

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.

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

2. Measurement data (Body SAR)

EB-WX1GJ/Body/Rear surface/11b DBPSK 1Mbps/2437MHz

Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2450$ MHz; $\sigma = 2$ mho/m; $\epsilon_r = 50.1$; $\rho = 1000$ 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 (61x201x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.336 mW/g

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

Reference Value = 11.1 V/m; Power Drift = -0.201 dB

Peak SAR (extrapolated) = 0.489 W/kg

SAR(1 g) = 0.216 mW/g; SAR(10 g) = 0.117 mW/g

Maximum value of SAR (measured) = 0.324 mW/g

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

Reference Value = 11.1 V/m; Power Drift = -0.201 dB

Peak SAR (extrapolated) = 0.612 W/kg

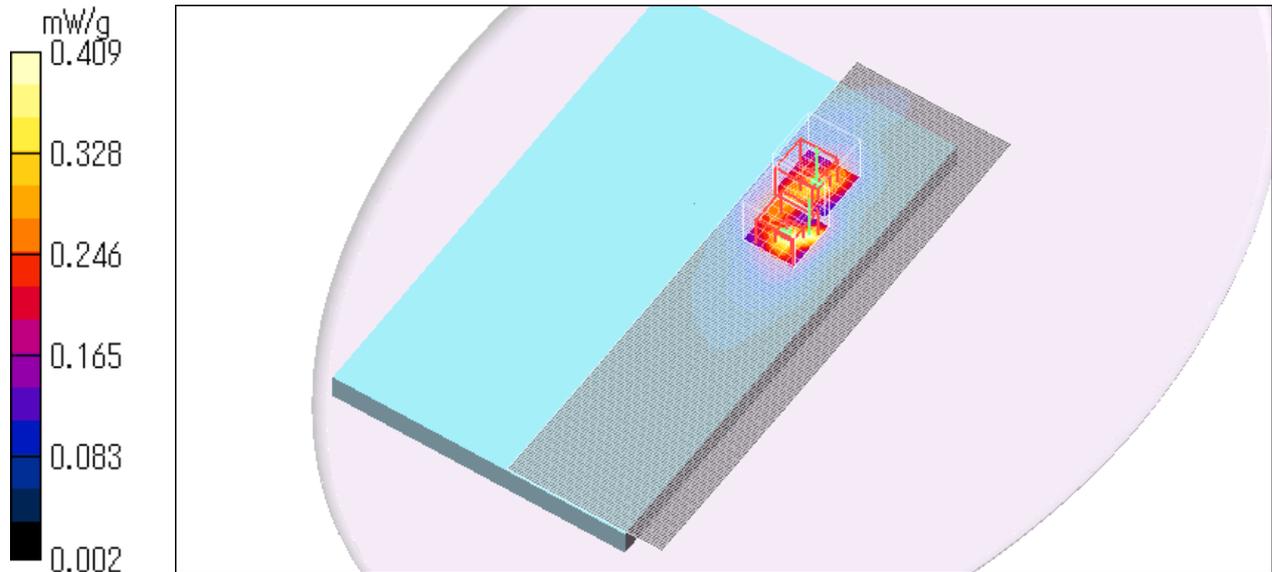
SAR(1 g) = 0.251 mW/g; SAR(10 g) = 0.119 mW/g

Maximum value of SAR (measured) = 0.409 mW/g

Test Date = 11/10/10

Ambient Temperature = 24.5 degree.C.

Liquid Temperature = Before 22.6 degree.C. , After 22.6 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

EB-WX1GJ/Body/Rear surface/11b CCK 11Mbps/2437MHz

Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2450$ MHz; $\sigma = 2$ mho/m; $\epsilon_r = 50.1$; $\rho = 1000$ 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 (61x201x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.537 mW/g

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

Reference Value = 14.7 V/m; Power Drift = -0.111 dB

Peak SAR (extrapolated) = 0.768 W/kg

SAR(1 g) = 0.317 mW/g; SAR(10 g) = 0.147 mW/g

Maximum value of SAR (measured) = 0.509 mW/g

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

Reference Value = 14.7 V/m; Power Drift = -0.111 dB

Peak SAR (extrapolated) = 0.488 W/kg

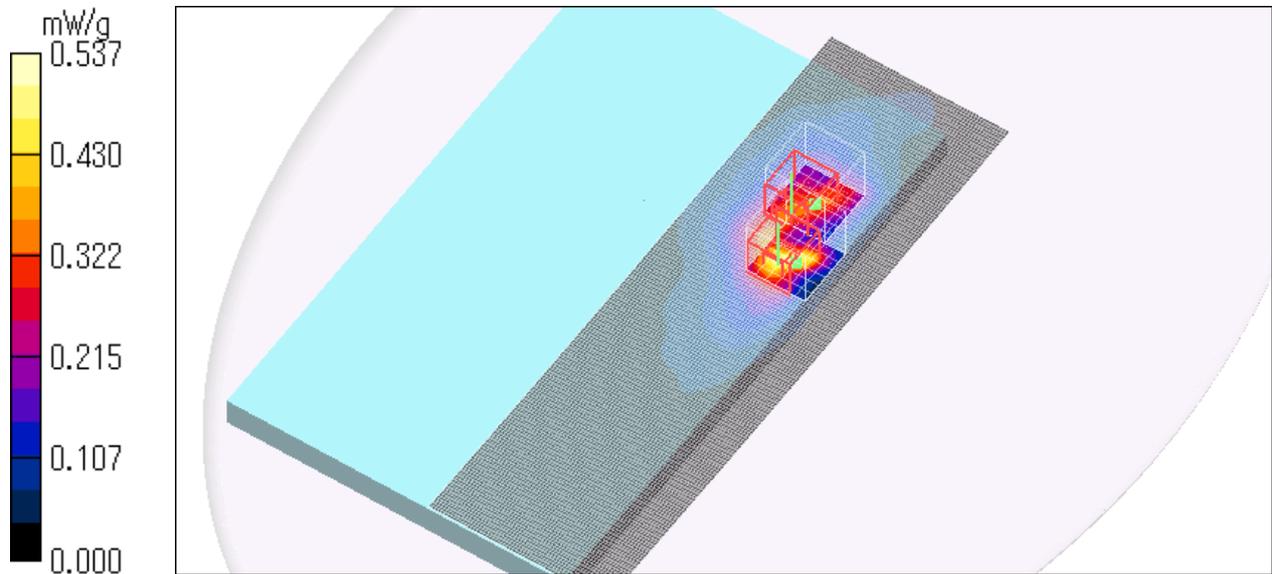
SAR(1 g) = 0.247 mW/g; SAR(10 g) = 0.131 mW/g

Maximum value of SAR (measured) = 0.354 mW/g

Test Date = 11/10/10

Ambient Temperature = 24.5 degree.C.

Liquid Temperature = Before 22.6 degree.C. , After 22.6 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

EB-WX1GJ/Body/Right edge/11b CCK 11Mbps/2437MHz

Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2450 \text{ MHz}$; $\sigma = 2 \text{ mho/m}$; $\epsilon_r = 50.1$; $\rho = 1000 \text{ kg/m}^3$

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 (61x201x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.005 mW/g

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

Reference Value = 1.12 V/m; Power Drift = -0.142 dB

Peak SAR (extrapolated) = 0.005 W/kg

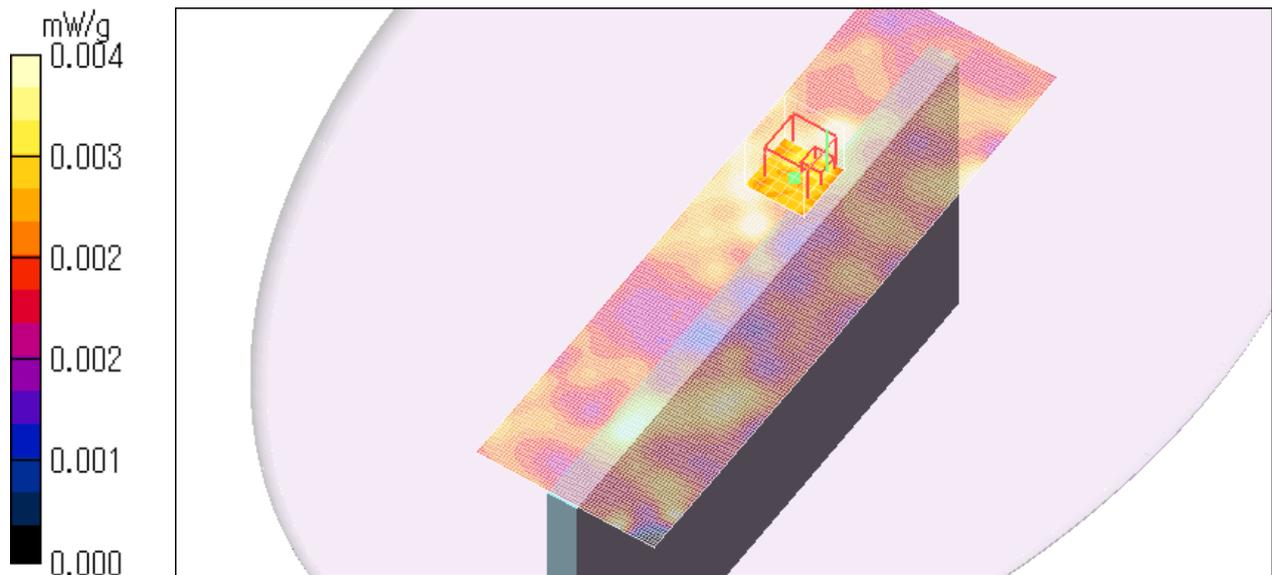
SAR(1 g) = 0.0026 mW/g; SAR(10 g) = 0.00147 mW/g

Maximum value of SAR (measured) = 0.004 mW/g

Test Date = 11/10/10

Ambient Temperature = 24.5 degree.C.

Liquid Temperature = Before 22.6 degree.C. , After 22.6 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

EB-WX1GJ/Body/Left edge/11b CCK 11Mbps/2437MHz

Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2450 \text{ MHz}$; $\sigma = 2 \text{ mho/m}$; $\epsilon_r = 50.1$; $\rho = 1000 \text{ kg/m}^3$

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 2 (61x201x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.747 mW/g

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

Reference Value = 13.8 V/m; Power Drift = -0.142 dB

Peak SAR (extrapolated) = 1.53 W/kg

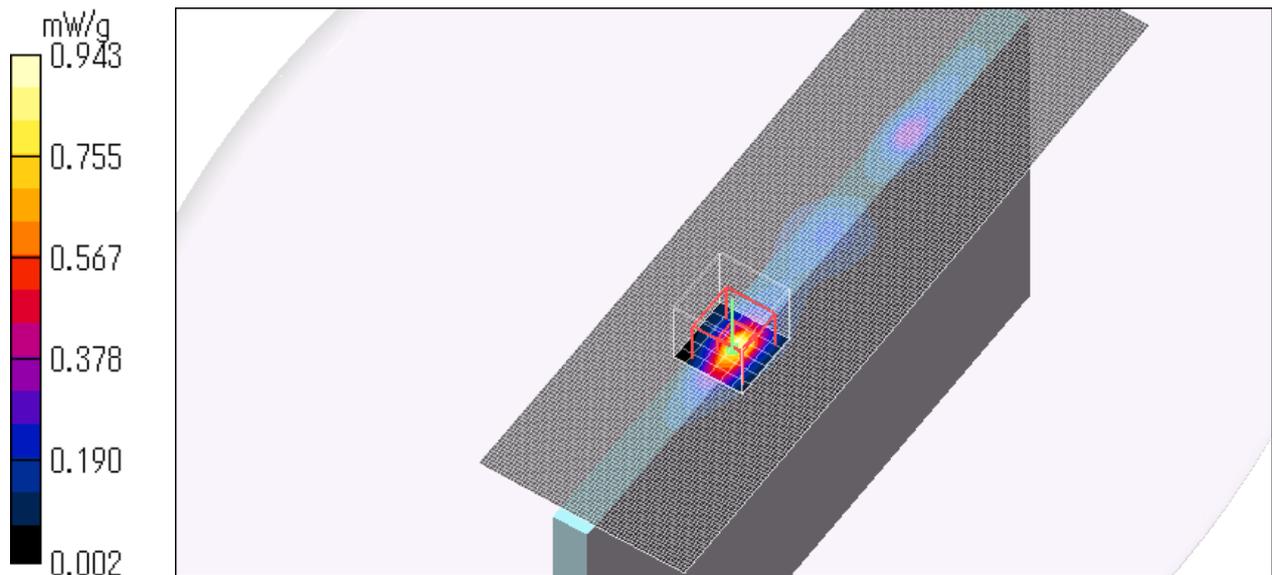
SAR(1 g) = 0.545 mW/g; SAR(10 g) = 0.199 mW/g

Maximum value of SAR (measured) = 0.943 mW/g

Test Date = 11/10/10

Ambient Temperature = 24.5 degree.C.

Liquid Temperature = Before 22.6 degree.C. , After 22.6 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

EB-WX1GJ/Body/Top edge /11b CCK 11Mbps/2437MHz

Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2450$ MHz; $\sigma = 2$ mho/m; $\epsilon_r = 50.1$; $\rho = 1000$ 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 (61x131x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.111 mW/g

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

Reference Value = 7.65 V/m; Power Drift = -0.132 dB

Peak SAR (extrapolated) = 0.218 W/kg

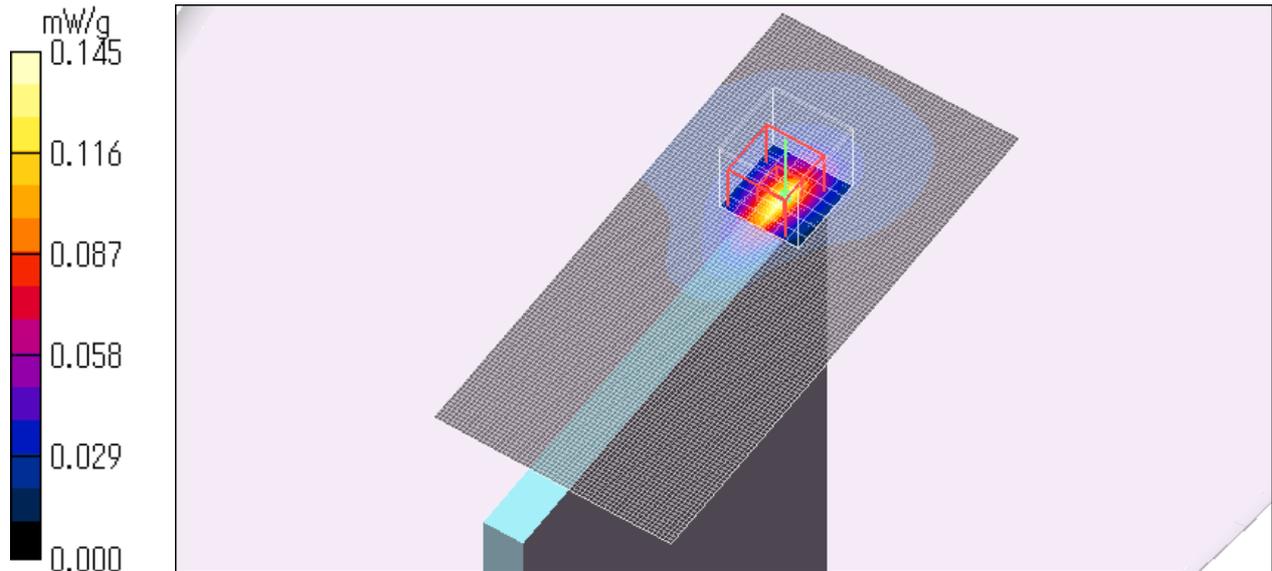
SAR(1 g) = 0.079 mW/g; SAR(10 g) = 0.034 mW/g

Maximum value of SAR (measured) = 0.145 mW/g

Test Date = 11/10/10

Ambient Temperature = 24.5 degree.C.

Liquid Temperature = Before 22.6 degree.C. , After 22.6 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

EB-WX1GJ/Body/Bottom edge/11b CCK 11Mbps/2437MHz

Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2450$ MHz; $\sigma = 2$ mho/m; $\epsilon_r = 50.1$; $\rho = 1000$ 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 (61x131x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.049 mW/g

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

Reference Value = 3.76 V/m; Power Drift = -0.205 dB

Peak SAR (extrapolated) = 0.096 W/kg

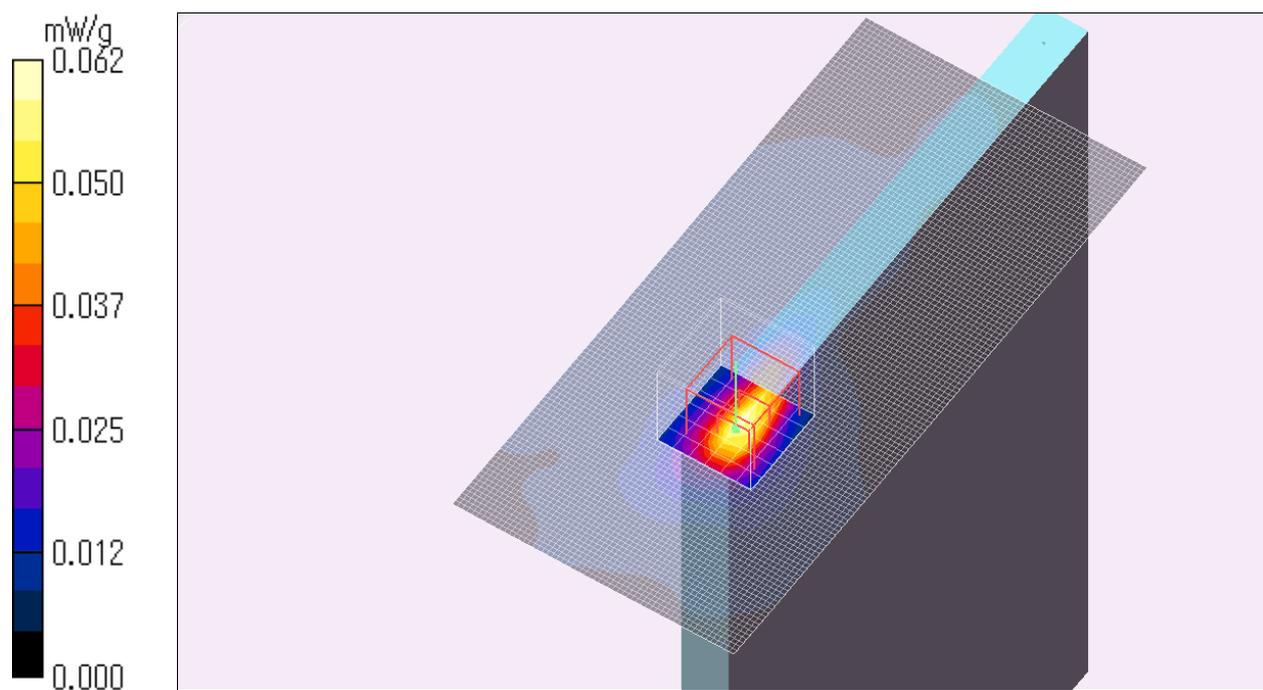
SAR(1 g) = 0.036 mW/g; SAR(10 g) = 0.016 mW/g

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

Test Date = 11/10/10

Ambient Temperature = 24.5 degree.C.

Liquid Temperature = Before 22.6 degree.C. , After 22.6 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

EB-WX1GJ/Body/Left edge/11b CCK 11Mbps/2412MHz

Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2450 \text{ MHz}$; $\sigma = 2 \text{ mho/m}$; $\epsilon_r = 50.1$; $\rho = 1000 \text{ kg/m}^3$

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 2 (61x201x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 1.08 mW/g

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

Reference Value = 22.4 V/m; Power Drift = -0.136 dB

Peak SAR (extrapolated) = 1.82 W/kg

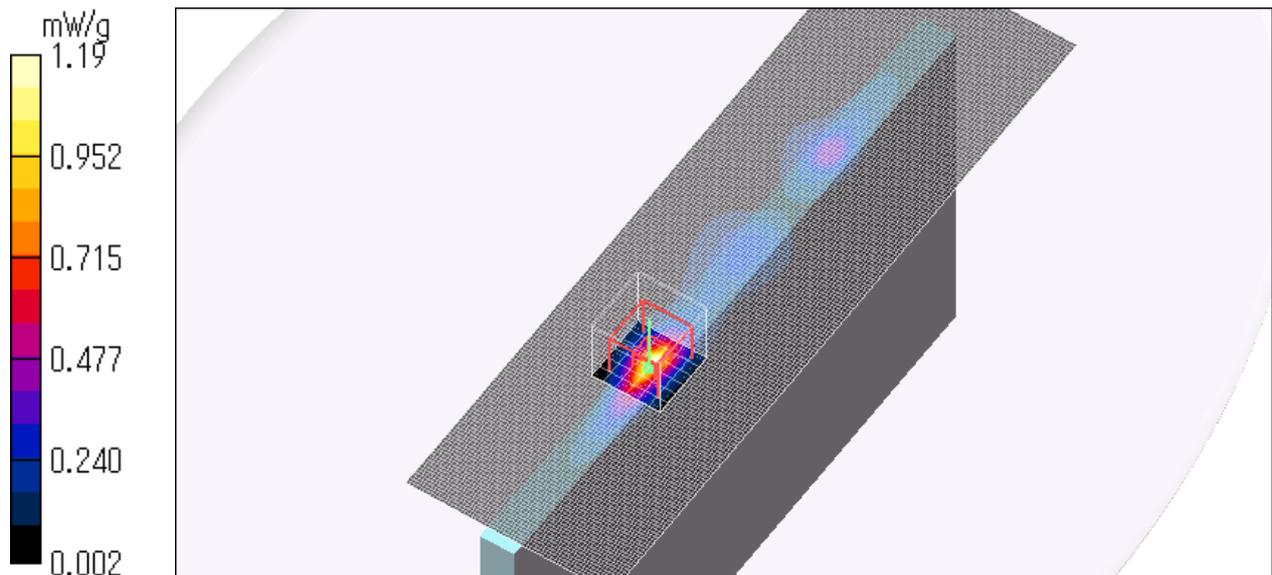
SAR(1 g) = 0.651 mW/g; SAR(10 g) = 0.242 mW/g

Maximum value of SAR (measured) = 1.19 mW/g

Test Date = 11/10/10

Ambient Temperature = 24.5 degree.C.

Liquid Temperature = Before 22.6 degree.C. , After 22.6 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

Z-axis scan at max SAR location

EB-WX1GJ/Body/Left edge/11b CCK 11Mbps/2412MHz

Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2450$ MHz; $\sigma = 2$ mho/m; $\epsilon_r = 50.1$; $\rho = 1000$ kg/m³

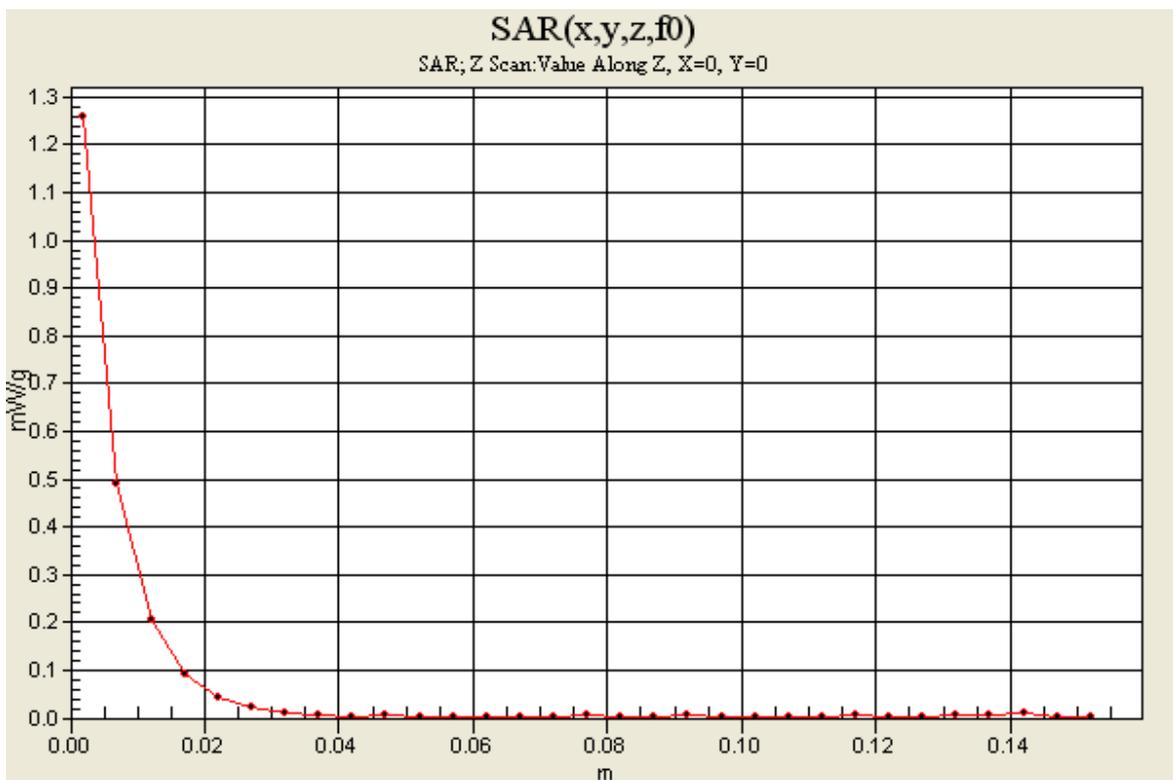
Phantom section: Flat Section

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) = 1.26 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

EB-WX1GJ/Body/Left edge/11b CCK 11Mbps/2462MHz

Duty Cycle: 1:1

Medium: M2450 Medium parameters used: $f = 2450$ MHz; $\sigma = 2$ mho/m; $\epsilon_r = 50.1$; $\rho = 1000$ 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 2 (61x201x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.910 mW/g

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

Reference Value = 19.2 V/m; Power Drift = -0.110 dB

Peak SAR (extrapolated) = 1.52 W/kg

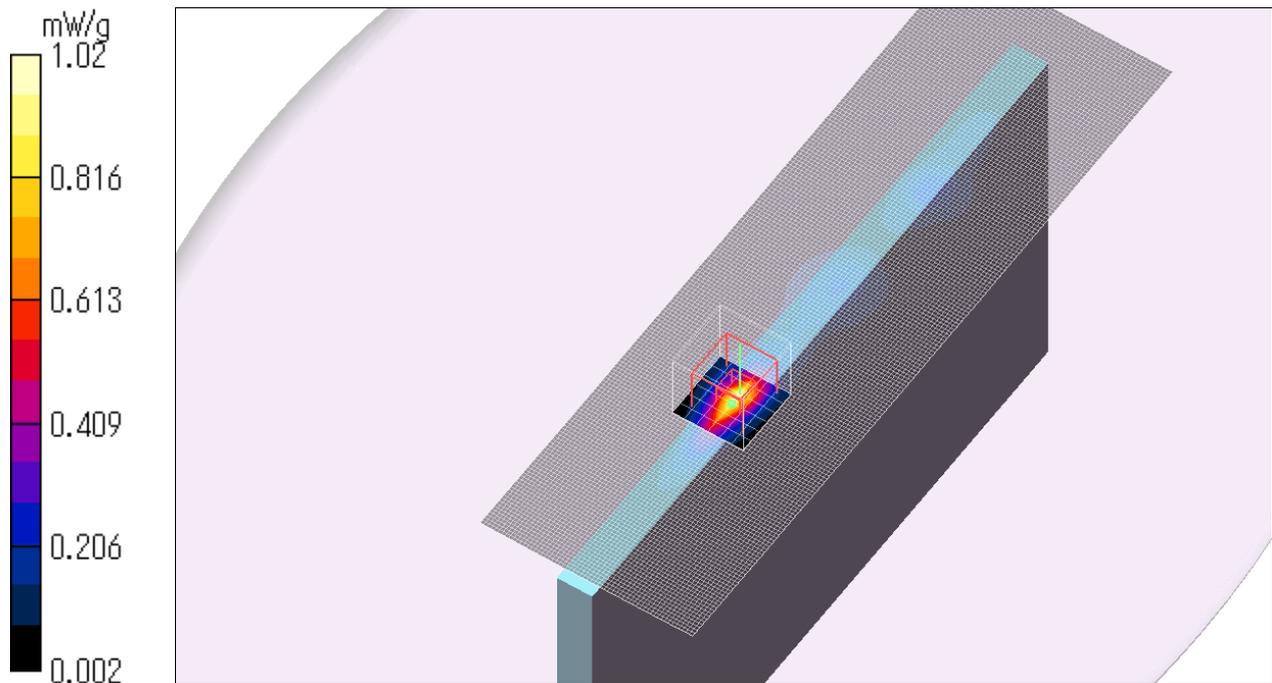
SAR(1 g) = 0.542 mW/g; SAR(10 g) = 0.201 mW/g

Maximum value of SAR (measured) = 1.02 mW/g

Test Date = 11/10/10

Ambient Temperature = 24.5 degree.C.

Liquid Temperature = Before 22.6 degree.C. , After 22.6 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