

**APPENDIX 3 : System Validation****1. System validation result****System validation result for 2450MHz****Simulated Tissue Liquid Parameter confirmation**

| DIELECTRIC PARAMETERS MEASUREMENT RESULTS |                       |                       |             |                      |                          |                  |                |          |               |           |
|-------------------------------------------|-----------------------|-----------------------|-------------|----------------------|--------------------------|------------------|----------------|----------|---------------|-----------|
| Date                                      | Ambient Temp. [deg.c] | Relative Humidity [%] | Liquid type | Liquid Temp. [deg.c] | Measured Frequency [MHz] | Parameters       | Target Value*1 | Measured | Deviation [%] | Limit [%] |
| 3-Sep                                     | 24.5                  | 57                    | HSL 2450    | 24.3                 | 2450                     | $\epsilon_r$     | 39.2           | 38.2     | -2.6          | +/-5      |
|                                           |                       |                       |             |                      |                          | $\sigma$ [mho/m] | 1.80           | 1.87     | 3.9           | +/-5      |

$\epsilon_r$ : Relative Permittivity /  $\sigma$ : Conductivity

\*1 The Target value is a parameter defined in FCC OET 65.

**System validation result**

| SYSTEM VALIDATION |                 |                     |  |               |               |           |
|-------------------|-----------------|---------------------|--|---------------|---------------|-----------|
| Date              | Frequency [MHz] | SAR 1g [W/kg]       |  |               | Deviation [%] | Limit [%] |
|                   |                 | Forward Power 250mW |  | Conversion 1W |               |           |
|                   |                 | Measured            |  | Calculation   |               |           |
| 3-Sep             | 2450.00         | 13.80               |  | 55.20         | 52.40         | +/-10     |

\*1 The target value is the parameter defined in IEEE 1528.

**2450MHz System Validation DATA / Dipole2.4GHz / Forward Conducted Power : 250mW**

Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.87$  mho/m;  $\epsilon_r = 38.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

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

DASY5 Configuration

Probe: EX3DV3 - SN3507; ConvF(7.88, 7.88, 7.88); Calibrated: 2011/03/16

Sensor-Surface: 2mm (Mechanical Surface Detection)

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

Phantom: SAM with CRP; Type: SAM;

Measurement SW: DASY52, Version 52.6 (1);

**System Performance Check MSL/System Performance Check/Area Scan (61x61x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 21.727 mW/g

**System Performance Check MSL/System Performance Check/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 108.2 V/m; Power Drift = -0.0047 dB

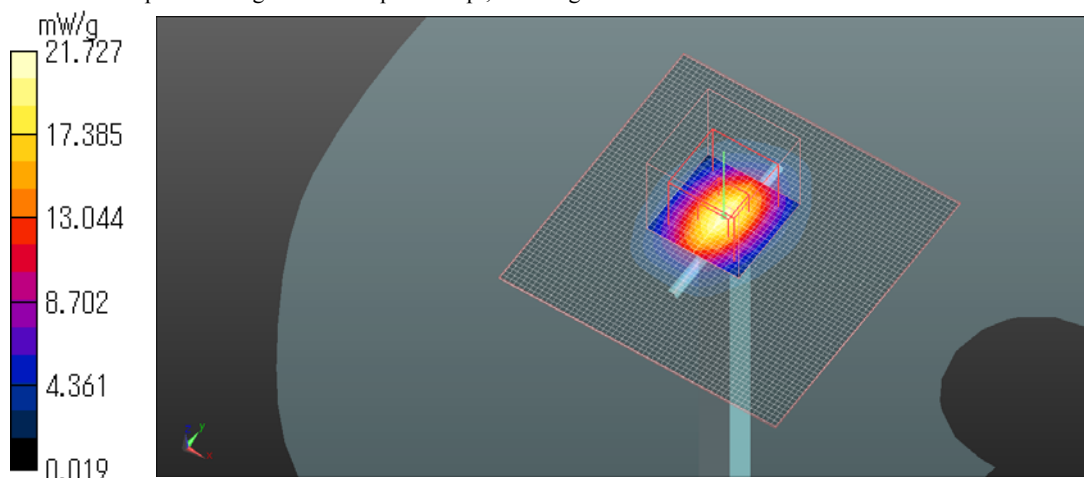
Peak SAR (extrapolated) = 29.582 W/kg

**SAR(1 g) = 13.8 mW/g; SAR(10 g) = 6.29 mW/g**

Maximum value of SAR (measured) = 21.511 mW/g

Date: 2011/09/02

Ambient Temp. : 24.5 degree.C. Liquid Temp.; 24.3 degree.C.



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**System validation result Body 2450****Simulated Tissue Liquid Parameter confirmation**

| <b>DIELECTRIC PARAMETERS MEASUREMENT RESULTS</b> |                          |                          |             |                         |                             |                  |                |          |                  |              |
|--------------------------------------------------|--------------------------|--------------------------|-------------|-------------------------|-----------------------------|------------------|----------------|----------|------------------|--------------|
| Date                                             | Ambient Temp.<br>[deg.c] | Relative Humidity<br>[%] | Liquid type | Liquid Temp.<br>[deg.c] | Measured Frequency<br>[MHz] | Parameters       | Target Value*1 | Measured | Deviation<br>[%] | Limit<br>[%] |
| 2-Sep                                            | 24.6                     | 53                       | MSL<br>2450 | 24.2                    | 2450                        | $\epsilon_r$     | 52.7           | 51.4     | -2.5             | +/-5         |
|                                                  |                          |                          |             |                         |                             | $\sigma$ [mho/m] | 1.95           | 2.01     | 3.1              | +/-5         |

 $\epsilon_r$ : Relative Permittivity /  $\sigma$ : Conductivity

\*1 The Target value is a parameter defined in FCC OET 65 .

| <b>DIELECTRIC PARAMETERS MEASUREMENT RESULTS</b> |                          |                          |             |                         |                             |                  |                |          |                  |                |
|--------------------------------------------------|--------------------------|--------------------------|-------------|-------------------------|-----------------------------|------------------|----------------|----------|------------------|----------------|
| Date                                             | Ambient Temp.<br>[deg.c] | Relative Humidity<br>[%] | Liquid type | Liquid Temp.<br>[deg.c] | Measured Frequency<br>[MHz] | Parameters       | Target Value*2 | Measured | Deviation<br>[%] | Limit*3<br>[%] |
| 2-Sep                                            | 24.6                     | 53                       | MSL<br>2450 | 24.2                    | 2450                        | $\epsilon_r$     | 52.5           | 51.4     | -2.1             | +/-6           |
|                                                  |                          |                          |             |                         |                             | $\sigma$ [mho/m] | 1.95           | 2.01     | 3.1              | +/-6           |

 $\epsilon_r$ : Relative Permittivity /  $\sigma$ : Conductivity

\*2 The target value is the calibrated dipole Body TSL parameters. (D2450V2 SN:713, Measured Body TSL parameters)

\*3 The limit is for deviation provided by manufacture.

**System validation result**

| SYSTEM VALIDATION |                    |                     |               |              |                  |              |
|-------------------|--------------------|---------------------|---------------|--------------|------------------|--------------|
| Date              | Frequency<br>[MHz] | SAR 1g [W/kg]       |               |              | Deviation<br>[%] | Limit<br>[%] |
|                   |                    | Forward Power 250mW | Conversion 1W | Target 1W *1 |                  |              |
|                   |                    | Measured            | Calculation   |              |                  |              |
| 2-Sep             | 2450.00            | 12.90               | 51.60         | 51.90        | 0.6              | +/-10        |

\*1 The target value is the parameter defined in 1g SAR (normalizes to 1W) in manufacturer calibrated dipole (D2450V2 SN:713)

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**Body 2450MHz System Validation DATA / Dipole2.4GHz / Forward Conducted Power : 250mW**

Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 2.01$  mho/m;  $\epsilon_r = 51.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

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

DASY5 Configuration

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

Sensor-Surface: 2mm (Mechanical Surface Detection)

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

Phantom: SAM with CRP; Type: SAM;

Measurement SW: DASY52, Version 52.6 (1);

**System Performance Check MSL/System Performance Check/Area Scan (61x61x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 19.322 mW/g

**System Performance Check MSL/System Performance Check/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 100.1 V/m; Power Drift = -0.0052 dB

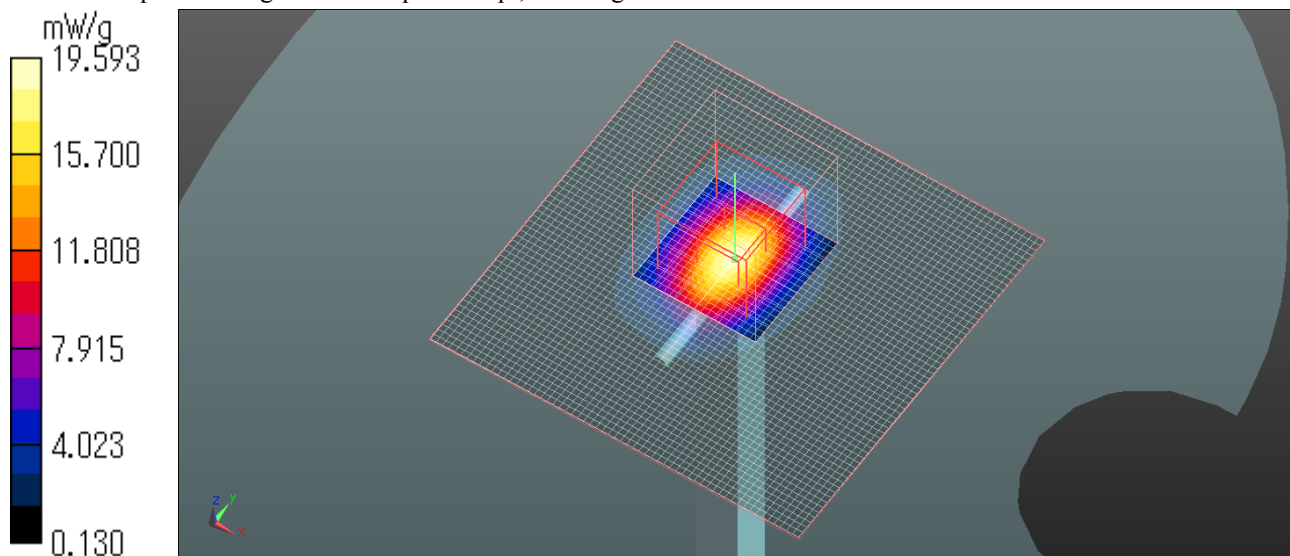
Peak SAR (extrapolated) = 26.884 W/kg

**SAR(1 g) = 12.9 mW/g; SAR(10 g) = 5.92 mW/g**

Maximum value of SAR (measured) = 19.593 mW/g

Date: 2011/09/02

Ambient Temp. : 24.6 degree.C. Liquid Temp.; 24.2 degree.C.



## 2. Validation uncertainty

The uncertainty budget has been determined for the DASY5 measurement system according to the SPEAG documents[2] and is given in the following Table.

| Error Description                    | Uncertainty value $\pm$ % | Probability distribution | divisor    | (ci) 1g | Standard Uncertainty (1g)     | vi or veff |
|--------------------------------------|---------------------------|--------------------------|------------|---------|-------------------------------|------------|
| <b>Measurement System</b>            |                           |                          |            |         |                               |            |
| Probe calibration                    | $\pm 6.55$                | Normal                   | 1          | 1       | $\pm 6.55$                    | $\infty$   |
| Axial isotropy of the probe          | $\pm 4.7$                 | Rectangular              | $\sqrt{3}$ | 1       | $\pm 2.7$                     | $\infty$   |
| Spherical isotropy of the probe      | $\pm 9.6$                 | Rectangular              | 0          | 0       | 0                             | $\infty$   |
| Boundary effects                     | $\pm 1.0$                 | Rectangular              | $\sqrt{3}$ | 1       | $\pm 1.2$                     | $\infty$   |
| Probe linearity                      | $\pm 4.7$                 | Rectangular              | $\sqrt{3}$ | 1       | $\pm 2.7$                     | $\infty$   |
| Detection limit                      | $\pm 1.0$                 | Rectangular              | $\sqrt{3}$ | 1       | $\pm 0.6$                     | $\infty$   |
| Readout electronics                  | $\pm 0.3$                 | Normal                   | 1          | 1       | $\pm 0.3$                     | $\infty$   |
| Response time                        | 0                         | Rectangular              | $\sqrt{3}$ | 1       | 0                             | $\infty$   |
| Integration time                     | 0                         | Rectangular              | $\sqrt{3}$ | 1       | 0                             | $\infty$   |
| RF ambient Noise                     | $\pm 1.0$                 | Rectangular              | $\sqrt{3}$ | 1       | $\pm 1.7$                     | $\infty$   |
| RF ambient Reflections               | $\pm 1.0$                 | Rectangular              | $\sqrt{3}$ | 1       | $\pm 1.7$                     | $\infty$   |
| Probe Positioner                     | $\pm 0.8$                 | Rectangular              | $\sqrt{3}$ | 1       | $\pm 0.5$                     | $\infty$   |
| Probe positioning                    | $\pm 6.7$                 | Rectangular              | $\sqrt{3}$ | 1       | $\pm 3.9$                     | $\infty$   |
| Algorithms for Max.SAR Eval.         | $\pm 2.0$                 | Rectangular              | $\sqrt{3}$ | 1       | $\pm 1.2$                     | $\infty$   |
| <b>Dipole</b>                        |                           |                          |            |         |                               |            |
| Deviation of exp.dipole              | $\pm 5.5$                 | Rectangular              | $\sqrt{3}$ | 1       | $\pm 3.2$                     | $\infty$   |
| Dipole Axis to Liquid Distance       | $\pm 2.0$                 | Rectangular              | $\sqrt{3}$ | 1       | $\pm 1.2$                     | $\infty$   |
| Input power and SAR drift meas.      | $\pm 3.4$                 | Rectangular              | $\sqrt{3}$ | 1       | $\pm 2.7$                     | $\infty$   |
| <b>Phantom and Setup</b>             |                           |                          |            |         |                               |            |
| Phantom uncertainty                  | $\pm 4.0$                 | Rectangular              | $\sqrt{3}$ | 1       | $\pm 2.3$                     | $\infty$   |
| SAR correction                       | $\pm 1.9$                 | Rectangular              | $\sqrt{3}$ | 1       | $\pm 1.1$                     |            |
| Liquid conductivity (target)         | $\pm 5.0$                 | Rectangular              | $\sqrt{3}$ | 0.78    | $\pm 2.3$                     | $\infty$   |
| Liquid conductivity (meas.)          | -2.6                      | Rectangular              | 1          | 0.26    | $\pm 0.68$                    | $\infty$   |
| Liquid permittivity (target)         | $\pm 5.0$                 | Rectangular              | $\sqrt{3}$ | 0.78    | $\pm 2.3$                     | $\infty$   |
| Liquid permittivity (meas.)          | +3.9                      | Rectangular              | 1          | 0.23    | $\pm 0.99$                    | $\infty$   |
|                                      |                           |                          |            |         |                               |            |
| <b>Combined Standard Uncertainty</b> |                           |                          |            |         | <b><math>\pm 10.93</math></b> |            |
| <b>Expanded Uncertainty (k=2)</b>    |                           |                          |            |         | <b><math>\pm 21.9</math></b>  |            |

## 3. System Validation Dipole (D2450V2,S/N:713)

**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: **D2450V2-713\_Sep10****CALIBRATION CERTIFICATE**Object **D2450V2 - SN: 713**
 Calibration procedure(s) **QA CAL-05.v7**  
**Calibration procedure for dipole validation kits**
Calibration date: **September 06, 2010**

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 ( $22 \pm 3$ )°C and humidity < 70%.

Calibration Equipment used (M&amp;TE critical for calibration)

| Primary Standards           | ID #               | Cal Date (Certificate No.)        | Scheduled Calibration  |
|-----------------------------|--------------------|-----------------------------------|------------------------|
| Power meter EPM-442A        | GB37480704         | 06-Oct-09 (No. 217-01086)         | Oct-10                 |
| Power sensor HP 8481A       | US37292783         | 08-Oct-09 (No. 217-01086)         | Oct-10                 |
| 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 S4208   | 18-Oct-01 (in house check Oct-09) | In house check: Oct-10 |

|                |                                |                                          |               |
|----------------|--------------------------------|------------------------------------------|---------------|
| Calibrated by: | Name<br><b>Claudio Leubler</b> | Function<br><b>Laboratory Technician</b> | Signature<br> |
| Approved by:   | Name<br><b>Katja Pokovic</b>   | Function<br><b>Technical Manager</b>     | Signature<br> |

Issued: September 8, 2010

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

Certificate No: D2450V2-713\_Sep10

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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.

**Measurement Conditions**

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

|                              |                           |             |
|------------------------------|---------------------------|-------------|
| DASY Version                 | DASY5                     | V52.2       |
| Extrapolation                | Advanced Extrapolation    |             |
| Phantom                      | Modular Flat Phantom V5.0 |             |
| Distance Dipole Center - TSL | 10 mm                     | with Spacer |
| Zoom Scan Resolution         | dx, dy, dz = 5 mm         |             |
| Frequency                    | 2450 MHz $\pm$ 1 MHz      |             |

**Head TSL parameters**

The following parameters and calculations were applied.

|                                  | Temperature         | Permittivity   | Conductivity         |
|----------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters      | 22.0 °C             | 39.2           | 1.80 mho/m           |
| Measured Head TSL parameters     | (22.0 $\pm$ 0.2) °C | 39.0 $\pm$ 6 % | 1.74 mho/m $\pm$ 6 % |
| Head TSL temperature during test | (21.8 $\pm$ 0.2) °C | ----           | ----                 |

**SAR result with Head TSL**

| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL | Condition          |                                |
|-------------------------------------------------------|--------------------|--------------------------------|
| SAR measured                                          | 250 mW input power | 12.9 mW / g                    |
| SAR normalized                                        | normalized to 1W   | 51.6 mW / g                    |
| SAR for nominal Head TSL parameters                   | normalized to 1W   | 52.4 mW / g $\pm$ 17.0 % (k=2) |

| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | condition          |                                |
|---------------------------------------------------------|--------------------|--------------------------------|
| SAR measured                                            | 250 mW input power | 6.08 mW / g                    |
| SAR normalized                                          | normalized to 1W   | 24.3 mW / g                    |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 24.4 mW / g $\pm$ 16.5 % (k=2) |

**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 %   | 1.95 mho/m ± 6 % |
| Body TSL temperature during test | (22.0 ± 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 | 13.0 mW / g                       |
| SAR normalized                                        | normalized to 1W   | 52.0 mW / g                       |
| SAR for nominal Body TSL parameters                   | normalized to 1W   | <b>51.9 mW / g ± 17.0 % (k=2)</b> |

| SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL | condition          |                                   |
|---------------------------------------------------------|--------------------|-----------------------------------|
| SAR measured                                            | 250 mW input power | 6.04 mW / g                       |
| SAR normalized                                          | normalized to 1W   | 24.2 mW / g                       |
| SAR for nominal Body TSL parameters                     | normalized to 1W   | <b>24.1 mW / g ± 16.5 % (k=2)</b> |

**Appendix****Antenna Parameters with Head TSL**

|                                      |                               |
|--------------------------------------|-------------------------------|
| Impedance, transformed to feed point | $53.0\ \Omega + 1.0\ j\Omega$ |
| Return Loss                          | - 30.4 dB                     |

**Antenna Parameters with Body TSL**

|                                      |                               |
|--------------------------------------|-------------------------------|
| Impedance, transformed to feed point | $49.6\ \Omega + 2.1\ j\Omega$ |
| Return Loss                          | - 33.5 dB                     |

**General Antenna Parameters and Design**

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.160 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 | July 05, 2002 |

## DASY5 Validation Report for Head TSL

Date/Time: 03.09.2010 15:07:26

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:713**

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

Medium: HSL U12 BB

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.74$  mho/m;  $\epsilon_r = 39$ ;  $\rho = 1000$  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, V52.2 Build 0, Version 52.2.0 (163)
- Postprocessing SW: SEMCAD X, V14.2 Build 2, Version 14.2.2 (1685)

**Head/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:**

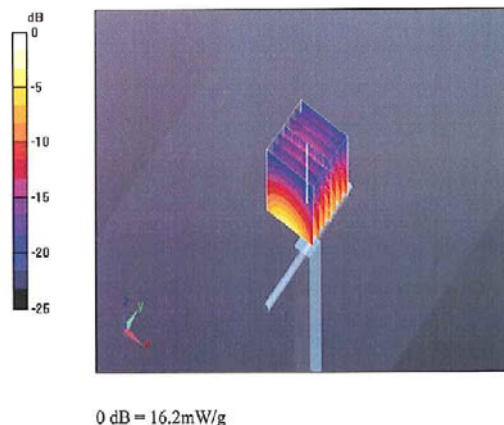
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 100.4 V/m; Power Drift = 0.050 dB

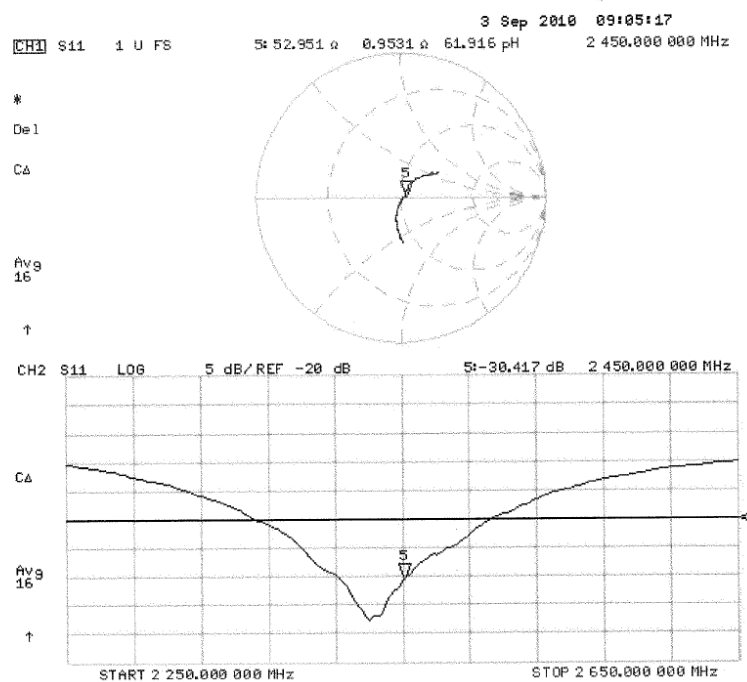
Peak SAR (extrapolated) = 26.3 W/kg

**SAR(1 g) = 12.9 mW/g; SAR(10 g) = 6.08 mW/g**

Maximum value of SAR (measured) = 16.2 mW/g



# Impedance Measurement Plot for Head TSL



## Validation Report for Body

Date/Time: 06.09.2010 13:42:13

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:713**

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

Medium: MSL U12 BB

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.95$  mho/m;  $\epsilon_r = 52.5$ ;  $\rho = 1000$  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, V52.2 Build 0, Version 52.2.0 (163)
- Postprocessing SW: SEMCAD X, V14.2 Build 2, Version 14.2.2 (1685)

**Body/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:**

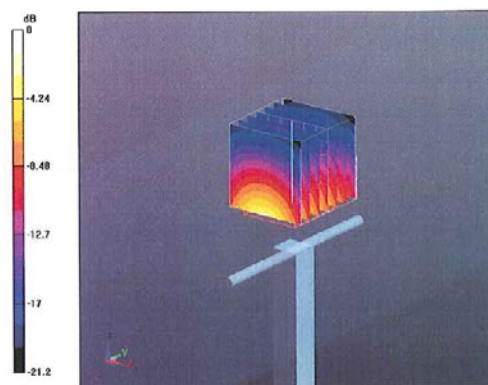
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 95.7 V/m; Power Drift = 0.030 dB

Peak SAR (extrapolated) = 27 W/kg

**SAR(1 g) = 13 mW/g; SAR(10 g) = 6.04 mW/g**

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



0 dB = 16.9mW/g

# Impedance Measurement Plot for Body TSL

