

## **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 10 mm x 10 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 24mm x 24mm x 20mm was assessed by measuring 7 x 7 x 11 points. And for any secondary peaks found in the Step2 which are within 2dB of maximum peak (level more than ambient noise ( $\geq 0.012$  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 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 (Head SAR)

**BCL-D10/ Left Head / Cheek / 71ch(5788.240269MHz)**

Crest factor: 9.5

Medium parameters used:  $f = 5800 \text{ MHz}$ ;  $\sigma = 5.2 \text{ mho/m}$ ;  $\epsilon_r = 32.1$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

Probe: EX3DV3 - SN3507; ConvF(4.82, 4.82, 4.82); Calibrated: 2006/05/26

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE3 Sn509; Calibrated: 2006/06/15

Phantom: SAM 1196

Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Area Scan (101x101x1):** Measurement grid:  $dx=10\text{mm}$ ,  $dy=10\text{mm}$

Maximum value of SAR (interpolated) =  $0.107 \text{ mW/g}$

**Zoom Scan (7x7x11)/Cube 0:** Measurement grid:  $dx=4\text{mm}$ ,  $dy=4\text{mm}$ ,  $dz=2\text{mm}$

Reference Value =  $3.89 \text{ V/m}$ ; Power Drift =  $-0.203 \text{ dB}$

Peak SAR (extrapolated) =  $0.183 \text{ W/kg}$

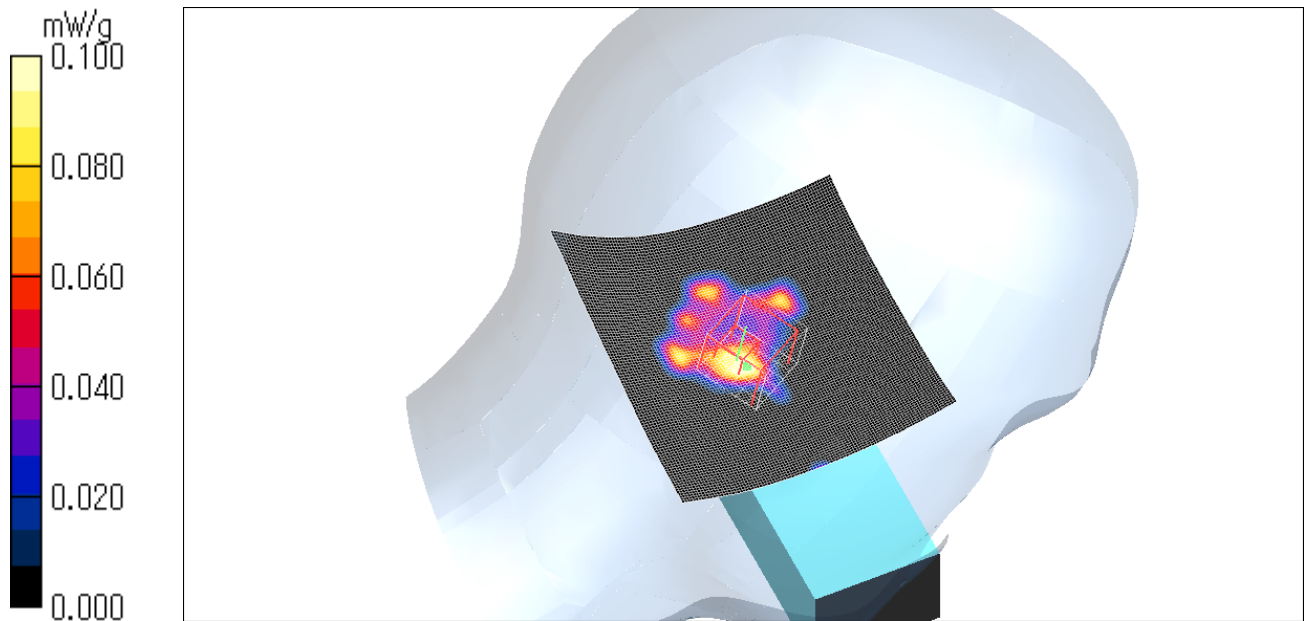
**SAR(1 g) =  $0.048 \text{ mW/g}$ ; SAR(10 g) =  $0.014 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.100 \text{ mW/g}$

Test Date = 02/15/07

Ambient Temperature =  $25.0^\circ\text{C}$ .

Liquid Temperature = Before  $22.8^\circ\text{C}$ ., After  $22.8^\circ\text{C}$ .



**BCL-D10/ Left Head / Tilt / 71ch(5788.240269MHz)**

Crest factor: 9.5

Medium parameters used:  $f = 5800$  MHz;  $\sigma = 5.2$  mho/m;  $\epsilon_r = 32.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

Probe: EX3DV3 - SN3507; ConvF(4.82, 4.82, 4.82); Calibrated: 2006/05/26

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE3 Sn509; Calibrated: 2006/06/15

Phantom: SAM 1196

Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Area Scan (81x81x1):** Measurement grid:  $dx=10$ mm,  $dy=10$ mm

Maximum value of SAR (interpolated) = 0.133 mW/g

**Zoom Scan (7x7x11)/Cube 0:** Measurement grid:  $dx=4$ mm,  $dy=4$ mm,  $dz=2$ mm

Reference Value = 3.98 V/m; Power Drift = 0.202 dB

Peak SAR (extrapolated) = 0.179 W/kg

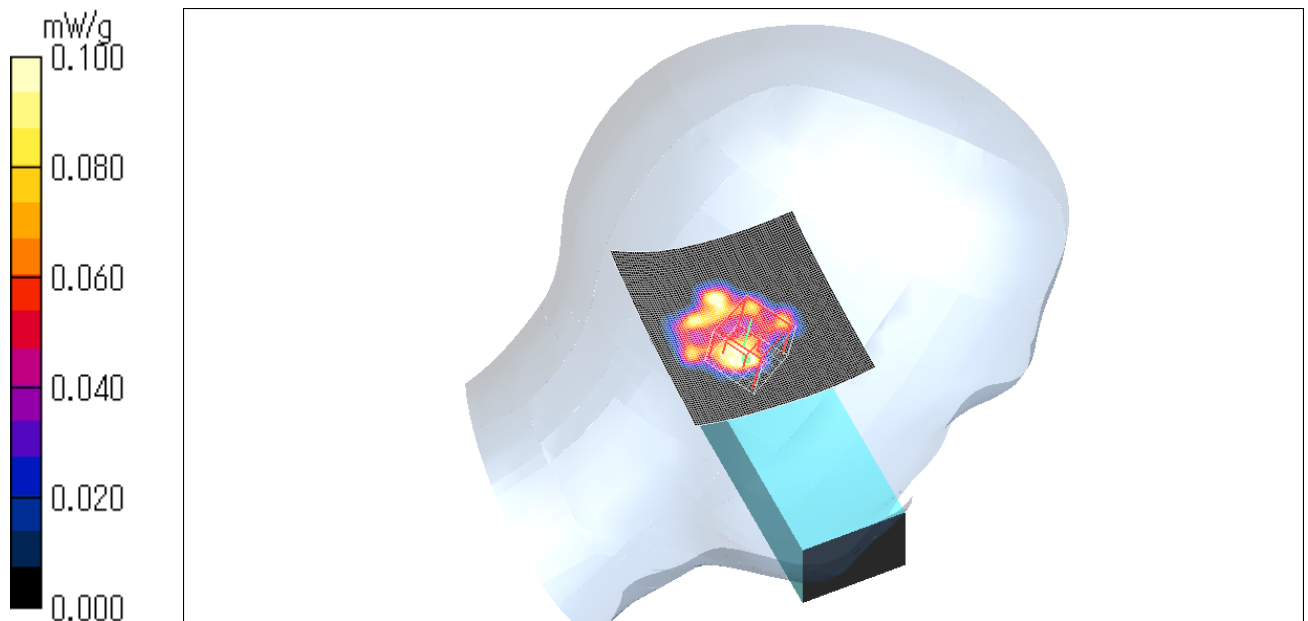
**SAR(1 g) = 0.047 mW/g; SAR(10 g) = 0.013 mW/g**

Maximum value of SAR (measured) = 0.100 mW/g

Test Date = 02/15/07

Ambient Temperature = 24.5degree C.

Liquid Temperature = Before 22.8 degree C. , After 22.8 degree C.



**BCL-D10/ Right Head / Cheek / 71ch(5788.240269MHz)**

Crest factor: 9.5

Medium parameters used:  $f = 5800$  MHz;  $\sigma = 5.2$  mho/m;  $\epsilon_r = 32.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

Probe: EX3DV3 - SN3507; ConvF(4.82, 4.82, 4.82); Calibrated: 2006/05/26

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE3 Sn509; Calibrated: 2006/06/15

Phantom: SAM 1196

Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Area Scan (81x81x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.117 mW/g

**Zoom Scan (7x7x11)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 3.77 V/m; Power Drift = 0.124 dB

Peak SAR (extrapolated) = 0.244 W/kg

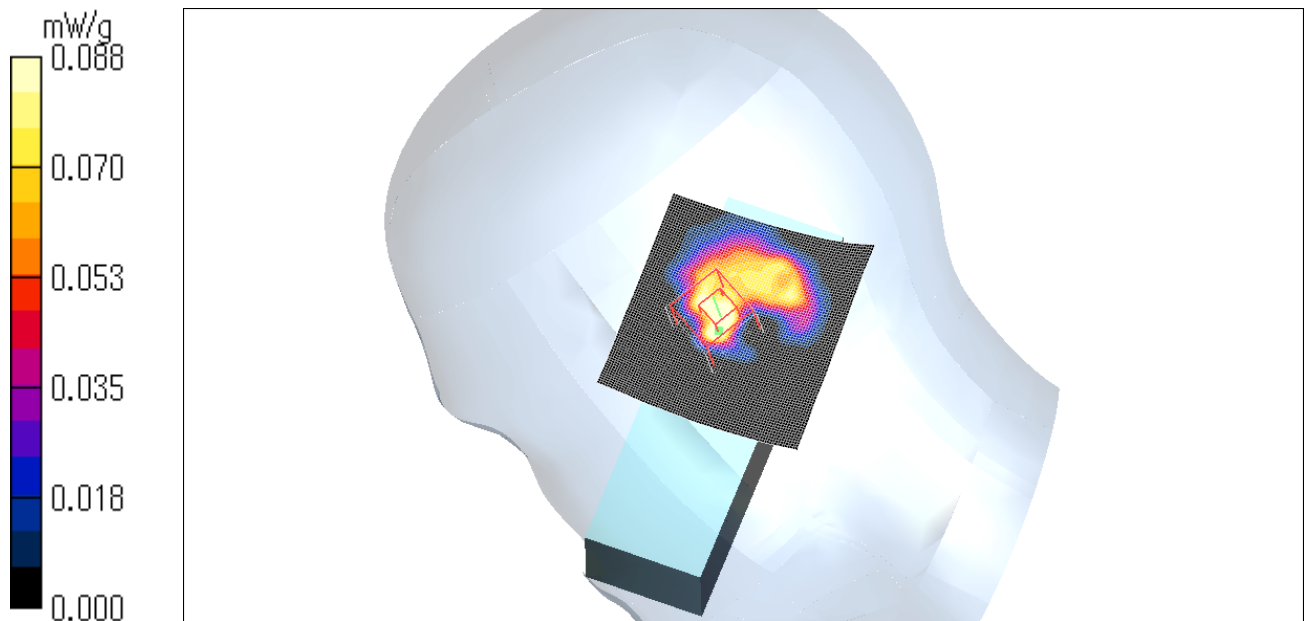
**SAR(1 g) = 0.037 mW/g; SAR(10 g) = 0.011 mW/g**

Maximum value of SAR (measured) = 0.088 mW/g

Test Date = 02/15/07

Ambient Temperature = 24.5 degree C.

Liquid Temperature = Before 22.8 degree C. , After 22.8 degree C.



**BCL-D10/ Right Head / Tilt / 71ch(5788.240269MHz)**

Crest factor: 9.5

Medium parameters used:  $f = 5800$  MHz;  $\sigma = 5.2$  mho/m;  $\epsilon_r = 32.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

Probe: EX3DV3 - SN3507; ConvF(4.82, 4.82, 4.82); Calibrated: 2006/05/26

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE3 Sn509; Calibrated: 2006/06/15

Phantom: SAM 1196

Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Area Scan (81x81x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.092 mW/g

**Zoom Scan (7x7x11)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 3.18 V/m; Power Drift = 0.113 dB

Peak SAR (extrapolated) = 0.189 W/kg

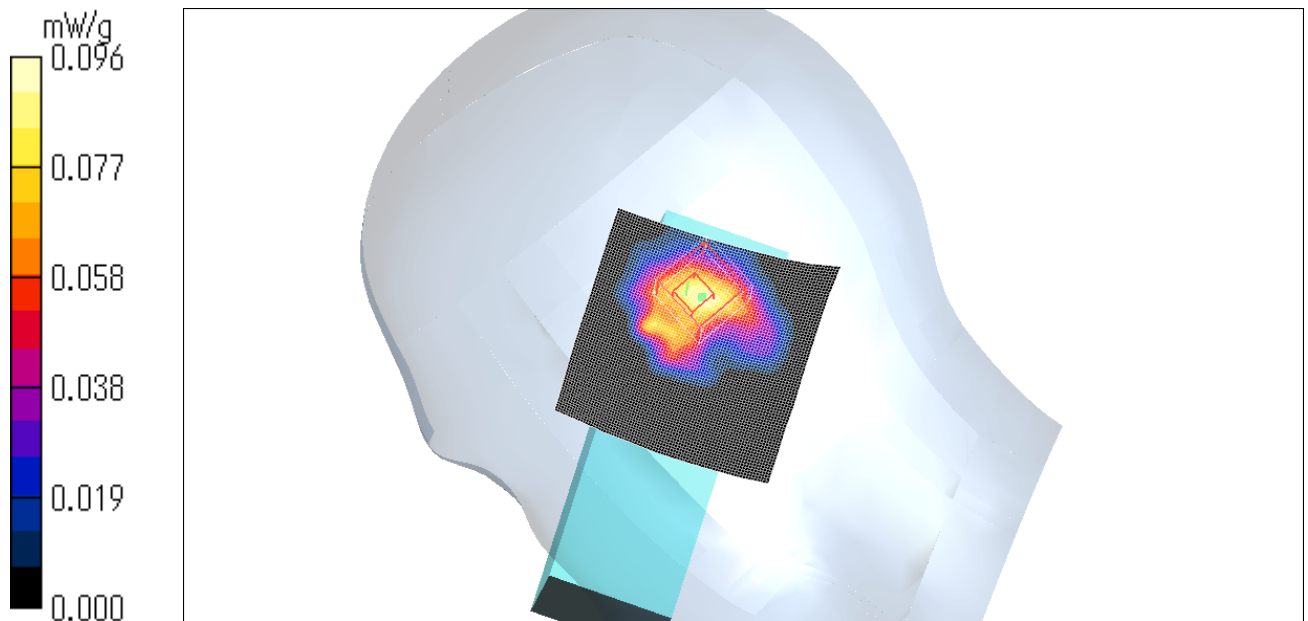
**SAR(1 g) = 0.046 mW/g; SAR(10 g) = 0.017 mW/g**

Maximum value of SAR (measured) = 0.096 mW/g

Test Date = 02/15/07

Ambient Temperature = 24.5 degree C.

Liquid Temperature = Before 22.8 degree C. , After 23.0 degree C.



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**BCL-D10/ Left Head / Cheek / 1ch(5725.809328 MHz)**

Crest factor: 9.5

Medium parameters used:  $f = 5800$  MHz;  $\sigma = 5.2$  mho/m;  $\epsilon_r = 32.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

Probe: EX3DV3 - SN3507; ConvF(4.82, 4.82, 4.82); Calibrated: 2006/05/26

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE3 Sn509; Calibrated: 2006/06/15

Phantom: SAM 1196

Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Area Scan (81x81x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.139 mW/g

**Zoom Scan (7x7x11)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 5.11 V/m; Power Drift = -0.121 dB

Peak SAR (extrapolated) = 0.587 W/kg

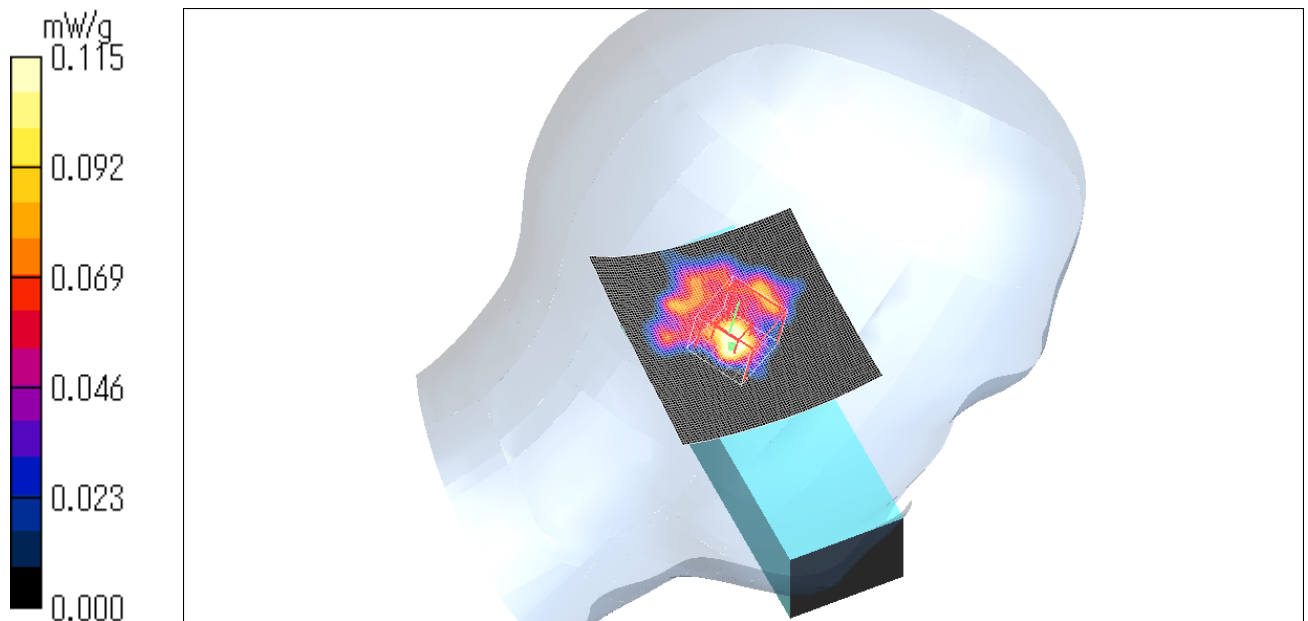
**SAR(1 g) = 0.065 mW/g; SAR(10 g) = 0.017 mW/g**

Maximum value of SAR (measured) = 0.115 mW/g

Test Date = 02/15/07

Ambient Temperature = 24.5 degree C.

Liquid Temperature = Before 23.0 degree C. , After 23.2 degree C.



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**BCL-D10/ Left Head / Cheek / 139ch(5848.889420MHz)**

Crest factor: 9.5

Medium parameters used:  $f = 5800$  MHz;  $\sigma = 5.2$  mho/m;  $\epsilon_r = 32.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

Probe: EX3DV3 - SN3507; ConvF(4.82, 4.82, 4.82); Calibrated: 2006/05/26

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE3 Sn509; Calibrated: 2006/06/15

Phantom: SAM 1196

Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Area Scan (81x81x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.109 mW/g

**Zoom Scan (7x7x11)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 3.83 V/m; Power Drift = -0.198 dB

Peak SAR (extrapolated) = 0.130 W/kg

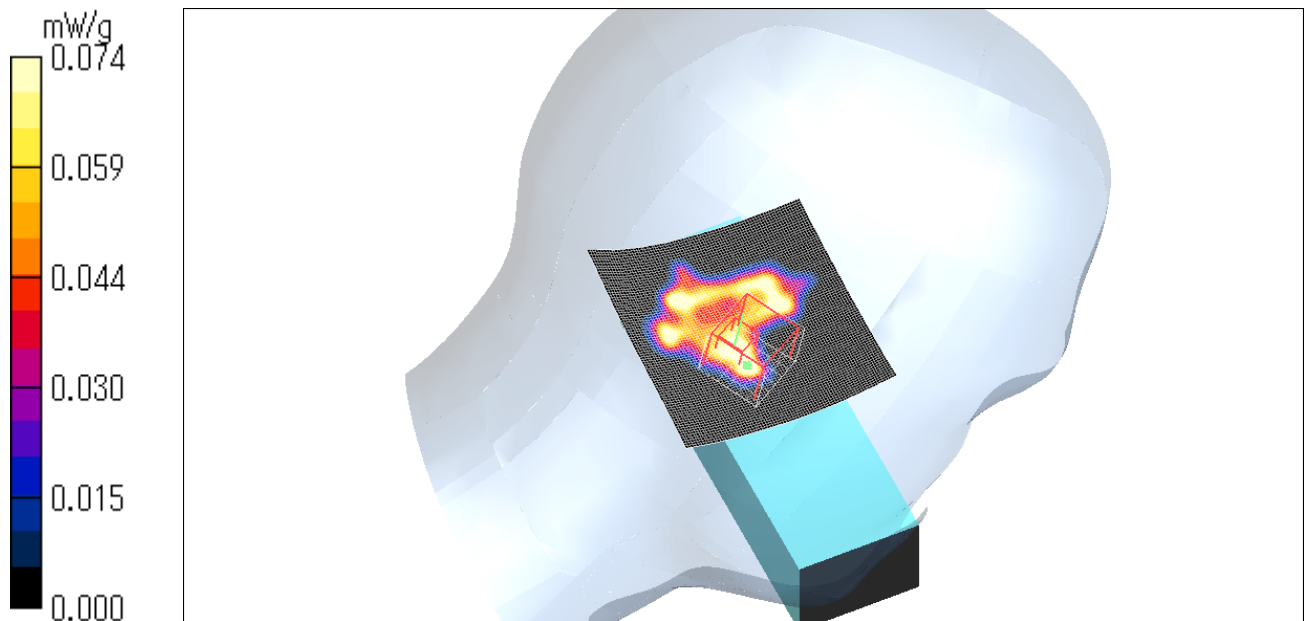
**SAR(1 g) = 0.033 mW/g; SAR(10 g) = 0.00795 mW/g**

Maximum value of SAR (measured) = 0.074 mW/g

Test Date = 02/15/07

Ambient Temperature = 24.5 degree C.

Liquid Temperature = Before 23.2 degree C. , After 23.2 degree C.



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**3. Measurement data (Body-worn SAR)**  
**BCL-D10/ Body / Rear 15mm / 1ch(5725.809328 MHz)**

Crest factor: 9.5

Medium parameters used:  $f = 5800$  MHz;  $\sigma = 6.14$  mho/m;  $\epsilon_r = 45.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

Probe: EX3DV3 - SN3507; ConvF(4.77, 4.77, 4.77); Calibrated: 2006/05/26

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE3 Sn509; Calibrated: 2006/06/15

Phantom: SAM 1196

Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Area Scan (101x101x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.365 mW/g

**Zoom Scan (7x7x11)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 7.06 V/m; Power Drift = -0.121 dB

Peak SAR (extrapolated) = 0.781 W/kg

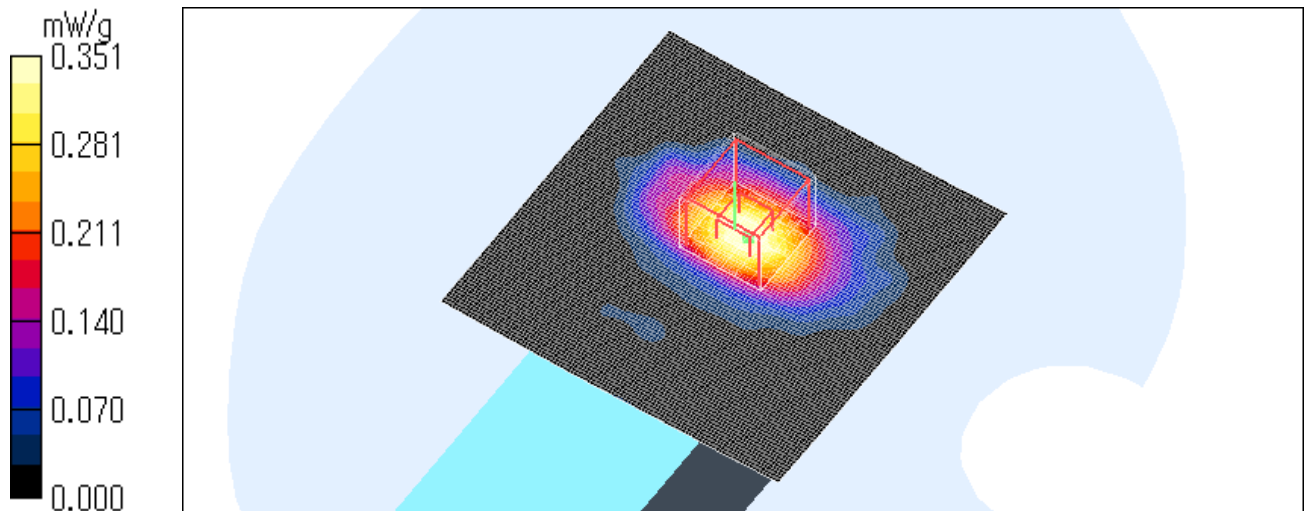
**SAR(1 g) = 0.197 mW/g; SAR(10 g) = 0.079 mW/g**

Maximum value of SAR (measured) = 0.351 mW/g

Test Date = 02/16/07

Ambient Temperature = 24.5degree C.

Liquid Temperature = Before 24.2 degree C. , After 24.2 degree C.



**BCL-D10/ Body / Rear 15mm / 71ch(5788.240269MHz)**

Crest factor: 9.5

Medium parameters used:  $f = 5800$  MHz;  $\sigma = 6.14$  mho/m;  $\epsilon_r = 45.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

Probe: EX3DV3 - SN3507; ConvF(4.77, 4.77, 4.77); Calibrated: 2006/05/26

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE3 Sn509; Calibrated: 2006/06/15

Phantom: SAM 1196

Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Area Scan (101x101x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.308 mW/g

**Zoom Scan (7x7x11)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 3.50 V/m; Power Drift = 0.130 dB

Peak SAR (extrapolated) = 0.679 W/kg

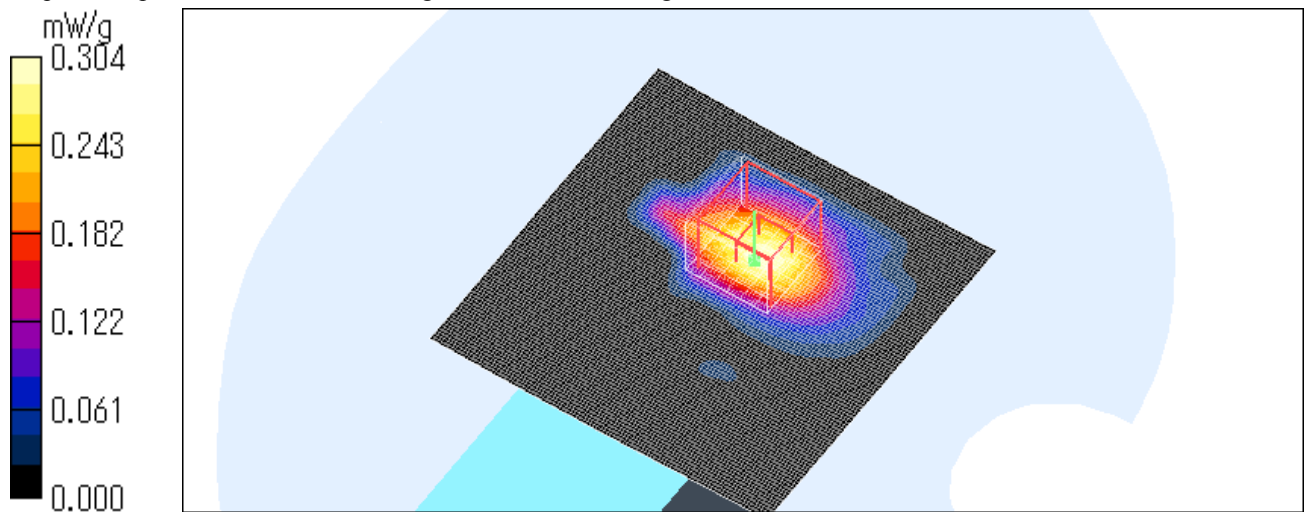
**SAR(1 g) = 0.167 mW/g; SAR(10 g) = 0.066 mW/g**

Maximum value of SAR (measured) = 0.304 mW/g

Test Date = 02/16/07

Ambient Temperature = 24.5degree C.

Liquid Temperature = Before 24.2 degree C. , After 24.2 degree C.



**Z-axis scan at max SAR location**

**BCL-D10/ Body / Rear 15mm / 71ch(5788.240269MHz)**

Crest factor: 9.5

Medium parameters used:  $f = 5800 \text{ MHz}$ ;  $\sigma = 6.14 \text{ mho/m}$ ;  $\epsilon_r = 45.2$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

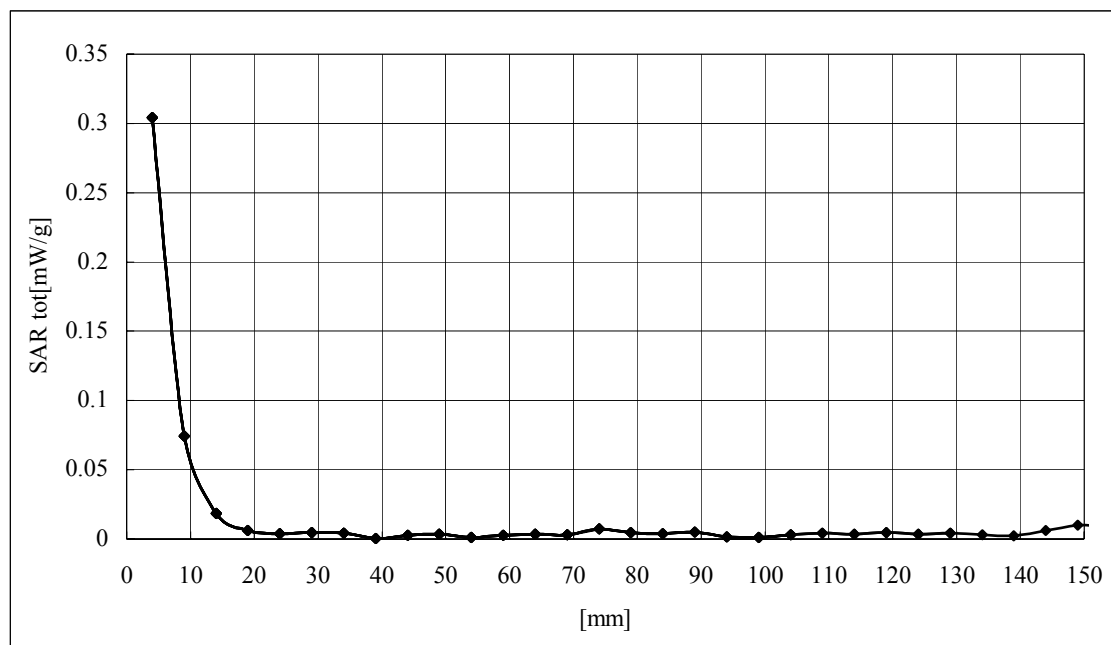
Probe: EX3DV3 - SN3507; ConvF(4.77, 4.77, 4.77); Calibrated: 2006/05/26

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE3 Sn509; Calibrated: 2006/06/15

Phantom: SAM 1196

Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160



**BCL-D10/ Body / Rear 15mm / 139ch(5848.889420MHz)**

Crest factor: 9.5

Medium parameters used:  $f = 5800$  MHz;  $\sigma = 6.14$  mho/m;  $\epsilon_r = 45.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

Probe: EX3DV3 - SN3507; ConvF(4.77, 4.77, 4.77); Calibrated: 2006/05/26

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE3 Sn509; Calibrated: 2006/06/15

Phantom: SAM 1196

Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

**Area Scan (101x101x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.202 mW/g

**Zoom Scan (7x7x11)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 5.07 V/m; Power Drift = -0.042 dB

Peak SAR (extrapolated) = 0.460 W/kg

**SAR(1 g) = 0.107 mW/g; SAR(10 g) = 0.043 mW/g**

Maximum value of SAR (measured) = 0.202 mW/g

Test Date = 02/16/07

Ambient Temperature = 24.5degree C.

Liquid Temperature = Before 24.2 degree C. , After 24.2 degree C.

