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## **APPENDIX 2: SAR Measurement data**

### **Appendix 2-1: Evaluation procedure**

#### **Appendix 2-1: Evaluation procedure**

The SAR evaluation was performed with the following procedure:

**Step 1:** Measurement of the E-field at a fixed location above the 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 suitable horizontal grid spacing of EUT. Based on these data, the area of the maximum absorption was determined by splines interpolation.

**Step 3:** Around this point found in the Step 2 (area scan), a volume of equal or more than 30mm(X axis)×30mm(Y axis)×30mm(Z axis) was assessed by measuring 7×7×7 points under 3GHz and a volume of 28mm(X axis)×28mm(Y axis)×22.5mm (Z axis) was assessed by measuring 8×8×6(ratio step method (\*1)) points for 3-6GHz frequency band.

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 away from the tip of the probe and the distance between the surface and the lowest measuring point is 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 (1g or 10g) 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 (10×10×10) 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 for the assessment of the power drift.

**Step 5:** Repeat Step 1-Step 4 with other condition or/and setup of EUT.

**\*1. Ratio step method parameters used;**

**The first measurement point: 2mm from the phantom surface, the initial grid separation: 2mm, subsequent graded grid ratio: 1.5**  
**These parameters comply with the requirement of the KDB 865664.**

In the section of SAR Scan Procedures-Zoom Scan, in KDB 865664(October 2006 revised, publication date: April 16, 2007): SAR Measurement Requirements for 3-6GHz, the graded grids requirement is as follows;

“When graded grids are used (z), the first measurement point should be within 3mm of the phantom surface for measurements below 4.5GHz and within 2mm at or above 4.5GHz. The initial grid separation, closest to the phantom, should be  $\leq 2.0$ mm. A subsequent graded ration of 1.5 is recommended and less than 2.0 is required. “

**Appendix 2-2: Measurement data (Body liquid) / 2.4GHz band**

**Step 1: Worst position search**

**Step 1-1: Antenna side-touch / Mid.channel: 2437MHz(6ch), 11b(1Mbps)**

**EUT: Wireless Module (11bgn(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11b(1Mbps); Frequency: 2437 MHz; Crest Factor: 1.0**

**Medium: M2450; Medium parameters used (23.5deg.C.): f = 2450 MHz;  $\sigma = 1.94$  S/m;  $\epsilon_r = 50.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(7.34, 7.34, 7.34); Calibrated: 2011/05/19

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

- Electronics: DAE4 Sn626; Calibrated: 2011/02/10

- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc2.4g-1.ant.side-touch&d0,11b(1m,13d),m2437/**

**Area Scan:90x90,stp15 (7x7x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (measured) = 0.327 mW/g

**Area Scan:90x90,stp15 (6Lx6Lx1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (interpolated) = 0.370 mW/g

**Zoom Scan:30x30x30,stp5 (7x7x7)/Cube 0:**

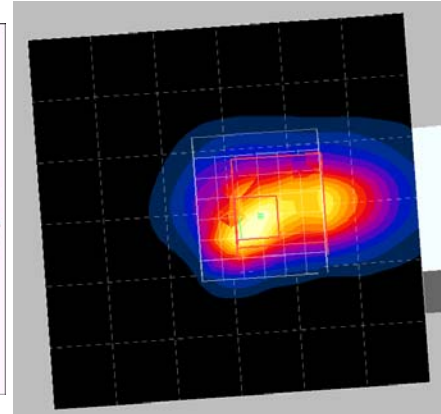
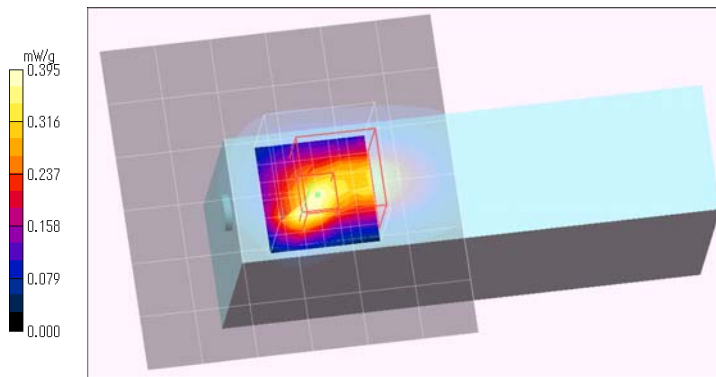
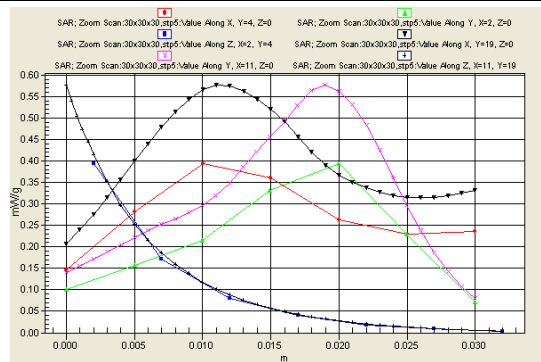
Measurement grid: dx=5mm, dy=5mm, dz=5mm:

Reference Value = 11.2 V/m; Power Drift = 0.173 dB,

Maximum value of SAR (measured) = 0.395 mW/g

Peak SAR (extrapolated) = 0.576 W/kg

**SAR(1 g) = 0.257 mW/g; SAR(10 g) = 0.122 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 158mm
- \*.ambient: 24±1 deg.C / 55±5 %RH; liquid temperature: (before) 23.3 deg.C/(after) 23.3 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 21, 2011

**Appendix 2-2: Measurement data (Body liquid) / 2.4GHz band (cont'd)**

**Step 1: Worst position search (cont'd)**

**Step 1-2: Bottom-touch / Mid.channel: 2437MHz(6ch), 11b(1Mbps)**

**EUT: Wireless Module (11bgan(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11b(1Mbps); Frequency: 2437 MHz; Crest Factor: 1.0**

**Medium: M2450; Medium parameters used (23.5deg.C.): f = 2450 MHz;  $\sigma = 1.94$  S/m;  $\epsilon_r = 50.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(7.34, 7.34, 7.34); Calibrated: 2011/05/19

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

- Electronics: DAE4 Sn626; Calibrated: 2011/02/10

- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc2.4g-3,btm-touch&d0,11b(1m,13d),m2437/**

**Area Scan:90x90,stp15 (7x7x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (measured) = 0.232 mW/g

**Area Scan:90x90,stp15 (61x61x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (interpolated) = 0.265 mW/g

**Zoom Scan:30x30x30,stp5 (7x7x7)/Cube 0:**

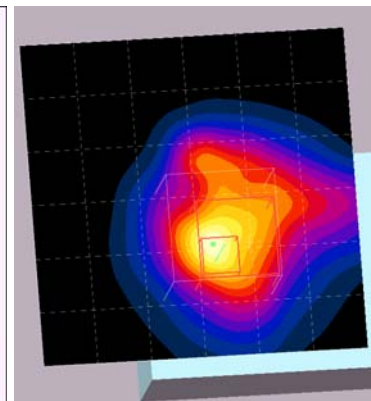
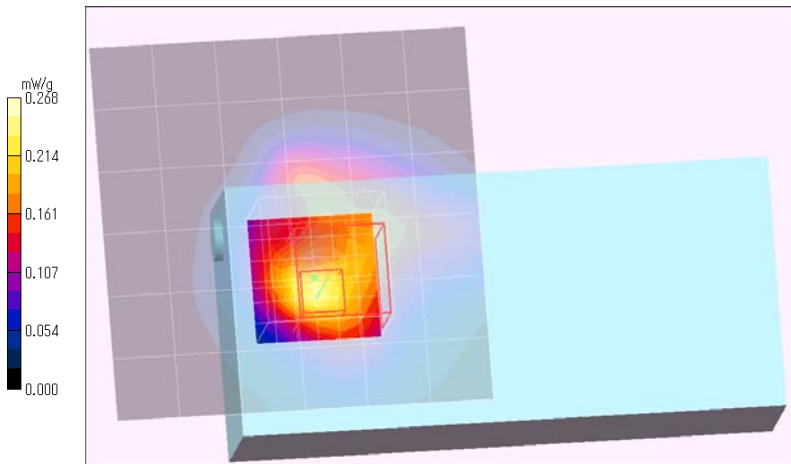
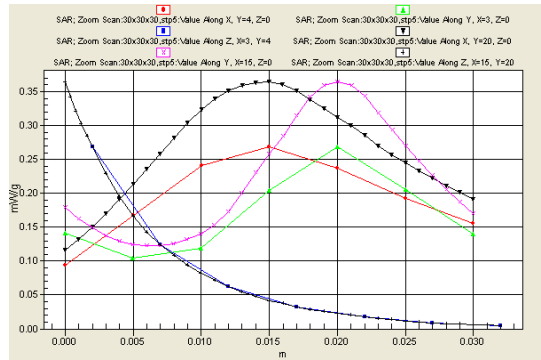
Measurement grid: dx=5mm, dy=5mm, dz=5mm;

Reference Value = 9.03 V/m; Power Drift = 0.145 dB,

Maximum value of SAR (measured) = 0.268 mW/g

Peak SAR (extrapolated) = 0.364 W/kg

**SAR(1 g) = 0.168 mW/g; SAR(10 g) = 0.087 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 158mm
- \*.ambient: 24±1 deg.C / 55±5 %RH; liquid temperature: (before) 23.3 deg.C / (after) 23.3 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 21, 2011

**Appendix 2-2: Measurement data (Body liquid) / 2.4GHz band (cont'd)**

**Step 1: Worst position search (cont'd)**

**Step 1-3: Top-touch / Mid.channel: 2437MHz(6ch), 11b(1Mbps)**

**EUT: Wireless Module (11bgn(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11b(1Mbps); Frequency: 2437 MHz; Crest Factor: 1.0**

**Medium: M2450; Medium parameters used (23.5deg.C.): f = 2450 MHz;  $\sigma = 1.94$  S/m;  $\epsilon_r = 50.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(7.34, 7.34, 7.34); Calibrated: 2011/05/19

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

- Electronics: DAE4 Sn626; Calibrated: 2011/02/10

- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc2.4g-4,top-touch&d0,11b(1m,13d),m2437/**

**Area Scan:90x90,stp15 (7x7x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (measured) = 0.069 mW/g

**Area Scan:90x90,stp15 (61x61x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (interpolated) = 0.083 mW/g

**Zoom Scan:30x30x30,stp5 (7x7x7)/Cube 0:**

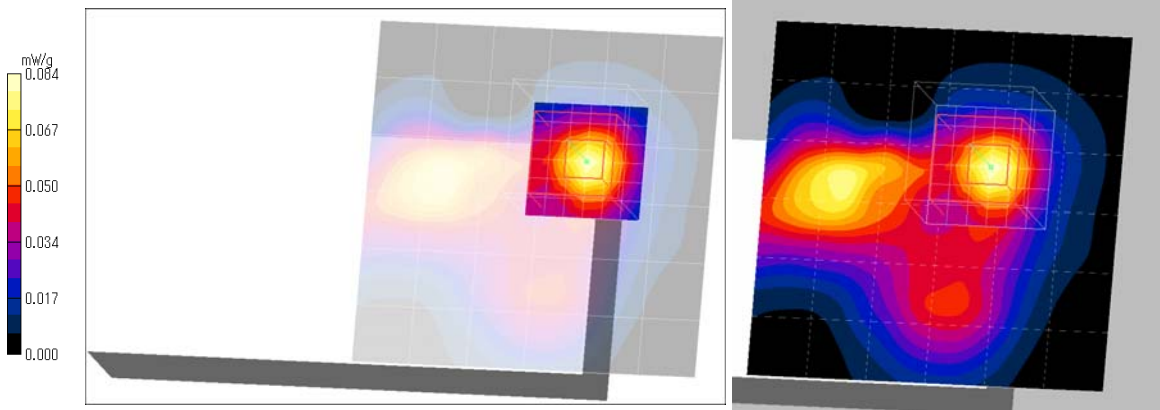
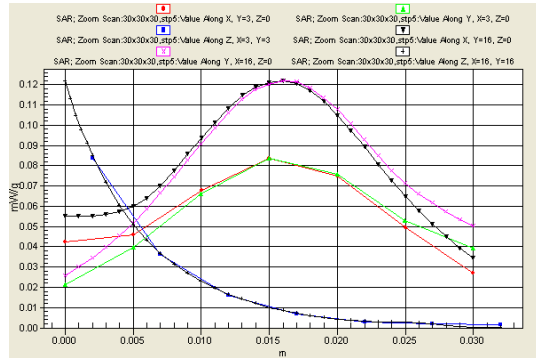
Measurement grid: dx=5mm, dy=5mm, dz=5mm;

Reference Value = 5.12 V/m; Power Drift = 0.160 dB;

Maximum value of SAR (measured) = 0.084 mW/g

Peak SAR (extrapolated) = 0.122 W/kg

**SAR(1 g) = 0.052 mW/g; SAR(10 g) = 0.023 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 158mm
- \*.ambient: 24±1 deg.C / 55±5 %RH; liquid temperature: (before) 23.3 deg.C/(after) 23.3 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place:No.7 shielded room., Date tested: July 21, 2011

**Appendix 2-2: Measurement data (Body liquid) / 2.4GHz band (cont'd)**

**Step 1: Worst position search (cont'd)**

**Step 1-4: USB port side-touch / Mid.channel: 2437MHz(6ch), 11b(1Mbps)**

**EUT: Wireless Module (11bgan(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11b(1Mbps); Frequency: 2437 MHz; Crest Factor: 1.0**

**Medium: M2450; Medium parameters used (23.5deg.C.): f = 2450 MHz;  $\sigma = 1.94$  S/m;  $\epsilon_r = 50.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(7.34, 7.34, 7.34); Calibrated: 2011/05/19

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

- Electronics: DAE4 Sn626; Calibrated: 2011/02/10

- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc2.4g-5.usb.port.side-touch&d0,11b(1m,13d),m2437/**

**Area Scan:90x90,stp15 (7x7x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (measured) = 0.136 mW/g

**Area Scan:90x90,stp15 (61x61x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (interpolated) = 0.146 mW/g

**Zoom Scan:30x30x30,stp5 (7x7x7)/Cube 0:**

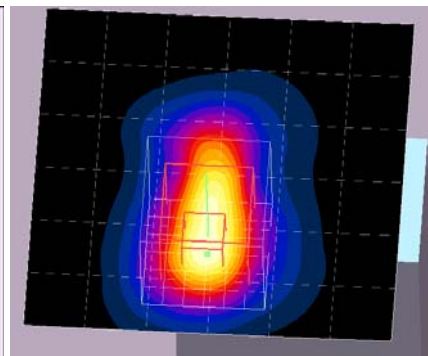
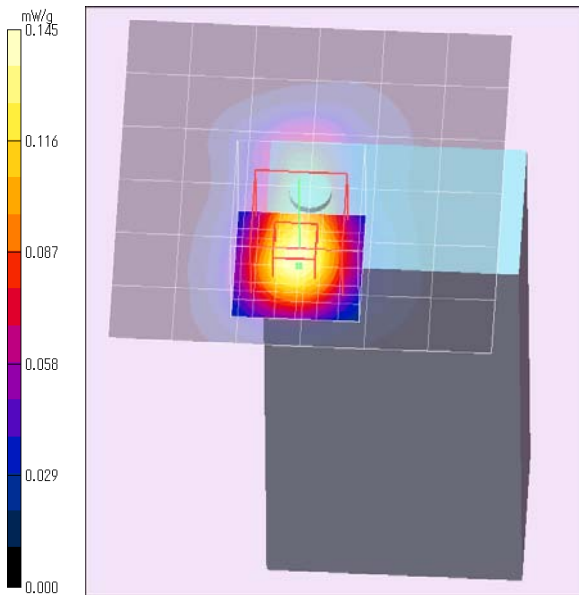
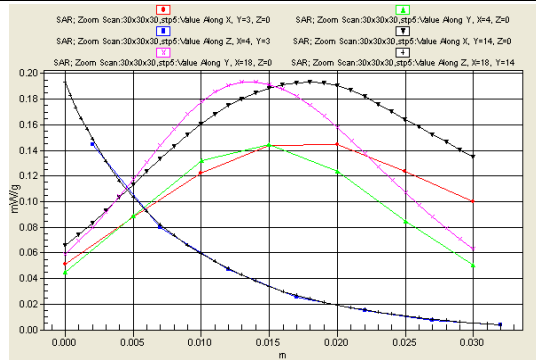
Measurement grid: dx=5mm, dy=5mm, dz=5mm;

Reference Value = 8.08 V/m; Power Drift = 0.107 dB;

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

Peak SAR (extrapolated) = 0.193 W/kg

**SAR(1 g) = 0.103 mW/g; SAR(10 g) = 0.051 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 158mm
- \*.ambient: 24±1 deg.C / 55±5 %RH; liquid temperature: (before) 23.3 deg.C / (after) 23.3 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 21, 2011

**Appendix 2-2: Measurement data (Body liquid) / 2.4GHz band (cont'd)**

**Step 2: Change the channel**

**Step 2-1: Low channel: 2412MHz(1ch) / 11b(1Mbps), Antenna side-touch**

**EUT: Wireless Module (11bgan(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11b(1Mbps); Frequency: 2412 MHz; Crest Factor: 1.0**

**Medium: M2450; Medium parameters used (23.5deg.C.): f = 2450 MHz;  $\sigma = 1.94$  S/m;  $\epsilon_r = 50.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(7.34, 7.34, 7.34); Calibrated: 2011/05/19

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

- Electronics: DAE4 Sn626; Calibrated: 2011/02/10

- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc2.4g-6,chg-ch/ant.side-touch&d0,11b(1m,13d),m2412(1ch)/**

**Area Scan:105x90,stp15 (8x7x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (measured) = 0.354 mW/g

**Area Scan:105x90,stp15 (71x61x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (interpolated) = 0.374 mW/g

**Zoom Scan:30x30x30,stp5 (7x7x7)/Cube 0:**

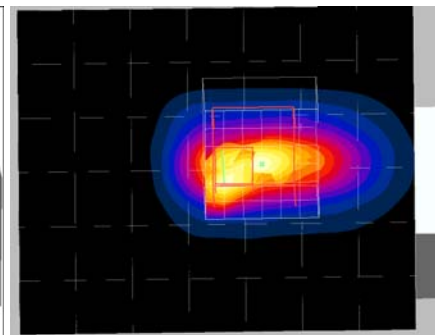
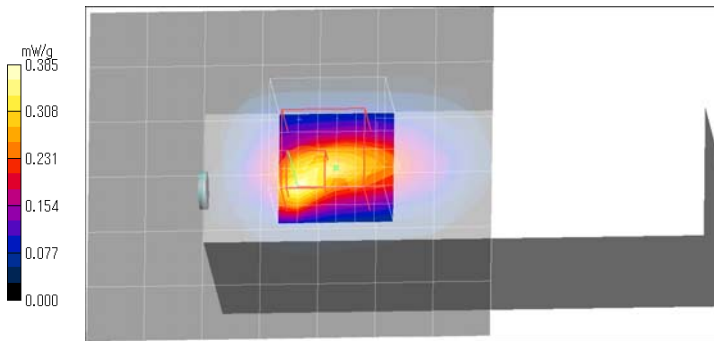
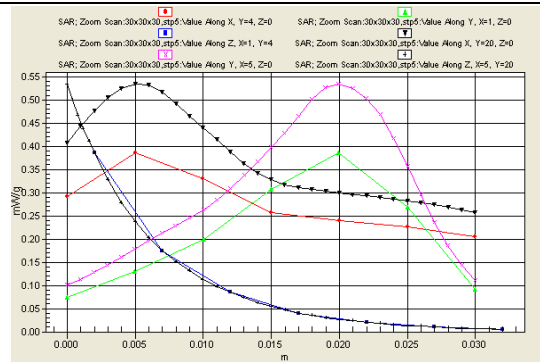
Measurement grid: dx=5mm, dy=5mm, dz=5mm;

Reference Value = 9.46 V/m; Power Drift = -0.002 dB,

Maximum value of SAR (measured) = 0.385 mW/g

Peak SAR (extrapolated) = 0.534 W/kg

**SAR(1 g) = 0.238 mW/g; SAR(10 g) = 0.112 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 158mm
- \*.ambient: 24±1 deg.C / 55±5 %RH; liquid temperature: (before) 23.3 deg.C / (after) 23.3 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 21, 2011

**Appendix 2-2: Measurement data (Body liquid) / 2.4GHz band (cont'd)**  
**Step 2: Change the channel (cont'd)**

**Step 2-2: High channel: 2462MHz(11ch) / 11b(1Mbps), Antenna side-touch**  
**->Worst SAR(1g) of 2.4GHz band**

Date/Time: 2011/07/21 10:57:47

**EUT: Wireless Module (11bgn(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11b(1Mbps); Frequency: 2462 MHz; Crest Factor: 1.0**

**Medium: M2450; Medium parameters used (23.5deg.C.): f = 2450 MHz;  $\sigma = 1.94$  S/m;  $\epsilon_r = 50.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(7.34, 7.34, 7.34); Calibrated: 2011/05/19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn626; Calibrated: 2011/02/10
- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc2.4g-7.chg.ch/ant.side-touch&d0,11b(1m,13d),m2462(11ch)/**

**Area Scan:105x90,stp15 (8x7x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (measured) = 0.382 mW/g

**Area Scan:105x90,stp15 (71x61x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (interpolated) = 0.407 mW/g

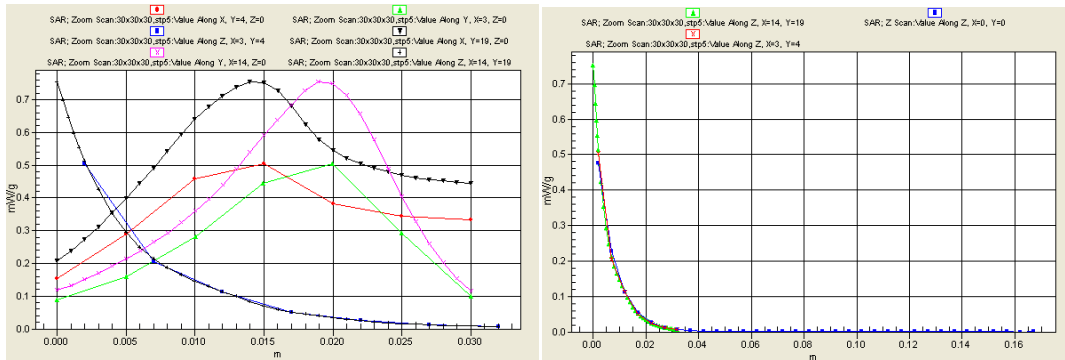
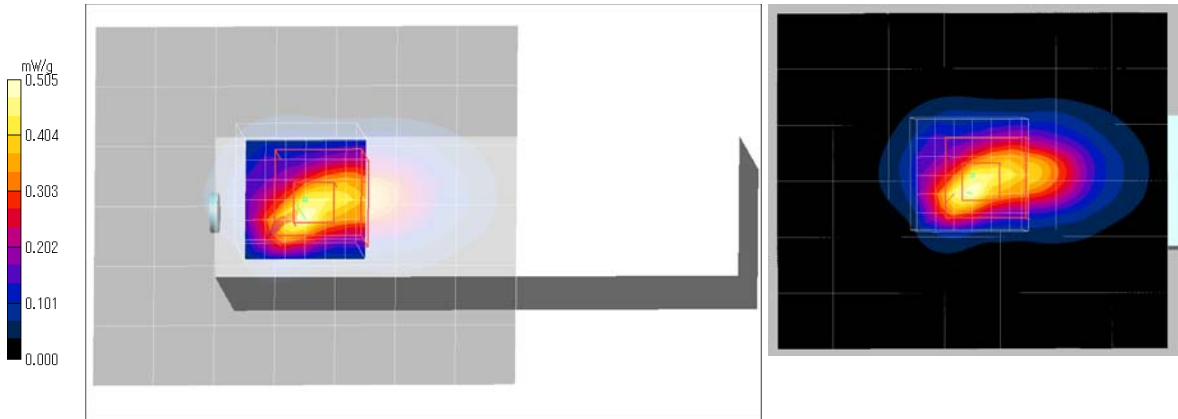
**Z Scan (1x1x34):** Measurement grid: dx=20mm, dy=20mm, dz=5mm; Maximum value of SAR (measured) = 0.476 mW/g

**Zoom Scan:30x30x30,stp5 (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm;

Reference Value = 10.3 V/m; Power Drift = 0.009 dB, Maximum value of SAR (measured) = 0.505 mW/g

Peak SAR (extrapolated) = 0.754 W/kg

**SAR(1 g) = 0.305 mW/g (Worst SAR(1g) of 2.4GHz band); SAR(10 g) = 0.144 mW/g**



**Additional information:**

- \*position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 158mm
- \*ambient: 24±1 deg.C / 55±5 %RH; liquid temperature: (before) 23.3 deg.C / (after) 23.3 deg.C
- \*white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 21, 2011

**Appendix 2-2: Measurement data (Body liquid) / 2.4GHz band (cont'd)**

**Step 3: Change the operation mode**

**Step 3-1: 11g(6Mbps) / High channel: 2462MHz(11ch), Antenna side-touch**

**EUT: Wireless Module (11bgn(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11g(6Mbps); Frequency: 2462 MHz; Crest Factor: 1.0**

**Medium: M2450; Medium parameters used (23.5deg.C.): f = 2450 MHz;  $\sigma = 1.94$  S/m;  $\epsilon_r = 50.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(7.34, 7.34, 7.34); Calibrated: 2011/05/19

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

- Electronics: DAE4 Sn626; Calibrated: 2011/02/10

- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc2.4g-7,chg.tx/ant.side-touch&d0,11g(6m,13d),m2462(11ch)/**

**Area Scan:105x90,stp15 (8x7x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (measured) = 0.359 mW/g

**Area Scan:105x90,stp15 (71x61x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (interpolated) = 0.391 mW/g

**Zoom Scan:30x30x30,stp5 (7x7x7)/Cube 0:**

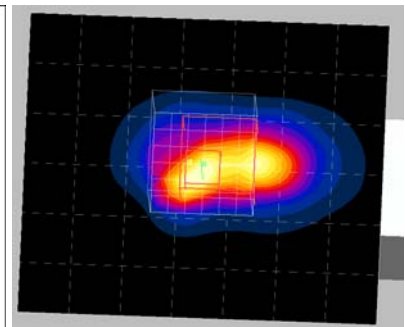
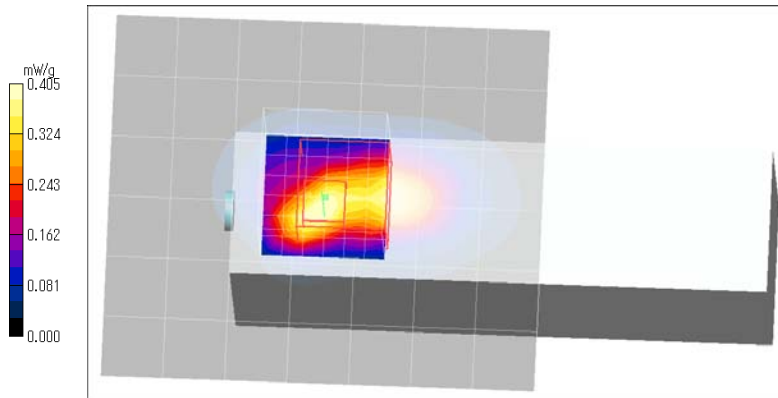
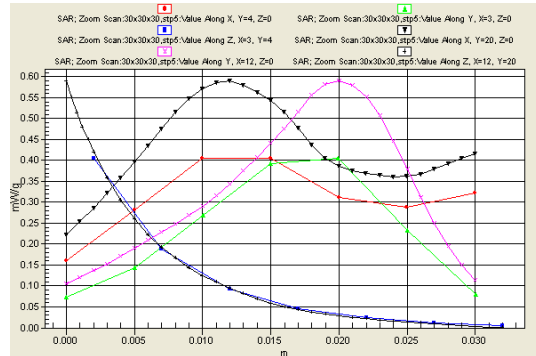
Measurement grid: dx=5mm, dy=5mm, dz=5mm;

Reference Value = 10.3 V/m; Power Drift = 0.004 dB,

Maximum value of SAR (measured) = 0.405 mW/g

Peak SAR (extrapolated) = 0.590 W/kg

**SAR(1 g) = 0.264 mW/g; SAR(10 g) = 0.129 mW/g**



**Additional information:**

- \*position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 158mm
- \*ambient: 24±1 deg.C / 55±5 %RH; liquid temperature: (before) 23.3 deg.C /(after) 23.3 deg.C
- \*white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 21, 2011



**Appendix 2-2: Measurement data (Body liquid) / 2.4GHz band (cont'd)**

**Step 3: Change the operation mode (cont'd)**

**Step 3-2: 11n-20HT(MCS0) / High channel: 2462MHz(11ch), Antenna side-touch**

**EUT: Wireless Module (11bgan(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11n-20HT(MCS0); Frequency: 2462 MHz; Crest Factor: 1.0**

**Medium: M2450; Medium parameters used (23.5deg.C.): f = 2450 MHz;  $\sigma = 1.94$  S/m;  $\epsilon_r = 50.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(7.34, 7.34, 7.34); Calibrated: 2011/05/19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn626; Calibrated: 2011/02/10
- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc2.4g-9-re,chg.tx/ant.side-touch&d0,11n-20ht(mcs0,13d),m2462(11ch)/**

**Area Scan:105x90,stp15 (8x7x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (measured) = 0.352 mW/g

**Area Scan:105x90,stp15 (71x61x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (interpolated) = 0.385 mW/g

**Zoom Scan:30x30x30,stp5 (9x7x7)/Cube 0:**

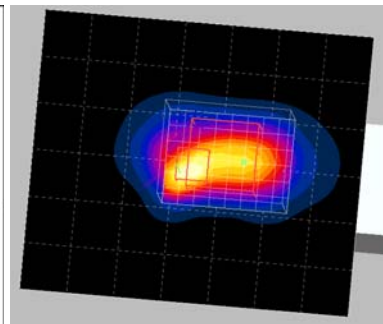
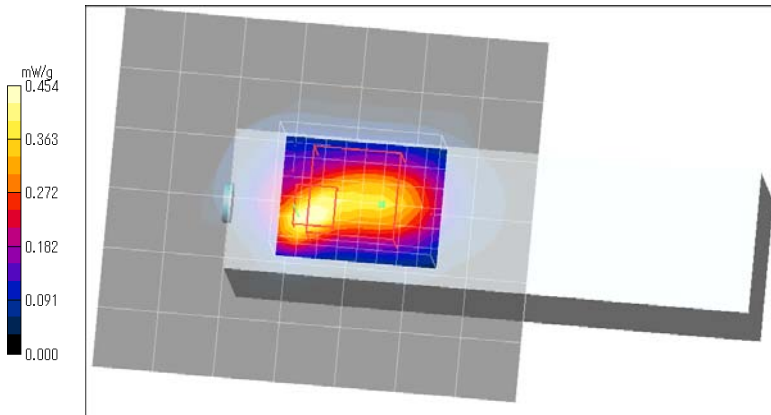
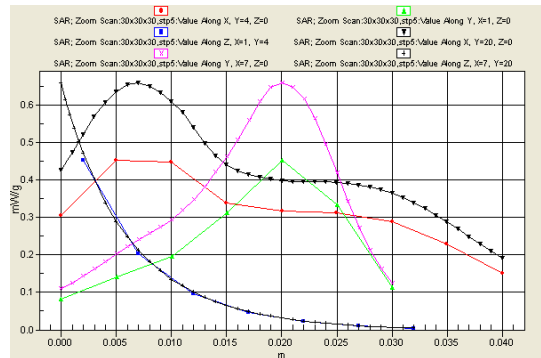
Measurement grid: dx=5mm, dy=5mm, dz=5mm;

Reference Value = 10.6 V/m; Power Drift = -0.114 dB,

Maximum value of SAR (measured) = 0.454 mW/g

Peak SAR (extrapolated) = 0.659 W/kg

**SAR(1 g) = 0.286 mW/g; SAR(10 g) = 0.139 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 158mm
- \*.ambient: 24±1 deg.C / 55±5 %RH; liquid temperature: (before) 23.3 deg.C /(after) 23.3 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 21, 2011

**Appendix 2-2: Measurement data (Body liquid) / 2.4GHz band (cont'd)**

**Step 3: Change the operation mode (cont'd)**

**Step 3-3: 11n-40HT(MCS0) / Low channel: 2422MHz(3ch), Antenna side-touch**

**EUT: Wireless Module (11bgan(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11n-40HT(MCS0); Frequency: 2422 MHz; Crest Factor: 1.0**

**Medium: M2450; Medium parameters used (23.5deg.C.): f = 2450 MHz;  $\sigma = 1.94$  S/m;  $\epsilon_r = 50.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(7.34, 7.34, 7.34); Calibrated: 2011/05/19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn626; Calibrated: 2011/02/10
- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc2.4g-10,chg,tx/ant,side-touch&d0,11n-40ht(mcs0,13d),m2422(3ch)/**

**Area Scan:105x90,stp15 (8x7x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (measured) = 0.366 mW/g

**Area Scan:105x90,stp15 (71x61x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (interpolated) = 0.452 mW/g

**Zoom Scan:30x30x30,stp5 (7x7x7)/Cube 0:**

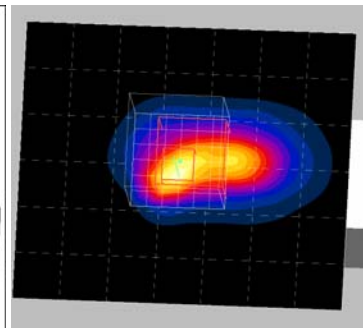
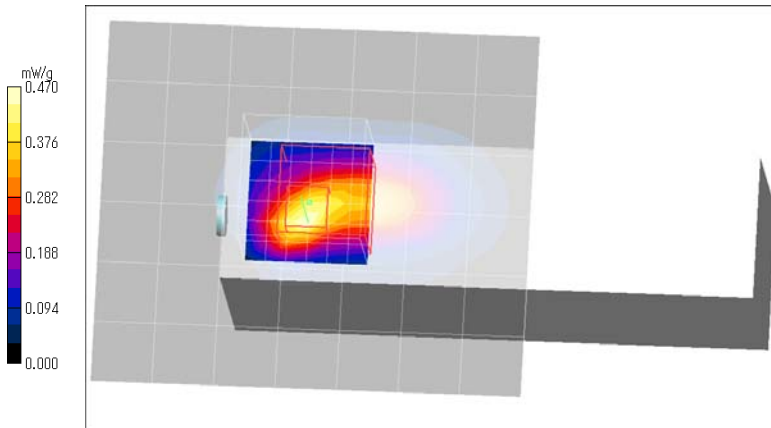
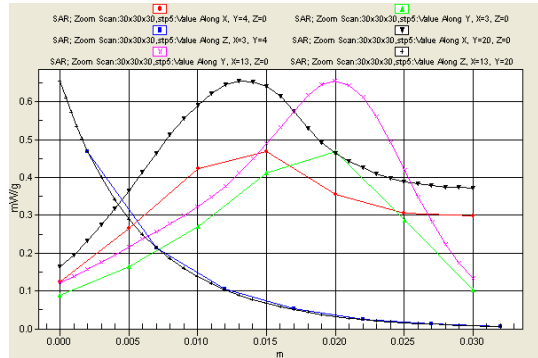
Measurement grid: dx=5mm, dy=5mm, dz=5mm;

Reference Value = 10.7 V/m; Power Drift = -0.173 dB,

Maximum value of SAR (measured) = 0.470 mW/g

Peak SAR (extrapolated) = 0.654 W/kg

**SAR(1 g) = 0.292 mW/g; SAR(10 g) = 0.139 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 158mm
- \*.ambient: 24±1 deg.C / 55±5 %RH; liquid temperature: (before) 23.3 deg.C / (after) 23.3 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 21, 2011

**Appendix 2-2: Measurement data (Body liquid) / 2.4GHz band (cont'd)**

**Step 3: Change the operation mode (cont'd)**

**Step 3-4: 11n-40HT(MCS0) / Mid.channel: 2437MHz(6ch), Antenna side-touch**

**EUT: Wireless Module (11bgan(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11n-40HT(MCS0); Frequency: 2437 MHz; Crest Factor: 1.0**

**Medium: M2450; Medium parameters used(23.5deg.C.): f = 2450 MHz;  $\sigma = 1.94$  S/m;  $\epsilon_r = 50.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(7.34, 7.34, 7.34); Calibrated: 2011/05/19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn626; Calibrated: 2011/02/10
- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc2.4g-11,chg,tx/ant,side-touch&d0,11n-40ht(mcs0,13d),m2437(6ch)/**

**Area Scan:105x90,stp15 (8x7x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (measured) = 0.353 mW/g

**Area Scan:105x90,stp15 (71x61x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (interpolated) = 0.404 mW/g

**Zoom Scan:30x30x30,stp5 (7x7x7)/Cube 0:**

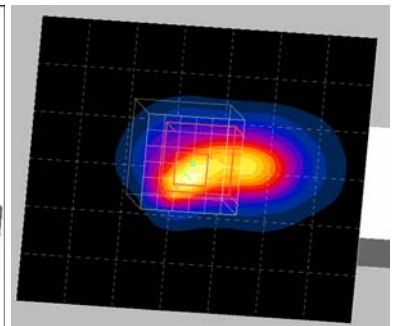
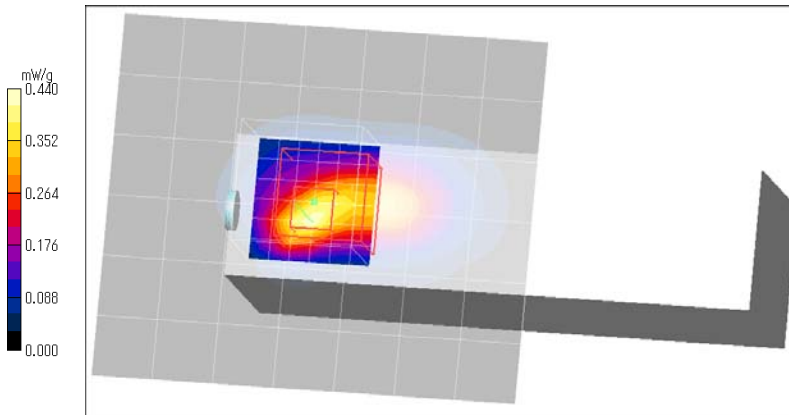
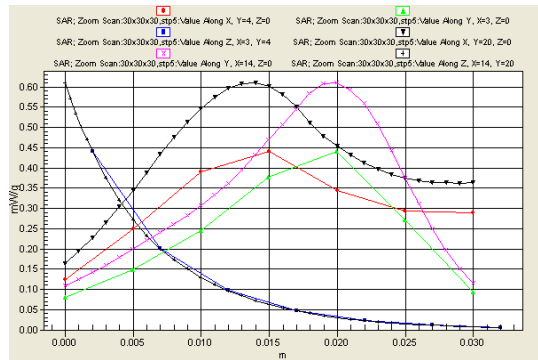
Measurement grid: dx=5mm, dy=5mm, dz=5mm;

Reference Value = 10.4 V/m; Power Drift = -0.186 dB,

Maximum value of SAR (measured) = 0.440 mW/g

Peak SAR (extrapolated) = 0.610 W/kg

**SAR(1 g) = 0.273 mW/g; SAR(10 g) = 0.130 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 158mm
- \*.ambient: 24±1 deg.C / 55±5 %RH; liquid temperature: (before) 23.3 deg.C/(after) 23.3 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place:No.7 shielded room., Date tested: July 21, 2011

**Appendix 2-2: Measurement data (Body liquid) / 2.4GHz band (cont'd)**

**Step 3: Change the operation mode (cont'd)**

**Step 3-5: 11n-40HT(MCS0) / High channel: 2452MHz(9ch), Antenna side-touch**

**EUT: Wireless Module (11bgan(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11n-40HT(MCS0); Frequency: 2452 MHz; Crest Factor: 1.0**

**Medium: M2450; Medium parameters used(23.5deg.C.): f = 2450 MHz;  $\sigma = 1.94$  S/m;  $\epsilon_r = 50.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(7.34, 7.34, 7.34); Calibrated: 2011/05/19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn626; Calibrated: 2011/02/10
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc2.4g-12,chg.tx/ant.side-touch&d0,11n-40ht(mcs0,13d),m2452(9ch)/**

**Area Scan:105x90,stp15 (8x7x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (measured) = 0.350 mW/g

**Area Scan:105x90,stp15 (71x61x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (interpolated) = 0.391 mW/g

**Zoom Scan:30x30x30,stp5 (7x7x7)/Cube 0:**

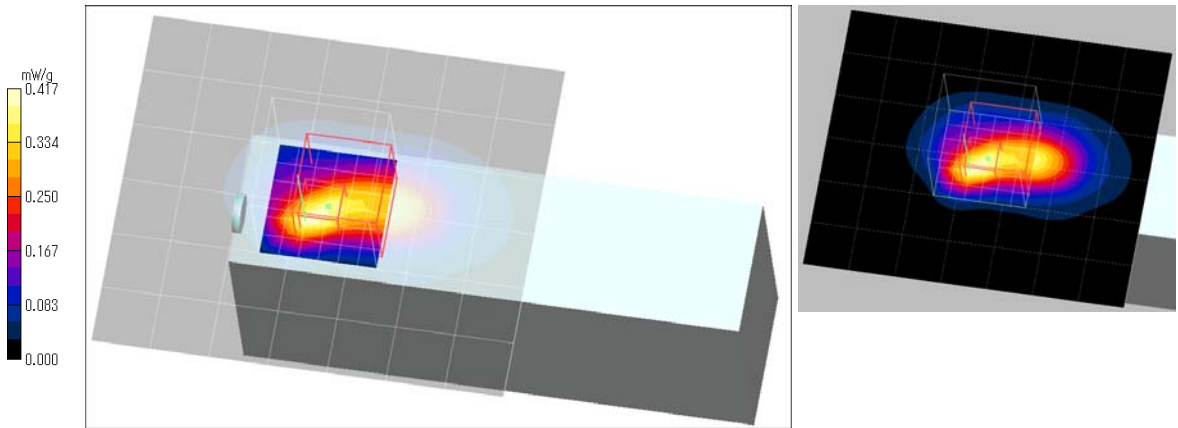
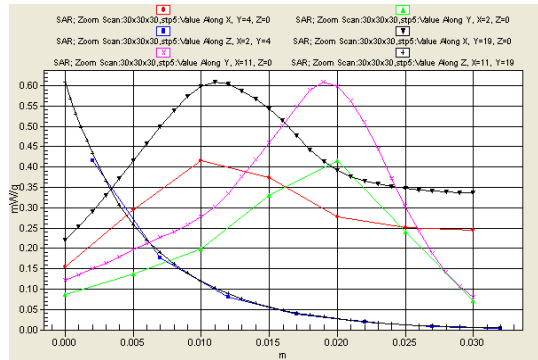
Measurement grid: dx=5mm, dy=5mm, dz=5mm;

Reference Value = 9.74 V/m; Power Drift = 0.143 dB,

Maximum value of SAR (measured) = 0.417 mW/g

Peak SAR (extrapolated) = 0.608 W/kg

**SAR(1 g) = 0.260 mW/g; SAR(10 g) = 0.124 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 158mm
- \*.ambient: 24±1 deg.C / 55±5 %RH; liquid temperature: (before) 23.3 deg.C / (after) 23.3 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 21, 2011

**Appendix 2-2: Measurement data (Body liquid) / 2.4GHz band (cont'd)**

**Step 4: Change the separation distance**

**Step 4-1: Separation distance=5mm, Antenna side / 11b(1Mbps) / High channel: 2462MHz(11ch)**

**EUT: Wireless Module (11bgn(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11b(1Mbps); Frequency: 2462 MHz; Crest Factor: 1.0**

**Medium: M2450; Medium parameters used (23.5deg.C.): f = 2450 MHz;  $\sigma = 1.94$  S/m;  $\epsilon_r = 50.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 -SN3679; ConvF(7.34, 7.34, 7.34); Calibrated: 2011/05/19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn626; Calibrated: 2011/02/10
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc2.4g-13,Separation/ant.side&d=5mm,11b(1m,13d),m2462(11ch)/**

**Area Scan:105x90,stp15 (8x7x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (measured) = 0.165 mW/g

**Area Scan:105x90,stp15 (71x61x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (interpolated) = 0.174 mW/g

**Zoom Scan:30x30x30,stp5 (7x7x7)/Cube 0:**

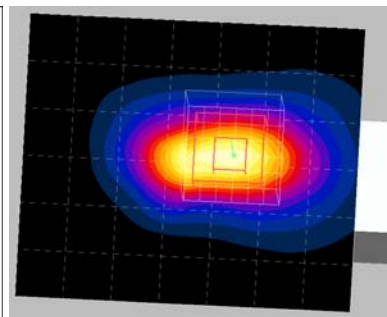
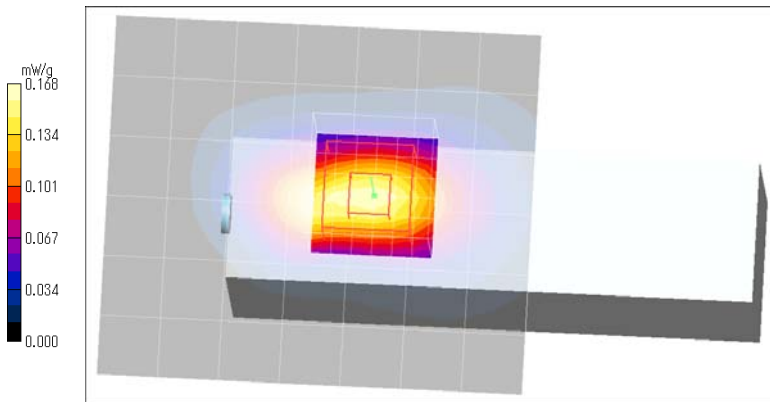
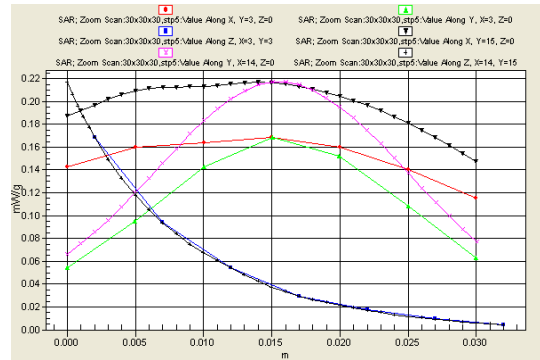
Measurement grid: dx=5mm, dy=5mm, dz=5mm;

Reference Value = 7.03 V/m; Power Drift = -0.147 dB,

Maximum value of SAR (measured) = 0.168 mW/g

Peak SAR (extrapolated) = 0.217 W/kg

**SAR(1 g) = 0.119 mW/g; SAR(10 g) = 0.063 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 158mm
- \*.ambient: 24±1 deg.C / 55±5 %RH; liquid temperature: (before) 23.3 deg.C /(after) 23.3 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place:No.7 shielded room., Date tested: July 21, 2011

**Appendix 2-3: Measurement data (Body liquid) / W52/53 band**

**Step 1: Worst position search**

**Step 1-1: Antenna side-touch / 5200MHz(40ch), 11a(6Mbps)**

**EUT: Wireless Module (11bgn(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11a(6Mbps); Frequency: 5200 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (24.0deg.C): f = 5200 MHz;  $\sigma = 5.4$  S/m;  $\epsilon_r = 49.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(4.1, 4.1, 4.1); Calibrated: 2011/05/19

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

- Electronics: DAE4 Sn626; Calibrated: 2011/02/10

- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc1,wftb,antside-touch&d=0,11a(6m,13d),m5200/**

**Area Scan (10x10x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 0.934 mW/g

**Area Scan (91x91x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 0.994 mW/g

**Zoom Scan (28x28x22.5mm,x,y;stp=4/z;dis&stp=2mm, ratio=1.5)(8x8x6)**

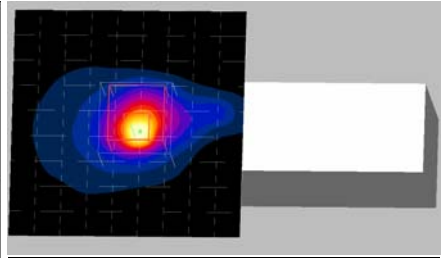
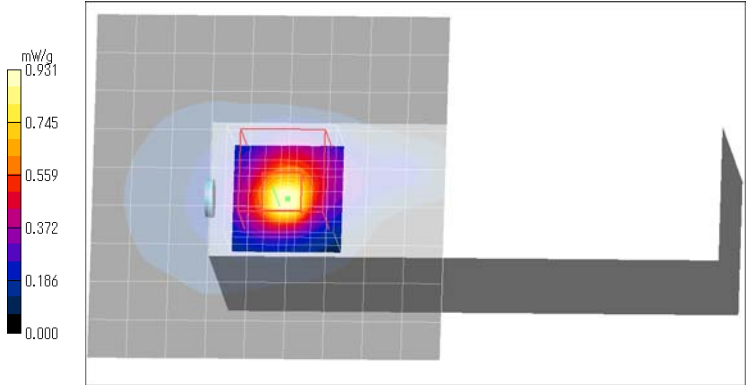
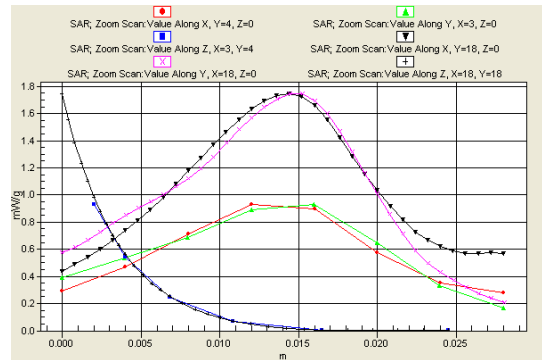
**/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 13.0 V/m; Power Drift = -0.20 dB,

Maximum value of SAR (measured) = 0.931 mW/g

Peak SAR (extrapolated) = 1.75 W/kg

**SAR(1 g) = 0.485 mW/g; SAR(10 g) = 0.153 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 150mm
- \*.ambient: 24±1 deg.C / 50±5 %RH; liquid temperature: (before) 23.6 deg.C / (after) 23.5 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 19, 2011

**Appendix 2-3: Measurement data (Body liquid) / W52/53 band (cont'd)**

**Step 1: Worst position search (cont'd)**

**Step 1-2: Bottom-touch / 5200MHz(40ch), 11a(6Mbps)**

**EUT: Wireless Module (11bgn(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11a(6Mbps); Frequency: 5200 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (24.0deg.C):  $f = 5200$  MHz;  $\sigma = 5.4$  S/m;  $\epsilon_r = 49.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(4.1, 4.1, 4.1); Calibrated: 2011/05/19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn626; Calibrated: 2011/02/10
- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc2,wftb,btm-touch&d=0,11a(6m,13d),m5200/**

**Area Scan (10x10x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 0.647 mW/g

**Area Scan (91x91x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 0.686 mW/g

**Zoom Scan (28x28x22.5mm,x,y,stp=4/z,dis&stp=2mm, ratio=1.5)(8x8x6)**

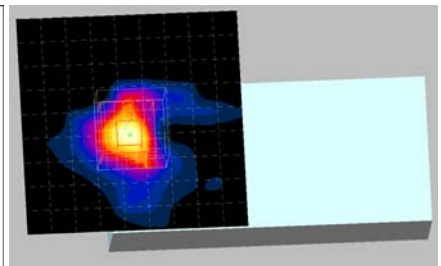
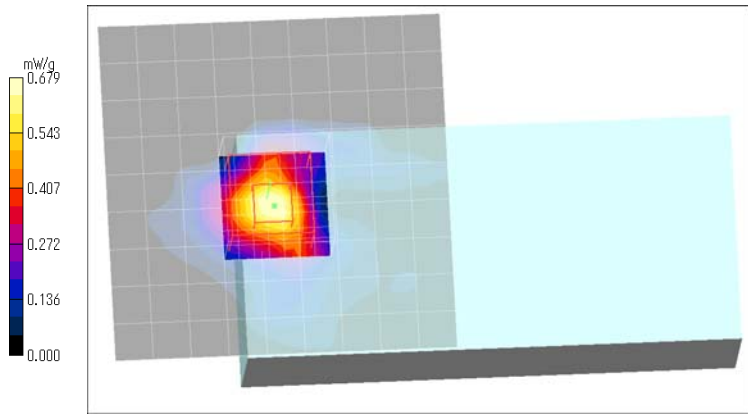
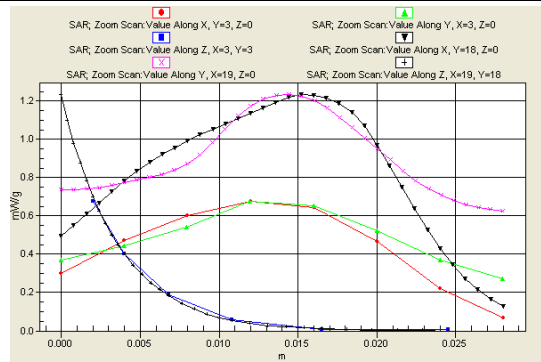
**/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 10.9 V/m; Power Drift = -0.133 dB,

Maximum value of SAR (measured) = 0.679 mW/g

Peak SAR (extrapolated) = 1.24 W/kg

**SAR(1 g) = 0.373 mW/g; SAR(10 g) = 0.133 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 150mm
- \*.ambient: 24±1 deg.C / 50±5 %RH; liquid temperature: (before) 23.4 deg.C / (after) 23.4 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 19, 2011

**Appendix 2-3: Measurement data (Body liquid) / W52/53 band (cont'd)**

**Step 1: Worst position search (cont'd)**

**Step 1-3: Switch side-touch / 5200MHz(40ch), 11a(6Mbps)**

**EUT: Wireless Module (11bgn(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11a(6Mbps); Frequency: 5200 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (24.0deg.C): f = 5200 MHz;  $\sigma = 5.4$  S/m;  $\epsilon_r = 49.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(4.1, 4.1, 4.1); Calibrated: 2011/05/19

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

- Electronics: DAE4 Sn626; Calibrated: 2011/02/10

- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc3,wfth,pw.sw.side-touch&d=0,11a(6m,13d),m5200/**

**Area Scan (10x10x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 0.057 mW/g

**Area Scan (91x91x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 0.065 mW/g

**Zoom Scan (24x24x22.5mm,x,y;stp=4/z;dis&stp=2mm, ratio=1.5)(7x7x6)**

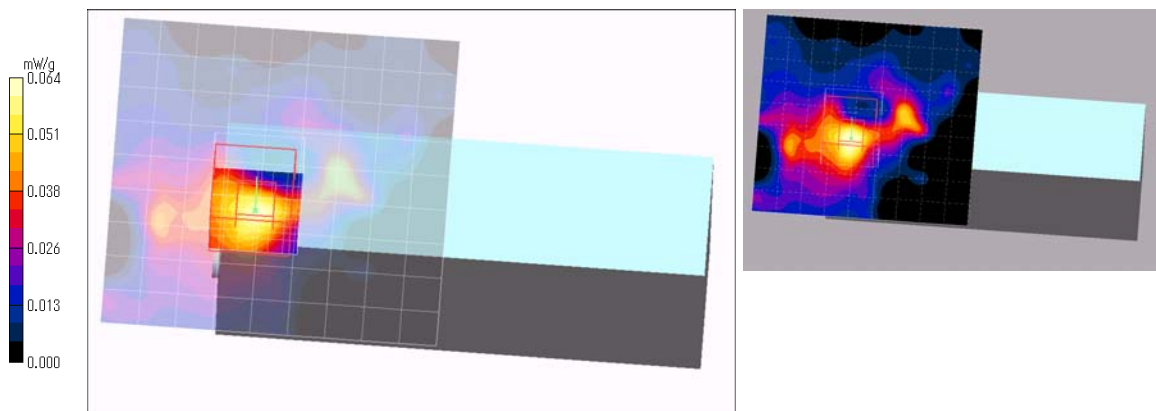
**/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 1.77 V/m; Power Drift = -0.009 dB,

Maximum value of SAR (measured) = 0.064 mW/g

Peak SAR (extrapolated) = 0.265 W/kg

**SAR(1 g) = 0.030 mW/g; SAR(10 g) = 0.011 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 150mm
- \*.ambient: 24±1 deg.C / 50±5 %RH; liquid temperature: (before) 23.4 deg.C / (after) 23.4 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 19, 2011



Appendix 2-3: Measurement data (Body liquid) / W52/53 band (cont'd)

Step 1: Worst position search (cont'd)

Step 1-4: Top-touch / 5200MHz(40ch), 11a(6Mbps)

**EUT: Wireless Module (11bgn(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11a(6Mbps); Frequency: 5200 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (24.0deg.C): f = 5200 MHz;  $\sigma = 5.4$  S/m;  $\epsilon_r = 49.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(4.1, 4.1, 4.1); Calibrated: 2011/05/19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn626; Calibrated: 2011/02/10
- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc4,wfth,top-touch&d=0,11a(6m,13d),m5200/**

**Area Scan (10x10x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 0.227 mW/g

**Area Scan (91x91x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 0.261 mW/g

**Zoom Scan (24x24x22.5mm,x,y;stp=4/z,dis&stp=2mm,ratio=1.5)(7x7x6)**

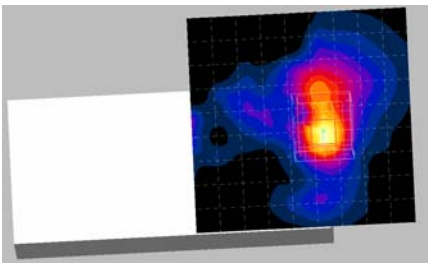
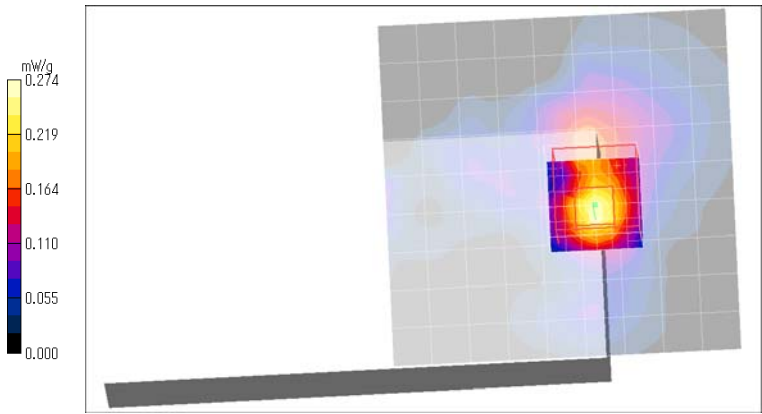
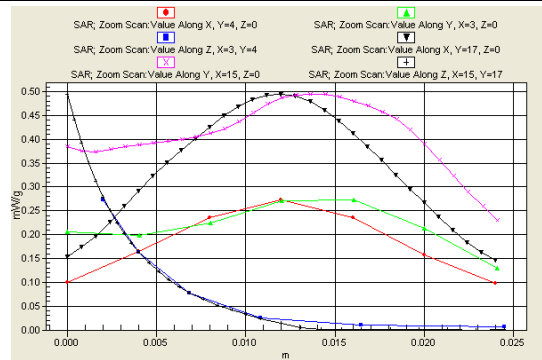
**/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 4.26 V/m; Power Drift = 0.185 dB,

Maximum value of SAR (measured) = 0.274 mW/g

Peak SAR (extrapolated) = 0.495 W/kg

**SAR(1 g) = 0.147 mW/g; SAR(10 g) = 0.050 mW/g**



Additional information:

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 150mm
- \*.ambient: 24±1 deg.C / 50±5 %RH; liquid temperature: (before) 23.4 deg.C / (after) 23.4 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 19, 2011

**Appendix 2-3: Measurement data (Body liquid) / W52/53 band (cont'd)**

**Step 1: Worst position search (cont'd)**

**Step 1-5: USB port side-touch / 5200MHz(40ch), 11a(6Mbps)**

**EUT: Wireless Module (11bgn(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11a(6Mbps); Frequency: 5200 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (24.0deg.C):  $f = 5200$  MHz;  $\sigma = 5.4$  S/m;  $\epsilon_r = 49.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(4.1, 4.1, 4.1); Calibrated: 2011/05/19

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

- Electronics: DAE4 Sn626; Calibrated: 2011/02/10

- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc5,wfth,usb-touch&d=0.11a(6m,13d),m5200/**

**Area Scan (10x8x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 1.12 mW/g

**Area Scan (91x71x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 1.13 mW/g

**Zoom Scan (24x24x22.5mm,x,y,stp=4/z,dis&stp=2mm, ratio=1.5)(7x7x6)**

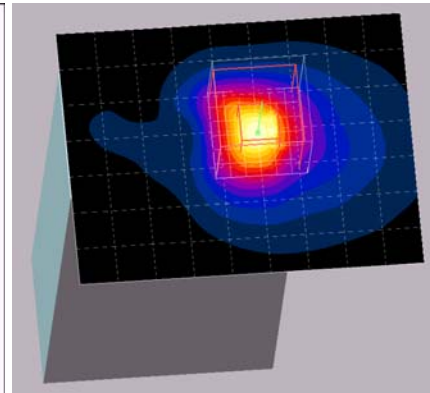
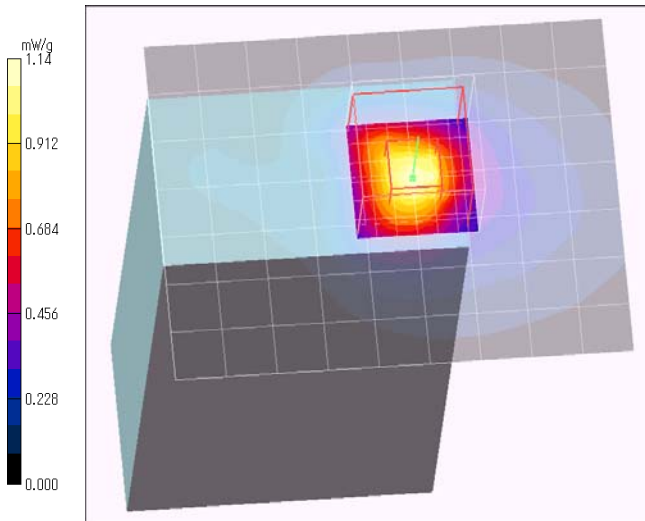
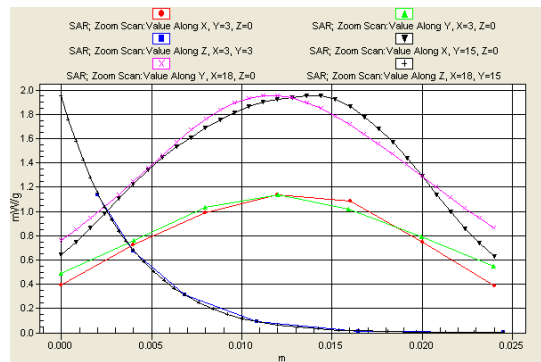
**/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 15.3 V/m; Power Drift = 0.088 dB,

Maximum value of SAR (measured) = 1.14 mW/g

Peak SAR (extrapolated) = 1.96 W/kg

**SAR(1g) = 0.613 mW/g; SAR(10g) = 0.222 mW/g**



**Additional information:**

- \*position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 150mm
- \*ambient: 24±1 deg.C / 50±5 %RH; liquid temperature: (before) 23.3 deg.C / (after) 23.3 deg.C
- \*white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 19, 2011

**Appendix 2-3: Measurement data (Body liquid) / W52/53 band (cont'd)**

**Step 2: Change the channel**

**Step 2-1: 5240MHz (48ch) / 11a(6Mbps), USB port side-touch**

**EUT: Wireless Module (11bgan(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11a(6Mbps); Frequency: 5240 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (24.0deg.C):  $f = 5240 \text{ MHz}$ ;  $\sigma = 5.48 \text{ S/m}$ ;  $\epsilon_r = 49.9$ ;  $\rho = 1000 \text{ kg/m}^3$**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(4.1, 4.1, 4.1); Calibrated: 2011/05/19

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

- Electronics: DAE4 Sn626; Calibrated: 2011/02/10

- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc6,wftb,usb-touch&d=0,11a(6m,13d),m5240(48)/**

**Area Scan (10x8x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 0.964 mW/g

**Area Scan (91x71x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 0.967 mW/g

**Zoom Scan (24x24x22.5mm,x,y;stp=4/z;dis&stp=2mm, ratio=1.5)(7x7x6)**

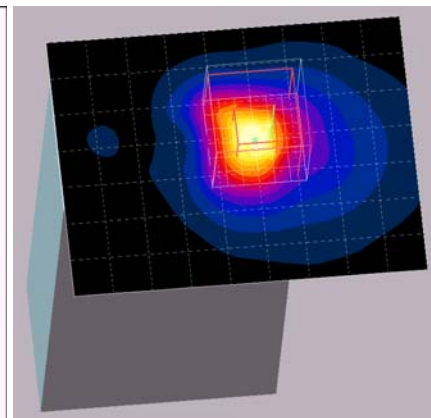
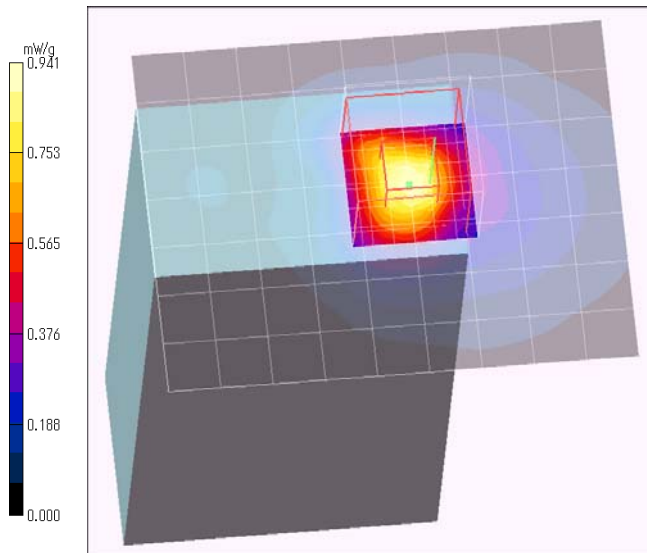
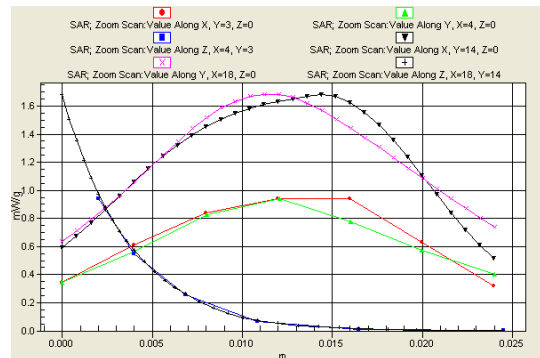
**/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 14.1 V/m; Power Drift = 0.050 dB,

Maximum value of SAR (measured) = 0.941 mW/g

Peak SAR (extrapolated) = 1.68 W/kg

**SAR(1 g) = 0.515 mW/g; SAR(10 g) = 0.186 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 150mm
- \*.ambient: 24±1 deg.C / 50±5 %RH; liquid temperature: (before) 23.3 deg.C / (after) 23.2 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 19, 2011

**Appendix 2-3: Measurement data (Body liquid) / W52/53 band (cont'd)**

**Step 2: Change the channel (cont'd)**

**Step 2-2: 5260MHz (52ch) / 11a(6Mbps), USB port side-touch**

**EUT: Wireless Module (11bgn(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11a(6Mbps); Frequency: 5260 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (24.0deg.C): f = 5260 MHz;  $\sigma = 5.54$  S/m;  $\epsilon_r = 49.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(3.88, 3.88, 3.88); Calibrated: 2011/05/19

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

- Electronics: DAE4 Sn626; Calibrated: 2011/02/10

- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc7,wfth,usb-touch&d=0,11a(6m,13d),m5260(52)/**

**Area Scan (10x8x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 0.918 mW/g

**Area Scan (91x71x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 0.922 mW/g

**Zoom Scan (24x24x22.5mm,x,y,stp=4/z,dis&stp=2mm,ratio=1.5)(7x7x6)**

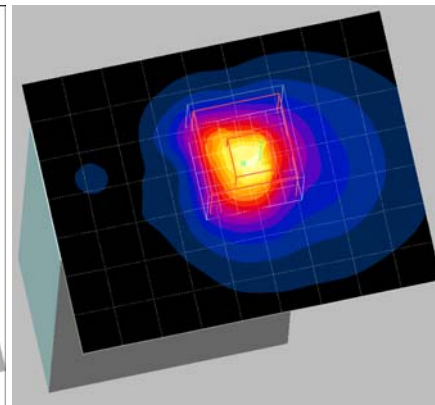
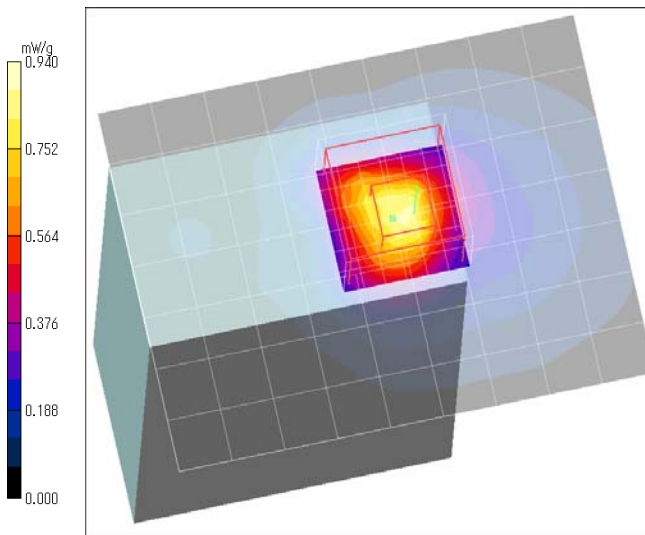
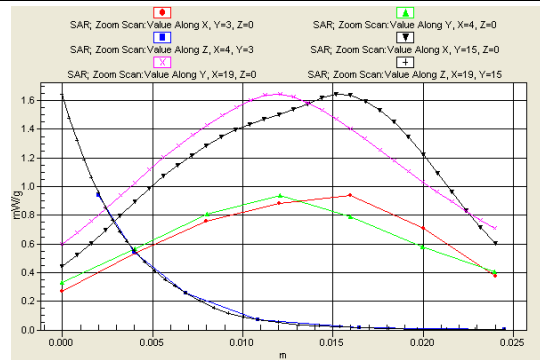
**/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 13.6 V/m; Power Drift = 0.043 dB,

Maximum value of SAR (measured) = 0.940 mW/g

Peak SAR (extrapolated) = 1.65 W/kg

**SAR(1 g) = 0.495 mW/g; SAR(10 g) = 0.179 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 150mm
- \*.ambient: 24±1 deg.C / 50±5 %RH; liquid temperature: (before) 23.2 deg.C / (after) 23.2 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 19, 2011

**Appendix 2-3: Measurement data (Body liquid) / W52/53 band (cont'd)**

**Step 2: Change the channel (cont'd)**

**Step 2-3: 5320MHz (64ch) / 11a(6Mbps), USB port side-touch**

**EUT: Wireless Module (11bgn(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11a(6Mbps); Frequency: 5320 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (24.0deg.C):  $f = 5320 \text{ MHz}$ ;  $\sigma = 5.6 \text{ S/m}$ ;  $\epsilon_r = 49.6$ ;  $\rho = 1000 \text{ kg/m}^3$**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(3.88, 3.88, 3.88); Calibrated: 2011/05/19

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

- Electronics: DAE4 Sn626; Calibrated: 2011/02/10

- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc8,wfth,usb-touch&d=0,11a(6m,13d),m5320(64)/**

**Area Scan (10x8x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 0.730 mW/g

**Area Scan (91x71x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 0.734 mW/g

**Zoom Scan (24x24x22.5mm,x,y,stp=4/z,dis&stp=2mm, ratio=1.5)(7x7x6)**

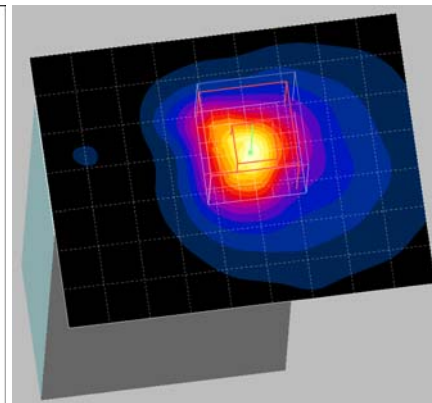
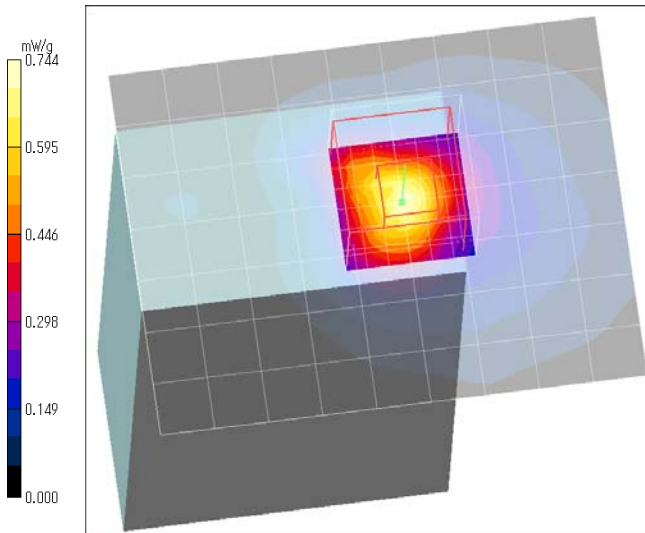
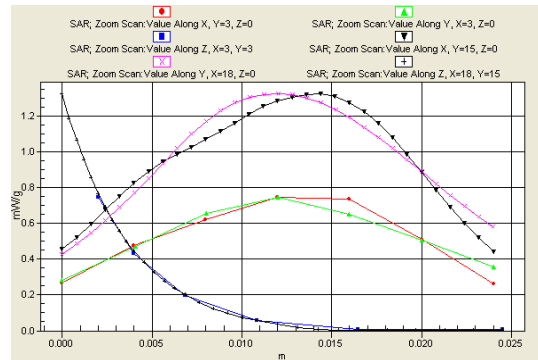
**/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 12.2 V/m; Power Drift = 0.032 dB,

Maximum value of SAR (measured) = 0.744 mW/g

Peak SAR (extrapolated) = 1.33 W/kg

**SAR(1g) = 0.397 mW/g; SAR(10g) = 0.141 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 150mm
- \*.ambient: 24±1 deg.C / 50±5 %RH; liquid temperature: (before) 23.2 deg.C / (after) 23.2 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 19, 2011

**Appendix 2-3: Measurement data (Body liquid) / W52/53 band (cont'd)**

**Step 3: Change the operation mode**

**Step 3-1: 11n-20HT(MCS0) / 5200MHz (40ch), USB port side-touch**

**EUT: Wireless Module (11bgan(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11n-20HT(MCS0); Frequency: 5200 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (24.0deg.C):  $f = 5200 \text{ MHz}$ ;  $\sigma = 5.4 \text{ S/m}$ ;  $\epsilon_r = 49.9$ ;  $\rho = 1000 \text{ kg/m}^3$**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(4.1, 4.1, 4.1); Calibrated: 2011/05/19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn626; Calibrated: 2011/02/10
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc9,wftb,usb-touch&d=0,11n-20ht(mcs0,13d),m5200/**

**Area Scan (10x8x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 1.17 mW/g

**Area Scan (91x71x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 1.17 mW/g

**Zoom Scan (24x24x22.5mm,x,y;stp=4/z;dis&stp=2mm, ratio=1.5)(7x7x6)**

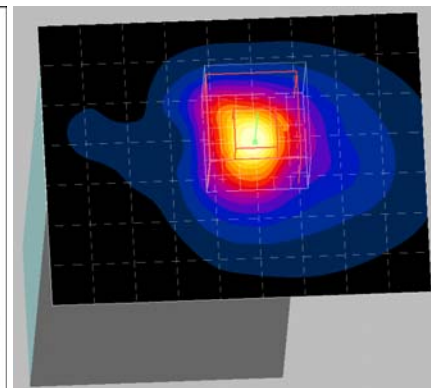
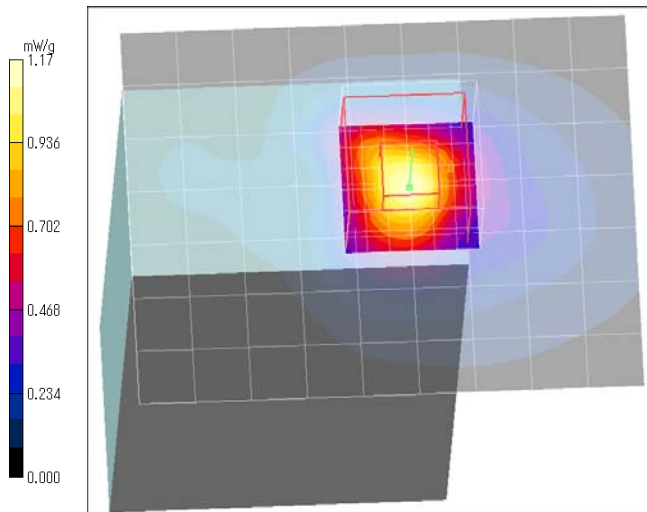
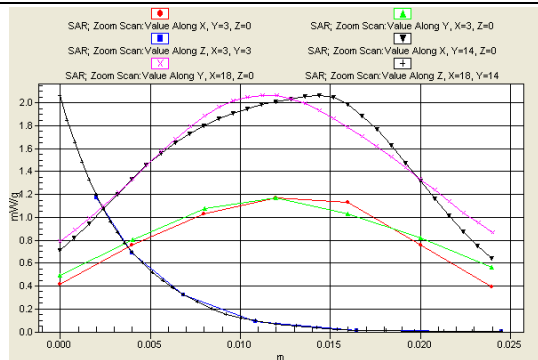
**/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 15.7 V/m; Power Drift = -0.041 dB,

Maximum value of SAR (measured) = 0.744 mW/g

Peak SAR (extrapolated) = 2.07 W/kg

**SAR(1 g) = 0.636 mW/g; SAR(10 g) = 0.229 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 150mm
- \*.ambient: 24±1 deg.C / 50±5 %RH; liquid temperature: (before) 23.2 deg.C / (after) 23.2 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 19, 2011

**Appendix 2-3: Measurement data (Body liquid) / W52/53 band (cont'd)**  
**Step 3: Change the operation mode (cont'd)**

**Step 3-2: 11n-40HT(MCS0) / 5190MHz (38ch), USB port side-touch**  
**->Worst SAR(1g) of W52/53 band**

**EUT: Wireless Module (11bgan(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11n-40HT(MCS0); Frequency: 5190 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (24.0deg.C): f = 5190 MHz;  $\sigma = 5.41$  S/m;  $\epsilon_r = 49.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(4.1, 4.1, 4.1); Calibrated: 2011/05/19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn626; Calibrated: 2011/02/10
- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc10,wfth,usb-touch&d=0,11n-40ht(mcs0,13d),m5190(38)/**

**Area Scan (10x8x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 1.36 mW/g

**Area Scan (91x71x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 1.42 mW/g

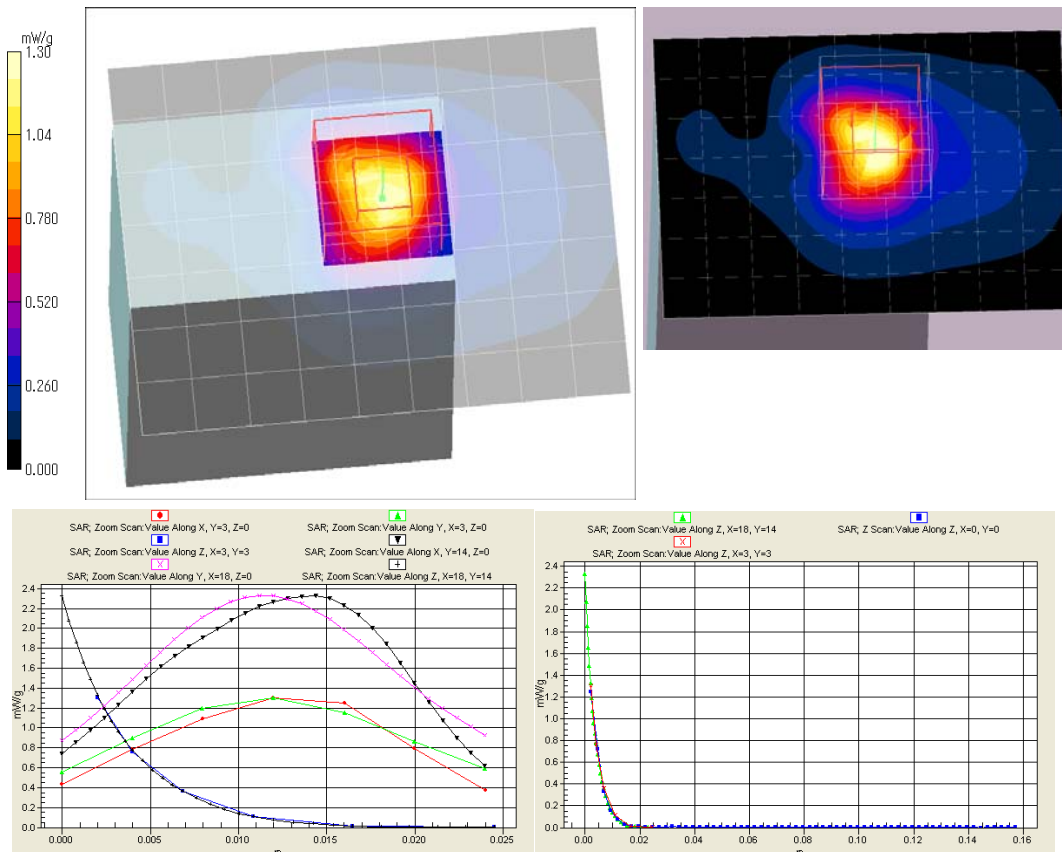
**Z Scan (1x1x63):** Measurement grid: dx=20mm, dy=20mm, dz=2.5mm; Maximum value of SAR (measured) = 1.24 mW/g

**Zoom Scan (24x24x22.5mm,x,ystp=4/z,dis&stp=2mm, ratio=1.5)(7x7x6)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 15.4 V/m; Power Drift = 0.0201 dB, Maximum value of SAR (measured) = 1.30 mW/g

Peak SAR (extrapolated) = 2.33 W/kg

**SAR(1 g) = 0.702 mW/g (Worst SAR(1g) of W52/53 band); SAR(10 g) = 0.247 mW/g**



**Additional information:**

- \* position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 150mm
- \* ambient: 24±1 deg.C / 50±5 %RH; liquid temperature: (before) 23.2 deg.C / (after) 23.1 deg.C
- \* white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \* Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 19, 2011

**Appendix 2-3: Measurement data (Body liquid) / W52/53 band (cont'd)**

**Step 3: Change the operation mode (cont'd)**

**Step 3-3: 11n-40HT(MCS0) / 5230MHz (46ch), USB port side-touch**

**EUT: Wireless Module (11bgan(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11n-40HT(MCS0); Frequency: 5230 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (24.0deg.C):  $f = 5230$  MHz;  $\sigma = 5.48$  S/m;  $\epsilon_r = 49.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(4.1, 4.1, 4.1); Calibrated: 2011/05/19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn626; Calibrated: 2011/02/10
- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc11,wfth,usb-touch&d=0,11n-40ht(mcs0,13d),m5230(46)**

**Area Scan (10x8x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 1.11 mW/g

**Area Scan (91x71x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 1.19 mW/g

**Zoom Scan (24x24x22.5mm,x,y,stp=4/z,dis&stp=2mm,ratio=1.5)(7x7x6)**

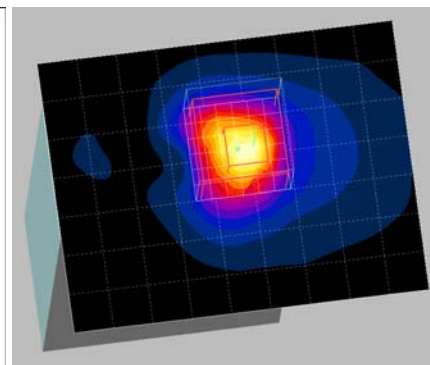
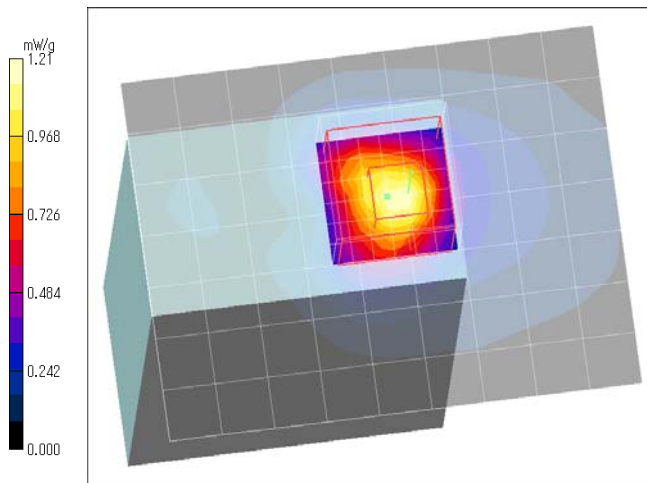
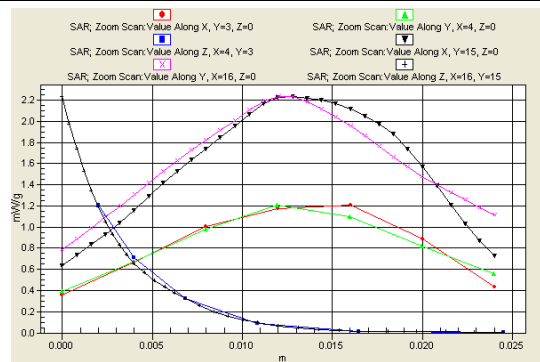
**/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 13.8 V/m; Power Drift = 0.197 dB,

Maximum value of SAR (measured) = 1.21 mW/g

Peak SAR (extrapolated) = 2.24 W/kg

**SAR(1 g) = 0.646 mW/g; SAR(10 g) = 0.227 mW/g**



**Additional information:**

- \*position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 150mm
- \*ambient: 24±1 deg.C / 50±5 %RH; liquid temperature: (before) 23.1 deg.C / (after) 23.1 deg.C
- \*white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 19, 2011



**Appendix 2-3: Measurement data (Body liquid) / W52/53 band (cont'd)**

**Step 3: Change the operation mode (cont'd)**

**Step 3-4: 11n-40HT(MCS0) / 5270MHz (54ch), USB port side-touch**

**EUT: Wireless Module (11bgan(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11n-40HT(MCS0); Frequency: 5270 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (24.0deg.C):  $f = 5270$  MHz;  $\sigma = 5.54$  S/m;  $\epsilon_r = 49.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(3.88, 3.88, 3.88); Calibrated: 2011/05/19

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

- Electronics: DAE4 Sn626; Calibrated: 2011/02/10

- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc12,wfth,usb-touch&d=0,11n-40ht(mcs0,13d),m5270(54)**

**Area Scan (10x8x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 1.05 mW/g

**Area Scan (91x71x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 1.10 mW/g

**Zoom Scan (24x24x22.5mm,x,y,stp=4/z,dis&stp=2mm,ratio=1.5)(7x7x6)**

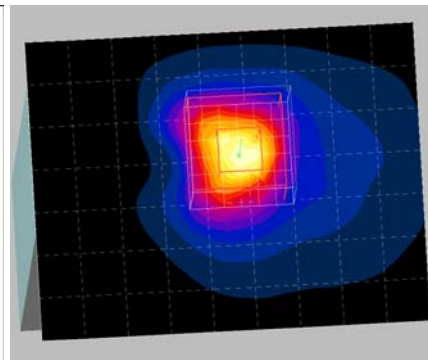
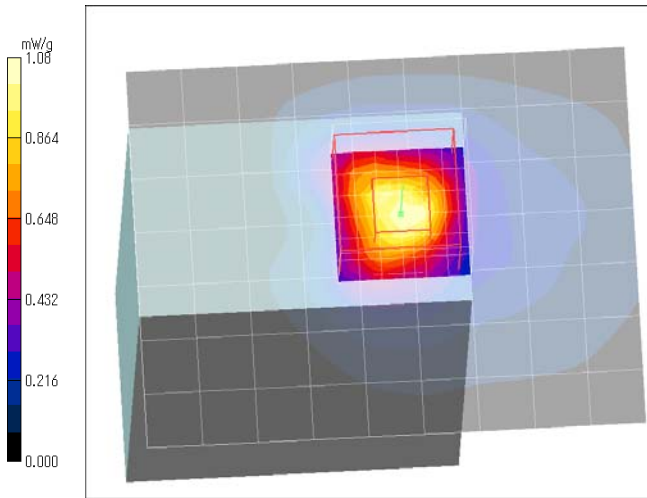
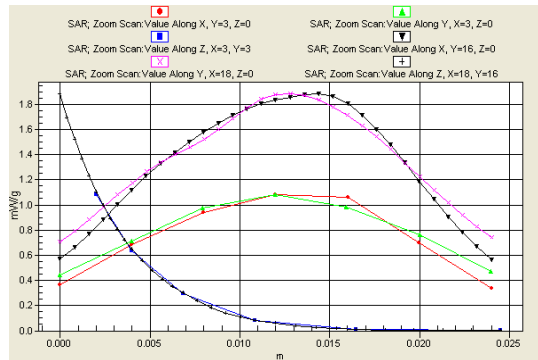
**/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 12.9 V/m; Power Drift = 0.20 dB,

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

Peak SAR (extrapolated) = 1.88 W/kg

**SAR(1 g) = 0.584 mW/g; SAR(10 g) = 0.207 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 150mm
- \*.ambient: 24±1 deg.C / 50±5 %RH; liquid temperature: (before) 23.1 deg.C / (after) 23.0 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 19, 2011

**Appendix 2-3: Measurement data (Body liquid) / W52/53 band (cont'd)**

**Step 3: Change the operation mode (cont'd)**

**Step 3-4: 11n-40HT(MCS0) / 5310MHz (62ch), USB port side-touch**

**EUT: Wireless Module (11bgan(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11n-40HT(MCS0); Frequency: 5310 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (24.0deg.C): f = 5310 MHz;  $\sigma = 5.63$  S/m;  $\epsilon_r = 49.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(3.88, 3.88, 3.88); Calibrated: 2011/05/19

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

- Electronics: DAE4 Sn626; Calibrated: 2011/02/10

- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc13,wfth,usb-touch&d=0,11n-40ht(mcs0,13d),m5310(62)/**

**Area Scan (10x8x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 0.937 mW/g

**Area Scan (91x71x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 0.972 mW/g

**Zoom Scan (24x24x22.5mm,x,y,stp=4/z,dis&stp=2mm, ratio=1.5)(7x7x6)**

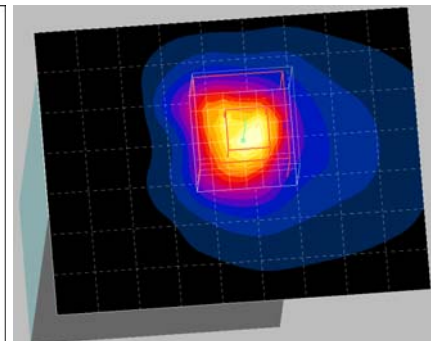
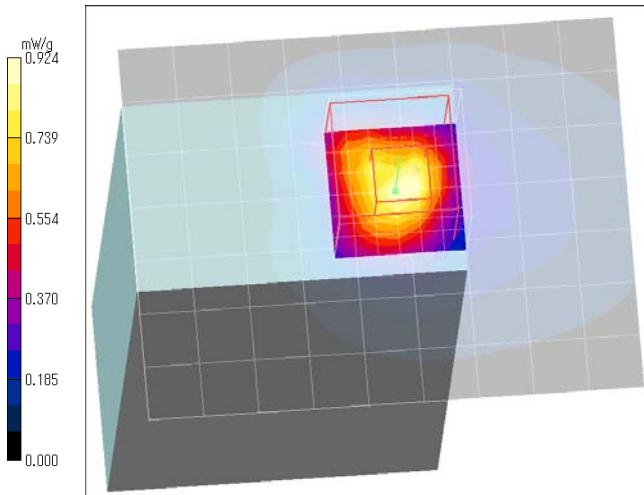
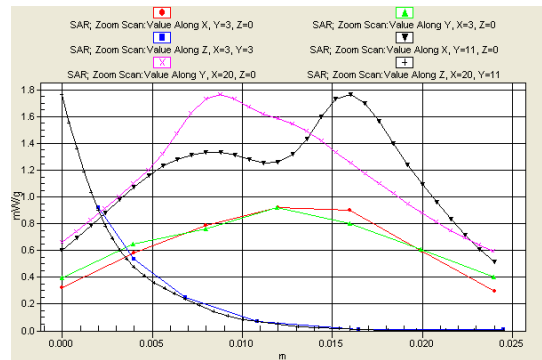
**/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 12.2 V/m; Power Drift = 0.20 dB,

Maximum value of SAR (measured) = 0.924 mW/g

Peak SAR (extrapolated) = 1.77 W/kg

**SAR(1 g) = 0.489 mW/g; SAR(10 g) = 0.176 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 150mm
- \*.ambient: 24±1 deg.C / 50±5 %RH; liquid temperature: (before) 23.0 deg.C / (after) 23.0 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 19, 2011

**Appendix 2-4: Measurement data (Body liquid) / W58 band**

**Step 1: Worst position search**

**Step 1-1: Antenna side-touch / 5765MHz(153ch), 11a(6Mbps)**

**EUT: Wireless Module (11bgn(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11a(6Mbps); Frequency: 5765 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (23.6deg.C.): f = 5765 MHz;  $\sigma = 6.23$  S/m;  $\epsilon_r = 48.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(3.94, 3.94, 3.94); Calibrated: 2011/05/19
- Sensor-Surface: 2mm(Mechanical Surface Detection)
- Electronics: DAE4 Sn626; Calibrated: 2011/02/10
- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc14,wfth,antside-touch&d=0,11a(6m,13d),m5765(153)/**

**Area Scan (10x10x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 0.572 mW/g

**Area Scan (91x91x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 0.630 mW/g

**Zoom Scan (24x24x22.5mm,x,y;stp=4/z;dis&stp=2mm, ratio=1.5)(7x7x6)**

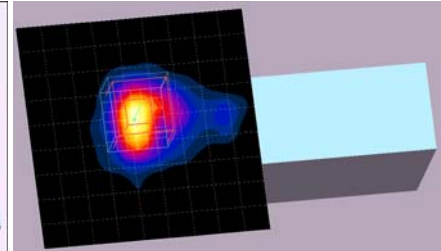
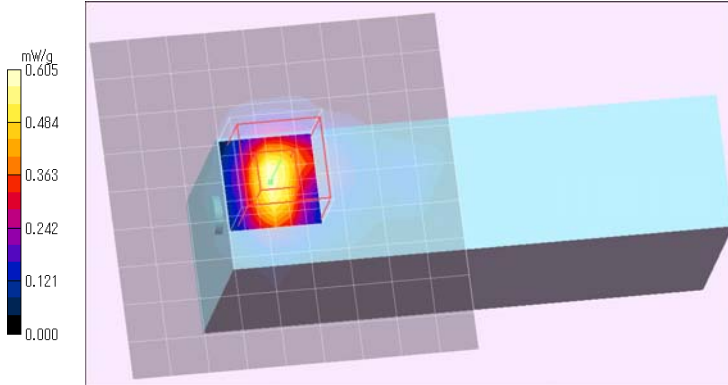
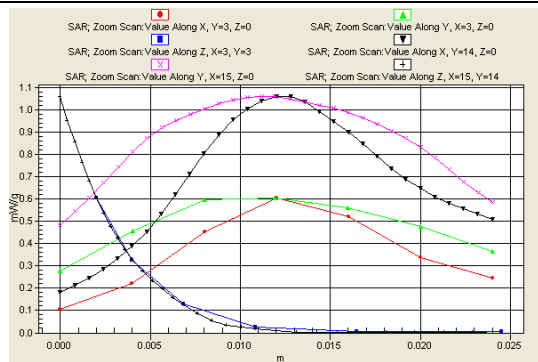
**/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 10.2 V/m; Power Drift = -0.048 dB,

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

Peak SAR (extrapolated) = 1.06 W/kg

**SAR(1 g) = 0.294 mW/g; SAR(10 g) = 0.095 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 149mm
- \*.ambient: 24±1 deg.C / 50±5 %RH; liquid temperature: (before) 23.2 deg.C /(after) 23.1 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 20, 2011

**Appendix 2-4: Measurement data (Body liquid) / W58 band (cont'd)**

**Step 1: Worst position search (cont'd)**

**Step 1-2: Top-touch / 5765MHz(153ch), 11a(6Mbps)**

**EUT: Wireless Module (11bgn(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11a(6Mbps); Frequency: 5765 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (23.6deg.C.): f = 5765 MHz;  $\sigma = 6.23$  S/m;  $\epsilon_r = 48.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(3.94, 3.94, 3.94); Calibrated: 2011/05/19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn626; Calibrated: 2011/02/10
- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc16-re,wfth,top-touch&d=0,11a(6m,13d),m5765/**

**Area Scan (10x10x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 0.262 mW/g

**Area Scan (91x91x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 0.306 mW/g

**Zoom Scan (24x24x22.5mm,x,y;stp=4/z;dis&stp=2mm, ratio=1.5)(7x7x6)**

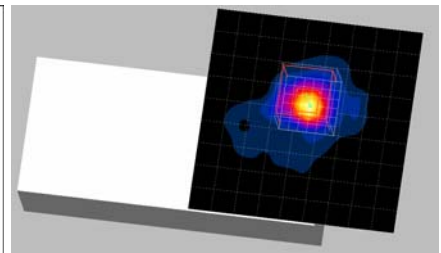
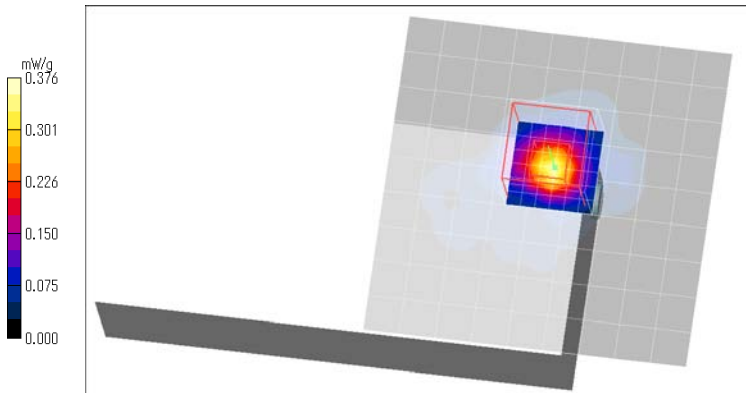
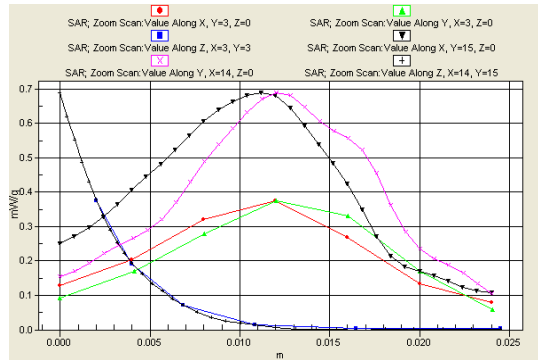
**/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 8.53 V/m; Power Drift = -0.157 dB,

Maximum value of SAR (measured) = 0.376 mW/g

Peak SAR (extrapolated) = 0.690 W/kg

**SAR(1 g) = 0.163 mW/g; SAR(10 g) = 0.044 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 149mm
- \*.ambient: 24±1 deg.C / 50±5 %RH; liquid temperature: (before) 23.1 deg.C / (after) 23.1 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 20, 2011

**Appendix 2-4: Measurement data (Body liquid) / W58 band (cont'd)**

**Step 1: Worst position search (cont'd)**

**Step 1-3: Bottom-touch / 5765MHz(153ch), 11a(6Mbps)**

**EUT: Wireless Module (11bgn(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11a(6Mbps); Frequency: 5765 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (23.6deg.C.): f = 5765 MHz;  $\sigma = 6.23$  S/m;  $\epsilon_r = 48.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(3.94, 3.94, 3.94); Calibrated: 2011/05/19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn626; Calibrated: 2011/02/10
- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc17,wftb,btm-touch&d=0,11a(6m,13d),m5765/**

**Area Scan (10x10x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 0.179 mW/g

**Area Scan (91x91x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 0.239 mW/g

**Zoom Scan (24x24x22.5mm,x,y,stp=4/z,dis&stp=2mm, ratio=1.5)(7x7x6)**

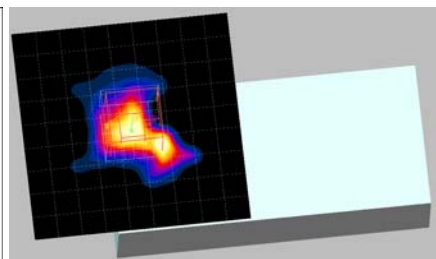
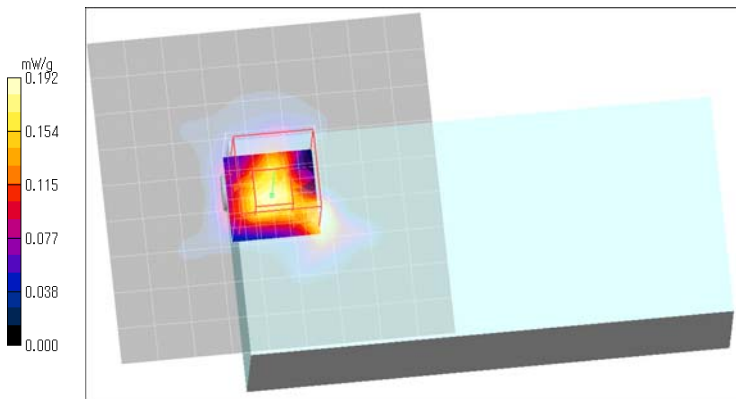
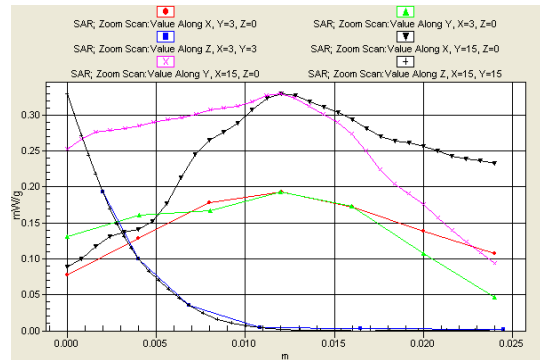
**/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 5.90 V/m; Power Drift = -0.120 dB,

Maximum value of SAR (measured) = 0.192 mW/g

Peak SAR (extrapolated) = 0.330 W/kg

**SAR(1 g) = 0.091 mW/g; SAR(10 g) = 0.032 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 149mm
- \*.ambient: 24±1 deg.C / 50±5 %RH; liquid temperature: (before) 23.1 deg.C / (after) 23.1 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 20, 2011

**Appendix 2-4: Measurement data (Body liquid) / W58 band (cont'd)**

**Step 1: Worst position search (cont'd)**

**Step 1-4: USB port side-touch / 5765MHz(153ch), 11a(6Mbps)**

**EUT: Wireless Module (11bgn(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11a(6Mbps); Frequency: 5765 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (23.6deg.C.): f = 5765 MHz;  $\sigma = 6.23$  S/m;  $\epsilon_r = 48.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(3.94, 3.94, 3.94); Calibrated: 2011/05/19

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

- Electronics: DAE4 Sn626; Calibrated: 2011/02/10

- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc18,wfth,usb-touch&d=0,11a(6m,13d),m5765/**

**Area Scan (10x8x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 0.186 mW/g

**Area Scan (91x71x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 0.189 mW/g

**Zoom Scan (24x24x22.5mm,x,y,stp=4/z,dis&stp=2mm, ratio=1.5)(7x7x6)**

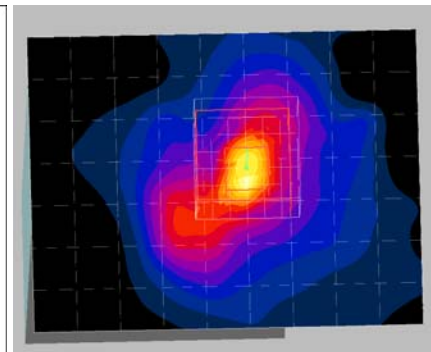
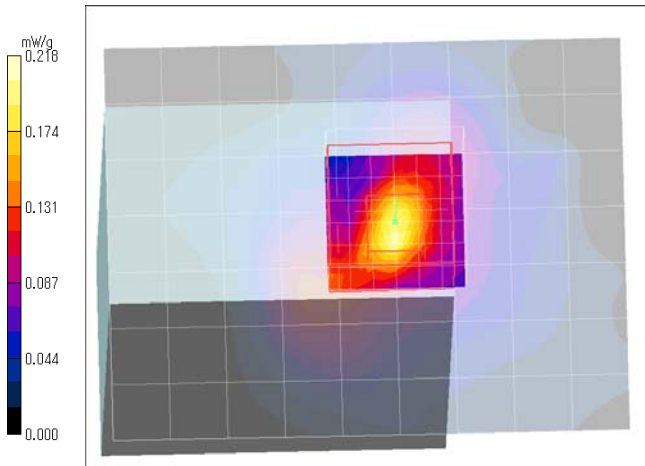
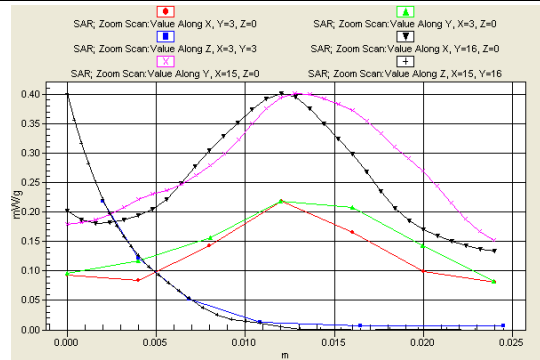
**/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 6.68 V/m; Power Drift = -0.197 dB,

Maximum value of SAR (measured) = 0.218 mW/g

Peak SAR (extrapolated) = 0.401 W/kg

**SAR(1g) = 0.097 mW/g; SAR(10g) = 0.031 mW/g**



**Additional information:**

- \*position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 149mm
- \*ambient: 24±1 deg.C / 50±5 %RH; liquid temperature: (before) 23.0 deg.C / (after) 22.9 deg.C
- \*white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 20, 2011

Appendix 2-4: Measurement data (Body liquid) / W58 band (cont'd)

Step 2: Change the channel

Step 2-1: 5785MHz(157ch) / 11a(6Mbps), Antenna side-touch

EUT: Wireless Module (11bgan(20/40HT), SISO); Model: CH9-1225; Serial: 06

Communication System: 11a(6Mbps); Frequency: 5785 MHz; Crest Factor: 1.0

Medium: MSL5800; Medium parameters used (23.6deg.C.): f = 5785 MHz;  $\sigma = 6.26 \text{ S/m}$ ;  $\epsilon_r = 48.8$ ;  $\rho = 1000 \text{ kg/m}^3$

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(3.94, 3.94, 3.94); Calibrated: 2011/05/19

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

- Electronics: DAE4 Sn626; Calibrated: 2011/02/10

- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

fc19,wftb,antside-touch&d=0,11a(6m,13d),m5785(157)/

Area Scan (10x10x1): Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 0.495 mW/g

Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 0.585 mW/g

Zoom Scan (24x24x22.5mm,x,y,stp=4/z,dis&stp=2mm,ratio=1.5)(7x7x6)

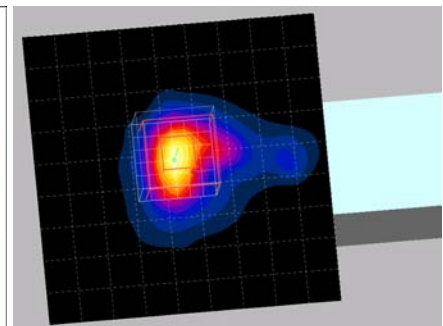
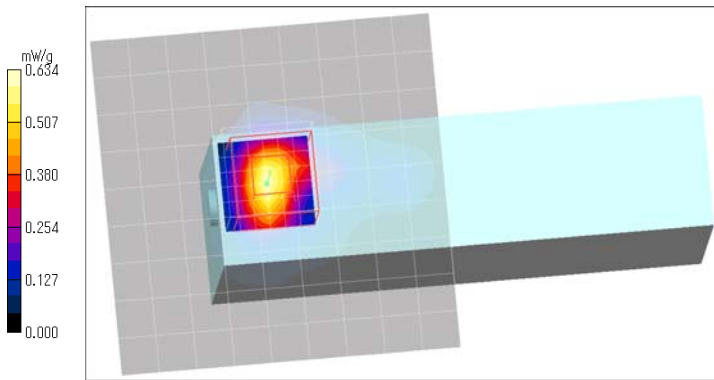
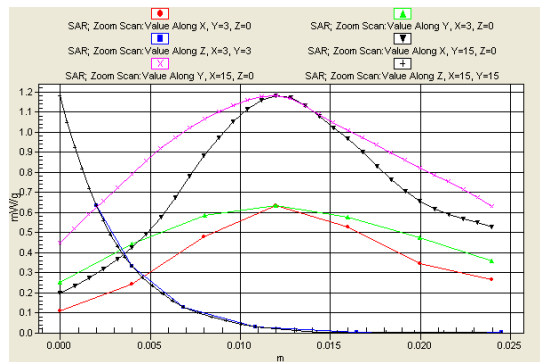
/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 10.8 V/m; Power Drift = -0.188 dB,

Maximum value of SAR (measured) = 0.634 mW/g

Peak SAR (extrapolated) = 1.18 W/kg

SAR(1 g) = 0.301 mW/g; SAR(10 g) = 0.095 mW/g



Additional information:

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 149mm
- \*.ambient: 24±1 deg.C / 50±5 %RH; liquid temperature: (before) 22.9 deg.C / (after) 22.9 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 20, 2011

**Appendix 2-4: Measurement data (Body liquid) / W58 band (cont'd)**

**Step 2: Change the channel (cont'd)**

**Step 2-2: 5825MHz(165ch) / 11a(6Mbps), Antenna side-touch**

**EUT: Wireless Module (11bgn(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11a(6Mbps); Frequency: 5825 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (23.6deg.C.): f = 5825 MHz;  $\sigma = 6.32$  S/m;  $\epsilon_r = 48.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

**DASY4 Configuration:**

- Probe: EX3DV4 - SN3679; ConvF(3.94, 3.94, 3.94); Calibrated: 2011/05/19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn626; Calibrated: 2011/02/10
- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc20,wftb,antside-touch&d=0,11a(6m,13d),m5825(165)/**

**Area Scan (10x10x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 0.429 mW/g

**Area Scan (91x91x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 0.521 mW/g

**Zoom Scan (24x24x22.5mm,x,y,stp=4/z,dis&stp=2mm,ratio=1.5)(7x7x6)**

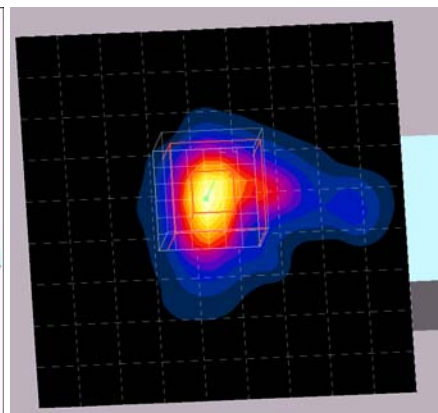
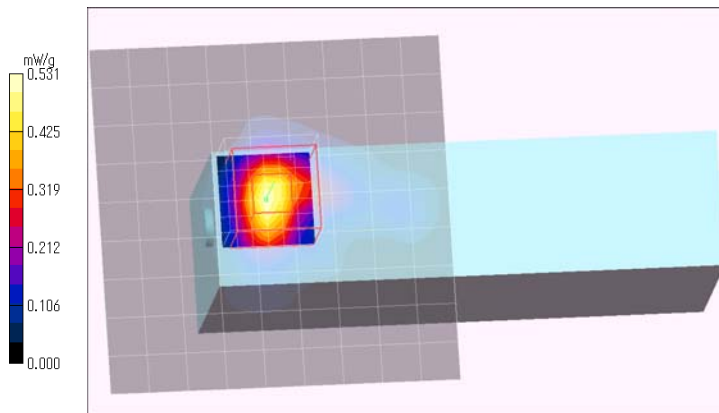
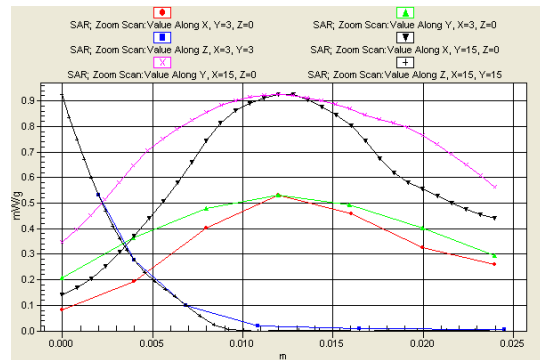
**/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 9.84 V/m; Power Drift = -0.117 dB,

Maximum value of SAR (measured) = 0.531 mW/g

Peak SAR (extrapolated) = 0.926 W/kg

**SAR(1 g) = 0.247 mW/g; SAR(10 g) = 0.079 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 149mm
- \*.ambient: 24±1 deg.C / 50±5 %RH; liquid temperature: (before) 22.9 deg.C / (after) 22.8 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 20, 2011



**Appendix 2-4: Measurement data (Body liquid) / W58 band (cont'd)**

**Step 3: Change the operation mode**

**Step 3-1: 11n-20HT(MCS0) / 5785MHz(157ch), Antenna side-touch**

**EUT: Wireless Module (11bgan(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11n-20HT(MCS0); Frequency: 5785 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (23.6deg.C.):  $f = 5785$  MHz;  $\sigma = 6.26$  S/m;  $\epsilon_r = 48.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(3.94, 3.94, 3.94); Calibrated: 2011/05/19

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

- Electronics: DAE4 Sn626; Calibrated: 2011/02/10

- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc21,wftb,antside-touch&d=0,11n-20ht(mcs0,13d),m5785(157)/**

**Area Scan (10x10x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 0.498 mW/g

**Area Scan (91x91x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 0.584 mW/g

**Zoom Scan (24x24x22.5mm,x,y;stp=4/z;dis&stp=2mm, ratio=1.5)(7x7x6)**

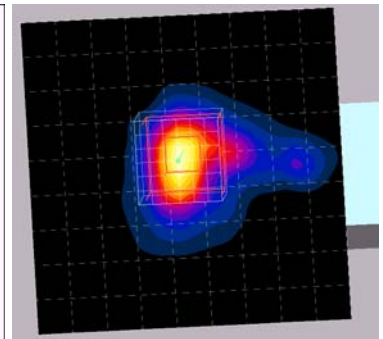
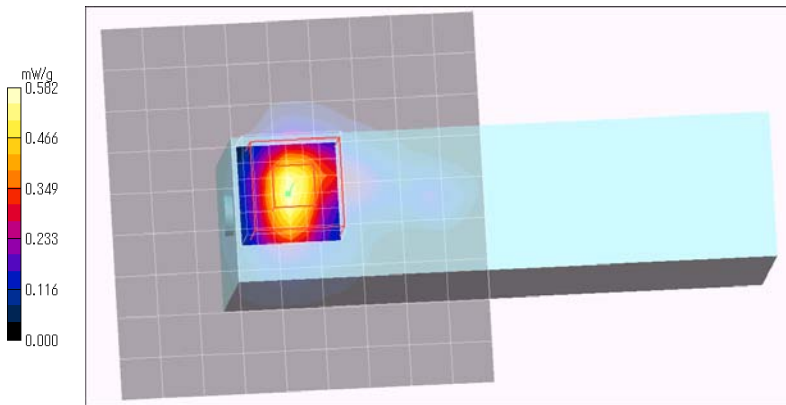
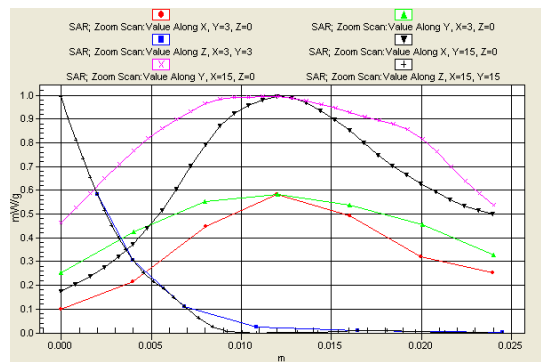
**/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 10.5 V/m; Power Drift = -0.149 dB,

Maximum value of SAR (measured) = 0.582 mW/g

Peak SAR (extrapolated) = 0.996 W/kg

**SAR(1 g) = 0.275 mW/g; SAR(10 g) = 0.089 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 149mm
- \*.ambient: 24±1 deg.C / 50±5 %RH; liquid temperature: (before) 22.8 deg.C / (after) 22.8 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 20, 2011

**Appendix 2-4: Measurement data (Body liquid) / W58 band (cont'd)**

**Step 3: Change the operation mode (cont'd)**

**Step 3-2: 11n-40HT(MCS0) / 5755MHz(151ch), Antenna side-touch**

**EUT: Wireless Module (11bgn(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11n-40HT(MCS0); Frequency: 5755 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (23.6deg.C): f = 5755 MHz;  $\sigma = 6.23$  S/m;  $\epsilon_r = 48.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(3.94, 3.94, 3.94); Calibrated: 2011/05/19

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

- Electronics: DAE4 Sn626; Calibrated: 2011/02/10

- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc22,wfth,antside-touch&d=0,11n-40ht(mcs0,13d),m5755(151)/**

**Area Scan (10x10x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 0.469 mW/g

**Area Scan (91x91x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 0.560 mW/g

**Zoom Scan (24x24x22.5mm,x,y,stp=4/z,dis&stp=2mm,ratio=1.5)(7x7x6)**

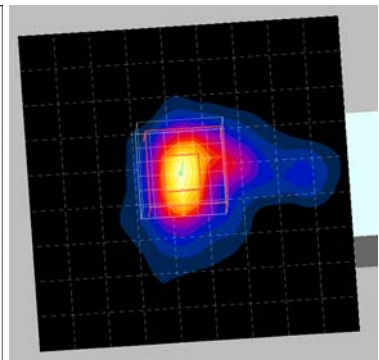
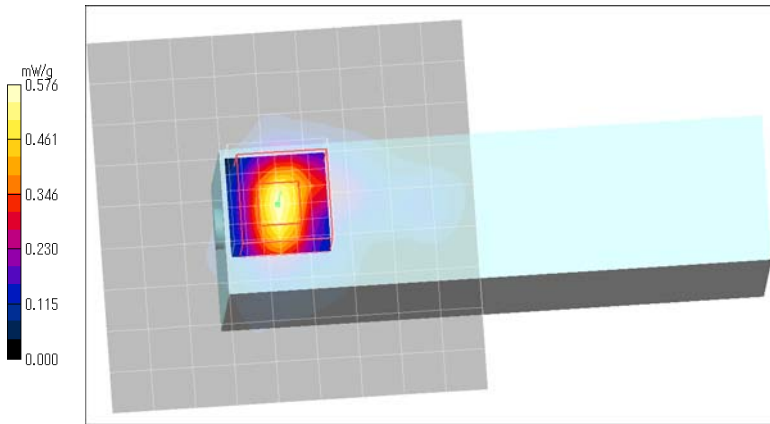
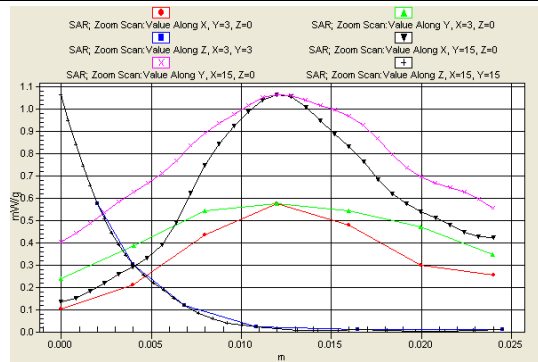
**/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 10.6 V/m; Power Drift = -0.193 dB,

Maximum value of SAR (measured) = 0.576 mW/g

Peak SAR (extrapolated) = 1.06 W/kg

**SAR(1 g) = 0.271 mW/g; SAR(10 g) = 0.087 mW/g**



**Additional information:**

- \*.position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 149mm
- \*.ambient: 24±1 deg.C / 50±5 %RH; liquid temperature: (before) 22.8 deg.C / (after) 22.7 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 20, 2011

**Appendix 2-4: Measurement data (Body liquid) / W58 band (cont'd)**

**Step 3: Change the operation mode (cont'd)**

**Step 3-3: 11n-40HT(MCS0) / 5795MHz(159ch), Antenna side-touch**

**>Worst SAR(1g) of W58 band**

**EUT: Wireless Module (11bgan(20/40HT), SISO); Model: CH9-1225; Serial: 06**

**Communication System: 11n-40HT(MCS0); Frequency: 5795 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (23.6deg.C.): f = 5795 MHz;  $\sigma = 6.27$  S/m;  $\epsilon_r = 48.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(3.94, 3.94, 3.94); Calibrated: 2011/05/19

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

- Electronics: DAE4 Sn626; Calibrated: 2011/02/10

- Phantom: ELI4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**fc23,wfth,antside-touch&d=0,11n-40ht(mcs0,13d),m5795(159)/**

**Area Scan (10x10x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (measured) = 0.495 mW/g

**Area Scan (91x91x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 0.589 mW/g

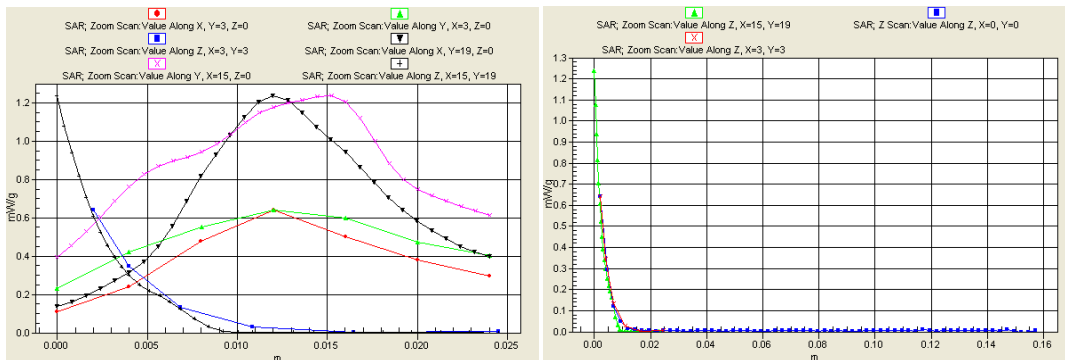
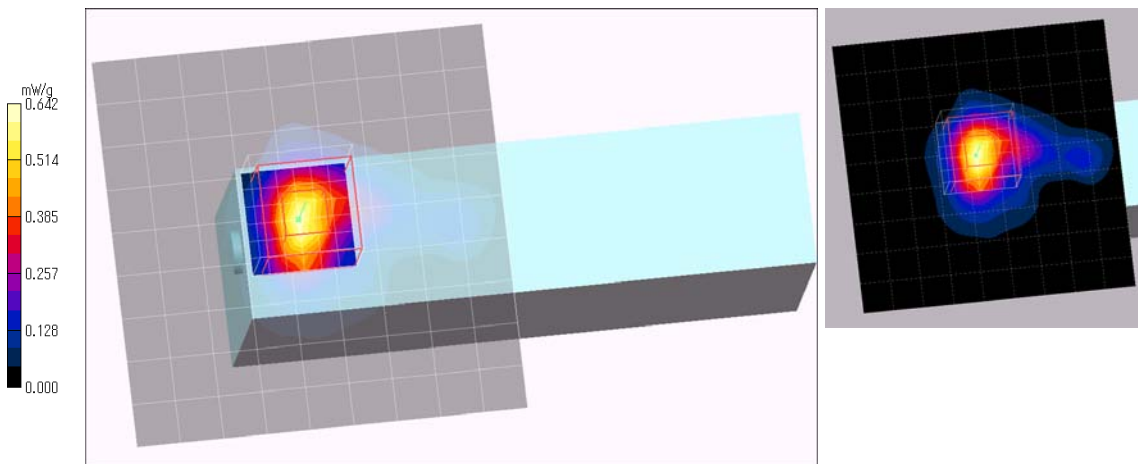
**Z Scan (1x1x63):** Measurement grid: dx=20mm, dy=20mm, dz=2.5mm; Maximum value of SAR (measured) = 0.643 mW/g

**Zoom Scan (24x24x22.5mm,x,ystp=4/zdis&stp=2mm, ratio=1.5)(7x7x6)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 10.5 V/m; Power Drift = 0.136 dB; Maximum value of SAR (measured) = 0.642 mW/g

Peak SAR (extrapolated) = 1.24 W/kg

**SAR(1 g) = 0.303 mW/g (Worst SAR(1g) of W58 band); SAR(10 g) = 0.095 mW/g**



**Additional information:**

- \*position: distance of EUT to phantom: 0mm (2mm to liquid), liquid depth: 149mm
- \*ambient: 24±1 deg.C / 50±5 %RH; liquid temperature: (before) 22.7 deg.C / (after) 22.7 deg.C
- \*white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 20, 2011

**APPENDIX 3: Test instruments****Appendix 3-1: Equipment used**

| Control No.        | Instrument                                    | Manufacturer                  | Model No                     | Serial No        | Test Item  | Calibration Date * Interval(month)           |
|--------------------|---|-------------------------------|------------------------------|------------------|------------|--|
| COTS-KSAR-01       | DASY4   | Schmid&Partner Engineering AG | DASY4 V4.7 B80               | -                | SAR        | -  |
| COTS-KSEP-01       | Dielectric measurement                        | Agilent                       | 85070                        | 1                | SAR        | -  |
| KSAR-01            | SAR measurement system                        | Schmid&Partner Engineering AG | DASY4                        | 1088             | SAR        | Pre Check                                    |
| SSRBT-01           | SAR robot                                     | Schmid&Partner Engineering AG | RX60B L                      | F04/5Z71A1/A /01 | SAR        | 2011/02/02 * 12                              |
| KDAE-01            | Data Acquisition Electronics                  | Schmid&Partner Engineering AG | DAE4                         | 626              | SAR        | 2011/02/10 * 12                              |
| KPB-01             | Dosimetric E-Field Probe                      | Schmid&Partner Engineering AG | EX3DV4                       | 3679             | SAR        | 2011/05/19 * 12                              |
| KSDA-01            | Dipole Antenna                                | Schmid&Partner Engineering AG | D2450V2                      | 822              | SAR        | 2011/01/05 * 24                              |
| KSDA-02            | Dipole Antenna                                | Schmid&Partner Engineering AG | D5GHzV2                      | 1070             | SAR        | 2011/02/16 * 24                              |
| KPFL-01            | Fiat Phantom                                  | Schmid&Partner Engineering AG | Oval flat phantom ELI 4.0    | 1059             | SAR        | Pre Check                                    |
| SSNA-01            | Network Analyzer                              | Agilent                       | 8753ES                       | US39171777       | SAR        | 2011/01/04 * 12                              |
| KEPP-01            | Dielectric probe                              | Agilent                       | 8710-2036                    | 2540             | SAR        | 2011/01/16 * 12                              |
| KSG-08             | Signal Generator                              | Rohde & Schwarz               | SMT06                        | 100763           | SAR        | 2011/06/07 * 12                              |
| KPA-12             | RF Power Amplifier                            | MILMEGA                       | AS2560-50                    | 1018582          | SAR        | Pre Check                                    |
| KCPL-07            | Directional Coupler                           | Pulsar Microwave Corp.        | CCS30-B26                    | 0621             | SAR        | Pre Check                                    |
| KPM-06             | Power Meter                                   | Rohde & Schwarz               | NRVD                         | 101599           | SAR        | 2011/01/27 * 12                              |
| KIU-08             | Power sensor                                  | Rohde & Schwarz               | NRV-Z4                       | 100372           | SAR(Pf)    | 2010/09/03 * 12                              |
| KIU-09             | Power sensor                                  | Rohde & Schwarz               | NRV-Z4                       | 100371           | SAR(dipl)  | 2011/01/27 * 12                              |
| KAT10-P1           | Attenuator                                    | Weinschel                     | 24-10-34                     | BY5927           | SAR        | 2011/02/17 * 12                              |
| KAT20-P1           | Attenuator                                    | TME                           | SFA-01AXPJ                   | -                | SAR        | 2011/02/17 * 12                              |
| KPM-08             | Power meter                                   | Anritsu                       | ML2495A                      | 6K00003356       | Ant.pwr.   | 2010/09/22 * 12                              |
| KPSS-04            | Power sensor                                  | Anritsu                       | MA2411B                      | 012088           | Ant.pwr.   | 2010/09/22 * 12                              |
| KAT10-S3           | Attenuator                                    | Agilent                       | 8490D 010                    | 50924            | Ant.pwr.   | 2011/02/17 * 12                              |
| KCC-D23            | Microwave cable                               | Hirose Electric               | UFL-2LP-066J1-A-(200)        | -                | Ant.pwr.   | Pre Check                                    |
| SSA-04             | Spectrum Analyzer                             | Advantest                     | R3272                        | 101100994        | SAR(moni.) | 2010/12/09 * 12                              |
| KRU-01             | Ruler(300mm)                                  | Shinwa                        | 13134                        | -                | SAR        | 2011/03/28 * 12                              |
| KRU-02             | Ruler(150mm,L)                                | Shinwa                        | 12103                        | -                | SAR        | 2011/03/28 * 12                              |
| KRU-04             | Ruler(300mm)                                  | Shinwa                        | 13134                        | -                | SAR        | 2011/05/26 * 12                              |
| KRU-05             | Ruler(100x50mm,L)                             | Shinwa                        | 12101                        | -                | SAR        | 2011/05/26 * 12                              |
| KOS-13             | Digital thermometer                           | HANNA                         | Checktemp-2                  | KOS-13           | SAR        | 2011/01/19 * 12                              |
| KOS-14             | Thermo-Hygrometer data logger                 | SATO KEIRYOKI                 | SK-L200THII α / SK-LTHII α-2 | 015246/08169     | SAR        | 2011/01/19 * 12                              |
| SOS-11             | Humidity Indicator                            | A&D                           | AD-5681                      | 4063424          | SAR        | 2011/02/23 * 12                              |
| KSLM245-01         | Tissue simulation liquid (2450MHz,body)       | Schmid&Partner Engineering AG | SL AAM 245                   | -                | SAR        | (Daily check)<br>Target value ±5%            |
| KSLM580-02         | Tissue simulation liquid (5800MHz,body)       | Schmid&Partner Engineering AG | SL AAM 501 AB                | 110520-3         |            | (Daily check)<br>Target value ±5%            |
| No.7 Shielded room | SAR shielded room (2.76m(W)x3.76m(D)x2.4m(H)) | TDK                           | -                            | -                | SAR        | (Daily check)<br>Ambient noise:<br>< 12mW/kg |

The expiration date of calibration is the end of the expired month.

As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

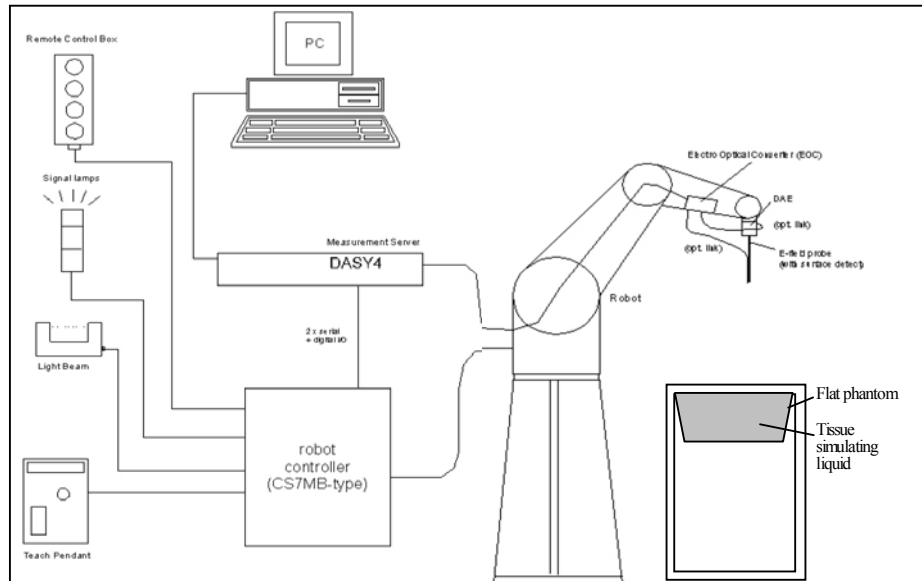
All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

[Test Item] SAR: Specific Absorption Rate, Ant.pwr: Antenna terminal conducted power

**Appendix 3-2: Dosimetry assessment setup**

These measurements were performed with the automated near-field scanning system DASY4 from Schmid & Partner Engineering AG (SPEAG). The system is based on a high precision robot (working range greater than 0.9 m), which positions the probes with a positional repeatability of better than +/- 0.02 mm. Special E- and H-field probes have been developed for measurements close to material discontinuity, the sensors of which are directly loaded with a Schottky diode and connected via highly resistive lines to the data acquisition unit. The SAR measurements were conducted with the dosimetry probes EX3DV4, SN: 3679 (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe has been calibrated according to the procedure described in [2] with accuracy of better than +/-10%. The spherical isotropy was evaluated with the procedure described in [3] and found to be better than +/-0.25 dB.

**Appendix 3-3: Configuration and peripherals**



The DASY4 system for performing compliance tests consist of the following items:

|    |   |
|----|---|
| 1  | A standard high precision 6-axis robot (Stäubli RX family) with controller and software.<br>An arm extension for accommodating the data acquisition electronics (DAE).  |
| 2  | A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.   |
| 3  | A data acquisition electronic (DAE), which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC. |
| 4  | The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to the DAE and for the analog signal from the optical surface detection.<br>The EOC is connected to the measurement server.   |
| 5  | The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.   |
| 6  | A probe alignment unit which improves the (absolute) accuracy of the probe positioning.   |
| 7  | A computer operating Windows XP.  |
| 8  | DASY4 software.   |
| 9  | Remote control with teaches pendant and additional circuitry for robot safety such as warning lamps, etc.   |
| 10 | The phantom.  |
| 11 | The device holder for EUT. (low-loss dielectric palette)  |
| 12 | Tissue simulating liquid mixed according to the given recipes.  |
| 13 | Validation dipole kits allowing to validate the proper functioning of the system.   |

**Appendix 3-4: System components**

**1) EX3DV4 Probe Specification**

**Construction:**

- Symmetrical design with triangular core.
- Built-in shielding against static charges.
- PEEK enclosure material (resistant to organic solvents, e.g., DGBE).

**Calibration (S/N 3679):**

Basic broad band calibration in air.

Conversion Factors(Head and Body): 2450, 5200, 5300, 5500, 5600, 5800MHz

**Frequency:**

10 MHz to > 6GHz, Linearity:  $\pm 0.2$  dB (30MHz to 6GHz)

**Directivity:**

$\pm 0.3$  dB in HSL (rotation around probe axis)

$\pm 0.5$  dB in tissue material (rotation normal to probe axis)

**Dynamic Range:**

$10\mu\text{W/g}$  to  $> 100\text{ mW/g}$ ; Linearity:  $\pm 0.2$  dB (noise: typically  $< 1\mu\text{W/g}$ )

**Dimensions:**

Overall length: 330mm (Tip: 20mm)

Tip diameter: 2.5mm (Body: 12mm)

Typical distance from probe tip to dipole centers: 1mm

**Application:**

High precision dosimetric measurement in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6GHz with precision of better 30%.



EX3DV4 E-field Probe



**2) Phantom (Flat type)**

**Construction:**

A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom position and measurement grids by manually teaching three points with the robot.

**Shell Thickness:**

Bottom plate:  $2 \pm 0.2$ mm

**Dimensions:**

Bottom elliptical: 600x400mm, Depth: 190mm

**Filling Volume:**

Approx. 30 liters



ELI4.0 flat phantom

**3) Device Holder**

For this measurement, the urethane foam was used as device holder.

In combination with the Twin SAM Phantom V4.0/V4.0c or ELI4, the Mounting Device enables the rotation of the mounted transmitter device in spherical coordinates. Transmitter devices can be easily and accurately positioned.

The low-loss dielectric urethane foam was used for the mounting section of device holder.

Device holder



**Appendix 3-5: Test system specification****RX60L Robot**

- Number of Axes : 6
- Reach : 800mm
- Control Unit : CS7M
- Manufacture : Stäubli Unimation Corp. Robot Model: RX60
- Payload : 1.6 kg
- Repeatability :  $\pm 0.025$ mm
- Programming Language : V+

**DASY4 Measurement server**

- Features : 166MHz low power Pentium MMX.  
32MB chipdisk and 64MB RAM Serial link to DAE (with watchdog supervision) 16 Bit A/D converter for surface detection system. Two serial links to robot (one for real-time communication which is supervised by watchdog) Ethernet link to PC (with watchdog supervision).  
Emergency stop relay for robot safety chain. Two expansion slots for future applications.
- Manufacture : Schmid & Partner Engineering AG

**Data Acquisition Electronic (DAE)**

- Features : Signal amplifier, multiplexer, A/D converter and control logic.  
Serial optical link for communication with DASY4 embedded system (fully remote controlled).  
2 step probe touch detector for mechanical surface detection and emergency robot stop (not in -R version)
- Measurement Range : 1 $\mu$ V to > 200mV (16bit resolution and two range settings: 4mV, 400mV)
- Input Offset voltage : < 1 $\mu$ V (with auto zero)
- Input Resistance : 200M $\Omega$
- Dimension : 60 $\times$ 60 $\times$ 68mm
- Battery Power : > 10hr of operation (with two 9V battery)
- Manufacture : Schmid & Partner Engineering AG

**Software**

- Item : Dosimetric Assessment System DASY4
- Software version No. : DASY4, V4.7 B80
- Manufacture / Origin : Schmid & Partner Engineering AG

**E-Field Probe**

- Model : EX3DV4 (sn: 3679)
- Frequency : 10MHz to 6GHz
- Manufacture : Schmid & Partner Engineering AG
- Construction : Symmetrical design with triangular core
- Linearity :  $\pm 0.2$ dB (30MHz to 6GHz)

**Phantom**

- Type : ELI 4.0 oval flat phantom
- Shell Thickness : Bottom plate: 2  $\pm$  0.2mm
- Manufacture : Schmid & Partner Engineering AG
- Shell Material : Fiberglass
- Dimensions : Bottom elliptical: 600 $\times$ 400mm, Depth: 190mm

**Appendix 3-6: Simulated tissue composition**

| Ingredient   | Mixture (%)                     |
|--|---------------------------------|
|  | Body 2450MHz (type: SL AAM 245) |
| Water 52-  | 75 %                            |
| C <sub>8</sub> H <sub>18</sub> O <sub>3</sub> (Diethylene glycol monobutyl ether (DGBE)) 25-48 | %                               |
| NaCl<  | 1.0%                            |
| Manufacture Schm   | id&Partner Engineering AG       |

| Ingredient                      | Mixture (%)                        |
|---------------------------------|------------------------------------|
|                                 | Body 5800MHz (type: SL AAM 501 AB) |
| Water 60-                       | 80 %                               |
| Esters, Emulsifiers, Inhibitors | 20-40 %                            |
| Sodium salt                     | 0-1.5 %                            |
| Manufacture Schm                | id&Partner Engineering AG          |

**Appendix 3-7: Simulated tissue parameter confirmation**

The dielectric parameters were checked prior to assessment using the 85070E dielectric probe kit. The dielectric parameters measurement is reported in each correspondent section.

| Dielectric parameter measurement results |             |               |                |                |       |                   |            |   |              |          |                             |           |                             |           |    |
|--|-------------|---------------|----------------|----------------|-------|-------------------|------------|---|--------------|----------|-----------------------------|-----------|-----------------------------|-----------|----|
| Date                                     | Freq. [MHz] | Ambient       |                | Liq.T.[deg.C.] |       | Liquid Depth [mm] | Parameters | Target value                            |              | Measured | Deviation for #1 (Std. [%]) | Limit [%] | Deviation for #2 (Cal. [%]) | Limit [%] |    |
|  |             | Temp [deg.C.] | Humidity [%RH] | Before         | After |                   |            | #1:Std. (*1)                            | #2:Cal. (*2) |          |                             |           |                             |           |    |
| July 19, 2011                            | 5200        | 23            | 9              | 62             | 24.0  | 24.1              | (150)      | Relative permittivity: $\epsilon_r$ [-] | 49.01        | 47.2     | 49.90                       | +1.8      | ±5                          | +5.7      | ±6 |
|  |             |               |                |                |       |                   |            | Conductivity: $\sigma$ [S/m]            | 5.299        | 5.37     | 5.402                       | +1.9      | ±5                          | +0.6      | ±6 |
| July 20, 2011                            | 5800        | 23            | 8              | 62             | 23.6  | 23.6              | (149)      | Relative permittivity: $\epsilon_r$ [-] | 48.2         | 46.2     | 48.71                       | +1.1      | ±5                          | +5.4      | ±6 |
|  |             |               |                |                |       |                   |            | Conductivity: $\sigma$ [S/m]            | 6.00         | 6.16     | 6.290                       | +4.8      | ±5                          | +2.1      | ±6 |
| July 21, 2011                            | 2450        | 23            | 5              | 60             | 23.5  | 23.5              | (158)      | Relative permittivity: $\epsilon_r$ [-] | 52.7         | 52.5     | 50.15                       | -4.8      | ±5                          | -4.5      | ±6 |
|  |             |               |                |                |       |                   |            | Conductivity: $\sigma$ [S/m]            | 1.95         | 1.96     | 1.935                       | -0.8      | ±5                          | -1.3      | ±6 |

\*1. The target value is a parameter defined in OET65, Supplement C.

\*2 For 5200MHz and 5800MHz, the target value and limit are parameter defined in the calibration data sheet of D5GHzV2 (sn:1070) dipole calibrated by Schmid & Partner Engineering AG (Certification No. D5GHzV2-1070\_Feb11, the data sheet was filed in this report.).

For 2450MHz, the target value and limit are parameter defined in the calibration data sheet of D2450V2 (sn:822) dipole calibrated by Schmid & Partner Engineering AG (Certification No. D2450V2-822\_Jan11, the data sheet was filed in this report.).

**\*. Decision on Simulated Tissues of 5200MHz and SAR tested frequencies of 5GHz band.**

In the current standards (e.g., IEEE 1528, OET 65 Supplement C), the dielectric parameters suggested for head and body tissue simulating liquid are given at 3000MHz and 5800MHz. As an intermediate solution, dielectric parameters for the frequencies between 5000 to 5800 MHz were obtained using linear interpolation. Furthermore, dielectric parameters for the frequencies above 5800MHz were obtained using linear extrapolation. Therefore the dielectric parameters of 5200MHz (the frequency for the validation) and other SAR tested frequencies in listed below were decided as following.

Standard and interpolated dielectric parameters for head and body tissue simulating liquid in the frequency range 3000 to 5825MHz.

| f (MHz) | Head Tissue  |                | Body Tissue  |                | Reference    |
|---------|--------------|----------------|--------------|----------------|--------------|
|         | $\epsilon_r$ | $\sigma$ [S/m] | $\epsilon_r$ | $\sigma$ [S/m] |              |
| 3000    | 38.5         | 2.40           | 52.0         | 2.73           | Standard     |
| 5800    | 35.3         | 5.27           | 48.2         | 6.00           | Standard     |
| 5190    | -            | -              | 49.03        | 5.288          | Interpolated |
| 5200    | -            | -              | 49.01        | 5.299          | Interpolated |
| 5230    | -            | -              | 48.97        | 5.334          | Interpolated |
| 5240    | -            | -              | 48.96        | 5.346          | Interpolated |
| 5260    | -            | -              | 48.93        | 5.369          | Interpolated |
| 5270    | -            | -              | 48.92        | 5.381          | Interpolated |
| 5310    | -            | -              | 48.87        | 5.428          | Interpolated |
| 5320    | -            | -              | 48.85        | 5.439          | Interpolated |

| f (MHz) | Head Tissue  |                | Body Tissue  |                | Reference    |
|---------|--------------|----------------|--------------|----------------|--------------|
|         | $\epsilon_r$ | $\sigma$ [S/m] | $\epsilon_r$ | $\sigma$ [S/m] |              |
| 5755    | -            | -              | 48.26        | 5.947          | Interpolated |
| 5765    | -            | -              | 48.25        | 5.959          | Interpolated |
| 5785    | -            | -              | 48.22        | 5.982          | Interpolated |
| 5795    | -            | -              | 48.21        | 5.994          | Interpolated |
| 5825    | -            | -              | 48.17        | 6.029          | Extrapolated |

**Appendix 3-8: System validation data**

Prior to the SAR assessment of EUT, the system validation kit was used to test whether the system was operating within its specifications of ±10%. The validation results are in the table below.

| System validation results |             |             |               |                |                       |        |       |                   |  |                                      |                  |  |                        |               |           |
|---------------------------|-------------|-------------|---------------|----------------|-----------------------|--------|-------|-------------------|--|--------------------------------------|------------------|--|------------------------|---------------|-----------|
| Date                      | Freq. [MHz] | Liquid Type | Ambient       |                | Liquid Temp. [deg.C.] |        |       | Liquid Depth [mm] | Permittivity measured $\epsilon_r$ [-] | Conductivity measured $\sigma$ [S/m] | Power drift [dB] | System dipole validation target & measured |                        |               |           |
|                           |             |             | Temp [deg.C.] | Humidity [%RH] | Check                 | Before | After |                   |  |                                      |                  | SAR Ig [W/kg] (at 1W)                      |                        | Deviation [%] | Limit [%] |
|                           |             |             |               |                |                       |        |       |                   |  |                                      |                  | Target value                               | Measured (*6)          |               |           |
| July 19, 2011             | 5200        | B ody2      | 5.0           | 52             | 24.0                  | 23.6   | 23.6  | 150               | 49.9                                   | 5.4                                  | 0.029            | 77.1(*4)                                   | 80.1 (8.01 (at 100mW)) | +3.9          | ±10       |
| July 20, 2011             | 5800        | B ody2      | 4.7           | 60             | 23.6                  | 23.5   | 23.4  | 149               | 48.7                                   | 6.29                                 | 0.073            | 72.4(*4)                                   | 71.5 (7.15 (at 100mW)) | -1.2          | ±10       |
| July 21, 2011             | 2450        | B ody2      | 3.6           | 60             | 23.5                  | 23.4   | 23.3  | 158               | 50.1                                   | 1.94                                 | 0.000            | 50.9(*5)                                   | 49.2 (12.3 (at 250mW)) | -3.3          | ±10       |

Note: Refer to Appendix 3-9 Validation measurement data for the above result representation in plot data.

\*4. The target value is a parameter defined in the calibration data sheet of D5GHzV2(sn:1070) dipole calibrated by Schmid & Partner Engineering AG (Certification No. D5GHzV2-1070\_Feb11, the data sheet was filed in this report.).

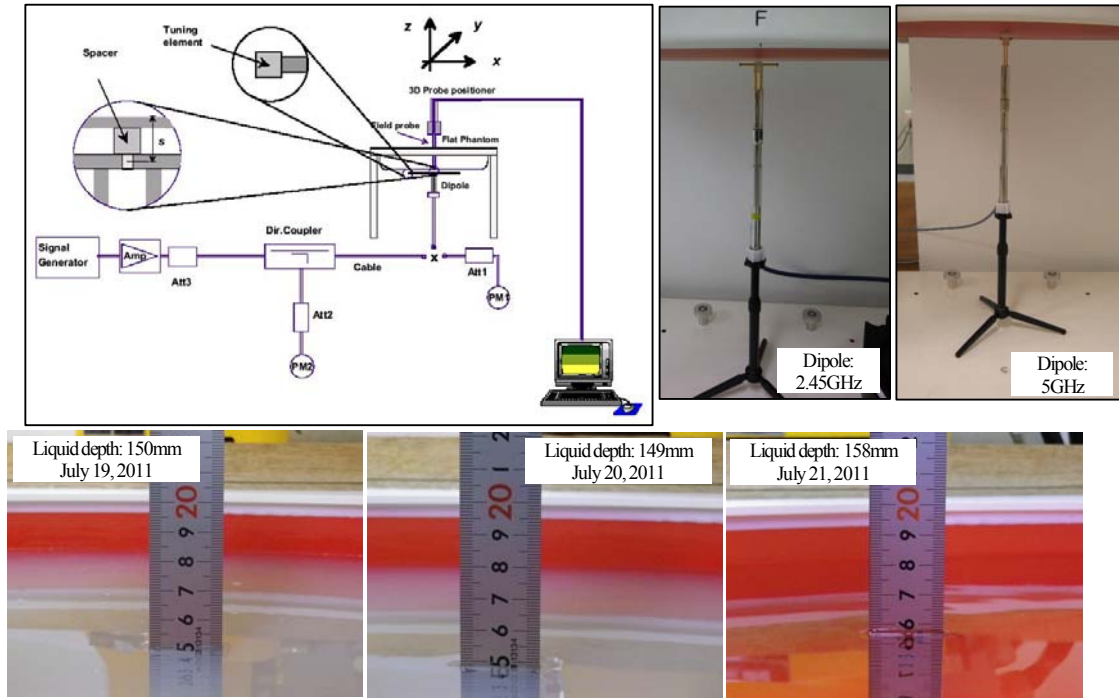
\*5. The target value is a parameter defined in the calibration data sheet of D2450V2 (sn:822) dipole calibrated by Schmid & Partner Engineering AG (Certification No. D2450V2-822\_Jan11, the data sheet was filed in this report.).

\*. We performed the system validation based on FCC requirement, "The 1-g or 10-g SAR values measured using the required tissue dielectric parameters should be within 10% of manufacturer calibrated dipole SAR values. However these manufacturer calibrated dipole target SAR values should be substantially similar to those defined in IEEE Standard 1528." and FCC permits "SAR system verification with the actual liquid used for EUT's SAR measurement, should be the default operating procedures." We confirmed the this dipole manufacture's validation data for head is within 5% against IEEE Standard 1528 (manufacture's cal.: 54.4W/kg (+3.8% vs. std.: 52.4W/kg). so we can only use Body liquid validation data for our system verification

\*6. The measurement value was normalized to 1W forward power.



**Appendix 3-8: System validation data (cont'd)**



**Test setup for the system performance check**

**Appendix 3-9: Validation measurement data**

**(July 19, 2011) 5200MHz system check (Body) / Forward conducted power: 100mW**

**DUT: Dipole 5GHz; Type: D5GHzV2; Serial: 1070**

**Communication System: CW; Frequency: 5200 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (24.0deg.C):  $f = 5200 \text{ MHz}$ ;  $\sigma = 5.4 \text{ S/m}$ ;  $\epsilon_r = 49.9$ ;  $\rho = 1000 \text{ kg/m}^3$**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(4.1, 4.1, 4.1); Calibrated: 2011/05/19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn626; Calibrated: 2011/02/10
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**Area Scan: 60x60, stp10 (61x61x1):** Measurement grid:  $dx=10\text{mm}$ ,  $dy=10\text{mm}$ ; Maximum value of SAR (interpolated) = 16.9 mW/g

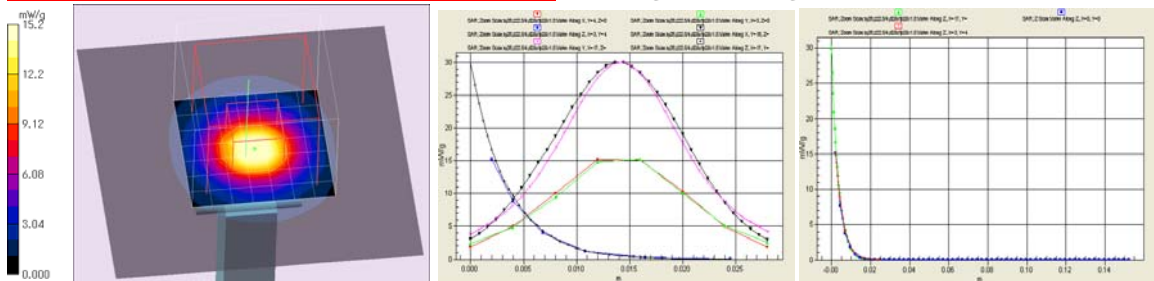
**Z Scan (1x1x61):** Measurement grid:  $dx=20\text{mm}$ ,  $dy=20\text{mm}$ ,  $dz=2.5\text{mm}$ ; Maximum value of SAR (measured) = 15.1 mW/g

**Zoom Scan: xy28,z22.5/d2&stp2&r1.5 (8x8x6)/Cube 0:** Measurement grid:  $dx=4\text{mm}$ ,  $dy=4\text{mm}$ ,  $dz=2\text{mm}$  ;

Reference Value = 60.9 V/m; Power Drift = 0.029 dB, Maximum value of SAR (measured) = 15.2 mW/g

**Peak SAR (extrapolated) = 30.0 W/kg (-3.5%, vs.speag-cal.=31.1W/kg)**

**SAR(1 g) = 8.01 mW/g (+3.9%, vs.speag-cal.=7.71mW/g); SAR(10 g) = 2.28 mW/g**



**Additional information:**

- \*.position: distance of dipole to phantom: 8mm (10mm to liquid), liquid depth: 150mm
- \*.ambient: 25.0 deg.C / 52 %RH; liquid temperature: (before) 23.6 deg.C / (after) 23.6 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 19, 2011

**Appendix 3-9: Validation measurement data (cont'd)**

**(July 20, 2011) 5800MHz system check (Body) / Forward conducted power: 100mW**

**DUT: Dipole 5GHz; Type: D5GHzV2; Serial: 1070**

**Communication System: CW; Frequency: 5800 MHz; Crest Factor: 1.0**

**Medium: MSL5800; Medium parameters used (23.6 deg.C.): f = 5800 MHz;  $\sigma = 6.29$  S/m;  $\epsilon_r = 48.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(3.94, 3.94, 3.94); Calibrated: 2011/05/19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn626; Calibrated: 2011/02/10
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**Area Scan:60x60,stp10 (61x61x1):** Measurement grid: dx=10mm, dy=10mm; Maximum value of SAR (interpolated) = 15.9 mW/g

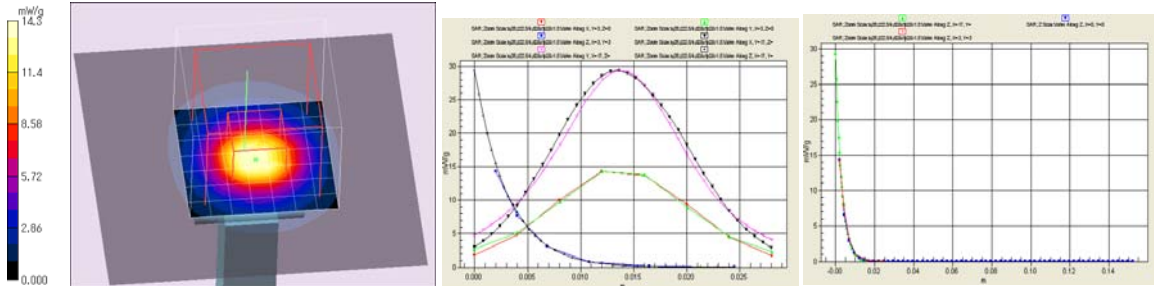
**Z Scan (1x1x61):** Measurement grid: dx=20mm, dy=20mm, dz=2.5mm; Maximum value of SAR (measured) = 14.3 mW/g

**Zoom Scan:xy28,z22.5/4,d2&stp2&r1.5 (8x8x6)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm;

Reference Value = 55.0 V/m; Power Drift = 0.073 dB, Maximum value of SAR (measured) = 14.3 mW/g

**Peak SAR (extrapolated) = 29.4 W/kg (-10.9%, vs.speag-cal.=33.0W/kg)**

**SAR(1 g) = 7.15 mW/g (-1.2%, vs.speag-cal.=7.24mW/g); SAR(10 g) = 2.02 mW/g**



**Additional information:**

- \*.position: distance of dipole to phantom: 8mm (10mm to liquid), liquid depth: 149mm
- \*.ambient: 24.7 deg.C / 60%RH; liquid temperature: (before) 23.5 deg.C / (after) 23.4 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 20, 2011

**(July 21, 2011) 2450MHz system check (Body) / Forward conducted power: 250mW**

**DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 822**

**Communication System: CW; Frequency: 2450 MHz; Crest Factor: 1.0**

**Medium: M2450; Medium parameters used: f = 2450 MHz;  $\sigma = 1.94$  S/m;  $\epsilon_r = 50.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>**

DASY4 Configuration:

- Probe: EX3DV4 - SN3679; ConvF(7.34, 7.34, 7.34); Calibrated: 2011/05/19
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn626; Calibrated: 2011/02/10
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1059; Phantom section: Flat Section
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

**Area Scan:60x60,stp15 (41x41x1):** Measurement grid: dx=15mm, dy=15mm; Maximum value of SAR (interpolated) = 18.7 mW/g

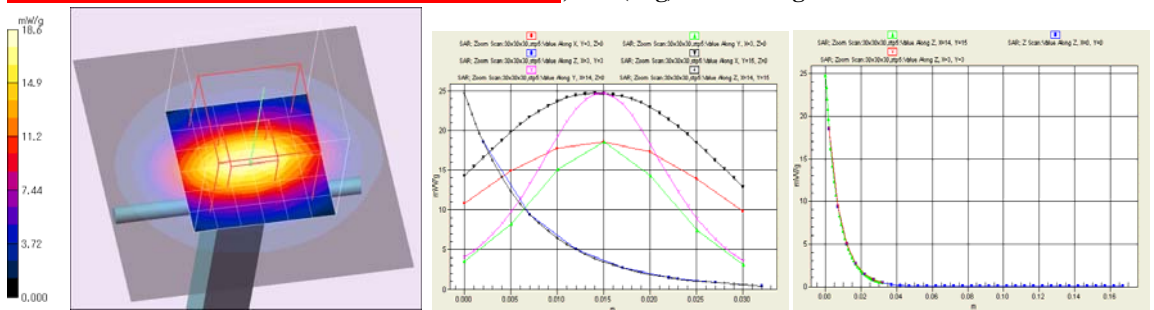
**Z Scan (1x1x34):** Measurement grid: dx=20mm, dy=20mm, dz=5mm; Maximum value of SAR (measured) = 18.5 mW/g

**Zoom Scan:30x30x30,stp5 (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm;

Reference Value = 99.4 V/m; Power Drift = 0.000 dB, Maximum value of SAR (measured) = 18.6 mW/g

**Peak SAR (extrapolated) = 24.7 W/kg (-8.5%, vs.speag-cal.=27.0W/kg)**

**SAR(1 g) = 12.3 mW/g (-3.3%, vs.speag-cal.=12.73mW/g); SAR(10 g) = 5.77 mW/g**



**Additional information:**

- \*.position: distance of dipole to phantom: 8mm (10mm to liquid), liquid depth: 158mm
- \*.ambient: 23.6 deg.C / 60%RH; liquid temperature: (before) 23.4 deg.C / (after) 23.3 deg.C
- \*.white cubic: zoom scan area, red big cubic: SAR(10g), red small cubic: SAR(1g)
- \*.Tested by: Hiroshi Naka / Tested place: No.7 shielded room., Date tested: July 21, 2011

**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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**Appendix 3-10: Validation uncertainty**

| Uncertainty of system check setup                                | Under 3GHz |         |
|--|------------|---------|
|  | 1g SAR     | 10g SAR |
| combined measurement uncertainty of the measurement system (k=1) | ± 9.9%     | ± 9.6%  |
| expanded uncertainty (k=2)                                       | ± 19.9%    | ± 19.3% |

| Error Description                                  | Uncertainty Value | Probability distribution | Divisor | ci (1g) | ci (10g) | ui (1g) (std. uncertainty) | ui (10g) (std. uncertainty) | vi, veff |
|--|-------------------|--------------------------|---------|---------|----------|----------------------------|-----------------------------|----------|
| <b>A Measurement System</b>                        |                   |                          |         |         |          |                            |                             |          |
| 1 Probe calibration                                | ±5.9 %            | Normal                   | 1       | 1       | 1        | ±5.9 %                     | ±5.9 %                      | ∞        |
| 2 Axial isotropy                                   | ±4.7 %            | Rectangular              | √3      | 0.7     | 0.7      | ±1.9 %                     | ±1.9 %                      | ∞        |
| 3 Hemispherical isotropy (flat, <5°)               | ±2.6 %            | Rectangular              | √3      | 0.7     | 0.7      | ±1.1 %                     | ±1.1 %                      | ∞        |
| 4 Boundary effects                                 | ±1.0 %            | Rectangular              | √3      | 1       | 1        | ±1.2 %                     | ±1.2 %                      | ∞        |
| 5 Probe linearity                                  | ±4.7 %            | Rectangular              | √3      | 1       | 1        | ±2.7 %                     | ±2.7 %                      | ∞        |
| 6 System detection limit                           | ±1.0 %            | Rectangular              | √3      | 1       | 1        | ±0.6 %                     | ±0.6 %                      | ∞        |
| 7 System readout electronics                       | ±0.3 %            | Normal                   | 1       | 1       | 1        | ±0.3 %                     | ±0.3 %                      | ∞        |
| 8 Response time                                    | ±0.0 %            | Rectangular              | √3      | 1       | 1        | ±0.0 %                     | ±0.0 %                      | ∞        |
| 9 Integration time                                 | ±0.0 %            | Rectangular              | √3      | 1       | 1        | ±0.0 %                     | ±0.0 %                      | ∞        |
| 10 RF ambient - noise                              | ±3.0 %            | Rectangular              | √3      | 1       | 1        | ±1.7 %                     | ±1.7 %                      | ∞        |
| 11 RF ambient - reflections                        | ±3.0 %            | Rectangular              | √3      | 1       | 1        | ±1.7 %                     | ±1.7 %                      | ∞        |
| 12 Probe positioner mechanical tolerance           | ±0.4 %            | Rectangular              | √3      | 1       | 1        | ±0.2 %                     | ±0.2 %                      | ∞        |
| 13 Probe positioning with respect to phantom shell | ±2.9 %            | Rectangular              | √3      | 1       | 1        | ±1.7 %                     | ±1.7 %                      | ∞        |
| 14 Max.SAR evaluation                              | ±1.0 %            | Rectangular              | √3      | 1       | 1        | ±0.6 %                     | ±0.6 %                      | ∞        |
| <b>B Dipole</b>                                    |                   |                          |         |         |          |                            |                             |          |
| 15 Dipole axis to liquid distance                  | ±2.0 %            | Rectangular              | √3      | 1       | 1        | ±1.2 %                     | ±1.2 %                      | ∞        |
| 16 Input power and SAR drift measurement           | ±4.7 %            | Rectangular              | √3      | 1       | 1        | ±4.7 %                     | ±4.7 %                      | 3        |
| <b>C Phantom and Setup</b>                         |                   |                          |         |         |          |                            |                             |          |
| 17 Phantom uncertainty                             | ±4.0 %            | Rectangular              | √3      | 1       | 1        | ±2.3 %                     | ±2.3 %                      | ∞        |
| 18 Liquid conductivity (target)                    | ±5.0 %            | Rectangular              | √3      | 0.64    | 0.43     | ±1.8 %                     | ±1.2 %                      | ∞        |
| 19 Liquid conductivity (meas.)                     | ±2.9 %            | Normal                   | 1       | 0.64    | 0.43     | ±1.9 %                     | ±1.2 %                      | 3        |
| 20 Liquid permittivity (target)                    | ±5.0 %            | Rectangular              | √3      | 0.6     | 0.49     | ±1.7 %                     | ±1.4 %                      | ∞        |
| 21 Liquid permittivity (meas.)                     | ±2.9 %            | Normal                   | 1       | 0.6     | 0.49     | ±1.7 %                     | ±1.4 %                      | 3        |
| Combined Standard Uncertainty                      |                   |                          |         |         |          | ±9.9 %                     | ±9.6 %                      | 88       |
| Expanded Uncertainty (k=2)                         |                   |                          |         |         |          | ±19.9 %                    | ±19.3 %                     |          |

\*. This measurement uncertainty budget is suggested by IEEE 1528 and determined by Schmid & Partner Engineering AG.[6]

| Uncertainty of SAR measurement system /Validation                | 5~6 GHz |         |
|--|---------|---------|
|  | 1g SAR  | 10g SAR |
| combined measurement uncertainty of the measurement system (k=1) | ± 12.1% | ± 11.9% |
| expanded uncertainty (k=2)                                       | ± 24.2% | ± 23.7% |

| Error Description                                  | Uncertainty Value | Probability distribution | Divisor | ci (1g) | ci (10g) | ui (1g) (std. uncertainty) | ui (10g) (std. uncertainty) | vi, veff |
|--|-------------------|--------------------------|---------|---------|----------|----------------------------|-----------------------------|----------|
| <b>A Measurement System</b>                        |                   |                          |         |         |          |                            |                             |          |
| 1 Probe calibration                                | ±6.8 %            | Normal                   | 1       | 1       | 1        | ±6.8 %                     | ±6.8 %                      | ∞        |
| 2 Axial isotropy ±4                                | ±4.7 %            | Rectangular              | √3      | 0.7     | 0.7      | ±1.9 %                     | ±1.9 %                      | ∞        |
| 3 Hemispherical isotropy (*flat phantom, <5°)      | ±2.6 %            | Rectangular              | √3      | 0.7     | 0.7      | ±1.1 %                     | ±1.1 %                      | ∞        |
| 4 Boundary effects                                 | ±2.0 %            | Rectangular              | √3      | 1       | 1        | ±1.2 %                     | ±1.2 %                      | ∞        |
| 5 Probe linearity                                  | ±4.7 %            | Rectangular              | √3      | 1       | 1        | ±2.7 %                     | ±2.7 %                      | ∞        |
| 6 System detection limit                           | ±1.0 %            | Rectangular              | √3      | 1       | 1        | ±0.6 %                     | ±0.6 %                      | ∞        |
| 7 System readout electronics                       | ±0.3 %            | Normal                   | 1       | 1       | 1        | ±0.3 %                     | ±0.3 %                      | ∞        |
| 8 Response time                                    | ±0.8 %            | Rectangular              | √3      | 1       | 1        | ±0 %                       | ±0 %                        | ∞        |
| 9 Integration time                                 | ±2.6 %            | Rectangular              | √3      | 1       | 1        | ±0 %                       | ±0 %                        | ∞        |
| 10 RF ambient - noise                              | ±3.0 %            | Rectangular              | √3      | 1       | 1        | ±1.7 %                     | ±1.7 %                      | ∞        |
| 11 RF ambient - reflections                        | ±3.0 %            | Rectangular              | √3      | 1       | 1        | ±1.7 %                     | ±1.7 %                      | ∞        |
| 12 Probe positioner mechanical tolerance           | ±0.8 %            | Rectangular              | √3      | 1       | 1        | ±0.5 %                     | ±0.5 %                      | ∞        |
| 13 Probe positioning with respect to phantom shell | ±9.9 %            | Rectangular              | √3      | 1       | 1        | ±5.7 %                     | ±5.7 %                      | ∞        |
| 14 Max.SAR evaluation                              | ±4.0 %            | Rectangular              | √3      | 1       | 1        | ±2.3 %                     | ±2.3 %                      | ∞        |
| <b>B Dipole</b>                                    |                   |                          |         |         |          |                            |                             |          |
| 15 Dipole axis to liquid distance                  | ±2.0 %            | Rectangular              | √3      | 1       | 1        | ±1.2 %                     | ±1.2 %                      | ∞        |
| 16 Input power and SAR drift measurement           | ±4.7 %            | Normal                   | 1       | 1       | 1        | ±4.7 %                     | ±4.7 %                      | ∞        |
| <b>C Phantom and Setup</b>                         |                   |                          |         |         |          |                            |                             |          |
| 17 Phantom uncertainty                             | ±4.0 %            | Rectangular              | √3      | 1       | 1        | ±2.3 %                     | ±2.3 %                      | ∞        |
| 18 Liquid conductivity (target)                    | ±5.0 %            | Rectangular              | √3      | 0.64    | 0.43     | ±1.8 %                     | ±1.2 %                      | ∞        |
| 19 Liquid conductivity (meas.)                     | ±3.0 %            | Normal                   | 1       | 0.64    | 0.43     | ±1.9 %                     | ±1.3 %                      | ∞        |
| 20 Liquid permittivity (target)                    | ±5.0 %            | Rectangular              | √3      | 0.6     | 0.49     | ±1.7 %                     | ±1.4 %                      | ∞        |
| 21 Liquid permittivity (meas.)                     | ±3.2 %            | Normal                   | 1       | 0.6     | 0.49     | ±1.9 %                     | ±1.6 %                      | ∞        |
| Combined Standard Uncertainty                      |                   |                          |         |         |          | ±12.1 %                    | ±11.9 %                     | ∞        |
| Expanded Uncertainty (k=2)                         |                   |                          |         |         |          | ±24.2 %                    | ±23.7 %                     |          |

\*. This measurement uncertainty budget is suggested by Schmid & Partner Engineering AG. [6]

**Appendix 3-11: Calibration certificate: Dipole (D2450V2) (sn:822)**

**Calibration Laboratory of  
Schmid & Partner  
Engineering AG**  
Zeughausstrasse 43, 8004 Zurich, Switzerland



**S** Schweizerischer Kalibrierdienst  
**C** Service suisse d'étalonnage  
**S** Servizio svizzero di taratura  
**S** Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)  
The Swiss Accreditation Service is one of the signatories to the EA  
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **UL Japan (PTT)**

Certificate No: **D2450V2-822\_Jan11**

**CALIBRATION CERTIFICATE**

Object: **D2450V2 - SN: 822**

Calibration procedure(s): **QA CAL-05.v8  
Calibration procedure for dipole validation kits**

Calibration date: **January 05, 2011**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards           | ID #               | Cal Date (Certificate No.)        | Scheduled Calibration  |
|-----------------------------|--------------------|-----------------------------------|------------------------|
| Power meter EPM-442A        | GB37480704         | 06-Oct-10 (No. 217-01266)         | Oct-11                 |
| Power sensor HP 8481A       | US37292783         | 06-Oct-10 (No. 217-01266)         | Oct-11                 |
| Reference 20 dB Attenuator  | SN: 5086 (20g)     | 30-Mar-10 (No. 217-01158)         | Mar-11                 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 30-Mar-10 (No. 217-01162)         | Mar-11                 |
| Reference Probe ES3DV3      | SN: 3205           | 30-Apr-10 (No. ES3-3205_Apr10)    | Apr-11                 |
| DAE4                        | SN: 601            | 10-Jun-10 (No. DAE4-601_Jun10)    | Jun-11                 |
| Secondary Standards         | ID #               | Check Date (in house)             | Scheduled Check        |
| Power sensor HP 8481A       | MY41092317         | 18-Oct-02 (in house check Oct-09) | In house check: Oct-11 |
| RF generator R&S SMT-06     | 100005             | 4-Aug-99 (in house check Oct-09)  | In house check: Oct-11 |
| Network Analyzer HP 8753E   | US37390585 S4206   | 18-Oct-01 (in house check Oct-10) | In house check: Oct-11 |

Calibrated by: **Jeton Kastrati** (Name), **Laboratory Technician** (Function),  (Signature)

Approved by: **Katja Pokovic** (Name), **Technical Manager** (Function),  (Signature)

Issued: January 5, 2011

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

**Appendix 3-11: Calibration certificate: Dipole (D2450V2) (sn:822) (cont'd)**

**Calibration Laboratory of**  
**Schmid & Partner**  
 Engineering AG  
 Zeughausstrasse 43, 8004 Zurich, Switzerland



**S** Schweizerischer Kalibrierdienst  
**C** Service suisse d'étalonnage  
**S** Servizio svizzero di taratura  
**S** Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)  
 The Swiss Accreditation Service is one of the signatories to the EA  
 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108****Glossary:**

TSL tissue simulating liquid  
 ConvF sensitivity in TSL / NORM x,y,z  
 N/A not applicable or not measured

**Calibration is Performed According to the Following Standards:**

- IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

**Additional Documentation:**

- DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

- Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:* SAR measured at the stated antenna input power.
- SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

**Appendix 3-11: Calibration certificate: Dipole (D2450V2) (sn:822) (cont'd)****Measurement Conditions**

DASY system configuration, as far as not given on page 1.

|                                     |                           |             |
|-------------------------------------|---------------------------|-------------|
| <b>DASY Version</b>                 | DASY5                     | V52.6       |
| <b>Extrapolation</b>                | Advanced Extrapolation    |             |
| <b>Phantom</b>                      | Modular Flat Phantom V5.0 |             |
| <b>Distance Dipole Center - TSL</b> | 10 mm                     | with Spacer |
| <b>Zoom Scan Resolution</b>         | dx, dy, dz = 5 mm         |             |
| <b>Frequency</b>                    | 2450 MHz $\pm$ 1 MHz      |             |

**Head TSL parameters**

The following parameters and calculations were applied.

|   | Temperature         | Permittivity   | Conductivity         |
|---|---------------------|----------------|----------------------|
| <b>Nominal Head TSL parameters</b>      | 22.0 °C             | 39.2           | 1.80 mho/m           |
| <b>Measured Head TSL parameters</b>     | (22.0 $\pm$ 0.2) °C | 37.9 $\pm$ 6 % | 1.74 mho/m $\pm$ 6 % |
| <b>Head TSL temperature during test</b> | (21.0 $\pm$ 0.2) °C | ----           | ----                 |

**SAR result with Head TSL**

| <b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b> | Condition          |  |
|---|--------------------|--|
| SAR measured  | 250 mW input power | 13.5 mW / g                                      |
| SAR normalized  | normalized to 1W   | 54.0 mW / g                                      |
| SAR for nominal Head TSL parameters                         | normalized to 1W   | <b>54.4 mW / g <math>\pm</math> 17.0 % (k=2)</b> |

| <b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b> | condition          |  |
|---|--------------------|--|
| SAR measured  | 250 mW input power | 6.33 mW / g                                      |
| SAR normalized  | normalized to 1W   | 25.3 mW / g                                      |
| SAR for nominal Head TSL parameters                           | normalized to 1W   | <b>25.3 mW / g <math>\pm</math> 16.5 % (k=2)</b> |

**Appendix 3-11: Calibration certificate: Dipole (D2450V2) (sn:822) (cont'd)**

**Body TSL parameters**

The following parameters and calculations were applied.

|                                  | Temperature     | Permittivity | Conductivity     |
|----------------------------------|-----------------|--------------|------------------|
| Nominal Body TSL parameters      | 22.0 °C         | 52.7         | 1.95 mho/m       |
| Measured Body TSL parameters     | (22.0 ± 0.2) °C | 52.5 ± 6 %   | 1.96 mho/m ± 6 % |
| Body TSL temperature during test | (21.0 ± 0.2) °C | ----         | ----             |

**SAR result with Body TSL**

| SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL | Condition          |                            |
|---|--------------------|----------------------------|
| SAR measured  | 250 mW input power | 12.8 mW / g                |
| SAR normalized  | normalized to 1W   | 51.2 mW / g                |
| SAR for nominal Body TSL parameters                   | normalized to 1W   | 50.9 mW / g ± 17.0 % (k=2) |

| SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL | condition          |                            |
|---|--------------------|----------------------------|
| SAR measured  | 250 mW input power | 5.91 mW / g                |
| SAR normalized  | normalized to 1W   | 23.6 mW / g                |
| SAR for nominal Body TSL parameters                     | normalized to 1W   | 23.6 mW / g ± 16.5 % (k=2) |

**Appendix 3-11: Calibration certificate: Dipole (D2450V2) (sn:822) (cont'd)****Appendix****Antenna Parameters with Head TSL**

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 54.3 $\Omega$ + 3.6 j $\Omega$ |
| Return Loss                          | - 25.4 dB                      |

**Antenna Parameters with Body TSL**

|                                      |                                |
|--------------------------------------|--------------------------------|
| Impedance, transformed to feed point | 49.7 $\Omega$ + 5.2 j $\Omega$ |
| Return Loss                          | - 25.6 dB                      |

**General Antenna Parameters and Design**

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.159 ns |
|----------------------------------|----------|

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

**Additional EUT Data**

|                 |                   |
|-----------------|-------------------|
| Manufactured by | SPEAG             |
| Manufactured on | December 11, 2008 |



**Appendix 3-11: Calibration certificate: Dipole (D2450V2) (sn:822) (cont'd)**

**DASY5 Validation Report for Head TSL**

Date/Time: 04.01.2011 14:12:13

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:822**

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: HSL U12 BB

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.75$  mho/m;  $\epsilon_r = 38.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.53, 4.53, 4.53); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY52, V52.6 Build (401)
- Postprocessing SW: SEMCAD X, V14.4.2 Build (2595)

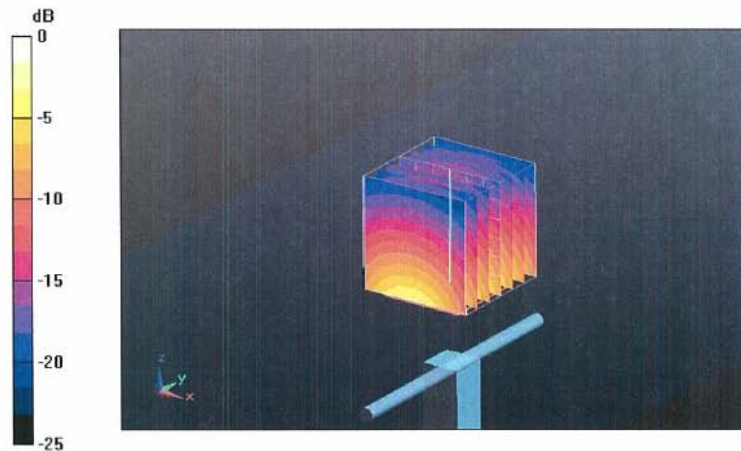
**Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement**  
grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 103.5 V/m; Power Drift = 0.039 dB

Peak SAR (extrapolated) = 27.7 W/kg

**SAR(1 g) = 13.5 mW/g; SAR(10 g) = 6.33 mW/g**

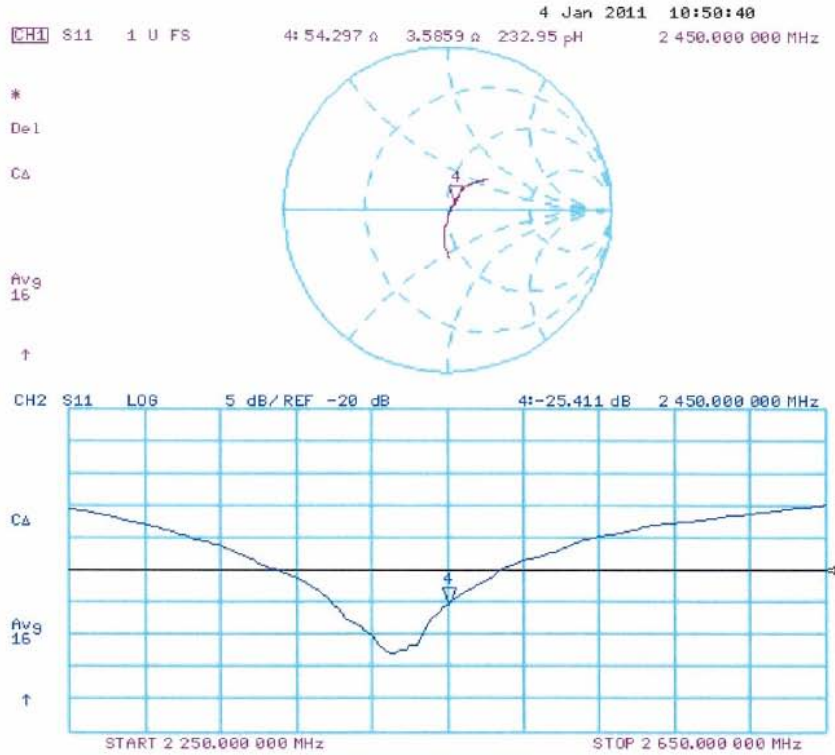
Maximum value of SAR (measured) = 17.4 mW/g



0 dB = 17.4mW/g

Appendix 3-11: Calibration certificate: Dipole (D2450V2) (sn:822) (cont'd)

Impedance Measurement Plot for Head TSL



**Appendix 3-11: Calibration certificate: Dipole (D2450V2) (sn:822) (cont'd)**

**DASY5 Validation Report for Body**

Date/Time: 05.01.2011 12:40:53

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:822**

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: MSL U12 BB

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.97$  mho/m;  $\epsilon_r = 52.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.31, 4.31, 4.31); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY52, V52.6 Build (401)
- Postprocessing SW: SEMCAD X, V14.4.2 Build (2595)

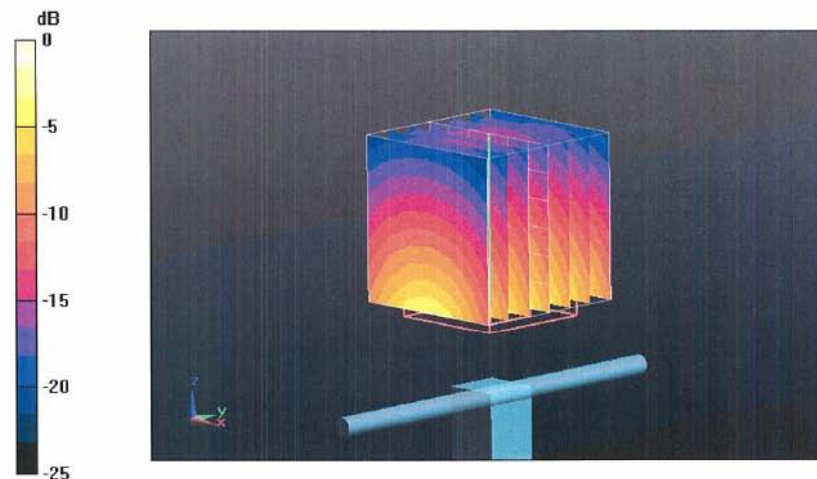
**Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 95.7 V/m; Power Drift = -0.024 dB

Peak SAR (extrapolated) = 27.1 W/kg

**SAR(1 g) = 12.8 mW/g; SAR(10 g) = 5.91 mW/g**

Maximum value of SAR (measured) = 16.9 mW/g



0 dB = 16.9mW/g

**Appendix 3-11: Calibration certificate: Dipole (D2450V2) (sn:822) (cont'd)**

**Impedance Measurement Plot for Body TSL**

