

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 (or 10mm x 10mm). 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 or more was assessed by measuring 7 x 7 x 7 points at least. And for any secondary peaks found in the Step2 which are within 2dB of maximum peak 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(EX3DV3) away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.3 mm. 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.

2. Measurement data

i) WLAN 11b

WYSAAVDX7(H423A) Front 11b 1Mbps 2412MHz

Communication System: WLAN 11a/b/g/n ; Communication System Band: WLAN 11b/g/n; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 2.01$ mho/m; $\epsilon_r = 51.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration

Probe: EX3DV3 - SN3507; ConvF(7.61, 7.61, 7.61); Calibrated: 2011/03/16

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2011/07/20

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASYS2, Version 52.6 (1);

Falt 0mm/dist=2.0mm (EX-Probe)/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.632 mW/g

Falt 0mm/dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.700 V/m; Power Drift = -0.14 dB

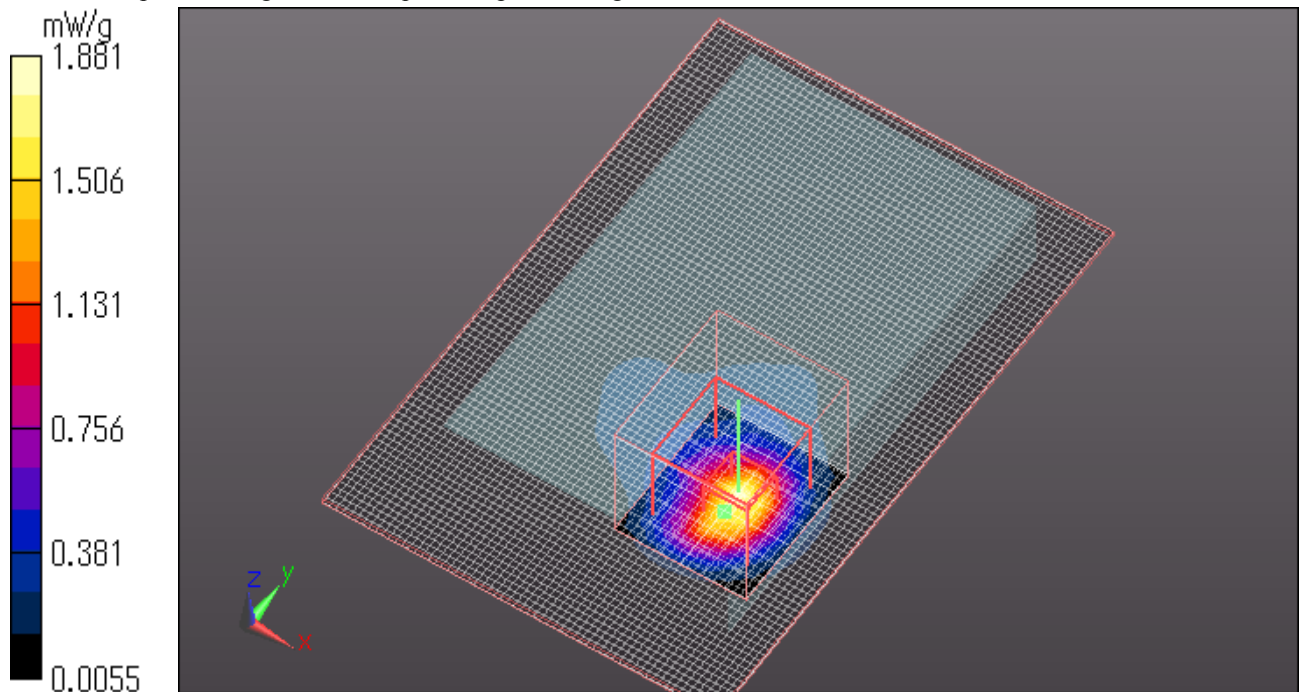
Peak SAR (extrapolated) = 2.758 W/kg

SAR(1 g) = 1.11 mW/g; SAR(10 g) = 0.432 mW/g

Maximum value of SAR (measured) = 1.881 mW/g

Date: 2011/09/01

Ambient Temp. : 23.5 degree.C. Liquid Temp.; 24.5 degree.C.



UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone: +81 596 24 8116

Facsimile: +81 596 24 8124

WYSAAVDX7(H423A) Front 11b 1Mbps 2412MHz

Communication System: WLAN 11a/b/g/n ; Communication System Band: WLAN 11b/g/n; Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 2.01$ mho/m; $\epsilon_r = 51.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration

Probe: EX3DV3 - SN3507; ConvF(7.61, 7.61, 7.61); Calibrated: 2011/03/16

Sensor-Surface: 2mm (Mechanical Surface Detection)

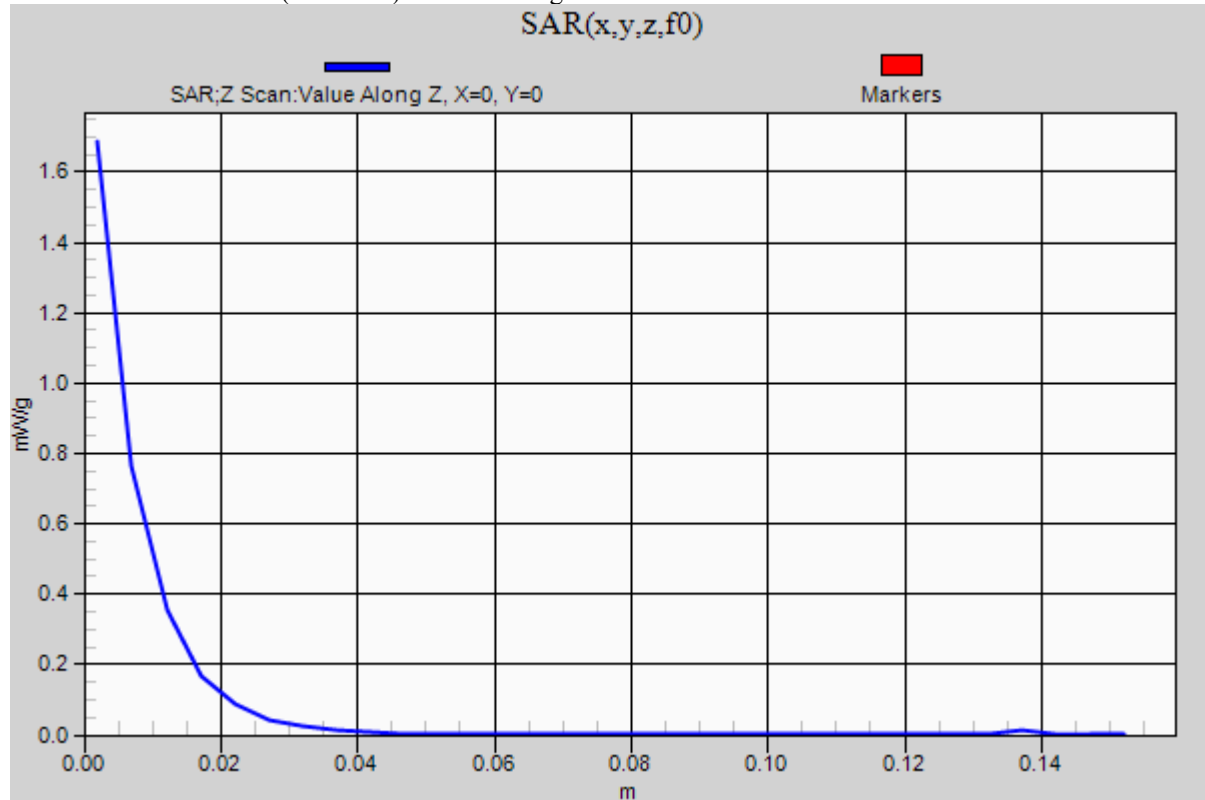
Electronics: DAE4 Sn509; Calibrated: 2011/07/20

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASYS2, Version 52.6 (1);

Falt 0mm/dist=2.0mm (EX-Probe)/Z Scan (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 1.686 mW/g



UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone: +81 596 24 8116

Facsimile: +81 596 24 8124

WYSAAVDX7(H423A) Rear 11b 1Mbps 2412MHz

Communication System: WLAN 11a/b/g/n ; Communication System Band: WLAN 11b/g/n; Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 2.01$ mho/m; $\epsilon_r = 51.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration

Probe: EX3DV3 - SN3507; ConvF(7.61, 7.61, 7.61); Calibrated: 2011/03/16

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2011/07/20

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASY52, Version 52.6 (1);

Falt 0mm/dist=2.0mm (EX-Probe)/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.103 mW/g

Falt 0mm/dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.974 V/m; Power Drift = -0.14 dB

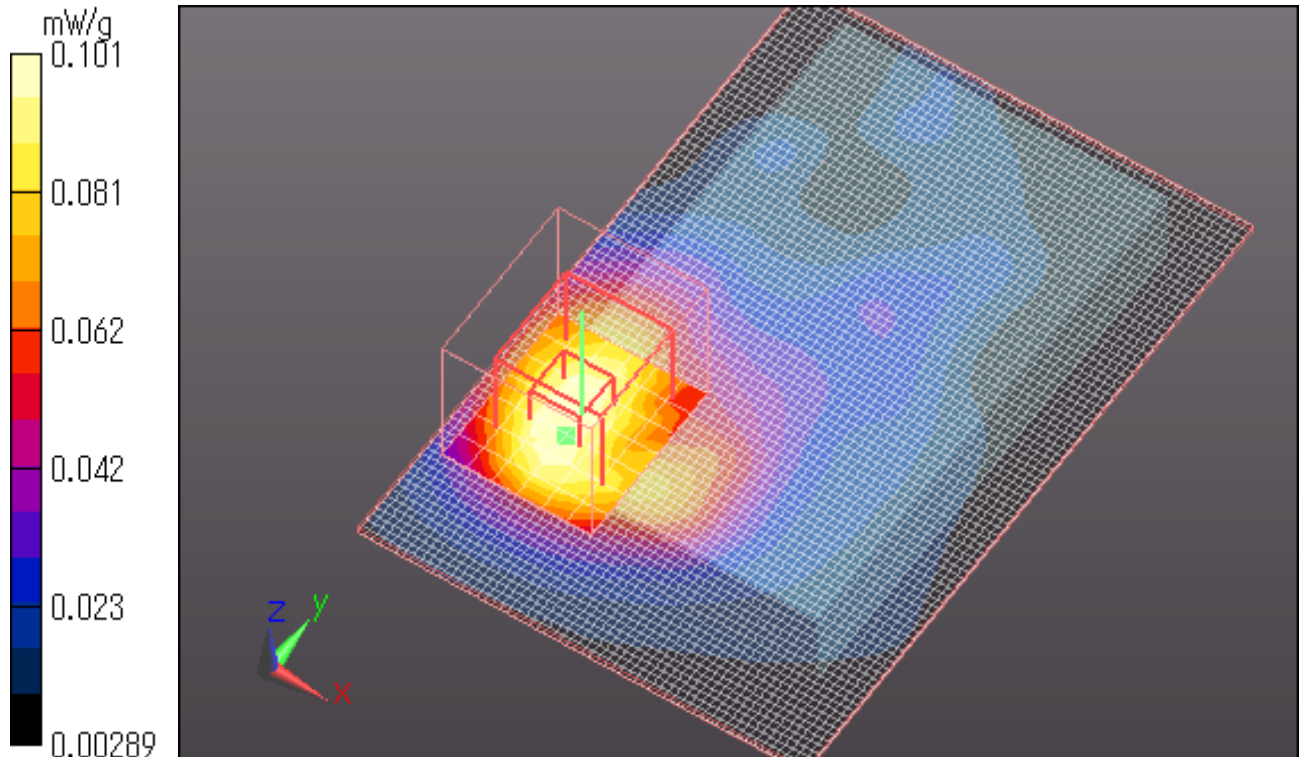
Peak SAR (extrapolated) = 0.142 W/kg

SAR(1 g) = 0.072 mW/g; SAR(10 g) = 0.041 mW/g

Maximum value of SAR (measured) = 0.101 mW/g

Date: 2011/09/01

Ambient Temp. : 23.5 degree.C. Liquid Temp.; 24.5 degree.C.



UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone: +81 596 24 8116

Facsimile: +81 596 24 8124

WYSAAVDX7(H423A) Left edge 11b 1Mbps 2412MHz

Communication System: WLAN 11a/b/g/n ; Communication System Band: WLAN 11b/g/n; Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 2.01$ mho/m; $\epsilon_r = 51.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration

Probe: EX3DV3 - SN3507; ConvF(7.61, 7.61, 7.61); Calibrated: 2011/03/16

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2011/07/20

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASYS2, Version 52.6 (1);

Falt 0mm/dist=2.0mm (EX-Probe)/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.065 mW/g

Falt 0mm/dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.027 V/m; Power Drift = -0.10 dB

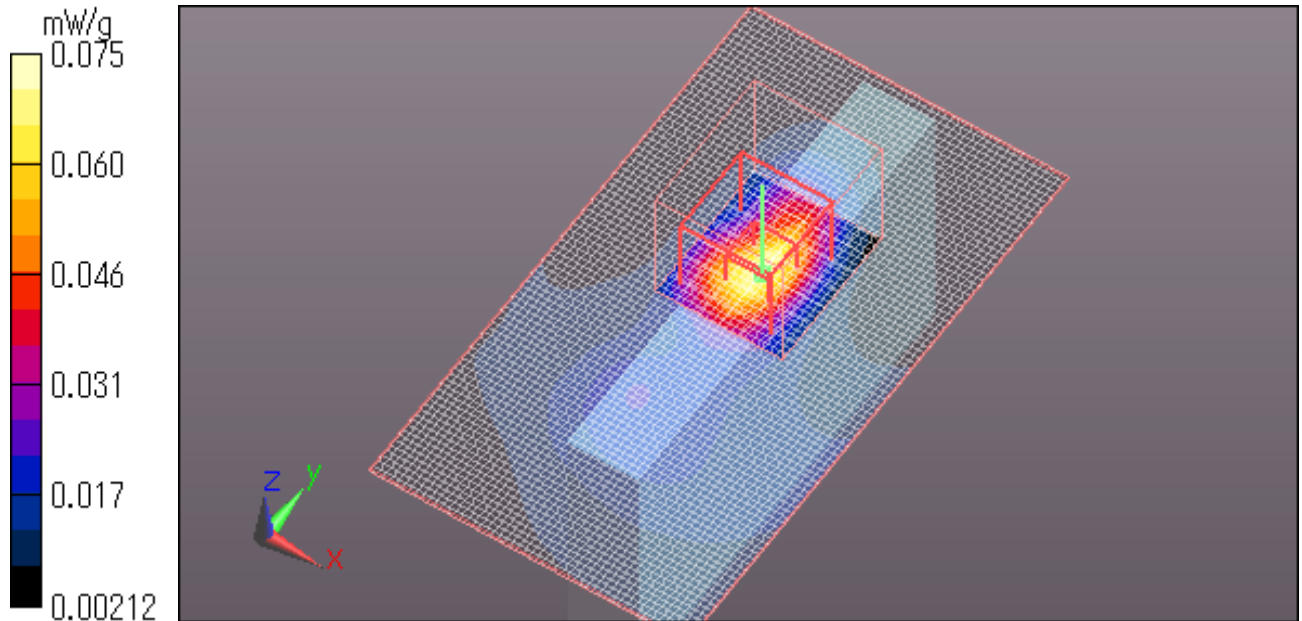
Peak SAR (extrapolated) = 0.102 W/kg

SAR(1 g) = 0.048 mW/g; SAR(10 g) = 0.023 mW/g

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

Date: 2011/09/01

Ambient Temp. : 23.5 degree.C. Liquid Temp.; 24.5 degree.C.



UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone: +81 596 24 8116

Facsimile: +81 596 24 8124

WYSAAVDX7(H423A) Right edge 11b 1Mbps 2412MHz

Communication System: WLAN 11a/b/g/n ; Communication System Band: WLAN 11b/g/n; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 2.01$ mho/m; $\epsilon_r = 51.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration

Probe: EX3DV3 - SN3507; ConvF(7.61, 7.61, 7.61); Calibrated: 2011/03/16

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2011/07/20

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASYS2, Version 52.6 (1);

Falt 0mm/dist=2.0mm (EX-Probe)/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.708 mW/g

Falt 0mm/dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 13.363 V/m; Power Drift = -0.15 dB

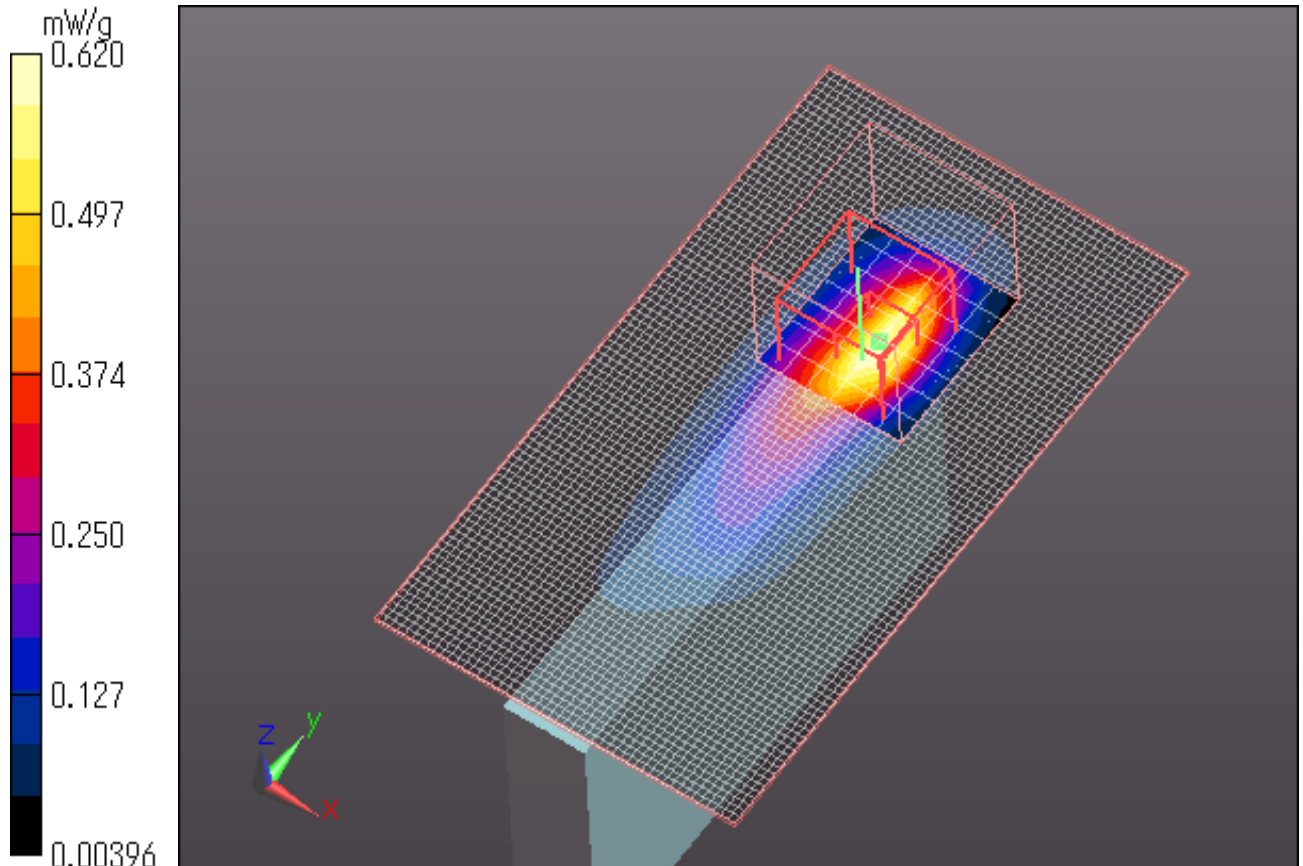
Peak SAR (extrapolated) = 0.889 W/kg

SAR(1 g) = 0.397 mW/g; SAR(10 g) = 0.176 mW/g

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

Date: 2011/09/01

Ambient Temp. : 24.2 degree.C. Liquid Temp.; 24.2 degree.C.



UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone: +81 596 24 8116

Facsimile: +81 596 24 8124

WYSAAVDX7(H423A) Top edge 11b 1Mbps 2412MHz

Communication System: WLAN 11a/b/g/n ; Communication System Band: WLAN 11b/g/n; Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 2.01$ mho/m; $\epsilon_r = 51.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration

Probe: EX3DV3 - SN3507; ConvF(7.61, 7.61, 7.61); Calibrated: 2011/03/16

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2011/07/20

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASY52, Version 52.6 (1);

Falt 0mm/dist=2.0mm (EX-Probe)/Area Scan (71x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.146 mW/g

Falt 0mm/dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.395 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.261 W/kg

SAR(1 g) = 0.109 mW/g; SAR(10 g) = 0.050 mW/g

Maximum value of SAR (measured) = 0.166 mW/g

Falt 0mm/dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x8x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.395 V/m; Power Drift = 0.09 dB

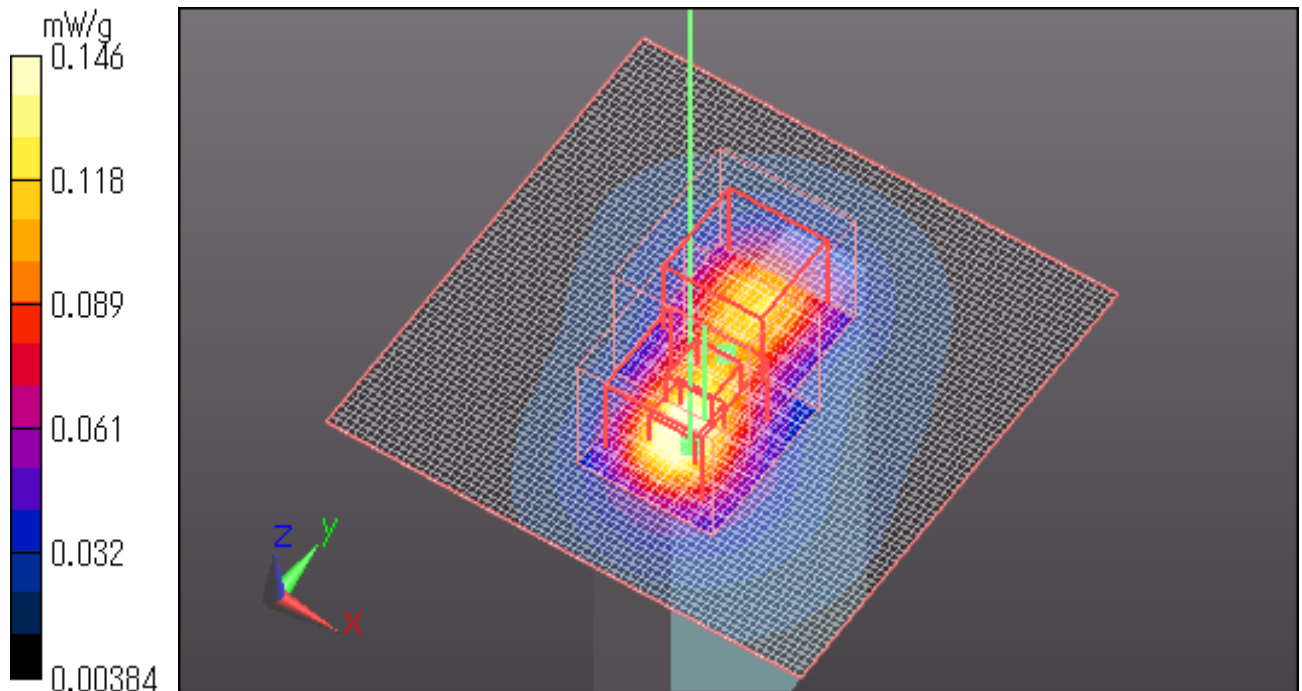
Peak SAR (extrapolated) = 0.239 W/kg

SAR(1 g) = 0.088 mW/g; SAR(10 g) = 0.047 mW/g

Maximum value of SAR (measured) = 0.157 mW/g

Date: 2011/09/01

Ambient Temp. : 23.5 degree.C. Liquid Temp.; 24.5 degree.C.



UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone: +81 596 24 8116

Facsimile: +81 596 24 8124

WYSAAVDX7(H423A) Bottom edge 11b 1Mbps 2412MHz

Communication System: WLAN 11a/b/g/n ; Communication System Band: WLAN 11b/g/n; Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 2.01$ mho/m; $\epsilon_r = 51.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration

Probe: EX3DV3 - SN3507; ConvF(7.61, 7.61, 7.61); Calibrated: 2011/03/16

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2011/07/20

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASYS2, Version 52.6 (1);

Falt 0mm/dist=2.0mm (EX-Probe)/Area Scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

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

Falt 0mm/dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.225 V/m; Power Drift = -0.12dB

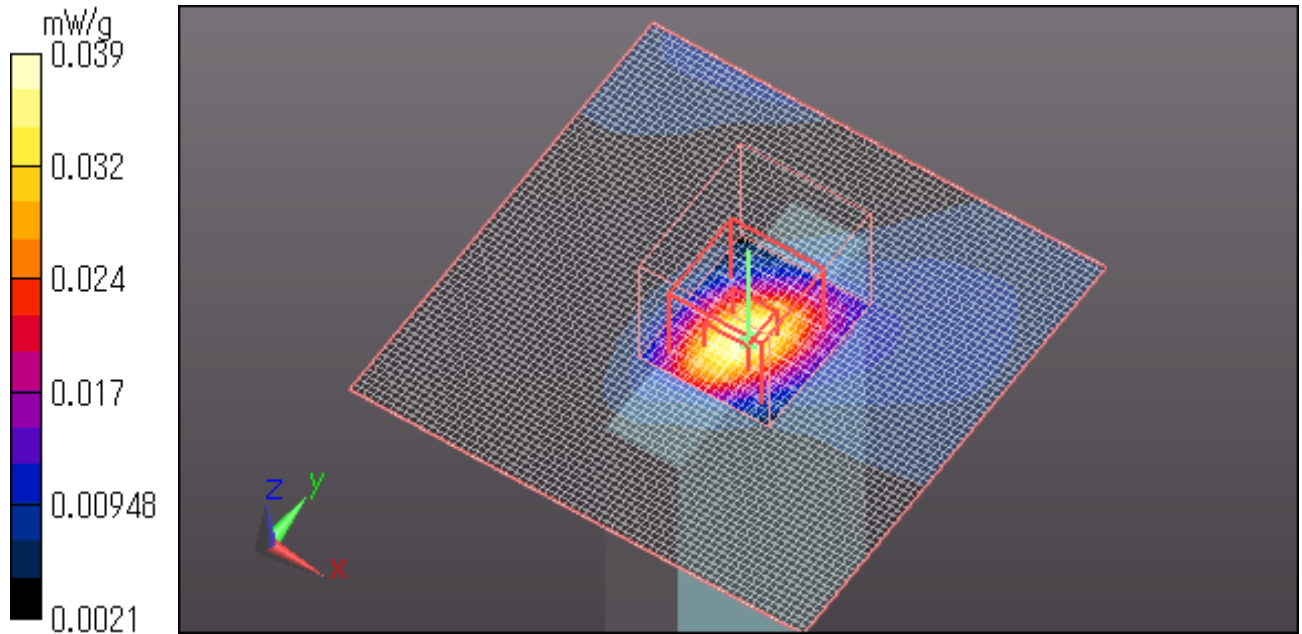
Peak SAR (extrapolated) = 0.052 W/kg

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

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

Date: 2011/09/01

Ambient Temp. : 23.5 degree.C. Liquid Temp.; 24.5 degree.C.



UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone: +81 596 24 8116

Facsimile: +81 596 24 8124

WYSAAVDX7(H423A) Front 11b 1Mbps 2437MHz

Communication System: WLAN 11a/b/g/n ; Communication System Band: WLAN 11b/g/n; Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 2.01$ mho/m; $\epsilon_r = 51.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration

Probe: EX3DV3 - SN3507; ConvF(7.61, 7.61, 7.61); Calibrated: 2011/03/16

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2011/07/20

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASYS2, Version 52.6 (1);

Falt 0mm/dist=2.0mm (EX-Probe)/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.968 mW/g

Falt 0mm/dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.917 V/m; Power Drift = 0.19 dB

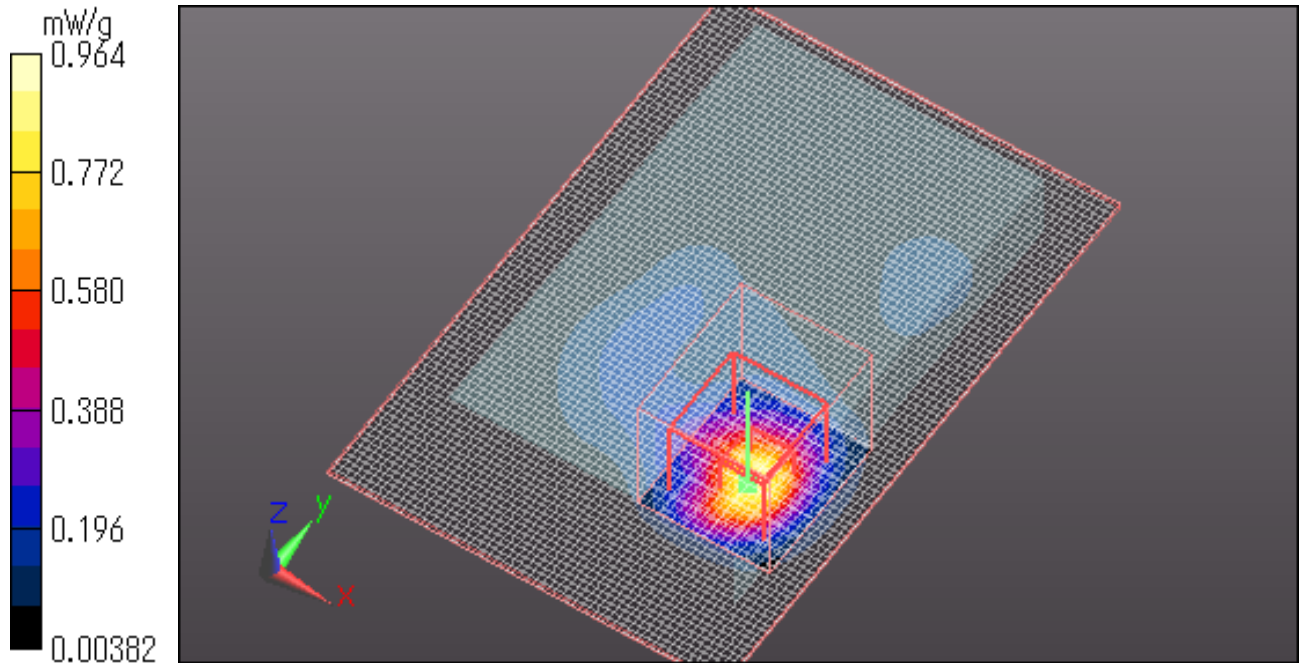
Peak SAR (extrapolated) = 1.389 W/kg

SAR(1 g) = 0.598 mW/g; SAR(10 g) = 0.252 mW/g

Maximum value of SAR (measured) = 0.964 mW/g

Date: 2011/09/01

Ambient Temp. : 23.5 degree.C. Liquid Temp.; 24.5 degree.C.



UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone: +81 596 24 8116

Facsimile: +81 596 24 8124

WYSAAVDX7(H423A) Front 11b 1Mbps 2462MHz

Communication System: WLAN 11a/b/g/n ; Communication System Band: WLAN 11b/g/n; Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 2.01$ mho/m; $\epsilon_r = 51.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration

Probe: EX3DV3 - SN3507; ConvF(7.61, 7.61, 7.61); Calibrated: 2011/03/16

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2011/07/20

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASYS2, Version 52.6 (1);

Falt 0mm/dist=2.0mm (EX-Probe)/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.984 mW/g

Falt 0mm/dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.251 V/m; Power Drift = -0.02 dB

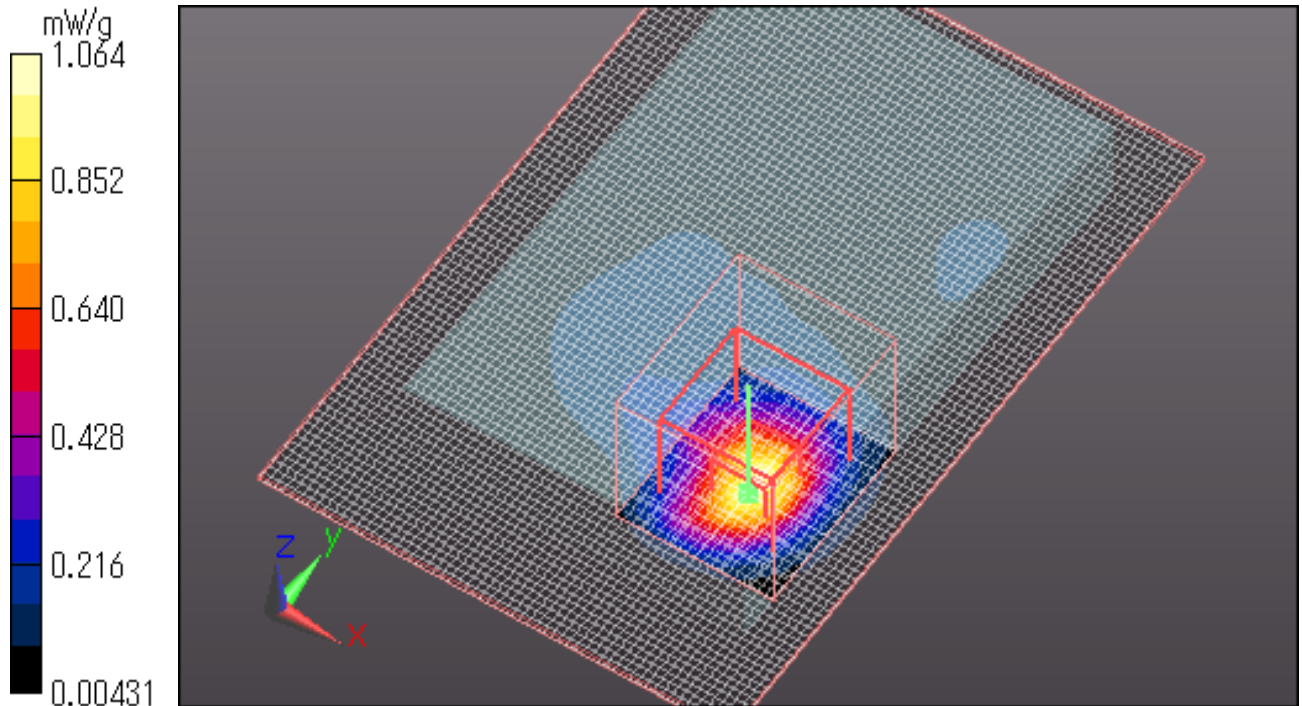
Peak SAR (extrapolated) = 1.584 W/kg

SAR(1 g) = 0.658 mW/g; SAR(10 g) = 0.270 mW/g

Maximum value of SAR (measured) = 1.064 mW/g

Date: 2011/09/01

Ambient Temp. : 23.5 degree.C. Liquid Temp.; 24.5 degree.C.



UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone: +81 596 24 8116

Facsimile: +81 596 24 8124

WYSAAVDX7(H423A) Front 5mm 11b 1Mbps 2412MHz

Communication System: WLAN 11a/b/g/n ; Communication System Band: WLAN 11b/g/n; Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 2.01$ mho/m; $\epsilon_r = 51.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration

Probe: EX3DV3 - SN3507; ConvF(7.61, 7.61, 7.61); Calibrated: 2011/03/16

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2011/07/20

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASYS2, Version 52.6 (1);

Falt 0mm/dist=2.0mm (EX-Probe)/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.347 mW/g

Falt 0mm/dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.465 V/m; Power Drift = -0.13dB

Peak SAR (extrapolated) = 0.507 W/kg

SAR(1 g) = 0.240 mW/g; SAR(10 g) = 0.108 mW/g

Maximum value of SAR (measured) = 0.372 mW/g

Falt 0mm/dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x8x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.465 V/m; Power Drift = -0.13B

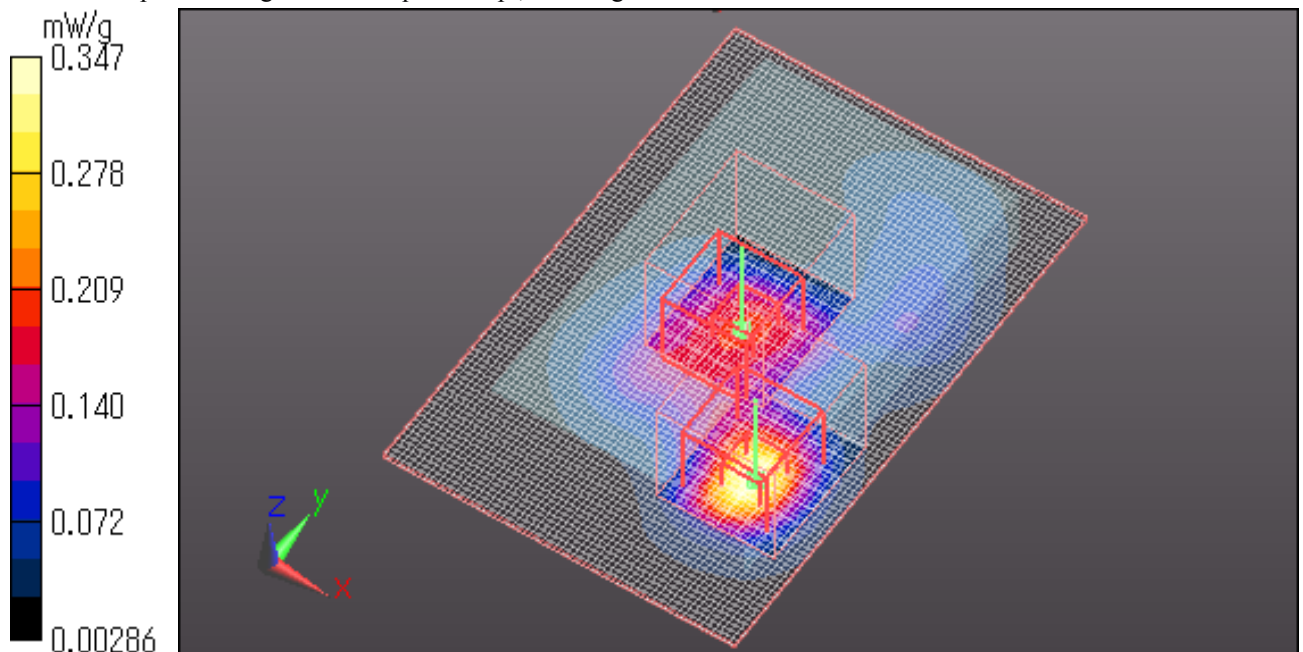
Peak SAR (extrapolated) = 0.252 W/kg

SAR(1 g) = 0.147 mW/g; SAR(10 g) = 0.086 mW/g

Maximum value of SAR (measured) = 0.198 mW/g

Date: 2011/09/01

Ambient Temp. : 23.5 degree.C. Liquid Temp.; 24.5 degree.C.



UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone: +81 596 24 8116

Facsimile: +81 596 24 8124