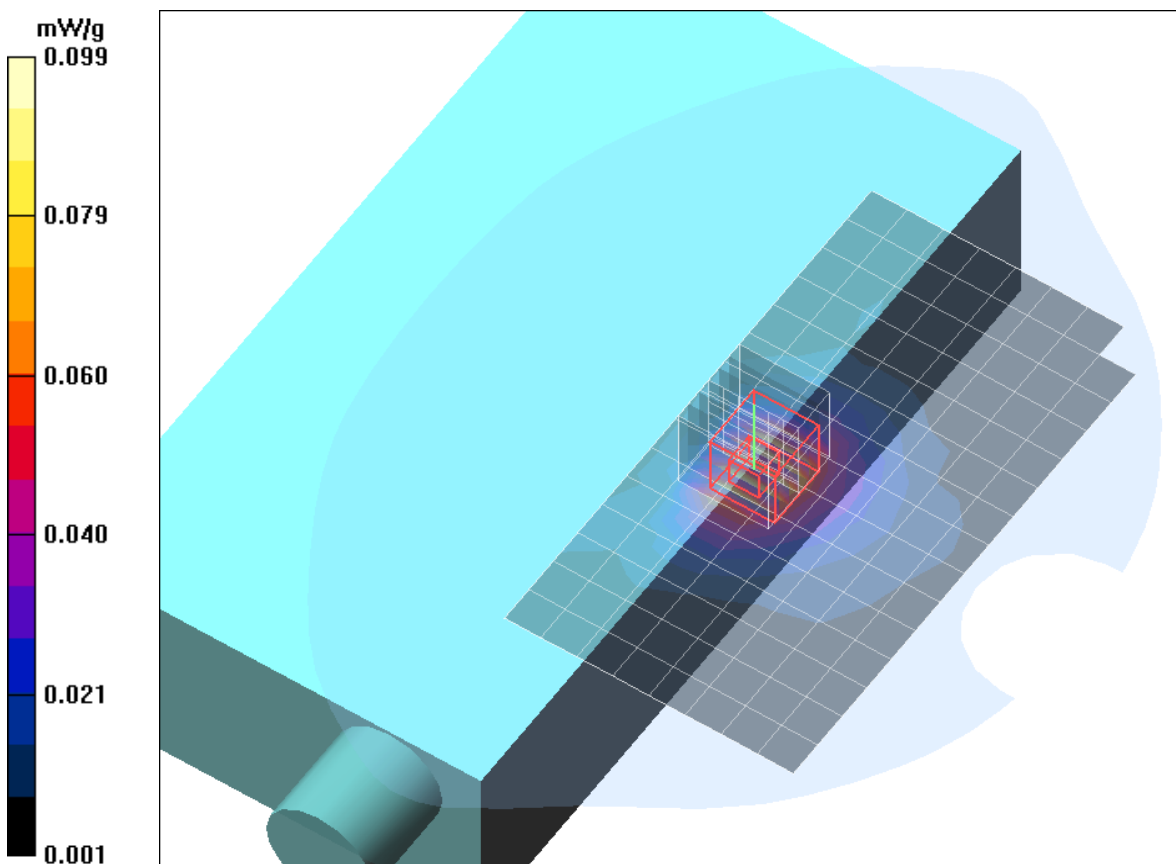


Fig. 2: SAR distribution for IEEE 802.11 b, channel 6, back side towards the phantom, 0 mm distance.

Test Laboratory: IMST GmbH, DASY Blue (I); **File Name:** [Bravo bwhm b ch6 right 0mm.da4](#)

DUT: Bruker; **Type:** Bravo Duo; **Serial:** N.A.

Program Name: IEEE 802.11 b

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

Medium parameters used: $f = 2437$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 52.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(7.34, 7.34, 7.34); Calibrated: 24.07.2014
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn631; Calibrated: 23.07.2014
- 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 (9x16x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 0.605 mW/g

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

Reference Value = 10.5 V/m; Power Drift = 0.036 dB

Peak SAR (extrapolated) = 1.27 W/kg

SAR(1 g) = 0.618 mW/g; SAR(10 g) = 0.290 mW/g

Maximum value of SAR (measured) = 0.785 mW/g

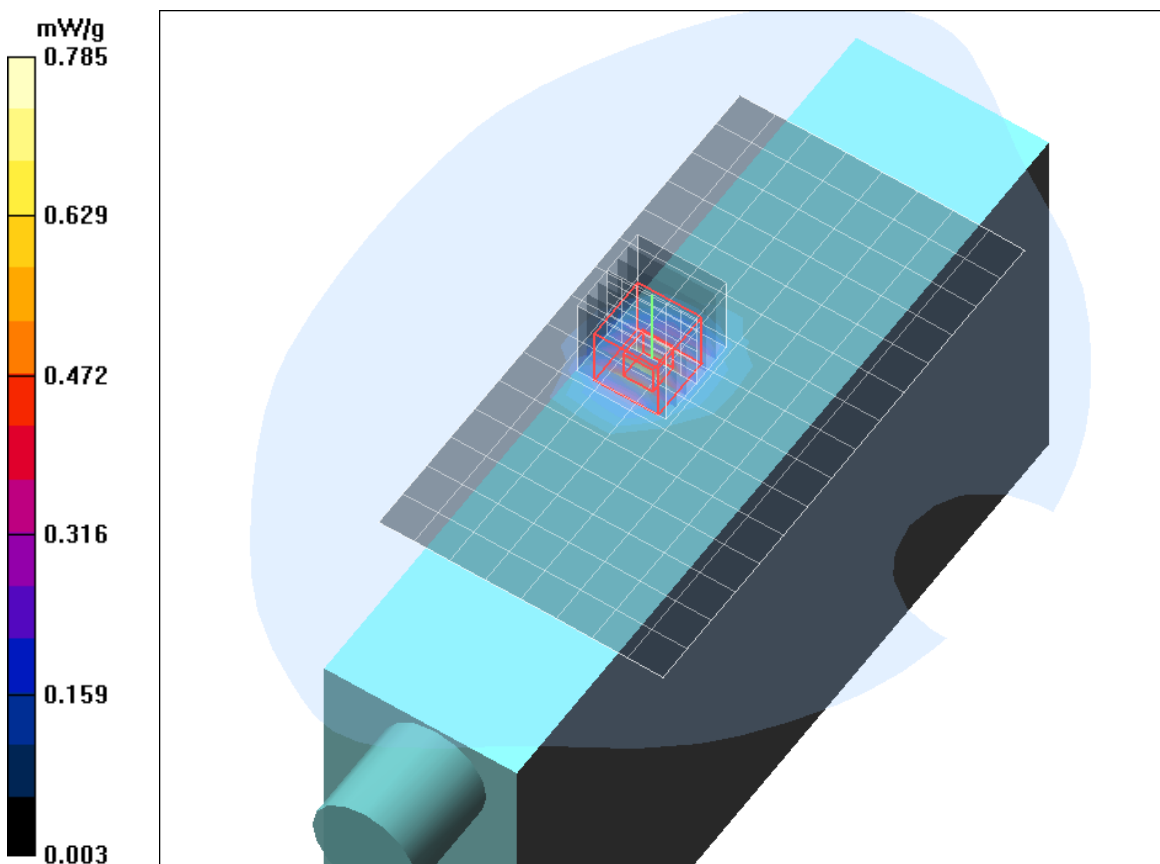


Fig. 3: SAR distribution for IEEE 802.11 b, channel 6, right side towards the phantom, 0 mm distance.

Test Laboratory: IMST GmbH, DASY Blue (I); **File Name:** [Bravo bwhm b ch6 left 0mm.da4](#)

DUT: Bruker; **Type:** Bravo Duo; **Serial:** N.A.

Program Name: IEEE 802.11 b

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

Medium parameters used: $f = 2437$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 52.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(7.34, 7.34, 7.34); Calibrated: 24.07.2014
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn631; Calibrated: 23.07.2014
- 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 (9x16x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 0.002 mW/g

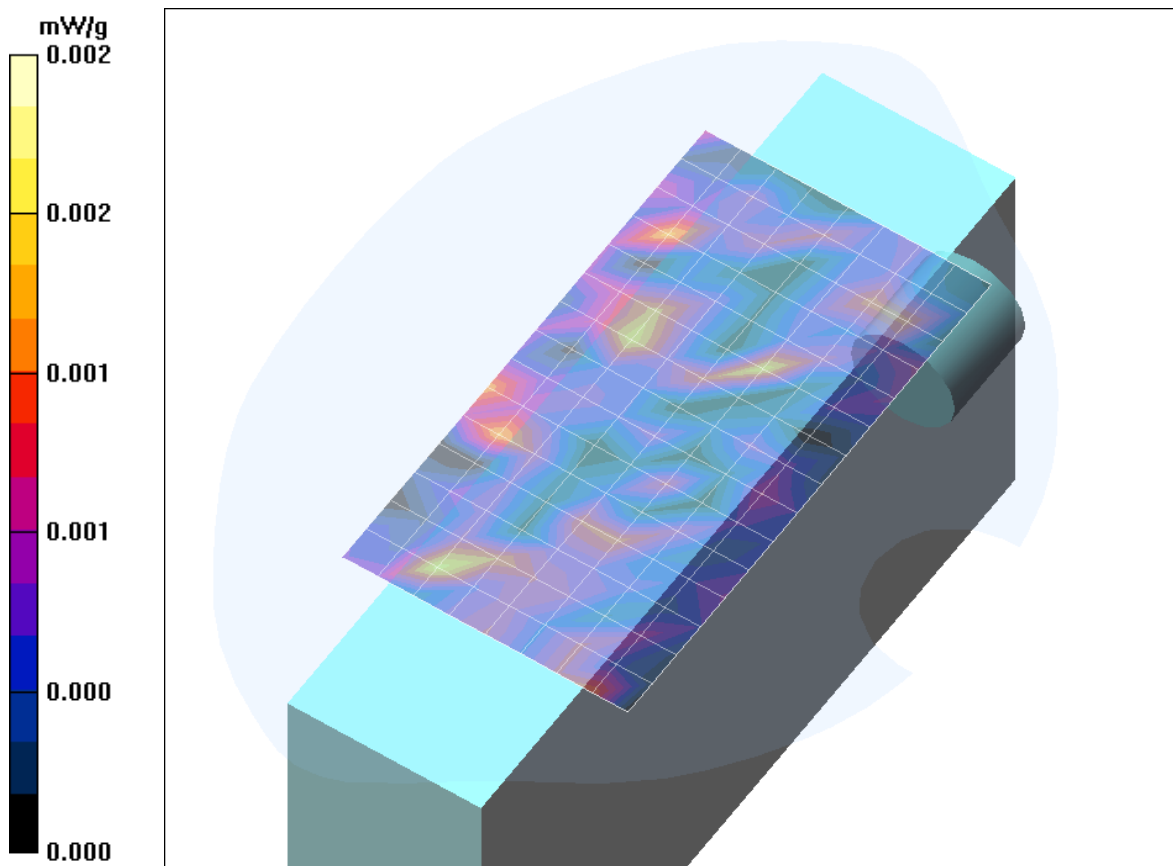


Fig. 4: SAR distribution for IEEE 802.11 b, channel 6, left side towards the phantom, 0 mm distance.

Test Laboratory: IMST GmbH, DASY Blue (I); **File Name:** [Bravo bwhl b ch1 right 0mm.da4](#)

DUT: Bruker; **Type:** Bravo Duo; **Serial:** N.A.

Program Name: IEEE 802.11 b

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

Medium parameters used: $f = 2412$ MHz; $\sigma = 1.94$ mho/m; $\epsilon_r = 52.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(7.34, 7.34, 7.34); Calibrated: 24.07.2014
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn631; Calibrated: 23.07.2014
- 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 (9x16x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 0.823 mW/g

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

Reference Value = 11.6 V/m; Power Drift = 0.115 dB

Peak SAR (extrapolated) = 1.71 W/kg

SAR(1 g) = 0.880 mW/g; SAR(10 g) = 0.412 mW/g

Maximum value of SAR (measured) = 0.999 mW/g

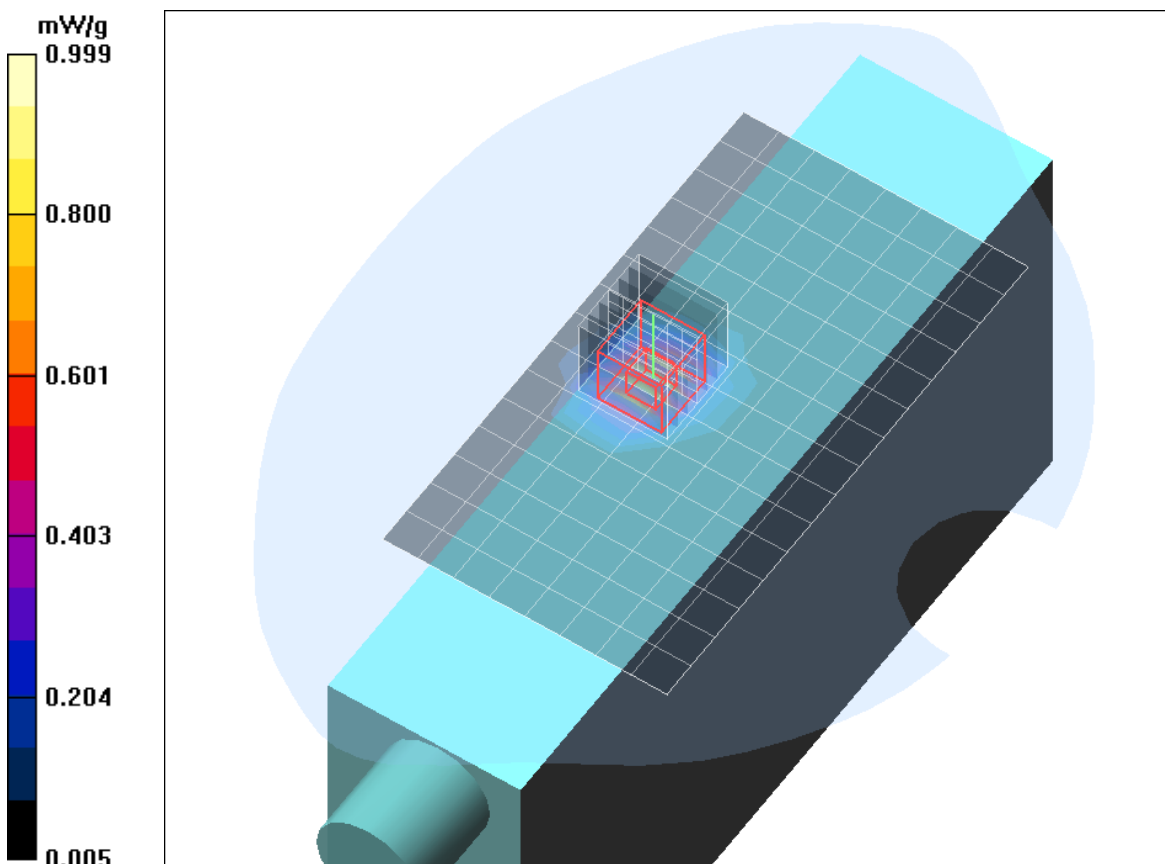


Fig. 5: SAR distribution for IEEE 802.11 b, channel 1, right side towards the phantom, 0 mm distance.

Test Laboratory: IMST GmbH, DASY Blue (I); **File Name:** [Bravo bwhl b ch1 right 0mm wdh.da4](#)

DUT: Bruker; **Type:** Bravo Duo; **Serial:** N.A.

Program Name: IEEE 802.11 b

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

Medium parameters used: $f = 2412$ MHz; $\sigma = 1.94$ mho/m; $\epsilon_r = 52.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(7.34, 7.34, 7.34); Calibrated: 24.07.2014
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn631; Calibrated: 23.07.2014
- 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 (9x9x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 0.784 mW/g

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

Reference Value = 11.5 V/m; Power Drift = 0.196 dB

Peak SAR (extrapolated) = 1.70 W/kg

SAR(1 g) = 0.877 mW/g; SAR(10 g) = 0.412 mW/g

Maximum value of SAR (measured) = 0.993 mW/g

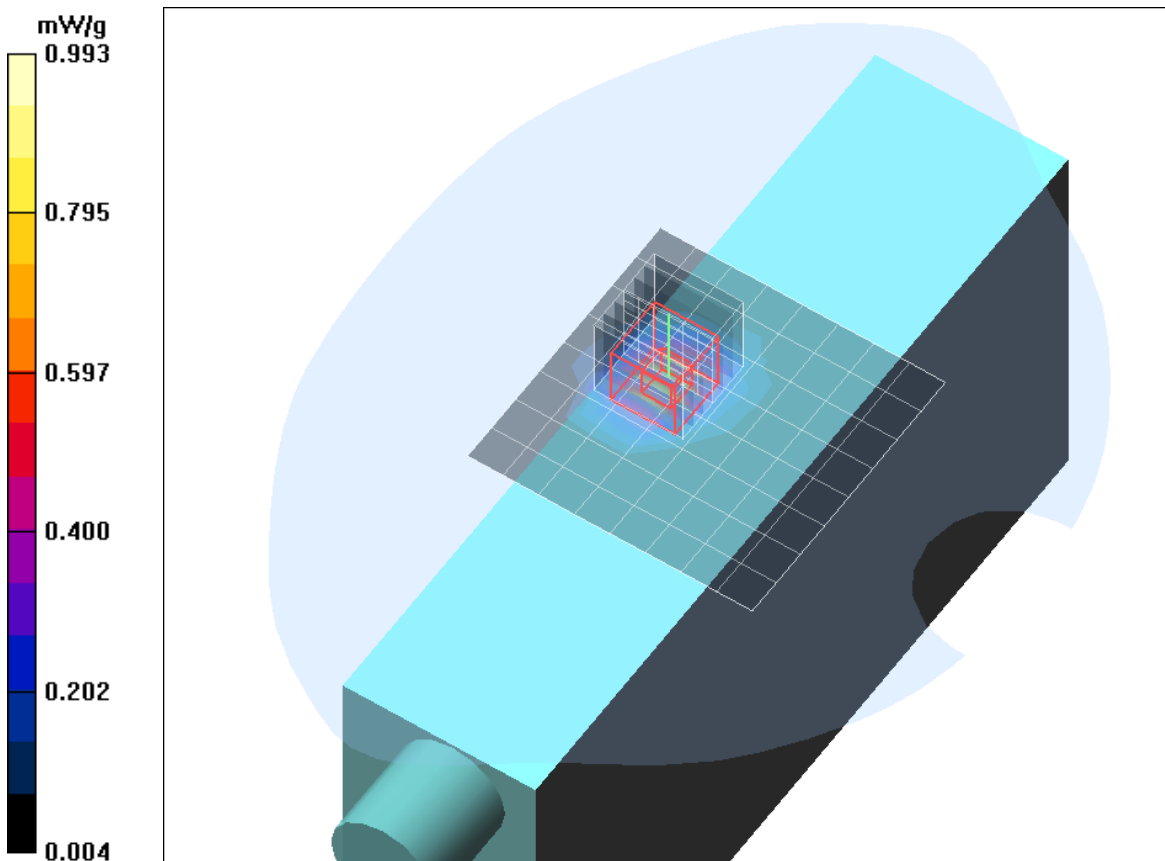


Fig. 6: SAR distribution for IEEE 802.11 b, channel 1, right side towards the phantom, 0 mm distance, measurement variability.

Test Laboratory: IMST GmbH, DASY Blue (I); **File Name:** [Bravo bwhh b ch11 right 0mm.da4](#)

DUT: Bruker; **Type:** Bravo Duo; **Serial:** N.A.

Program Name: IEEE 802.11 b

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

Medium parameters used: $f = 2462$ MHz; $\sigma = 2.01$ mho/m; $\epsilon_r = 52.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3536; ConvF(7.34, 7.34, 7.34); Calibrated: 24.07.2014
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn631; Calibrated: 23.07.2014
- 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 (9x16x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 0.401 mW/g

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

Reference Value = 8.40 V/m; Power Drift = 0.152 dB

Peak SAR (extrapolated) = 0.824 W/kg

SAR(1 g) = 0.420 mW/g; SAR(10 g) = 0.196 mW/g

Maximum value of SAR (measured) = 0.478 mW/g

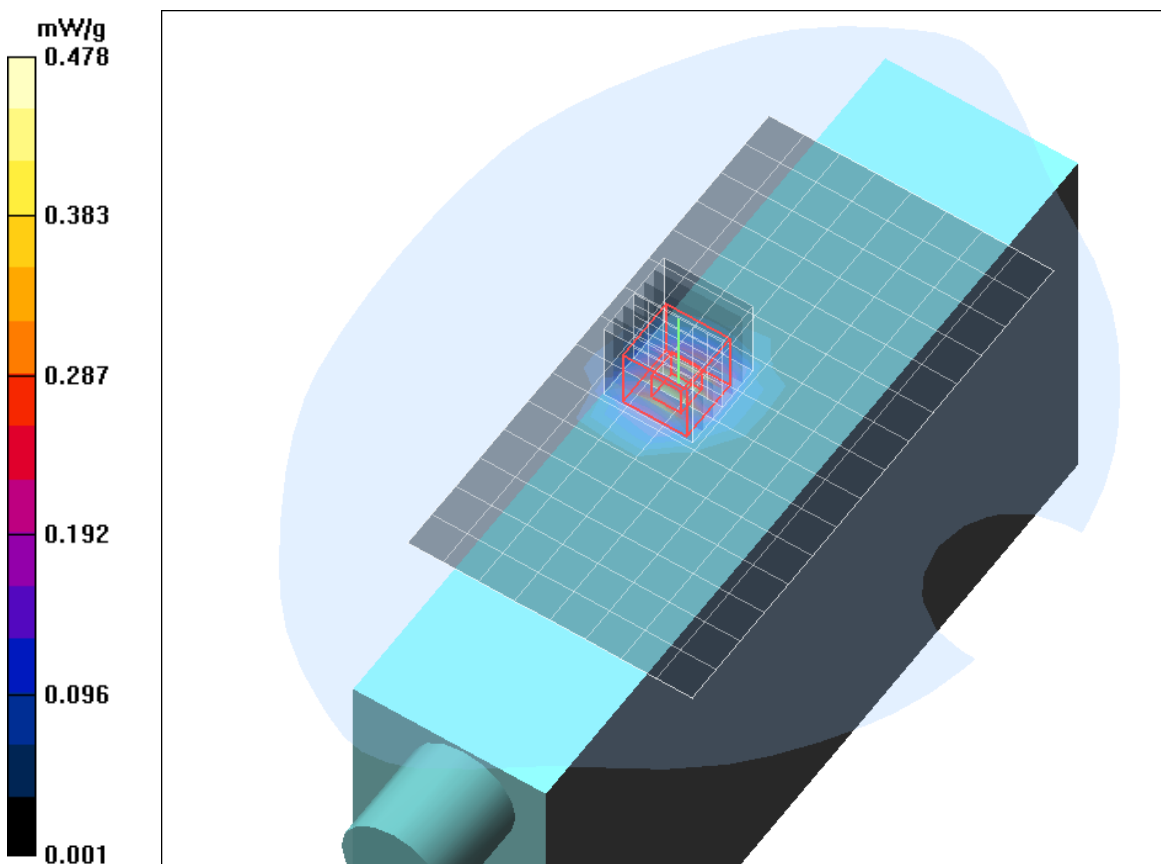


Fig. 7: SAR distribution for IEEE 802.11 b, channel 11, right side towards the phantom, 0 mm distance.