

APPENDIX 2 : SAR Measurement data

1. Evaluation procedure

The evaluation was performed with the following procedure:

Step 1: Measurement of the E-field at a fixed location above the ear point or central position of flat phantom was used as a reference value for assessing the power drop.

Step 2: The SAR distribution at the exposed side of head or body position was measured at a distance of each device from the inner surface of the shell. The area covered the entire dimension of the antenna of EUT and the horizontal grid spacing was 15 mm x 15 mm . Based on these data, the area of the maximum absorption was determined by spline interpolation.

Step 3: Around this point found in the Step 2 (area scan), a volume of 30mm x 30mm x 30mm was assessed by measuring 7 x 7 x 7 points for IEEE802.11b (2.4G) And for any secondary peaks found in the Step2 which are within 2dB of maximum peak (level more than ambient noise (≥ 0.012 W/kg)) and not with this Step3 (Zoom scan) is repeated. On the basis of this data set, the spatial peak SAR value was evaluated under the following procedure:

(1). The data at the surface were extrapolated, since the center of the dipoles is 1mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1mm. Therefore minimum distance of probe sensor from surface was set to the 2mm.

The extrapolation was based on a least square algorithm [4]. A polynomial of the fourth order was calculated through the points in z-axes.

This polynomial was then used to evaluate the points between the surface and the probe tip.

(2). The maximum interpolated value was searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed by the 3D-Spline interpolation algorithm. The 3D-Spline is composed of three one-dimensional splines with the "Not a knot"-condition (in x, y and z-directions) [4], [5]. The volume was integrated with the trapezoidal-algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the average.

(3). All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

Step 4: Re-measurement of the E-field at the same location as in Step 1.

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2. Measurement data (Body SAR)

EB-W51GJ/Body/Rear surface/11b DBPSK 1Mbps/2437MHz

Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 50.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV3 - SN3507; ConvF(8.11, 8.11, 8.11); Calibrated: 2010/02/19

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

- Phantom: Flat Phantom ELI4.0

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

Area Scan (81x131x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 1.83 mW/g

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

Reference Value = 4.62 V/m; Power Drift = 0.144 dB

Peak SAR (extrapolated) = 2.65 W/kg

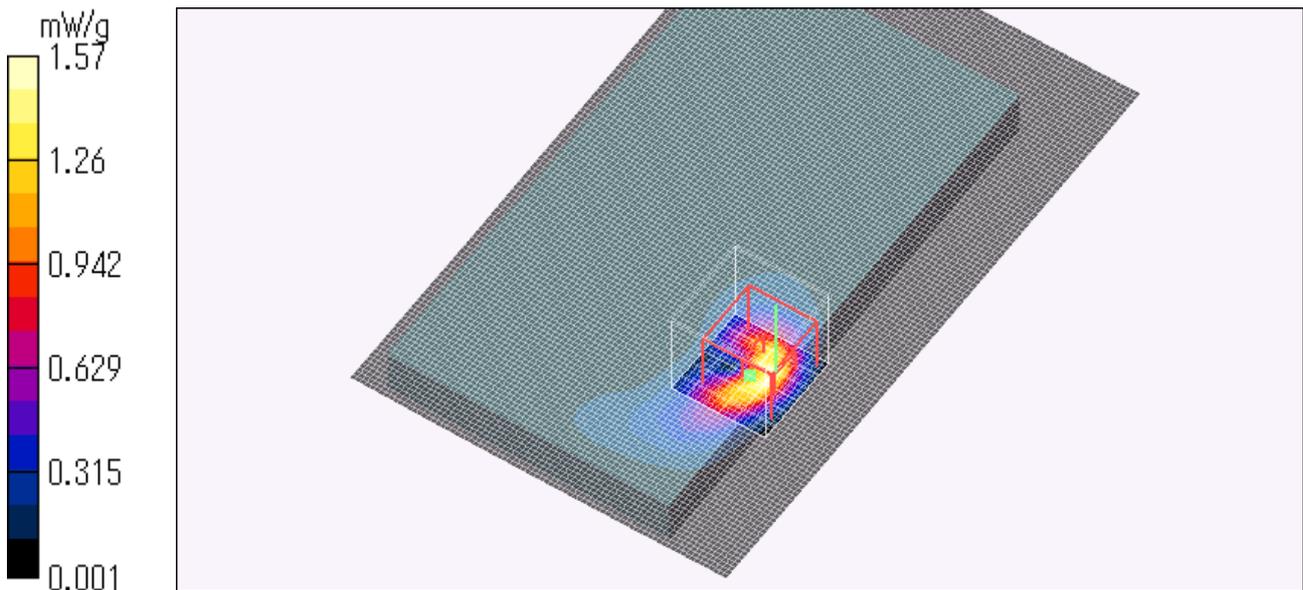
SAR(1 g) = 0.916 mW/g; SAR(10 g) = 0.355 mW/g

Maximum value of SAR (measured) = 1.57 mW/g

Test Date = 11/08/10

Ambient Temperature = 24.8 degree.C.

Liquid Temperature = Before 24.0 degree.C. , After 24.0 degree.C.



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EB-W51GJ/Body/Rear surface/11b CCK 11Mbps/2437MHz

Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 50.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV3 - SN3507; ConvF(8.11, 8.11, 8.11); Calibrated: 2010/02/19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Area Scan (81x131x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.22 mW/g

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

Reference Value = 4.11 V/m; Power Drift = 0.204 dB

Peak SAR (extrapolated) = 2.52 W/kg

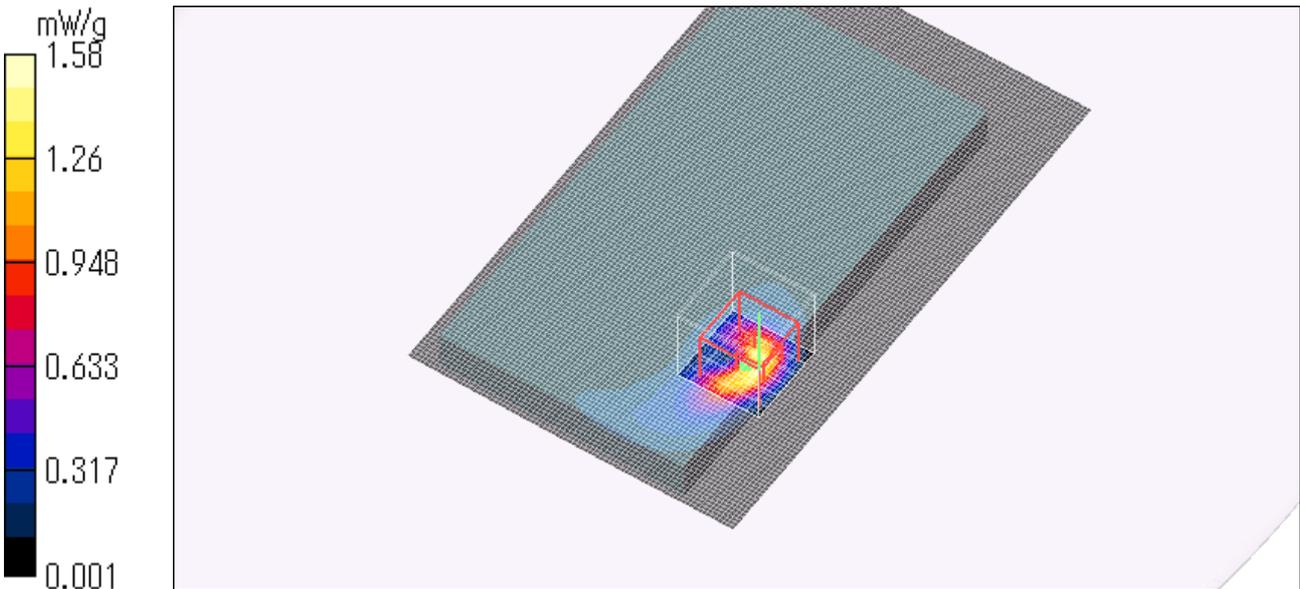
SAR(1 g) = 0.895 mW/g; SAR(10 g) = 0.348 mW/g

Maximum value of SAR (measured) = 1.58 mW/g

Test Date = 11/08/10

Ambient Temperature = 24.8 degree.C.

Liquid Temperature = Before 24.0 degree.C. , After 24.0 degree.C.



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EB-W51GJ/Body/Right edge/11b DBPSK 1Mbps/2437MHz

Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 50.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV3 - SN3507; ConvF(8.11, 8.11, 8.11); Calibrated: 2010/02/19

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

- Phantom: Flat Phantom ELI4.0

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

Area Scan (81x131x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.837 mW/g

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

Reference Value = 20.4 V/m; Power Drift = -0.145 dB

Peak SAR (extrapolated) = 1.43 W/kg

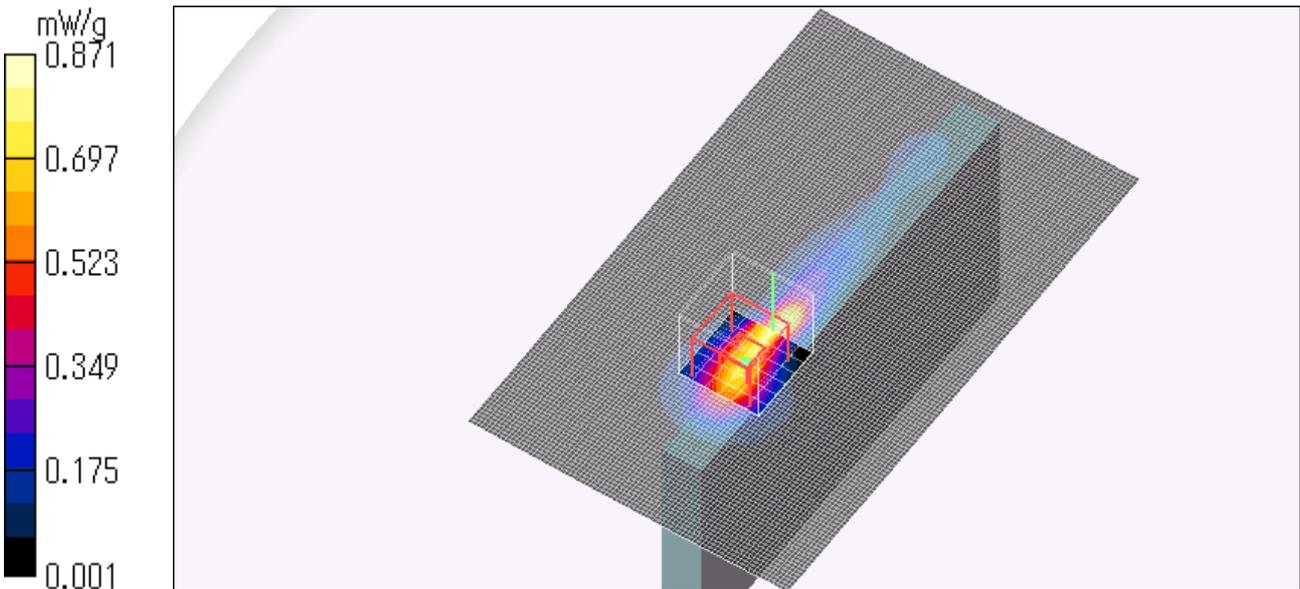
SAR(1 g) = 0.505 mW/g; SAR(10 g) = 0.239 mW/g

Maximum value of SAR (measured) = 0.871 mW/g

Test Date = 11/08/10

Ambient Temperature = 24.5 degree.C.

Liquid Temperature = Before 24.0 degree.C. , After 24.0 degree.C.



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EB-W51GJ/Body/Left edge/11b DBPSK 1Mbps/2437MHz

Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 50.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV3 - SN3507; ConvF(8.11, 8.11, 8.11); Calibrated: 2010/02/19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Area Scan (51x121x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.025 mW/g

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

Reference Value = 2.30 V/m; Power Drift = 0.203 dB

Peak SAR (extrapolated) = 0.031 W/kg

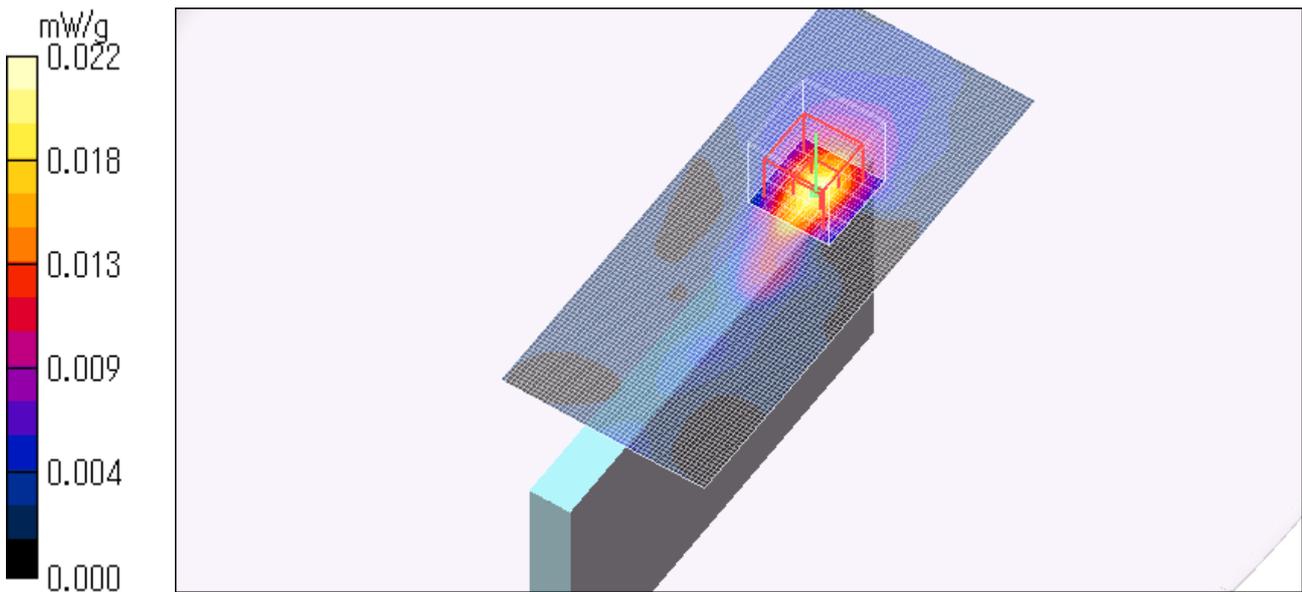
SAR(1 g) = 0.014 mW/g; SAR(10 g) = 0.00637 mW/g

Maximum value of SAR (measured) = 0.022 mW/g

Test Date = 11/08/10

Ambient Temperature = 24.5 degree.C.

Liquid Temperature = Before 24.0 degree.C. , After 24.0 degree.C.



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EB-W51GJ/Body/Top edge /11b DBPSK 1Mbps/2437MHz

Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 50.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV3 - SN3507; ConvF(8.11, 8.11, 8.11); Calibrated: 2010/02/19

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

- Phantom: Flat Phantom ELI4.0

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

Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 1.84 V/m; Power Drift = -0.194 dB

Peak SAR (extrapolated) = 0.021 W/kg

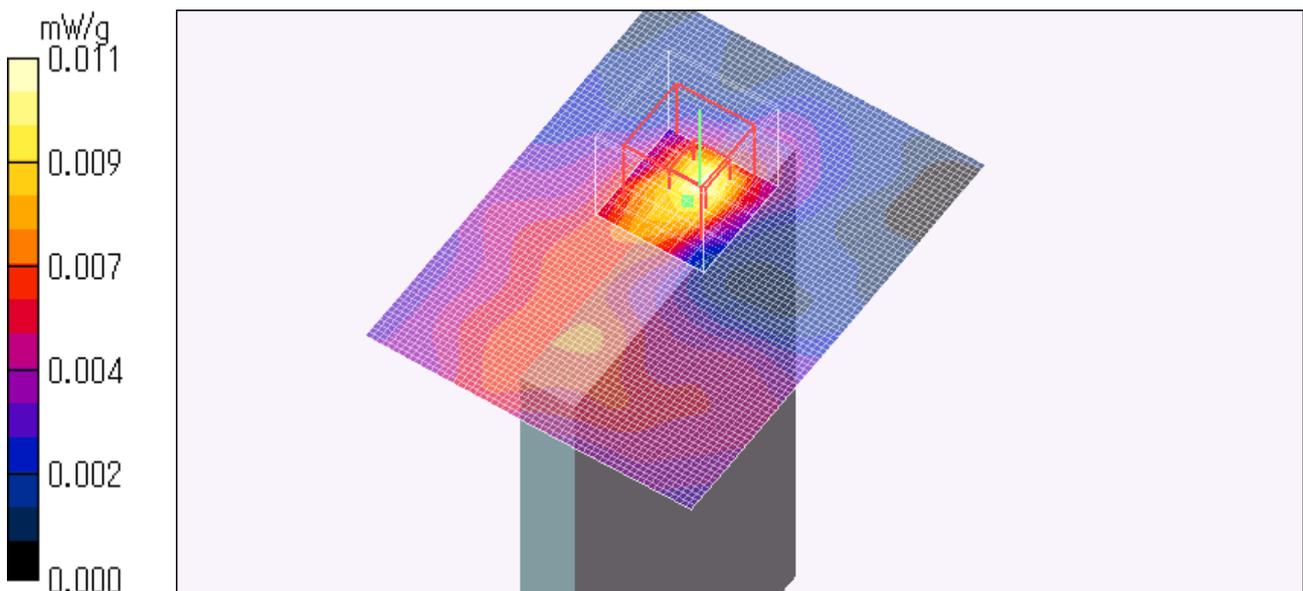
SAR(1 g) = 0.00748 mW/g; SAR(10 g) = 0.00386 mW/g

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

Test Date = 11/08/10

Ambient Temperature = 24.5 degree.C.

Liquid Temperature = Before 24.0 degree.C. , After 24.0 degree.C.



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EB-W51GJ/Body/Bottom edge/11b DBPSK 1Mbps/2437MHz

Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 50.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

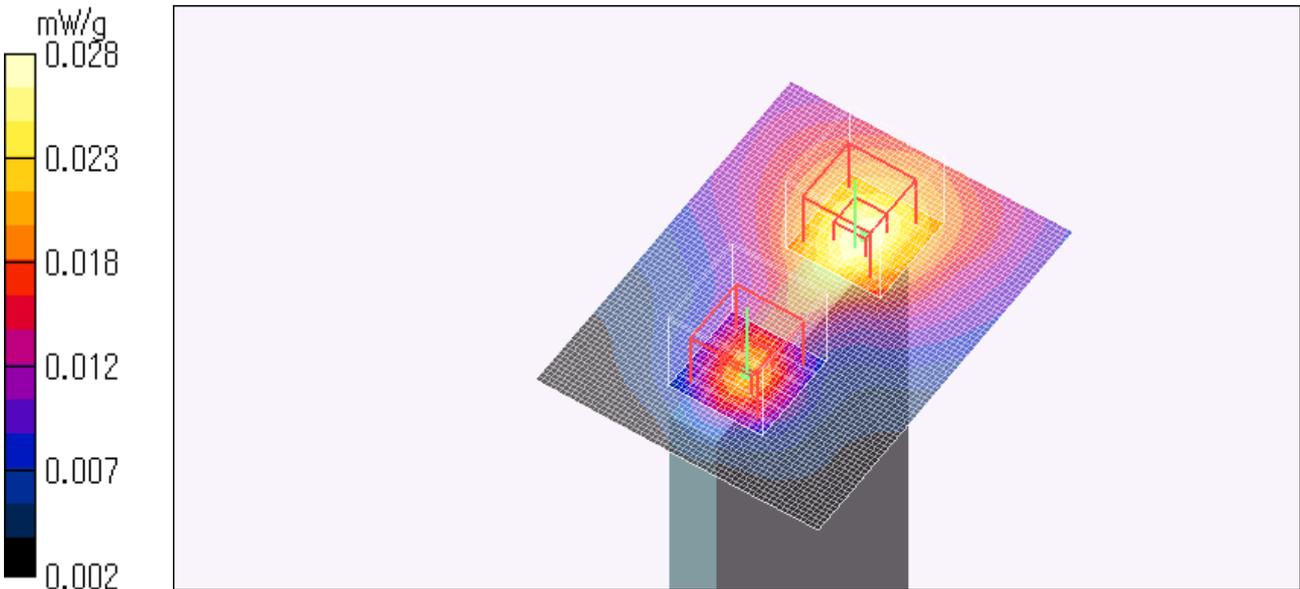
DASY4 Configuration:

- Probe: EX3DV3 - SN3507; ConvF(8.11, 8.11, 8.11); Calibrated: 2010/02/19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Area Scan (61x81x1): Measurement grid: $dx=15$ mm, $dy=15$ mm
Maximum value of SAR (interpolated) = 0.028 mW/g

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm
Reference Value = 2.97 V/m; Power Drift = -0.191 dB
Peak SAR (extrapolated) = 0.039 W/kg
SAR(1 g) = 0.020 mW/g; SAR(10 g) = 0.011 mW/g
Maximum value of SAR (measured) = 0.029 mW/g

Zoom Scan (7x7x7)/Cube 1: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm
Reference Value = 2.97 V/m; Power Drift = -0.191 dB
Peak SAR (extrapolated) = 0.027 W/kg
SAR(1 g) = 0.015 mW/g; SAR(10 g) = 0.00753 mW/g
Maximum value of SAR (measured) = 0.021 mW/g
Test Date = 11/08/10
Ambient Temperature = 24.5 degree.C.
Liquid Temperature = Before 24.0 degree.C. , After 24.0 degree.C.



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EB-W51GJ/Body/Rear surface/11b DBPSK 1Mbps/2412MHz

Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 50.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV3 - SN3507; ConvF(8.11, 8.11, 8.11); Calibrated: 2010/02/19

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

- Phantom: Flat Phantom ELI4.0

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

Area Scan (81x131x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.07 mW/g

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

Reference Value = 3.91 V/m; Power Drift = 0.168 dB

Peak SAR (extrapolated) = 2.36 W/kg

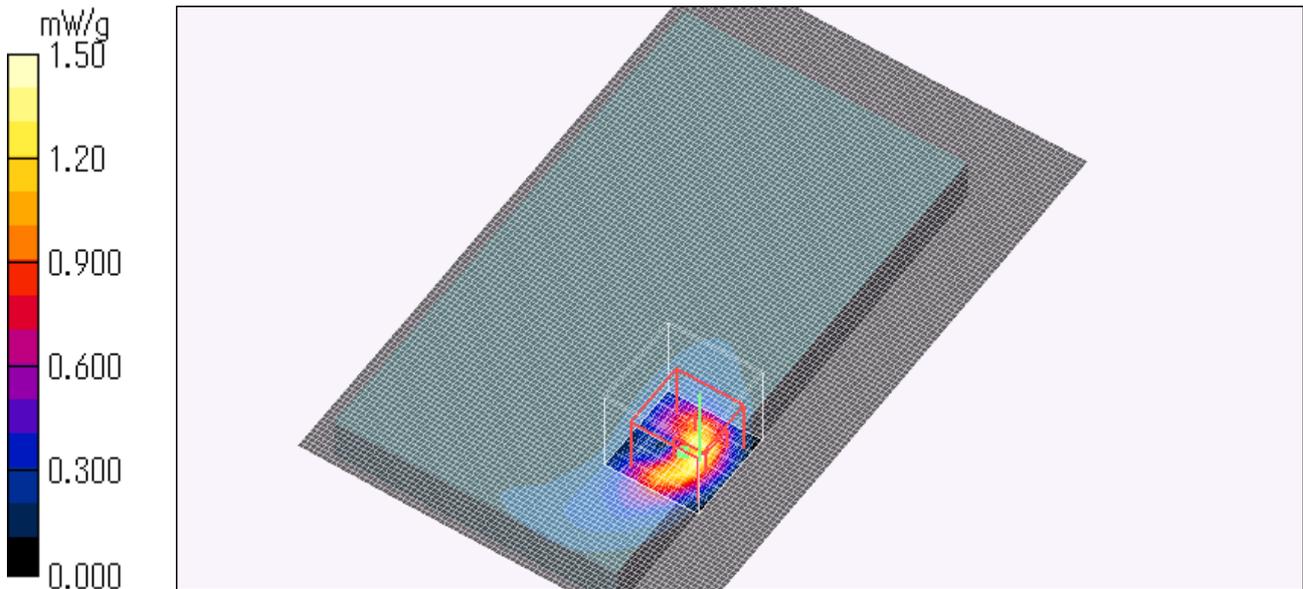
SAR(1 g) = 0.841 mW/g; SAR(10 g) = 0.328 mW/g

Maximum value of SAR (measured) = 1.50 mW/g

Test Date = 11/08/10

Ambient Temperature = 24.5 degree.C.

Liquid Temperature = Before 24.0 degree.C. , After 24.0 degree.C.



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EB-W51GJ/Body/Rear surface/11b DBPSK 1Mbps/2462MHz

Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 50.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV3 - SN3507; ConvF(8.11, 8.11, 8.11); Calibrated: 2010/02/19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Area Scan (81x131x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.97 mW/g

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

Reference Value = 3.16 V/m; Power Drift = 0.172 dB

Peak SAR (extrapolated) = 2.87 W/kg

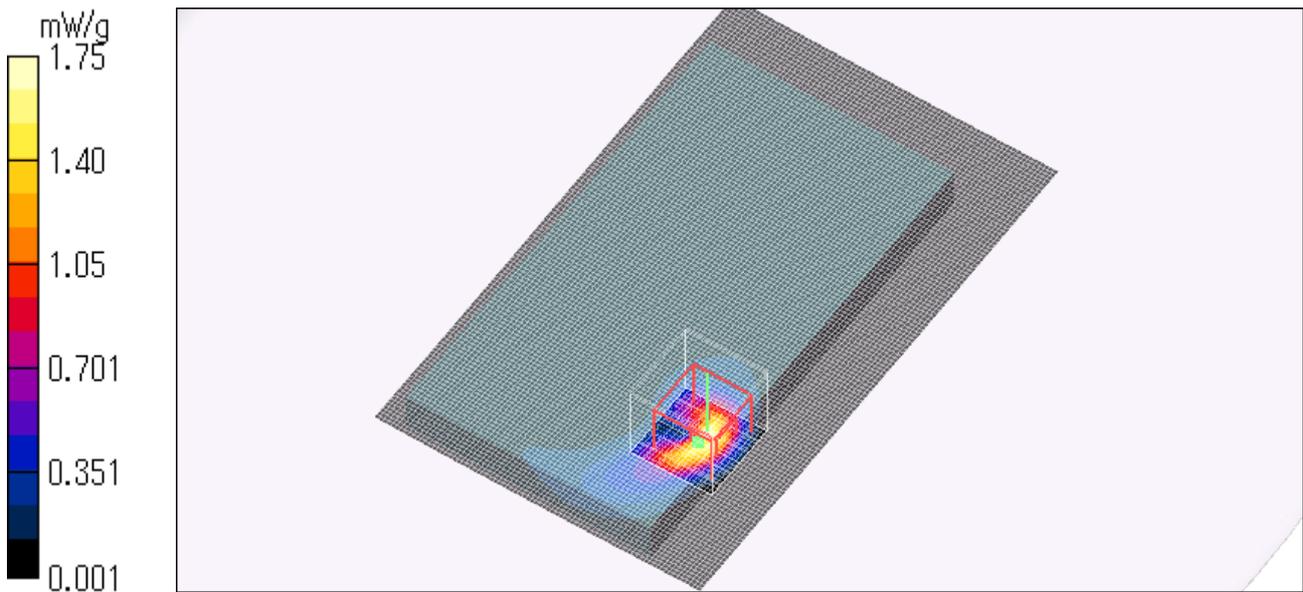
SAR(1 g) = 0.998 mW/g; SAR(10 g) = 0.387 mW/g

Maximum value of SAR (measured) = 1.75 mW/g

Test Date = 11/08/10

Ambient Temperature = 24.5 degree.C.

Liquid Temperature = Before 24.0 degree.C. , After 24.0 degree.C.



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Z-axis scan at max SAR location
EB-W51GJ/Body/Rear surface/11b DBPSK 1Mbps/2462MHz

Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.98$ mho/m; $\epsilon_r = 50.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV3 - SN3507; ConvF(8.11, 8.11, 8.11); Calibrated: 2010/02/19

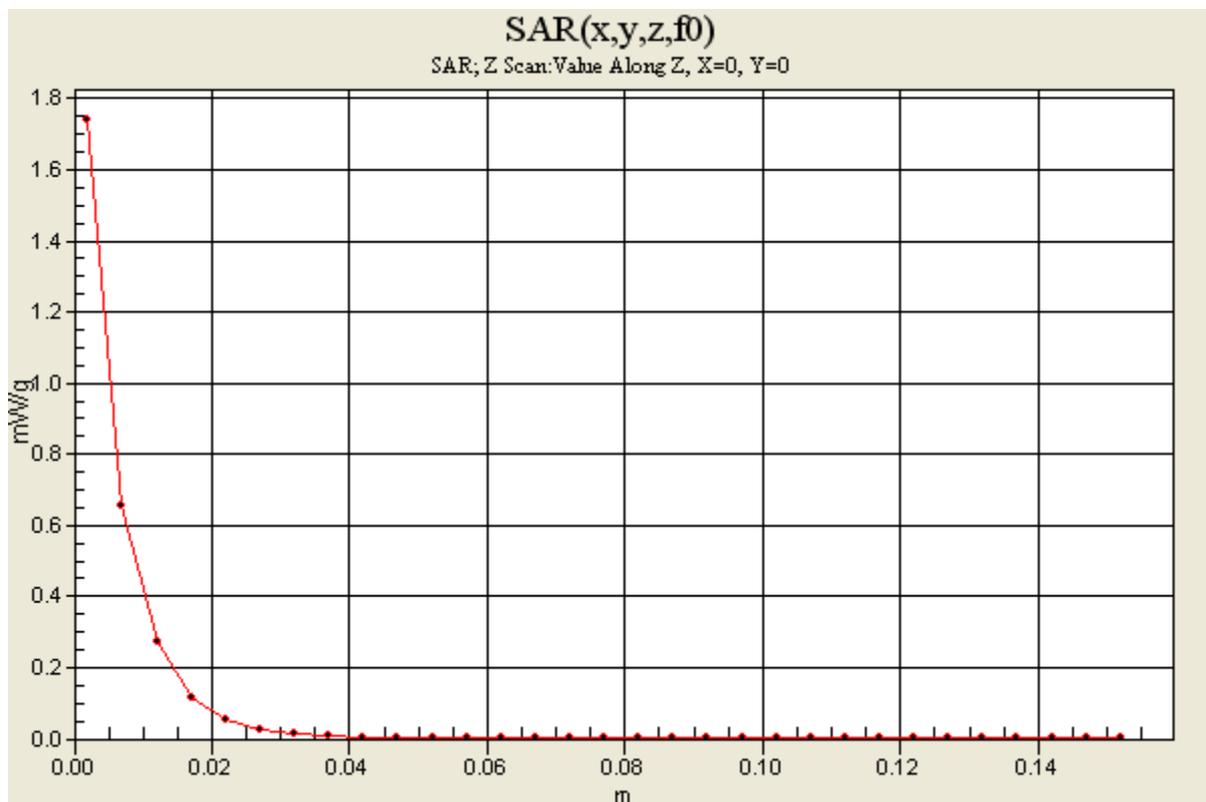
- Sensor-Surface: 2mm (Mechanical Surface Detection)

- Phantom: Flat Phantom ELI4.0

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

Z Scan (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 1.74 mW/g



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