

## SAR Compliance Test Report

|                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                         |                                                                                                                               |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Test report no.:                                 | SD_SAR_0850_01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Date of report:         | 2008-12-15                                                                                                                    |
| Template version:                                | 11.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Number of pages:        | 74                                                                                                                            |
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| Measurements made by:                            | Jose Gomez                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                         |                                                                                                                               |
| Tested device:                                   | RM-455                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                         |                                                                                                                               |
| FCC ID:                                          | QMNRM-455                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | IC:                     | 661X-RM455                                                                                                                    |
| Supplement reports:                              | SD_SAR_0850_02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |                                                                                                                               |
| Testing has been carried out in accordance with: | <b>47CFR §2.1093</b><br>Radiofrequency Radiation Exposure Evaluation: Portable Devices<br><b>FCC OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01)</b><br>Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields<br><b>RSS-102</b><br>Evaluation Procedure for Mobile and Portable Radio Transmitters with Respect to Health Canada's Safety Code 6 for Exposure of Humans to Radio Frequency Fields<br><b>IEEE 1528 - 2003</b><br>IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Technique |                         |                                                                                                                               |
| Documentation:                                   | The documentation of the testing performed on the tested devices is archived for 15 years at TCC San Diego.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                         |                                                                                                                               |
| Test results:                                    | <b>The tested device complies with the requirements in respect of all parameters subject to the test.</b> The test results and statements relate only to the items tested. The test report shall not be reproduced except in full, without written approval of the laboratory.                                                                                                                                                                                                                                                                                                                                                                                                |                         |                                                                                                                               |

### Date and signatures:



For the contents:

**Jose Gomez**  
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2008-12-29

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## 1. SUMMARY OF SAR TEST REPORT

### 1.1 Test Details

|                                        |                                                          |
|----------------------------------------|----------------------------------------------------------|
| Period of test                         | 2008-11-17 to 2008-12-11                                 |
| SN, HW and SW numbers of tested device | SN: 004401/10/307247/2, HW: 0310, SW: bl4.05, DUT: 03107 |
| Batteries used in testing              | BP-6MT, DUT: 3109, 3111, 3112, 3113                      |
| Headsets used in testing               | HS-9, DUT: 3110                                          |
| Other accessories used in testing      | -                                                        |
| State of sample                        | Prototype unit                                           |
| Notes                                  | -                                                        |

### 1.2 Maximum Results

The maximum measured SAR values for Head configuration and Body Worn configuration are given in section 1.2.1 and 1.2.2 respectively. The device conforms to the requirements of the standard(s) when the maximum measured SAR value is less than or equal to the limit.

#### 1.2.1 Head Configuration

| Mode            | Ch / f (MHz)    | Radiated power | Position        | Measured SAR value (1g avg) | Scaled* SAR value (1g avg) | SAR limit (1g avg) | Result        |
|-----------------|-----------------|----------------|-----------------|-----------------------------|----------------------------|--------------------|---------------|
| 2-slot GPRS850  | 251/<br>848.8   | 28.5dBm ERP    | Right,<br>Cheek | 0.739W/kg                   | <b>0.83W/kg</b>            | 1.6<br>W/kg        | <b>PASSED</b> |
| WCDMA850        | 4233/<br>846.6  | 20.1dBm ERP    | Right,<br>Cheek | 0.576W/kg                   | <b>0.65W/kg</b>            | 1.6<br>W/kg        | <b>PASSED</b> |
| 2-slot GPRS1900 | 810/<br>1909.8  | 26.6dBm EIRP   | Left,<br>Cheek  | 0.655W/kg                   | <b>0.73W/kg</b>            | 1.6<br>W/kg        | <b>PASSED</b> |
| WCDMA1900       | 9400/<br>1880.0 | 22.6dBm EIRP   | Left,<br>Cheek  | 0.917W/kg                   | <b>1.03W/kg</b>            | 1.6<br>W/kg        | <b>PASSED</b> |

### 1.2.2 Body Worn Configuration

| Mode            | Ch / f (MHz)    | Radiated power | Separation distance | Measured SAR value (1g avg) | Scaled* SAR value (1g avg) | SAR limit (1g avg) | Result        |
|-----------------|-----------------|----------------|---------------------|-----------------------------|----------------------------|--------------------|---------------|
| 2-slot GPRS850  | 251/<br>848.8   | 26.2dBm ERP    | 1.5cm               | 0.758W/kg                   | <b>0.85W/kg</b>            | 1.6 W/kg           | <b>PASSED</b> |
| WCDMA850        | 4175/<br>835.0  | 19.6dBm ERP    | 1.5cm               | 0.485W/kg                   | <b>0.54W/kg</b>            | 1.6 W/kg           | <b>PASSED</b> |
| 2-slot GPRS1900 | 810/<br>1909.8  | 28.5dBm EIRP   | 1.5cm               | 0.424W/kg                   | <b>0.47W/kg</b>            | 1.6 W/kg           | <b>PASSED</b> |
| WCDMA1900       | 9538/<br>1907.6 | 22.2dBm EIRP   | 1.5cm               | 0.717W/kg                   | <b>0.80W/kg</b>            | 1.6 W/kg           | <b>PASSED</b> |

\*SAR values are scaled up by 12% to cover measurement drift.

### 1.2.3 Maximum Drift

| Maximum drift covered by<br>12% scaling up of the SAR values | Maximum drift during measurements |
|--------------------------------------------------------------|-----------------------------------|
| 0.5dB                                                        | 0.47dB                            |

### 1.2.4 Measurement Uncertainty

|                                |         |
|--------------------------------|---------|
| Expanded Uncertainty (k=2) 95% | ± 25.8% |
|--------------------------------|---------|

## 2. DESCRIPTION OF THE DEVICE UNDER TEST

|                      |                                   |
|----------------------|-----------------------------------|
| Device category      | Portable                          |
| Exposure environment | General population / uncontrolled |

| Modes of Operation | Bands                          | Modulation Mode | Duty Cycle | Transmitter Frequency Range (MHz) |
|--------------------|--------------------------------|-----------------|------------|-----------------------------------|
| GSM                | 850<br>1900                    | GMSK            | 1/8        | 824 – 849<br>1850 – 1910          |
| GPRS               | 850<br>1900                    | GMSK            | 1/8 to 2/8 | 824 – 849<br>1850 – 1910          |
| EGPRS              | 850<br>1900                    | GMSK / 8PSK     | 1/8 to 2/8 | 824 – 849<br>1850 – 1910          |
| WCDMA              | 850 (Band V)<br>1900 (Band II) |                 | 1          | 826 – 847<br>1852 – 1908          |
| BT                 | 2450                           | GFSK            | 1          | 2402 – 2480                       |

Outside of USA and Canada, the transmitter of the device is capable of operating also in GSM/GPRS/EGPRS900, GSM/GPRS/EGPRS1800 and WCDMA2100 bands which are not part of this filing.

This device has Push to Talk capability for use at the ear. Therefore, SAR for multi slot GPRS mode was evaluated against the head profile of the phantom.

## 2.1 Description of the Antenna

The device has internal antennas.

## 3. TEST CONDITIONS

### 3.1 Temperature and Humidity

|                           |              |
|---------------------------|--------------|
| Ambient temperature (°C): | 20.9 to 21.9 |
| Ambient humidity (RH %):  | 24 to 33     |

### 3.2 Test Signal, Frequencies and Output Power

The device was put into operation by using a call tester. Communication between the device and the call tester was established by air link.

The device output power was set to maximum power level for all tests; a fully charged battery was used for every test sequence.

The transmission mode of the device in all WCDMA tests was configured to 12.2kbps RMC with all TPC bits set as "1".

In all operating bands the measurements were performed on lowest, middle and highest channels.

The radiated output power of the device was measured by a separate test laboratory on the same unit(s) as used for SAR testing.

## 4. DESCRIPTION OF THE TEST EQUIPMENT

### 4.1 Measurement System and Components

The measurements were performed using an automated near-field scanning system, DASY4, manufactured by Schmid & Partner Engineering AG (SPEAG) in Switzerland. The SAR extrapolation algorithm used in all measurements was the 'advanced extrapolation' algorithm.

The following table lists calibration dates of SPEAG components:

| Test Equipment                 | Serial Number | Calibration interval | Calibration expiry |
|--------------------------------|---------------|----------------------|--------------------|
| DAE 4                          | 860           | 12 months            | 2009-06            |
| E-field Probe ET3DV6           | 1516          | 12 months            | 2009-10            |
| Dipole Validation Kit, D835V2  | 486           | 24 months            | 2010-10            |
| Dipole Validation Kit, D1900V2 | 509           | 24 months            | 2010-06            |
| DASY Software                  | Version 4.7   | -                    | -                  |

Additional test equipment used in testing:

| Test Equipment          | Model              | Serial Number   | Calibration interval | Calibration expiry |
|-------------------------|--------------------|-----------------|----------------------|--------------------|
| Signal Generator        | HP E4432B          | US 40053677     | 24 months            | 2009-10            |
| Signal Generator        | HP E4432B          | US 40052231     | 24 months            | 2010-06            |
| Amplifier               | Milmega AS0822-8L  | 1004832         | -                    | -                  |
| Amplifier               | Milmega AS0822-20L | 1009777         | -                    | -                  |
| Power Meter             | Agilent E4419B     | GB40202155      | 12 months            | 2009-03            |
| Power Meter             | Agilent E4417A     | GB41290918      | 12 months            | 2009-01            |
| Power Sensor            | Agilent E9301A     | US39211902      | 12 months            | 2009-07            |
| Power Sensor            | Agilent E9327A     | US40440896      | 12 months            | 2009-04            |
| Call Tester             | CMU200             | US11-40052403-1 | -                    | -                  |
| Vector Network Analyzer | Agilent 8753ES     | US39174327      | 12 months            | 2009-05            |
| Dielectric Probe Kit    | Agilent 85070D     | US01440165      | -                    | -                  |

#### 4.1.1 Isotropic E-field Probe Type ET3DV6

|                                  |                                                                                                                                                                                                                              |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Construction</b>              | Symmetrical design with triangular core<br>Built-in optical fiber for surface detection system<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents, e.g., butyl diglycol) |
| <b>Calibration</b>               | Calibration certificate in Appendix C                                                                                                                                                                                        |
| <b>Frequency</b>                 | 10 MHz to 3 GHz (dosimetry); Linearity: $\pm 0.2$ dB (30 MHz to 3 GHz)                                                                                                                                                       |
| <b>Optical Surface Detection</b> | $\pm 0.2$ mm repeatability in air and clear liquids over diffuse reflecting surfaces                                                                                                                                         |
| <b>Directivity</b>               | $\pm 0.2$ dB in HSL (rotation around probe axis)<br>$\pm 0.4$ dB in HSL (rotation normal to probe axis)                                                                                                                      |
| <b>Dynamic Range</b>             | 5 $\mu$ W/g to > 100 mW/g; Linearity: $\pm 0.2$ dB                                                                                                                                                                           |
| <b>Dimensions</b>                | Overall length: 330 mm<br>Tip length: 16 mm<br>Body diameter: 12 mm<br>Tip diameter: 6.8 mm<br>Distance from probe tip to dipole centers: 2.7 mm                                                                             |
| <b>Application</b>               | General dosimetry up to 3 GHz<br>Compliance tests of mobile phones<br>Fast automatic scanning in arbitrary phantoms                                                                                                          |

#### 4.2 Phantoms

The phantom used for all tests i.e. for both system checks and device testing, was the twin-headed "SAM Phantom", manufactured by SPEAG. The phantom conforms to the requirements of IEEE 1528 - 2003.

System checking was performed using the flat section, whilst Head SAR tests used the left and right head profile sections. Body SAR testing also used the flat section between the head profiles.

The SPEAG device holder (see Section 5.1) was used to position the device in all tests whilst a tripod was used to position the validation dipoles against the flat section of phantom.

#### 4.3 Tissue Simulants

Recommended values for the dielectric parameters of the tissue simulants are given in IEEE 1528 - 2003 and FCC Supplement C to OET Bulletin 65. All tests were carried out using simulants whose dielectric parameters were within  $\pm 5\%$  of the recommended values. All tests were carried out within 24 hours of measuring the dielectric parameters.

The depth of the tissue simulant was  $15.0 \pm 0.5$  cm measured from the ear reference point during system checking and device measurements.

#### 4.3.1 Tissue Simulant Recipes

The following recipe(s) were used for Head and Body tissue simulant(s):

##### 800MHz band

| Ingredient      | Head<br>(% by weight) | Body<br>(% by weight) |
|-----------------|-----------------------|-----------------------|
| Deionised Water | 51.50                 | 69.25                 |
| Tween 20        | 47.35                 | 30.00                 |
| Salt            | 1.15                  | 0.75                  |

##### 1900MHz band

| Ingredient      | Head<br>(% by weight) | Body<br>(% by weight) |
|-----------------|-----------------------|-----------------------|
| Deionised Water | 54.50                 | 70.25                 |
| Tween 20        | 45.23                 | 29.41                 |
| Salt            | 0.27                  | 0.34                  |

#### 4.3.2 System Checking

The manufacturer calibrates the probes annually. Dielectric parameters of the tissue simulants were measured every day using the dielectric probe kit and the network analyser. A system check measurement was made following the determination of the dielectric parameters of the simulant, using the dipole validation kit. A power level of 250 mW was supplied to the dipole antenna, which was placed under the flat section of the twin SAM phantom. The system checking results (dielectric parameters and SAR values) are given in the table below.

##### System checking, head tissue simulant

| $f$ [MHz] | Description       | SAR [W/kg],<br>1g | Dielectric Parameters |                | Temp<br>[°C] |
|-----------|-------------------|-------------------|-----------------------|----------------|--------------|
|           |                   |                   | $\epsilon_r$          | $\sigma$ [S/m] |              |
| 835       | Reference result  | 2.39              | 40.5                  | 0.90           |              |
|           | $\pm 10\%$ window | 2.15 – 2.63       |                       |                |              |
|           | 2008-12-08        | 2.18              | 40.2                  | 0.88           | 21.9         |
| 1900      | Reference result  | 9.96              | 39.1                  | 1.48           |              |
|           | $\pm 10\%$ window | 8.96 - 10.96      |                       |                |              |
|           | 2008-11-17        | 10.4              | 38.8                  | 1.41           | 21.8         |
|           | 2008-11-20        | 9.23              | 38.4                  | 1.41           | 21.9         |



### System checking, body tissue simulant

| f [MHz] | Description      | SAR [W/kg],<br>1g | Dielectric Parameters |                | Temp<br>[°C] |
|---------|------------------|-------------------|-----------------------|----------------|--------------|
|         |                  |                   | $\epsilon_r$          | $\sigma$ [S/m] |              |
| 835     | Reference result | 2.42              | 53.4                  | 1.00           |              |
|         | ± 10% window     | 2.18 – 2.66       |                       |                |              |
|         | 2008-12-09       | 2.21              | 52.8                  | 0.98           | 21.3         |
| 1900    | Reference result | 9.77              | 52.4                  | 1.58           |              |
|         | ± 10% window     | 8.79 – 10.75      |                       |                |              |
|         | 2008-12-10       | 10.2              | 53.0                  | 1.51           | 20.9         |
|         | 2008-12-11       | 10.2              | 52.8                  | 1.51           | 21.3         |

Plots of the system checking scans are given in Appendix A.

### 4.3.3 Tissue Simulants used in the Measurements

#### Head tissue simulant measurements

| f<br>[MHz] | Description       | Dielectric Parameters |                | Temp<br>[°C] |
|------------|-------------------|-----------------------|----------------|--------------|
|            |                   | $\epsilon_r$          | $\sigma$ [S/m] |              |
| 836        | Recommended value | 41.5                  | 0.90           |              |
|            | ± 5% window       | 39.4 – 43.6           | 0.86 – 0.95    |              |
|            | 2008-12-08        | 40.2                  | 0.88           | 21.9         |
| 1880       | Recommended value | 40.0                  | 1.40           |              |
|            | ± 5% window       | 38.0 – 42.0           | 1.33 – 1.47    |              |
|            | 2008-11-17        | 38.9                  | 1.39           | 21.8         |
|            | 2008-11-20        | 38.5                  | 1.40           | 21.9         |

#### Body tissue simulant measurements

| f<br>[MHz] | Description       | Dielectric Parameters |                | Temp<br>[°C] |
|------------|-------------------|-----------------------|----------------|--------------|
|            |                   | $\epsilon_r$          | $\sigma$ [S/m] |              |
| 836        | Recommended value | 55.2                  | 0.97           |              |
|            | ± 5% window       | 52.4 – 58.0           | 0.92 – 1.02    |              |
|            | 2008-12-09        | 52.8                  | 0.98           | 21.3         |
| 1880       | Recommended value | 53.3                  | 1.52           |              |
|            | ± 5% window       | 50.6 – 56.0           | 1.44 – 1.60    |              |
|            | 2008-12-10        | 53.0                  | 1.49           | 20.9         |
|            | 2008-12-11        | 52.9                  | 1.49           | 21.3         |

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## 5. DESCRIPTION OF THE TEST PROCEDURE

### 5.1 Device Holder

The device was placed in the device holder (illustrated below) that is supplied by SPEAG as an integral part of the Dasy system.



Device holder supplied by SPEAG

A Nokia designed spacer (illustrated below) was used to position the device within the SPEAG holder. The spacer positions the device so that the holder has minimal effect on the test results but still holds the device securely. The spacer was removed before the tests.



Nokia spacer

### 5.2 Test Positions

#### 5.2.1 Against Phantom Head

Measurements were made in “cheek” and “tilt” positions on both the left hand and right hand sides of the phantom.

The positions used in the measurements were according to IEEE 1528 - 2003 "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques".

#### 5.2.2 Body Worn Configuration

The device was placed in the SPEAG holder using the Nokia spacer and placed below the flat section of the phantom. The distance between the device and the phantom was kept at the

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separation distance indicated in Section 1.2.2 using a separate flat spacer that was removed before the start of the measurements. The device was oriented with both sides facing the phantom to find the highest results.

### 5.3 Scan Procedures

First, area scans were used for determination of the field distribution. Next, a zoom scan, a minimum of 5x5x7 points covering a volume of at least 30x30x30mm, was performed around the highest E-field value to determine the averaged SAR value. Drift was determined by measuring the same point at the start of the area scan and again at the end of the zoom scan.

### 5.4 SAR Averaging Methods

The maximum SAR value was averaged over a cube of tissue using interpolation and extrapolation.

The interpolation, extrapolation and maximum search routines within Dasy4 are all based on the modified Quadratic Shepard's method (Robert J. Renka, "Multivariate Interpolation Of Large Sets Of Scattered Data", University of North Texas ACM Transactions on Mathematical Software, vol. 14, no. 2, June 1988, pp. 139-148).

The interpolation scheme combines a least-square fitted function method with a weighted average method. A trivariate 3-D / bivariate 2-D quadratic function is computed for each measurement point and fitted to neighbouring points by a least-square method. For the zoom scan, inverse distance weighting is incorporated to fit distant points more accurately. The interpolating function is finally calculated as a weighted average of the quadratics.

In the zoom scan, the interpolation function is used to extrapolate the Peak SAR from the deepest measurement points to the inner surface of the phantom.

## 6. MEASUREMENT UNCERTAINTY

Table 6.1 – Measurement uncertainty evaluation

| Uncertainty Component                                                           | Section in IEEE 1528 | Tol. (%) | Prob Dist | Div | $C_i$           | $C_i \cdot U_i$ (%) | $\nu_i$ |
|---------------------------------------------------------------------------------|----------------------|----------|-----------|-----|-----------------|---------------------|---------|
| <b>Measurement System</b>                                                       |                      |          |           |     |                 |                     |         |
| Probe Calibration                                                               | E2.1                 | ±5.9     | N         | 1   | 1               | ±5.9                | ∞       |
| Axial Isotropy                                                                  | E2.2                 | ±4.7     | R         | √3  | $(1-c_p)^{1/2}$ | ±1.9                | ∞       |
| Hemispherical Isotropy                                                          | E2.2                 | ±9.6     | R         | √3  | $(c_p)^{1/2}$   | ±3.9                | ∞       |
| Boundary Effect                                                                 | E2.3                 | ±1.0     | R         | √3  | 1               | ±0.6                | ∞       |
| Linearity                                                                       | E2.4                 | ±4.7     | R         | √3  | 1               | ±2.7                | ∞       |
| System Detection Limits                                                         | E2.5                 | ±1.0     | R         | √3  | 1               | ±0.6                | ∞       |
| Readout Electronics                                                             | E2.6                 | ±1.0     | N         | 1   | 1               | ±1.0                | ∞       |
| Response Time                                                                   | E2.7                 | ±0.8     | R         | √3  | 1               | ±0.5                | ∞       |
| Integration Time                                                                | E2.8                 | ±2.6     | R         | √3  | 1               | ±1.5                | ∞       |
| RF Ambient Conditions - Noise                                                   | E6.1                 | ±3.0     | R         | √3  | 1               | ±1.7                | ∞       |
| RF Ambient Conditions - Reflections                                             | E6.1                 | ±3.0     | R         | √3  | 1               | ±1.7                | ∞       |
| Probe Positioner Mechanical Tolerance                                           | E6.2                 | ±0.4     | R         | √3  | 1               | ±0.2                | ∞       |
| Probe Positioning with respect to Phantom Shell                                 | E6.3                 | ±2.9     | R         | √3  | 1               | ±1.7                | ∞       |
| Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation | E5                   | ±3.9     | R         | √3  | 1               | ±2.3                | ∞       |
| <b>Test sample Related</b>                                                      |                      |          |           |     |                 |                     |         |
| Test Sample Positioning                                                         | E4.2                 | ±6.0     | N         | 1   | 1               | ±6.0                | 11      |
| Device Holder Uncertainty                                                       | E4.1                 | ±5.0     | N         | 1   | 1               | ±5.0                | 7       |
| Output Power Variation - SAR drift measurement                                  | 6.6.3                | ±0.0     | R         | √3  | 1               | ±0.0                | ∞       |
| <b>Phantom and Tissue Parameters</b>                                            |                      |          |           |     |                 |                     |         |
| Phantom Uncertainty (shape and thickness tolerances)                            | E3.1                 | ±4.0     | R         | √3  | 1               | ±2.3                | ∞       |
| Conductivity Target - tolerance                                                 | E3.2                 | ±5.0     | R         | √3  | 0.64            | ±1.8                | ∞       |
| Conductivity - measurement uncertainty                                          | E3.3                 | ±5.5     | N         | 1   | 0.64            | ±3.5                | 5       |
| Permittivity Target - tolerance                                                 | E3.2                 | ±5.0     | R         | √3  | 0.6             | ±1.7                | ∞       |
| Permittivity - measurement uncertainty                                          | E3.3                 | ±2.9     | N         | 1   | 0.6             | ±1.7                | 5       |
| <b>Combined Standard Uncertainty</b>                                            |                      |          | RSS       |     |                 | ±12.9               | 116     |
| <b>Coverage Factor for 95%</b>                                                  |                      |          | k=2       |     |                 |                     |         |
| <b>Expanded Uncertainty</b>                                                     |                      |          |           |     |                 | ±25.8               |         |

## 7. RESULTS

The measured Head SAR values for the test device are tabulated below:

### 850MHz Head SAR results

| Option used                     | Test configuration |       | SAR, averaged over 1g (W/kg) |                      |                      |
|---------------------------------|--------------------|-------|------------------------------|----------------------|----------------------|
|                                 |                    |       | Ch 128<br>824.2 MHz          | Ch 190<br>836.6 MHz  | Ch 251<br>848.8 MHz  |
| <b>GSM</b>                      | <b>Power</b>       |       | <b>30.2 dBm</b>              | <b>30.0 dBm</b>      | <b>30.1 dBm</b>      |
| Flip open<br>Sony<br>Battery    | Left               | Cheek | -                            | 0.458                | -                    |
|                                 |                    | Tilt  | -                            | -                    | -                    |
|                                 | Right              | Cheek | -                            | -                    | -                    |
|                                 |                    | Tilt  | -                            | -                    | -                    |
| <b>2-slot GPRS</b>              | <b>Power</b>       |       | <b>28.3 dBm</b>              | <b>28.5 dBm</b>      | <b>28.5 dBm</b>      |
| Flip open<br>Sony<br>Battery    | Left               | Cheek | -                            | 0.546                | -                    |
|                                 |                    | Tilt  | -                            | 0.201                | -                    |
|                                 | Right              | Cheek | 0.505                        | 0.671                | <b>0.722</b>         |
|                                 |                    | Tilt  | -                            | 0.246                | -                    |
| <b>2-slot 8PSK<br/>EGPRS</b>    | <b>Power</b>       |       | <b>23.6 dBm</b>              | <b>22.7 dBm</b>      | <b>22.2 dBm</b>      |
| Flip open<br>Sony<br>Battery    | Left               | Cheek | -                            | -                    | -                    |
|                                 |                    | Tilt  | -                            | -                    | -                    |
|                                 | Right              | Cheek | -                            | -                    | 0.173                |
|                                 |                    | Tilt  | -                            | -                    | -                    |
| Option used                     | Test configuration |       | SAR, averaged over 1g (W/kg) |                      |                      |
|                                 |                    |       | Ch 4132<br>826.4 MHz         | Ch 4175<br>835.0 MHz | Ch 4233<br>846.6 MHz |
| <b>WCDMA</b>                    | <b>Power</b>       |       | <b>19.1 dBm</b>              | <b>19.7 dBm</b>      | <b>20.1 dBm</b>      |
| Flip open<br>Sony<br>Battery    | Left               | Cheek | -                            | 0.446                | -                    |
|                                 |                    | Tilt  | -                            | 0.218                | -                    |
|                                 | Right              | Cheek | 0.490                        | 0.512                | <b>0.576</b>         |
|                                 |                    | Tilt  | -                            | 0.222                | -                    |
| <b>2-slot GPRS</b>              | <b>Power</b>       |       | <b>28.3 dBm</b>              | <b>28.5 dBm</b>      | <b>28.5 dBm</b>      |
| Flip open<br>Samsung<br>Battery | Right              | Cheek | 0.532                        | 0.683                | <b>0.739</b>         |

**1900MHz Head SAR results**

| Option used                     | Test configuration |       | SAR, averaged over 1g (W/kg) |                       |                       |
|---------------------------------|--------------------|-------|------------------------------|-----------------------|-----------------------|
|                                 |                    |       | Ch 512<br>1850.2 MHz         | Ch 661<br>1880.0 MHz  | Ch 810<br>1909.8 MHz  |
| <b>GSM</b>                      | <b>Power</b>       |       | <b>30.2 dBm</b>              | <b>28.9 dBm</b>       | <b>30.0 dBm</b>       |
| Flip open<br>Sony<br>Battery    | Left               | Cheek | -                            | 0.509                 | -                     |
|                                 |                    | Tilt  | -                            | -                     | -                     |
|                                 | Right              | Cheek | -                            | -                     | -                     |
|                                 |                    | Tilt  | -                            | -                     | -                     |
| <b>2-slot GPRS</b>              | <b>Power</b>       |       | <b>26.5 dBm</b>              | <b>25.9 dBm</b>       | <b>26.6 dBm</b>       |
| Flip open<br>Sony<br>Battery    | Left               | Cheek | 0.572                        | 0.566                 | <b>0.655</b>          |
|                                 |                    | Tilt  | -                            | 0.079                 | -                     |
|                                 | Right              | Cheek | -                            | 0.374                 | -                     |
|                                 |                    | Tilt  | -                            | 0.071                 | -                     |
| <b>2-slot 8PSK<br/>EGPRS</b>    | <b>Power</b>       |       | <b>23.3 dBm</b>              | <b>22.9 dBm</b>       | <b>23.8 dBm</b>       |
| Flip open<br>Sony Battery       | Left               | Cheek | -                            | -                     | 0.155                 |
|                                 |                    | Tilt  | -                            | -                     | -                     |
|                                 | Right              | Cheek | -                            | -                     | -                     |
|                                 |                    | Tilt  | -                            | -                     | -                     |
| Option used                     | Test configuration |       | SAR, averaged over 1g (W/kg) |                       |                       |
|                                 |                    |       | Ch 9262<br>1852.4 MHz        | Ch 9400<br>1880.0 MHz | Ch 9538<br>1907.6 MHz |
| <b>WCDMA</b>                    | <b>Power</b>       |       | <b>22.8 dBm</b>              | <b>22.6 dBm</b>       | <b>22.0 dBm</b>       |
| Flip open<br>Sony<br>Battery    | Left               | Cheek | 0.893                        | <b>0.917</b>          | 0.894                 |
|                                 |                    | Tilt  | -                            | 0.127                 | -                     |
|                                 | Right              | Cheek | -                            | 0.583                 | -                     |
|                                 |                    | Tilt  | -                            | 0.109                 | -                     |
| Flip open<br>Samsung<br>Battery | Left               | Cheek | 0.867                        | 0.872                 | 0.869                 |

The measured Body SAR values for the test device are tabulated below:

**850MHz Body SAR results**

| Option used                       | Device orientation        | Test configuration | SAR, averaged over 1g (W/kg) |                      |                      |
|-----------------------------------|---------------------------|--------------------|------------------------------|----------------------|----------------------|
|                                   |                           |                    | Ch 128<br>824.2 MHz          | Ch 190<br>836.6 MHz  | Ch 251<br>848.8 MHz  |
| <b>2-slot GPRS</b>                |                           | <b>Power</b>       | <b>25.9 dBm</b>              | <b>26.6 dBm</b>      | <b>26.2 dBm</b>      |
| Flip closed<br>Sony<br>Battery    | Display facing<br>phantom | Without headset    | -                            | 0.291                | -                    |
|                                   |                           | Headset HS-9       | -                            | 0.285                | -                    |
|                                   | Back facing<br>phantom    | Without headset    | -                            | 0.705                | -                    |
|                                   |                           | Headset HS-9       | 0.555                        | 0.711                | <b>0.732</b>         |
| Option used                       | Device orientation        | Test configuration | SAR, averaged over 1g (W/kg) |                      |                      |
|                                   |                           |                    | Ch 4132<br>826.4 MHz         | Ch 4175<br>835.0 MHz | Ch 4233<br>846.6 MHz |
| <b>WCDMA</b>                      |                           | <b>Power</b>       | <b>16.5 dBm</b>              | <b>16.8 dBm</b>      | <b>16.9 dBm</b>      |
| Flip closed<br>Sony<br>Battery    | Display facing<br>phantom | Without headset    | -                            | 0.215                | -                    |
|                                   |                           | Headset HS-9       | -                            | 0.212                | -                    |
|                                   | Back facing<br>phantom    | Without headset    | -                            | 0.473                | -                    |
|                                   |                           | Headset HS-9       | 0.482                        | <b>0.485</b>         | 0.484                |
| <b>2-slot GPRS</b>                |                           | <b>Power</b>       | <b>25.9 dBm</b>              | <b>26.6 dBm</b>      | <b>26.2 dBm</b>      |
| Flip closed<br>Samsung<br>Battery | Back facing<br>phantom    | Headset HS-9       | 0.591                        | 0.750                | <b>0.758</b>         |

**1900MHz Body SAR results**

| Option used                       | Device orientation        | Test configuration | SAR, averaged over 1g (W/kg) |                          |                          |
|-----------------------------------|---------------------------|--------------------|------------------------------|--------------------------|--------------------------|
|                                   |                           |                    | Ch 512<br>1850.2<br>MHz      | Ch 661<br>1880.0<br>MHz  | Ch 810<br>1909.8<br>MHz  |
| <b>2-slot GPRS</b>                |                           | <b>Power</b>       | <b>27.9 dBm</b>              | <b>27.2 dBm</b>          | <b>28.5 dBm</b>          |
| Flip closed<br>Sony<br>Battery    | Display facing<br>phantom | Without headset    | -                            | 0.164                    | -                        |
|                                   |                           | Headset HS-9       | -                            | 0.134                    | -                        |
|                                   | Back facing<br>phantom    | Without headset    | 0.397                        | 0.416                    | <b>0.424</b>             |
|                                   |                           | Headset HS-9       | -                            | 0.341                    | -                        |
| Option used                       | Device orientation        | Test configuration | SAR, averaged over 1g (W/kg) |                          |                          |
|                                   |                           |                    | Ch 9262<br>1852.4<br>MHz     | Ch 9400<br>1880.0<br>MHz | Ch 9538<br>1907.6<br>MHz |
| <b>WCDMA</b>                      |                           | <b>Power</b>       | <b>23.8 dBm</b>              | <b>23.2 dBm</b>          | <b>22.2 dBm</b>          |
| Flip closed<br>Sony<br>Battery    | Display facing<br>phantom | Without headset    | -                            | 0.248                    | -                        |
|                                   |                           | Headset HS-9       | -                            | 0.176                    | -                        |
|                                   | Back facing<br>phantom    | Without headset    | 0.654                        | 0.691                    | <b>0.717</b>             |
|                                   |                           | Headset HS-9       | -                            | 0.427                    | -                        |
| Flip closed<br>Samsung<br>Battery | Back facing<br>phantom    | Without headset    | 0.654                        | 0.588                    | 0.688                    |

Plots of the Measurement scans are given in Appendix B.



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## APPENDIX A: SYSTEM CHECKING SCANS

Date/Time: 2008-12-08 10:26:54

Test Laboratory: TCC Nokia

Type: D835V2; Serial: 409

**Communication System: CW835**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL 835; Medium Notes: Liquid temperature= 21.9C

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.881 \text{ mho/m}$ ;  $\epsilon_r = 40.2$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(6.26, 6.26, 6.26); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**System Check/Area Scan (61x61x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 2.36 mW/g

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

Reference Value = 55.4 V/m

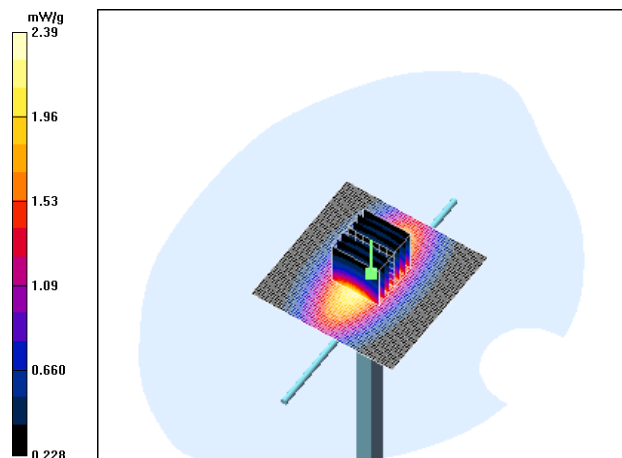
Peak SAR (extrapolated) = 2.91 W/kg

**SAR(1 g) = 2.18 mW/g**

**SAR(10 g) = 1.46 mW/g**

**Power Drift = -0.016 dB**

Maximum value of SAR (measured) = 2.39 mW/g



Date/Time: 2008-11-17 10:34:57

Test Laboratory: TCC Nokia

Type: D1900V2; Serial: 509

**Communication System: CW1900**

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL 1900; Medium Notes: Liquid temperature= 21.8C

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.41$  mho/m;  $\epsilon_r = 38.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(5.1, 5.1, 5.1); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

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

Maximum value of SAR (interpolated) = 12.8 mW/g

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

Reference Value = 97.6 V/m

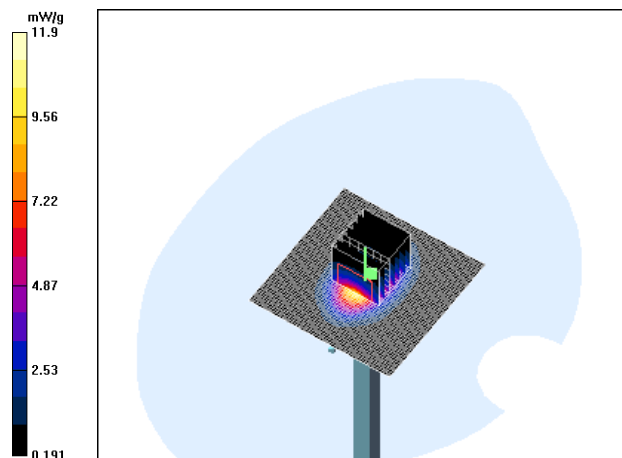
Peak SAR (extrapolated) = 18.7 W/kg

**SAR(1 g) = 10.4 mW/g**

**SAR(10 g) = 5.48 mW/g**

**Power Drift = -0.153 dB**

Maximum value of SAR (measured) = 11.9 mW/g



Date/Time: 2008-11-20 8:48:13

Test Laboratory: TCC Nokia

Type: D1900V2; Serial: 509

**Communication System: CW1900**

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL 1900; Medium Notes: Liquid temperature= 21.9C

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.41$  mho/m;  $\epsilon_r = 38.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(5.1, 5.1, 5.1); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

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

Maximum value of SAR (interpolated) = 11.3 mW/g

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

Reference Value = 94.0 V/m

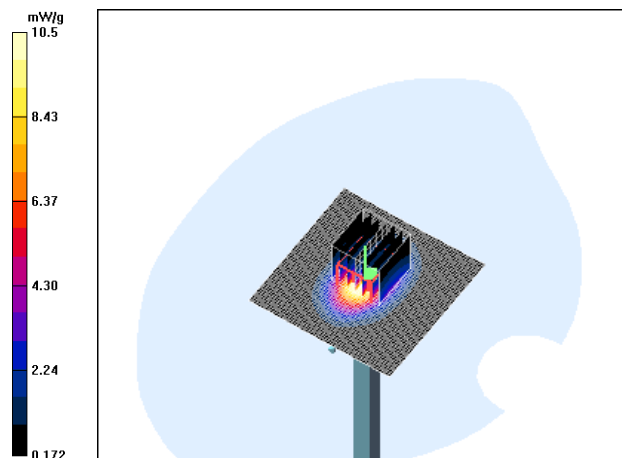
Peak SAR (extrapolated) = 15.6 W/kg

**SAR(1 g) = 9.23 mW/g**

**SAR(10 g) = 4.94 mW/g**

**Power Drift = -0.023 dB**

Maximum value of SAR (measured) = 10.5 mW/g



Date/Time: 2008-12-09 9:41:16

Test Laboratory: TCC Nokia

Type: D835V2; Serial: 486

**Communication System: CW835**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: MSL 835; Medium Notes: Liquid temperature= 21.3C

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.983 \text{ mho/m}$ ;  $\epsilon_r = 52.8$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(6.01, 6.01, 6.01); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**System Check/Area Scan (61x61x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 2.35 mW/g

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

Reference Value = 53.5 V/m

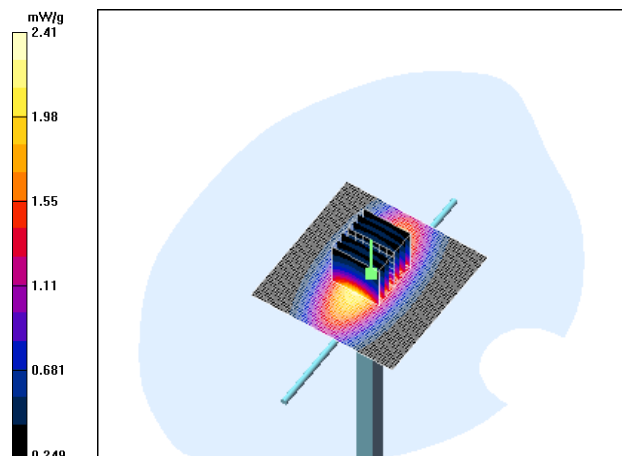
Peak SAR (extrapolated) = 2.81 W/kg

**SAR(1 g) = 2.21 mW/g**

**SAR(10 g) = 1.5 mW/g**

**Power Drift = 0.099 dB**

Maximum value of SAR (measured) = 2.41 mW/g



Date/Time: 2008-12-10 13:31:54

Test Laboratory: TCC Nokia

Type: D1900V2; Serial: 509

**Communication System: CW1900**

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: MSL 1900; Medium Notes: Liquid temperature= 20.9C

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.51$  mho/m;  $\epsilon_r = 53$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(4.76, 4.76, 4.76); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phatom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

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

Maximum value of SAR (interpolated) = 12.3 mW/g

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

Reference Value = 92.9 V/m

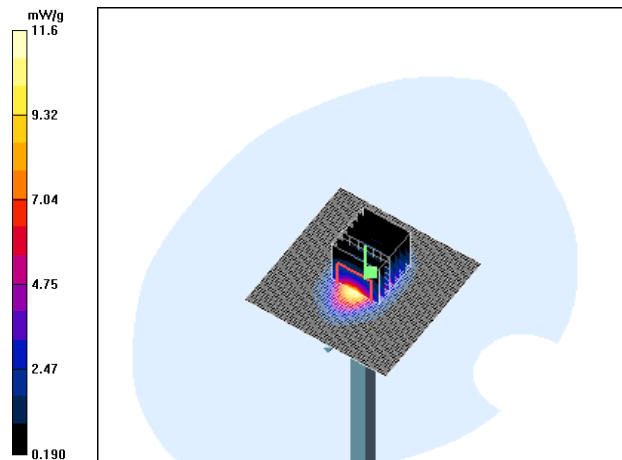
Peak SAR (extrapolated) = 18.3 W/kg

**SAR(1 g) = 10.2 mW/g**

**SAR(10 g) = 5.37 mW/g**

**Power Drift = -0.010 dB**

Maximum value of SAR (measured) = 11.6 mW/g



Date/Time: 2008-12-11 8:41:59

Test Laboratory: TCC Nokia

Type: D1900V2; Serial: 509

**Communication System: CW1900**

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: MSL 1900; Medium Notes: Liquid temperature= 21.3C

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.51$  mho/m;  $\epsilon_r = 52.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(4.76, 4.76, 4.76); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

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

Maximum value of SAR (interpolated) = 12.2 mW/g

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

Reference Value = 92.4 V/m

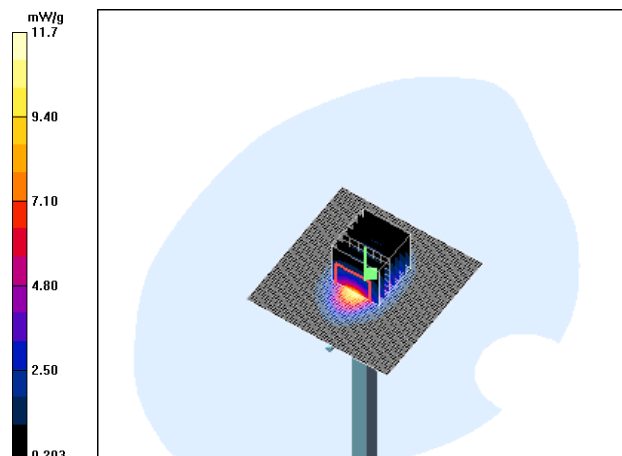
Peak SAR (extrapolated) = 18.4 W/kg

**SAR(1 g) = 10.2 mW/g**

**SAR(10 g) = 5.38 mW/g**

**Power Drift = 0.001 dB**

Maximum value of SAR (measured) = 11.7 mW/g



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## APPENDIX B: MEASUREMENT SCANS



Date/Time: 2008-12-08 11:03:33

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: GSM850**

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: HSL 835; Medium Notes: Liquid temperature= 21.9C

Medium parameters used:  $f = 837$  MHz;  $\sigma = 0.88$  mho/m;  $\epsilon_r = 40.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(6.26, 6.26, 6.26); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Cheek, Middle, Sony Battery, Flip open/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.490 mW/g

**Cheek, Middle, Sony Battery, Flip open/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.1 V/m

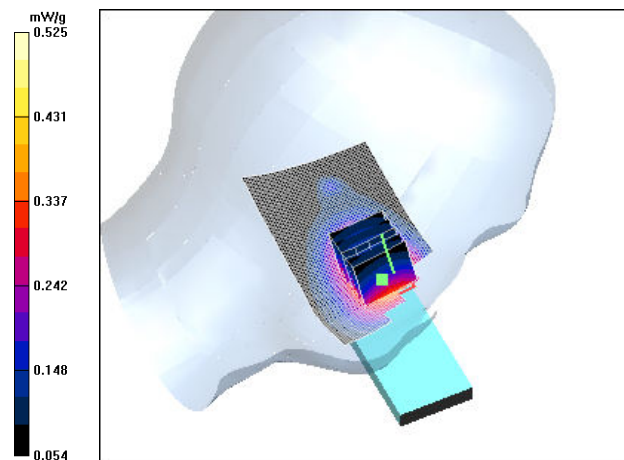
Peak SAR (extrapolated) = 0.606 W/kg

**SAR(1 g) = 0.458 mW/g**

**SAR(10 g) = 0.315 mW/g**

**Power Drift = -0.054 dB**

Maximum value of SAR (measured) = 0.525 mW/g



Date/Time: 2008-12-08 12:08:10

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: 2-slot GPRS850**

Frequency: 836.6 MHz; Duty Cycle: 1:4.2

Medium: HSL 835; Medium Notes: Liquid temperature= 21.9C

Medium parameters used:  $f = 837$  MHz;  $\sigma = 0.88$  mho/m;  $\epsilon_r = 40.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

**DASY4 Configuration:**

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(6.26, 6.26, 6.26); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Cheek, Middle, Sony Battery, Flip open/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.585 mW/g

**Cheek, Middle, Sony Battery, Flip open/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.5 V/m

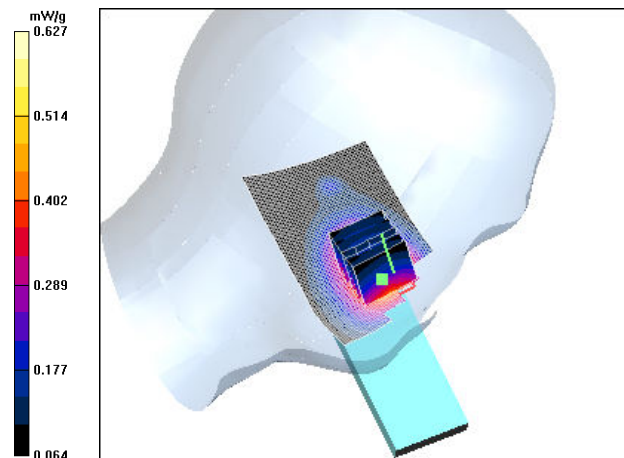
Peak SAR (extrapolated) = 0.734 W/kg

**SAR(1 g) = 0.546 mW/g**

**SAR(10 g) = 0.377 mW/g**

**Power Drift = -0.085 dB**

Maximum value of SAR (measured) = 0.627 mW/g



Date/Time: 2008-12-08 12:24:21

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: 2-slot GPRS850**

Frequency: 836.6 MHz; Duty Cycle: 1:4.2

Medium: HSL 835; Medium Notes: Liquid temperature= 21.9C

Medium parameters used:  $f = 837$  MHz;  $\sigma = 0.88$  mho/m;  $\epsilon_r = 40.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(6.26, 6.26, 6.26); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Tilt, Middle, Sony Battery, Flip opne/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.289 mW/g

**Tilt, Middle, Sony Battery, Flip open/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 16.3 V/m

Peak SAR (extrapolated) = 0.381 W/kg

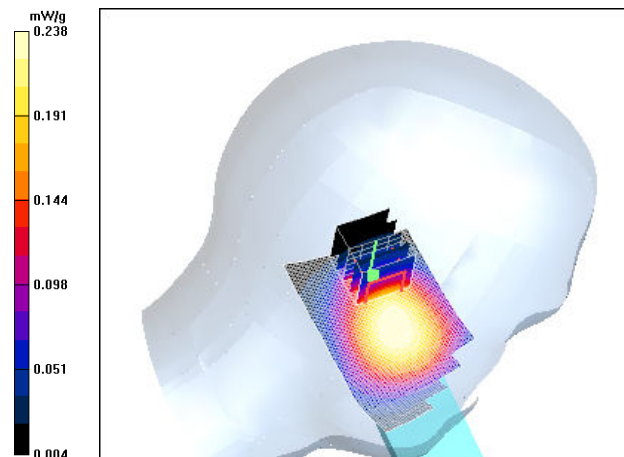
**SAR(1 g) = 0.201 mW/g**

**SAR(10 g) = 0.126 mW/g**

**Power Drift = -0.256 dB**

Warning: Maximum averaged SAR over 10 g is located on the boundary of the measurement cube. This cube might not incorporate the absolute averaged SAR. Please consider a refinement of the Area Scan measurement.

Maximum value of SAR (measured) = 0.238 mW/g



SAR Report

SD\_SAR\_0850\_01

Applicant: Nokia Corporation

Type: RM-455

Copyright © 2009 TCC Nokia

Date/Time: 2008-12-08 13:19:31

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: 2-slot GPRS850**

Frequency: 848.8 MHz; Duty Cycle: 1:4.2

Medium: HSL 835; Medium Notes: Liquid temperature= 21.9C

Medium parameters used:  $f = 849 \text{ MHz}$ ;  $\sigma = 0.891 \text{ mho/m}$ ;  $\epsilon_r = 40.1$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(6.26, 6.26, 6.26); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: TwN Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Cheek, High, Sony Battery, Flip open/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.851 mW/g

**Cheek, High, Sony Battery, Flip open/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 13.1 V/m

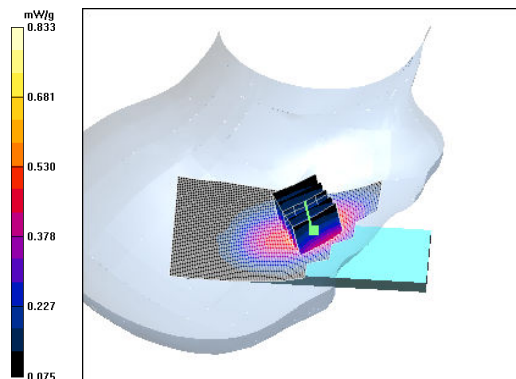
Peak SAR (extrapolated) = 1.09 W/kg

**SAR(1 g) = 0.722 mW/g**

**SAR(10 g) = 0.458 mW/g**

**Power Drift = -0.006 dB**

Maximum value of SAR (measured) = 0.833 mW/g



Date/Time: 2008-12-08 12:55:08

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: 2-slot GPRS850**

Frequency: 836.6 MHz; Duty Cycle: 1:4.2

Medium: HSL 835; Medium Notes: Liquid temperature= 21.9C

Medium parameters used:  $f = 837$  MHz;  $\sigma = 0.88$  mho/m;  $\epsilon_r = 40.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(6.26, 6.26, 6.26); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Tilt, Middle, Sony Battery, Flip open/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.261 mW/g

**Tilt, Middle, Sony Battery, Flip open/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 16.1 V/m

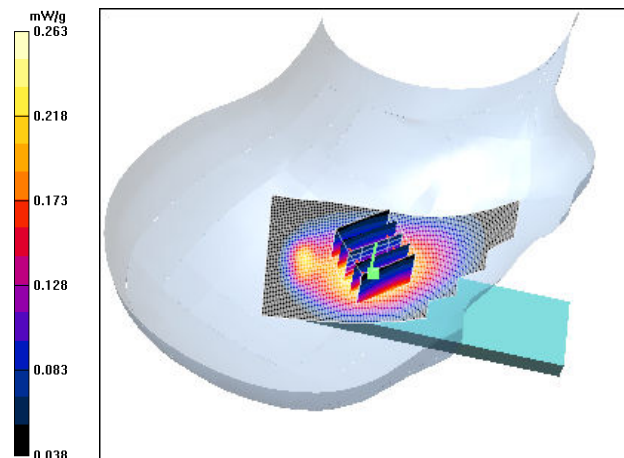
Peak SAR (extrapolated) = 0.291 W/kg

**SAR(1 g) = 0.246 mW/g**

**SAR(10 g) = 0.184 mW/g**

**Power Drift = -0.111 dB**

Maximum value of SAR (measured) = 0.263 mW/g



Date/Time: 2008-12-08 13:35:24

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: 2-slot 8PSK EGPRS850**

Frequency: 848.8 MHz; Duty Cycle: 1:4.2

Medium: HSL 835; Medium Notes: Liquid temperature= 21.9C

Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.891$  mho/m;  $\epsilon_r = 40.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(6.26, 6.26, 6.26); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Cheek, High, Sony Battery, Flip open/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

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

**Cheek, High, Sony Battery, Flip open/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.42 V/m

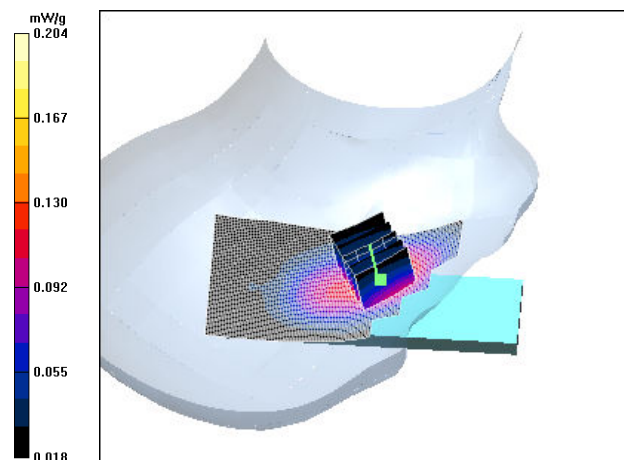
Peak SAR (extrapolated) = 0.271 W/kg

**SAR(1 g) = 0.173 mW/g**

**SAR(10 g) = 0.109 mW/g**

**Power Drift = -0.102 dB**

Maximum value of SAR (measured) = 0.204 mW/g



Date/Time: 2008-12-08 15:04:26

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: WCDMA850**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL 835; Medium Notes: Liquid temperature= 21.9C

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.881 \text{ mho/m}$ ;  $\epsilon_r = 40.2$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

**DASY4 Configuration:**

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(6.26, 6.26, 6.26); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Cheek, Middle, Sony Battery, Flip open/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.471 mW/g

**Cheek, Middle, Sony Battery, Flip open/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 11.5 V/m

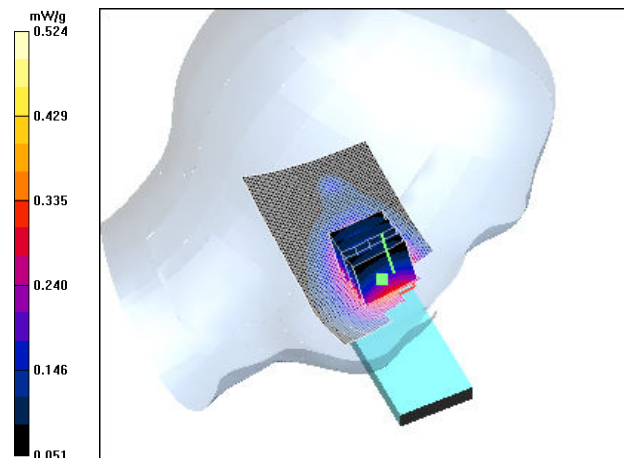
Peak SAR (extrapolated) = 0.611 W/kg

**SAR(1 g) = 0.446 mW/g**

**SAR(10 g) = 0.303 mW/g**

**Power Drift = 0.030 dB**

Maximum value of SAR (measured) = 0.524 mW/g



Date/Time: 2008-12-08 15:17:41

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: WCDMA850**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL 835; Medium Notes: Liquid temperature= 21.9C

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.881 \text{ mho/m}$ ;  $\epsilon_r = 40.2$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

**DASY4 Configuration:**

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(6.26, 6.26, 6.26); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Tilt, Middle, Sony Battery, Flip open/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.299 mW/g

**Tilt, Middle, Sony Battery, Flip open/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 15.0 V/m

Peak SAR (extrapolated) = 0.450 W/kg

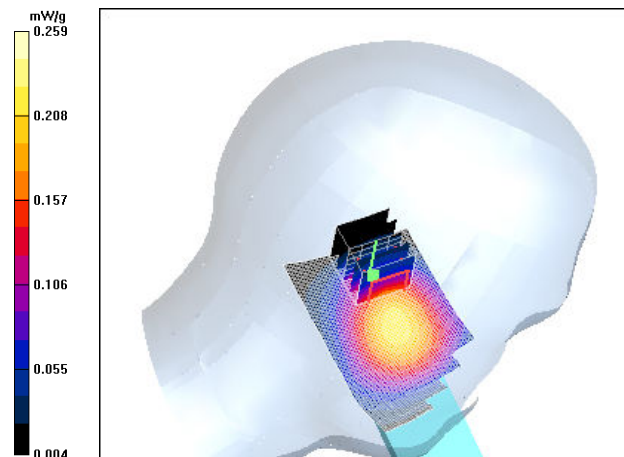
**SAR(1 g) = 0.218 mW/g**

**SAR(10 g) = 0.127 mW/g**

**Power Drift = 0.018 dB**

Warning: Maximum averaged SAR over 10 g is located on the boundary of the measurement cube. This cube might not incorporate the absolute averaged SAR. Please consider a refinement of the Area Scan measurement.

Maximum value of SAR (measured) = 0.259 mW/g



SAR Report

SD\_SAR\_0850\_01

Applicant: Nokia Corporation

Type: RM-455

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Date/Time: 2008-12-08 15:46:14

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: WCDMA850**

Frequency: 846.6 MHz; Duty Cycle: 1:1

Medium: HSL 835; Medium Notes: Liquid temperature= 21.9C

Medium parameters used:  $f = 847$  MHz;  $\sigma = 0.889$  mho/m;  $\epsilon_r = 40.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

**DASY4 Configuration:**

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(6.26, 6.26, 6.26); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Cheek, High, Sony Battery, Flip open/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.639 mW/g

**Cheek, High, Sony Battery, Flip open/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.3 V/m

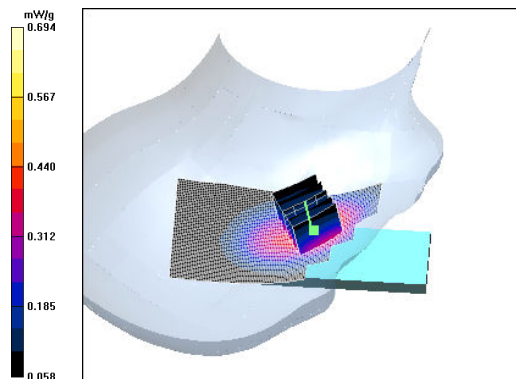
Peak SAR (extrapolated) = 0.906 W/kg

**SAR(1 g) = 0.576 mW/g**

**SAR(10 g) = 0.358 mW/g**

**Power Drift = -0.005 dB**

Maximum value of SAR (measured) = 0.694 mW/g



Date/Time: 2008-12-08 14:51:32

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: WCDMA850**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL 835; Medium Notes: Liquid temperature= 21.9C

Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.881$  mho/m;  $\epsilon_r = 40.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(6.26, 6.26, 6.26); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Tilt, Middle, Sony Battery, Flip open/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.232 mW/g

**Tilt, Middle, Sony Battery, Flip open/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.6 V/m

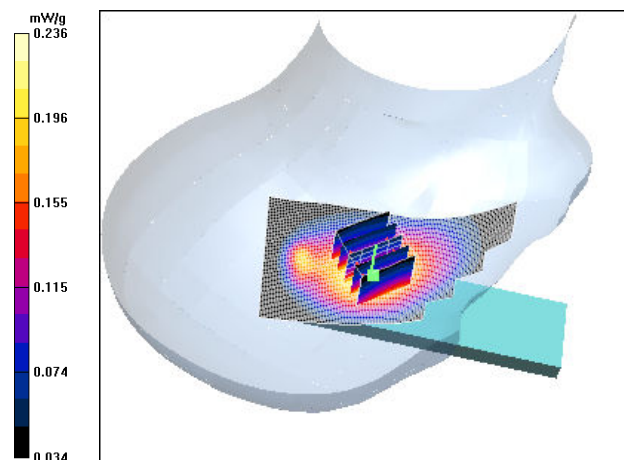
Peak SAR (extrapolated) = 0.261 W/kg

**SAR(1 g) = 0.222 mW/g**

**SAR(10 g) = 0.166 mW/g**

**Power Drift = -0.202 dB**

Maximum value of SAR (measured) = 0.236 mW/g



Date/Time: 2008-12-08 14:23:25

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: 2-slot GPRS850**

Frequency: 848.8 MHz; Duty Cycle: 1:4.2

Medium: HSL 835; Medium Notes: Liquid temperature= 21.9C

Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.891$  mho/m;  $\epsilon_r = 40.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

**DASY4 Configuration:**

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(6.26, 6.26, 6.26); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Cheek, High, Samsung Battery, Flip open/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.880 mW/g

**Cheek, High, Samsung Battery, Flip open/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.9 V/m

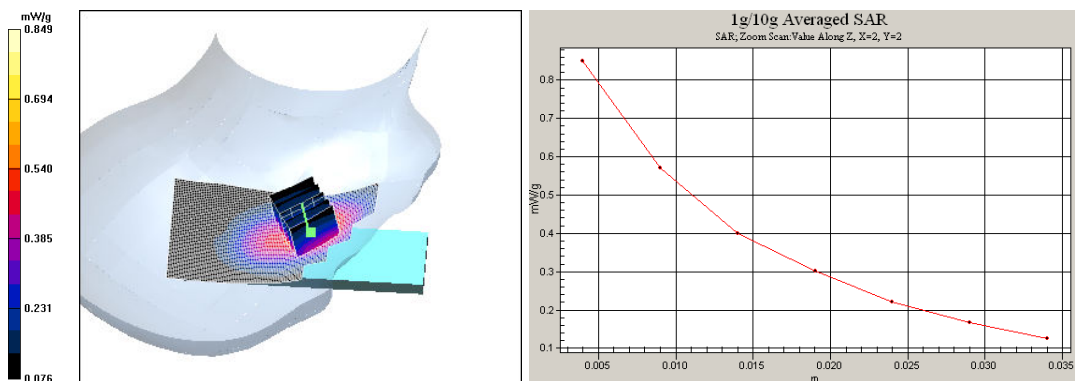
Peak SAR (extrapolated) = 1.16 W/kg

**SAR(1 g) = 0.739 mW/g**

**SAR(10 g) = 0.468 mW/g**

**Power Drift = -0.183 dB**

Maximum value of SAR (measured) = 0.849 mW/g



SAR Report

SD\_SAR\_0850\_01

Applicant: Nokia Corporation

Type: RM-455

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Date/Time: 2008-11-17 10:34:33

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: GSM1900**

Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium: HSL 1900; Medium Notes: Liquid temperature= 21.8C

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.39$  mho/m;  $\epsilon_r = 38.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(5.1, 5.1, 5.1); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Cheek, Middle, Sony Battery, Flip open/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.567 mW/g

**Cheek, Middle, Sony Battery, Flip open/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.82 V/m

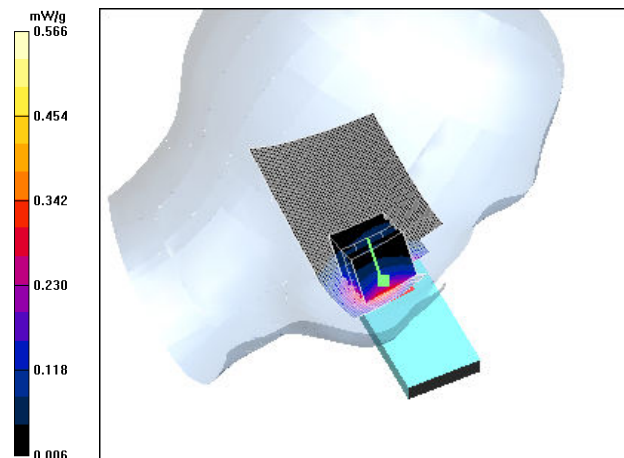
Peak SAR (extrapolated) = 0.763 W/kg

**SAR(1 g) = 0.509 mW/g**

**SAR(10 g) = 0.310 mW/g**

**Power Drift = 0.252 dB**

Maximum value of SAR (measured) = 0.566 mW/g



Date/Time: 2008-11-17 15:47:09

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: 2-slot GPRS1900**

Frequency: 1909.8 MHz; Duty Cycle: 1:4.2

Medium: HSL 1900; Medium Notes: Liquid temperature= 21.8C

Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.42$  mho/m;  $\epsilon_r = 38.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(5.1, 5.1, 5.1); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Cheek, High, Sony Battery, Flip open/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.723 mW/g

**Cheek, High, Sony Battery, Flip open/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.38 V/m

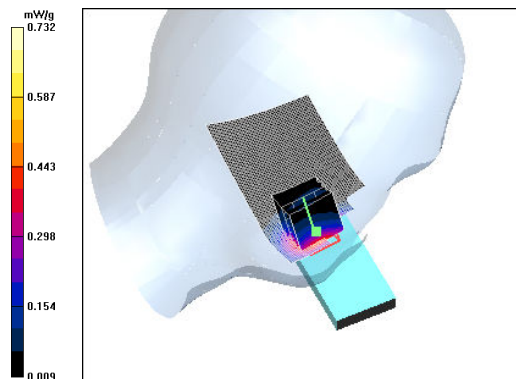
Peak SAR (extrapolated) = 1.01 W/kg

**SAR(1 g) = 0.655 mW/g**

**SAR(10 g) = 0.394 mW/g**

**Power Drift = -0.123 dB**

Maximum value of SAR (measured) = 0.732 mW/g



Date/Time: 2008-11-17 14:35:47

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: 2-slot GPRS1900**

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: HSL 1900; Medium Notes: Liquid temperature= 21.8C

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.39$  mho/m;  $\epsilon_r = 38.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(5.1, 5.1, 5.1); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Tilt, Middle, Sony Battery, Flip open/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.085 mW/g

**Tilt, Middle, Sony Battery, Flip open/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.52 V/m

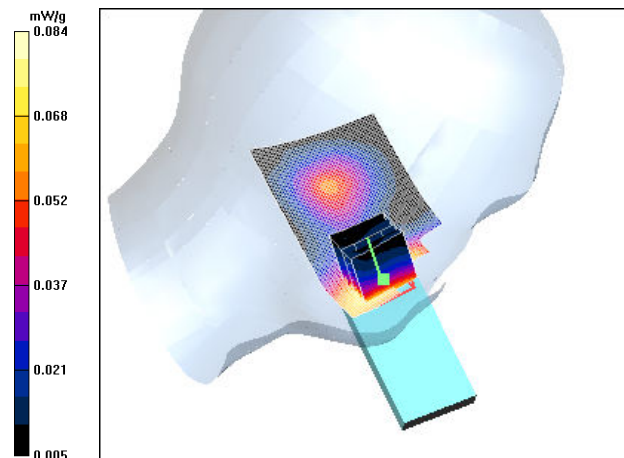
Peak SAR (extrapolated) = 0.109 W/kg

**SAR(1 g) = 0.079 mW/g**

**SAR(10 g) = 0.053 mW/g**

**Power Drift = 0.175 dB**

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



Date/Time: 2008-11-17 14:51:44

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: 2-slot GPRS1900**

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: HSL 1900; Medium Notes: Liquid temperature= 21.8C

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.39$  mho/m;  $\epsilon_r = 38.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(5.1, 5.1, 5.1); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Cheek, Middle, Sony Battery, Flip open/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

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

**Cheek, Middle, Sony Battery, Flip open/Zoom Scan (6x6x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.70 V/m

Peak SAR (extrapolated) = 0.514 W/kg

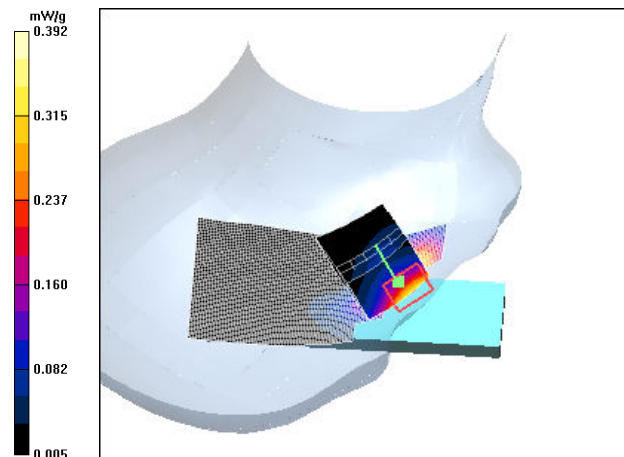
**SAR(1 g) = 0.374 mW/g**

**SAR(10 g) = 0.252 mW/g**

**Power Drift = 0.044 dB**

Warning: Maximum averaged SAR over 10 g is located on the boundary of the measurement cube. This cube might not incorporate the absolute averaged SAR. Please consider a refinement of the Area Scan measurement.

Maximum value of SAR (measured) = 0.392 mW/g



SAR Report

SD\_SAR\_0850\_01

Applicant: Nokia Corporation

Type: RM-455

Copyright © 2009 TCC Nokia

Date/Time: 2008-11-17 15:19:20

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: 2-slot GPRS1900**

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: HSL 1900; Medium Notes: Liquid temperature= 21.8C

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.39$  mho/m;  $\epsilon_r = 38.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(5.1, 5.1, 5.1); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Tilt, Middle, Sony Battery, Flip open/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.079 mW/g

**Tilt, Middle, Sony Battery, Flip open/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.53 V/m

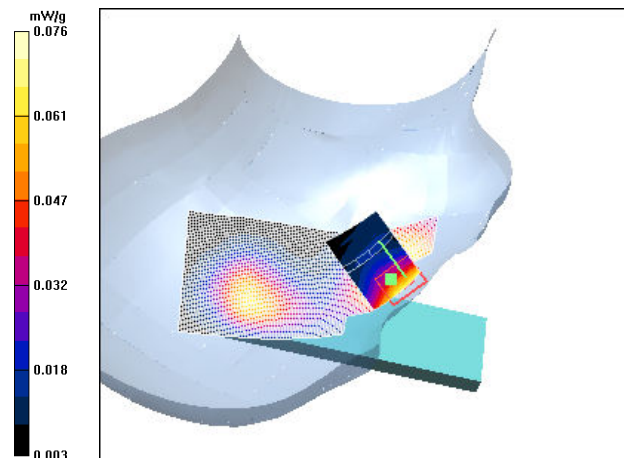
Peak SAR (extrapolated) = 0.098 W/kg

**SAR(1 g) = 0.071 mW/g**

**SAR(10 g) = 0.051 mW/g**

**Power Drift = -0.027 dB**

Maximum value of SAR (measured) = 0.076 mW/g





Date/Time: 2008-11-20 9:29:50

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: 2-slot 8PSK EGPRS1900**

Frequency: 1909.8 MHz; Duty Cycle: 1:4.2

Medium: HSL 1900; Medium Notes: Liquid temperature= 21.9C

Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.42$  mho/m;  $\epsilon_r = 38.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(5.1, 5.1, 5.1); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Cheek, High, Sony Battery, Flip open/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.171 mW/g

**Cheek, High, Sony Battery, Flip open/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.84 V/m

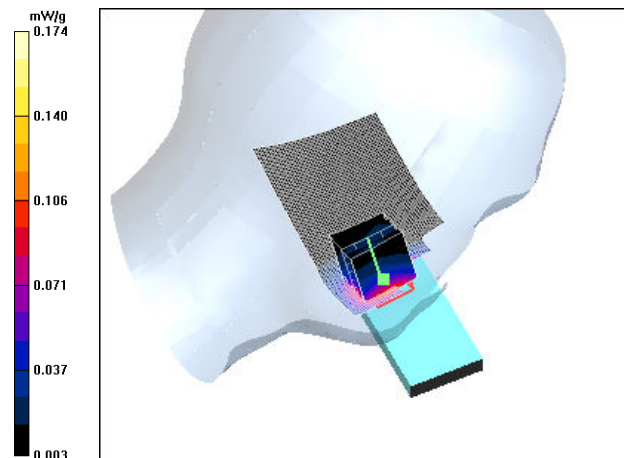
Peak SAR (extrapolated) = 0.232 W/kg

**SAR(1 g) = 0.155 mW/g**

**SAR(10 g) = 0.094 mW/g**

**Power Drift = 0.168 dB**

Maximum value of SAR (measured) = 0.174 mW/g



Date/Time: 2008-11-17 11:32:54

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: WCDMA1900**

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: HSL 1900; Medium Notes: Liquid temperature= 21.8C

Medium parameters used:  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.39 \text{ mho/m}$ ;  $\epsilon_r = 38.9$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

**DASY4 Configuration:**

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(5.1, 5.1, 5.1); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Cheek, Middle, Sony Battery, Flip open/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 1.04 mW/g

**Cheek, Middle, Sony Battery, Flip open/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 3.53 V/m

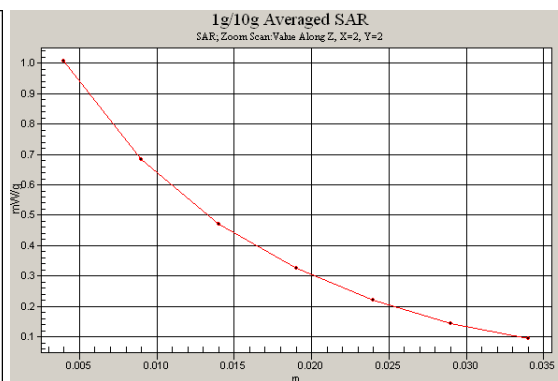
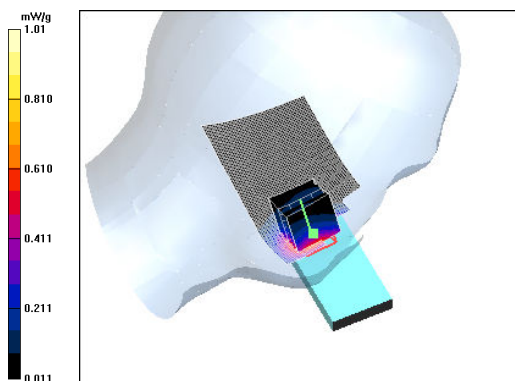
Peak SAR (extrapolated) = 1.38 W/kg

**SAR(1 g) = 0.917 mW/g**

**SAR(10 g) = 0.562 mW/g**

**Power Drift = 0.428 dB**

Maximum value of SAR (measured) = 1.01 mW/g



SAR Report

SD\_SAR\_0850\_01

Applicant: Nokia Corporation

Type: RM-455

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Date/Time: 2008-11-17 11:57:45

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: WCDMA1900**

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: HSL 1900; Medium Notes: Liquid temperature= 21.8C

Medium parameters used:  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.39 \text{ mho/m}$ ;  $\epsilon_r = 38.9$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

**DASY4 Configuration:**

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(5.1, 5.1, 5.1); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Tilt, Middle, Sony Battery, Flip open/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.135 mW/g

**Tilt, Middle, Sony Battery, Flip open/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 6.83 V/m

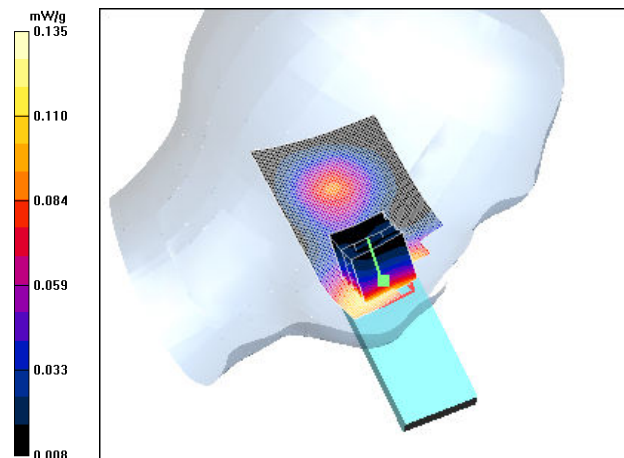
Peak SAR (extrapolated) = 0.185 W/kg

**SAR(1 g) = 0.127 mW/g**

**SAR(10 g) = 0.086 mW/g**

**Power Drift = 0.194 dB**

Maximum value of SAR (measured) = 0.135 mW/g



Date/Time: 2008-11-17 12:36:34

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: WCDMA1900**

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: HSL 1900; Medium Notes: Liquid temperature= 21.8C

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.39$  mho/m;  $\epsilon_r = 38.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(5.1, 5.1, 5.1); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Cheek, Middle, Sony Battery, Flip open/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.713 mW/g

**Cheek, Middle, Sony Battery, Flip open/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.39 V/m

Peak SAR (extrapolated) = 0.856 W/kg

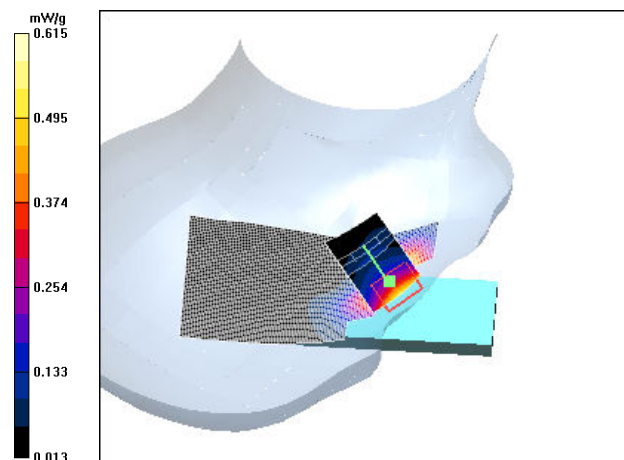
**SAR(1 g) = 0.583 mW/g**

**SAR(10 g) = 0.391 mW/g**

**Power Drift = 0.083 dB**

Warning: Maximum averaged SAR over 10 g is located on the boundary of the measurement cube. This cube might not incorporate the absolute averaged SAR. Please consider a refinement of the Area Scan measurement.

Maximum value of SAR (measured) = 0.615 mW/g



SAR Report

SD\_SAR\_0850\_01

Applicant: Nokia Corporation

Type: RM-455

Copyright © 2009 TCC Nokia

Date/Time: 2008-11-17 12:51:21

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: WCDMA1900**

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: HSL 1900; Medium Notes: Liquid temperature= 21.8C

Medium parameters used:  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.39 \text{ mho/m}$ ;  $\epsilon_r = 38.9$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(5.1, 5.1, 5.1); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Tilt, Middle, Sony Battery, Flip open/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.121 mW/g

**Tilt, Middle, Sony Battery, Flip open/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 7.32 V/m

Peak SAR (extrapolated) = 0.152 W/kg

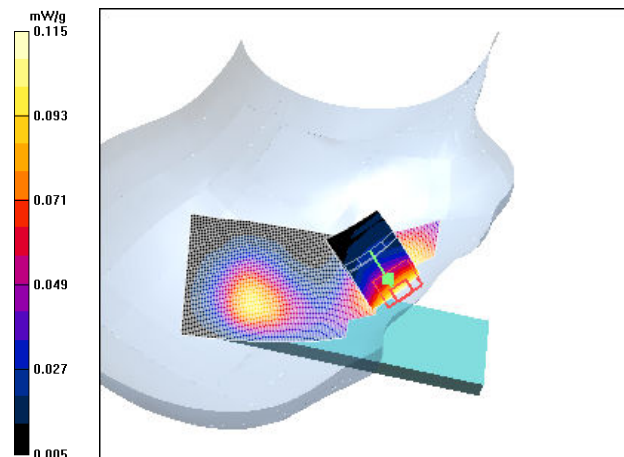
**SAR(1 g) = 0.109 mW/g**

**SAR(10 g) = 0.077 mW/g**

**Power Drift = -1.19 dB**

Warning: Maximum averaged SAR over 10 g is located on the boundary of the measurement cube. This cube might not incorporate the absolute averaged SAR. Please consider a refinement of the Area Scan measurement.

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



SAR Report

SD\_SAR\_0850\_01

Applicant: Nokia Corporation

Type: RM-455

Copyright © 2009 TCC Nokia

Date/Time: 2008-11-20 11:03:47

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: WCDMA1900**

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: HSL 1900; Medium Notes: Liquid temperature= 21.9C

Medium parameters used:  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.39 \text{ mho/m}$ ;  $\epsilon_r = 38.5$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(5.1, 5.1, 5.1); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Cheek, Low, Samsung Battery, Flip open/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.982 mW/g

**Cheek, Low, Samsung Battery, Flip open/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 3.90 V/m

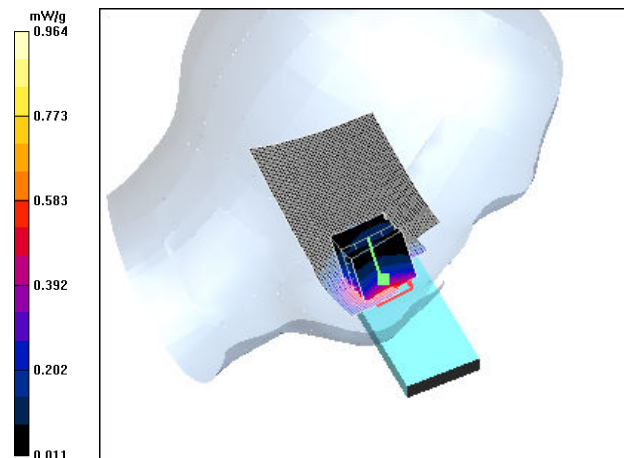
Peak SAR (extrapolated) = 1.27 W/kg

**SAR(1 g) = 0.872 mW/g**

**SAR(10 g) = 0.538 mW/g**

**Power Drift = -0.082 dB**

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



Date/Time: 2008-12-09 14:48:13

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: 2-slot GPRS850**

Frequency: 836.6 MHz; Duty Cycle: 1:4.2

Medium: MSL 850; Medium Notes: Liquid temperature= 21.3C

Medium parameters used:  $f = 837$  MHz;  $\sigma = 0.985$  mho/m;  $\epsilon_r = 52.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(6.01, 6.01, 6.01); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Body, Middle, No accessory, Display facing phantom, Sony Battery, Flip closed/Area Scan (51x91x1):**

Measurement grid: dx=15mm, dy=15mm

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

**Body, Middle, No accessory, Display facing phantom, Sony Battery, Flip closed/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.8 V/m

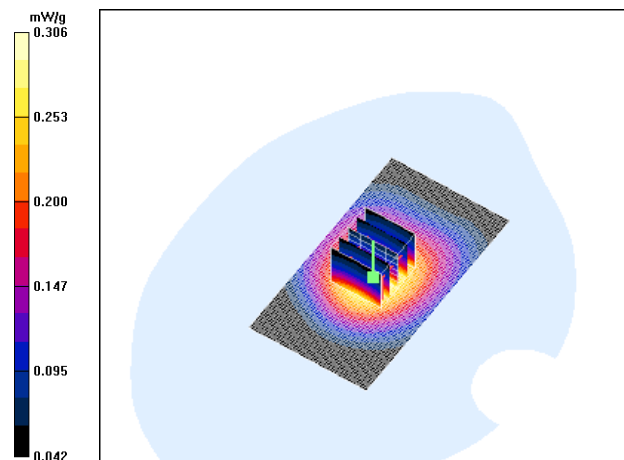
Peak SAR (extrapolated) = 0.352 W/kg

**SAR(1 g) = 0.291 mW/g**

**SAR(10 g) = 0.216 mW/g**

**Power Drift = -0.176 dB**

Maximum value of SAR (measured) = 0.306 mW/g



Date/Time: 2008-12-09 14:36:48

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: 2-slot GPRS850**

Frequency: 836.6 MHz; Duty Cycle: 1:4.2

Medium: MSL 850; Medium Notes: Liquid temperature= 21.3C

Medium parameters used:  $f = 837$  MHz;  $\sigma = 0.985$  mho/m;  $\epsilon_r = 52.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(6.01, 6.01, 6.01); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Body, Middle, HS-9, Display facing phantom, Sony Battery, Flip closed/Area Scan (51x91x1):** Measurement grid:  
dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.298 mW/g

**Body, Middle, HS-9, Display facing phantom, Sony Battery, Flip closed/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.4 V/m

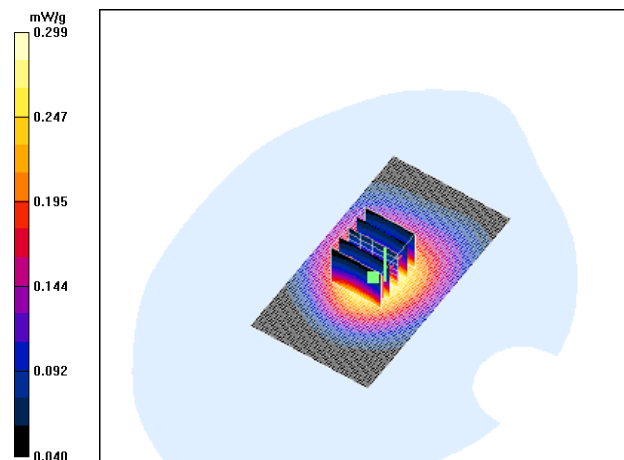
Peak SAR (extrapolated) = 0.345 W/kg

**SAR(1 g) = 0.285 mW/g**

**SAR(10 g) = 0.212 mW/g**

**Power Drift = 0.011 dB**

Maximum value of SAR (measured) = 0.299 mW/g





Date/Time: 2008-12-09 14:09:18

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: 2-slot GPRS850**

Frequency: 836.6 MHz; Duty Cycle: 1:4.2

Medium: MSL 850; Medium Notes: Liquid temperature= 21.3C

Medium parameters used:  $f = 837$  MHz;  $\sigma = 0.985$  mho/m;  $\epsilon_r = 52.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(6.01, 6.01, 6.01); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Body, Middle, No accessory, Back facing phantom, Sony Battery, Flip closed/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.729 mW/g

**Body, Middle, No accessory, Back facing phantom, Sony Battery, Flip closed/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 27.0 V/m

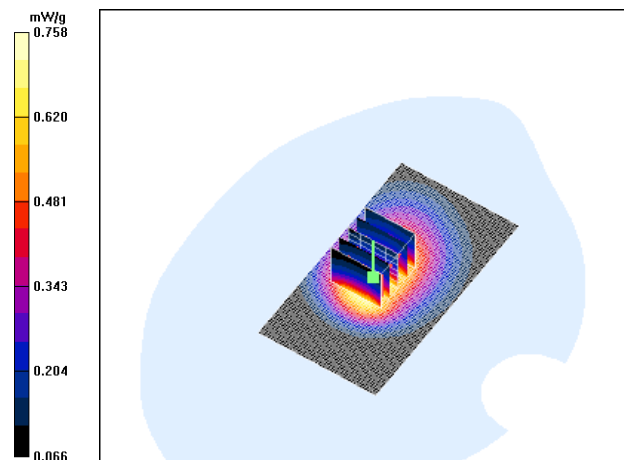
Peak SAR (extrapolated) = 0.886 W/kg

**SAR(1 g) = 0.705 mW/g**

**SAR(10 g) = 0.507 mW/g**

**Power Drift = -0.008 dB**

Maximum value of SAR (measured) = 0.758 mW/g



Date/Time: 2008-12-09 15:00:12

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: 2-slot GPRS850**

Frequency: 848.8 MHz; Duty Cycle: 1:4.2

Medium: MSL 850; Medium Notes: Liquid temperature= 21.3C

Medium parameters used:  $f = 849 \text{ MHz}$ ;  $\sigma = 0.991 \text{ mho/m}$ ;  $\epsilon_r = 52.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(6.01, 6.01, 6.01); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Body, High, HS-9, Back facing phantom, Sony Battery, Flip closed/Area Scan (51x91x1): Measurement grid:**

$dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.777 mW/g

**Body, High, HS-9, Back facing phantom, Sony Battery, Flip closed/Zoom Scan 2 (6x6x7)/Cube 0: Measurement**

grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 25.6 V/m

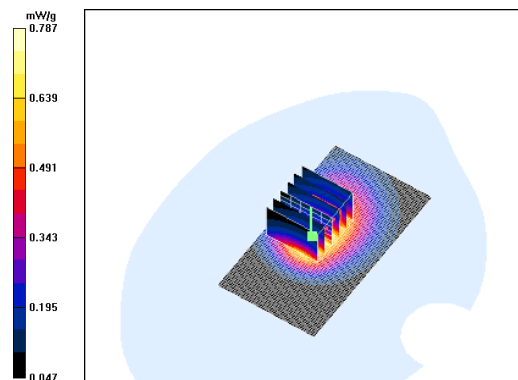
Peak SAR (extrapolated) = 0.934 W/kg

**SAR(1 g) = 0.732 mW/g**

**SAR(10 g) = 0.526 mW/g**

**Power Drift = -0.052 dB**

Maximum value of SAR (measured) = 0.787 mW/g



Date/Time: 2008-12-09 12:19:12

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: WCDMA850**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: MSL 850; Medium Notes: Liquid temperature= 21.3C

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.983 \text{ mho/m}$ ;  $\epsilon_r = 52.8$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(6.01, 6.01, 6.01); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Body, Middle, No accessory, Display facing phantom, Sony Battery, Flip closed/Area Scan (51x91x1):**

Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.235 mW/g

**Body, Middle, No accessory, Display facing phantom, Sony Battery, Flip closed/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 16.5 V/m

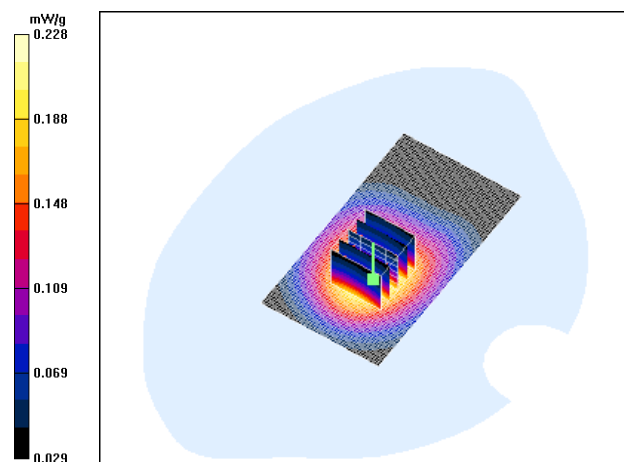
Peak SAR (extrapolated) = 0.256 W/kg

**SAR(1 g) = 0.215 mW/g**

**SAR(10 g) = 0.159 mW/g**

**Power Drift = -0.169 dB**

Maximum value of SAR (measured) = 0.228 mW/g



Date/Time: 2008-12-09 12:07:16

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: WCDMA850**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: MSL 850; Medium Notes: Liquid temperature= 21.3C

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.983 \text{ mho/m}$ ;  $\epsilon_r = 52.8$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(6.01, 6.01, 6.01); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Body, Middle, HS-9, Display facing phantom, Sony Battery, Flip closed/Area Scan (51x91x1):** Measurement grid:

$dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.222 mW/g

**Body, Middle, HS-9, Display facing phantom, Sony Battery, Flip closed/Zoom Scan (5x5x7)/Cube 0:** Measurement

grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 16.1 V/m

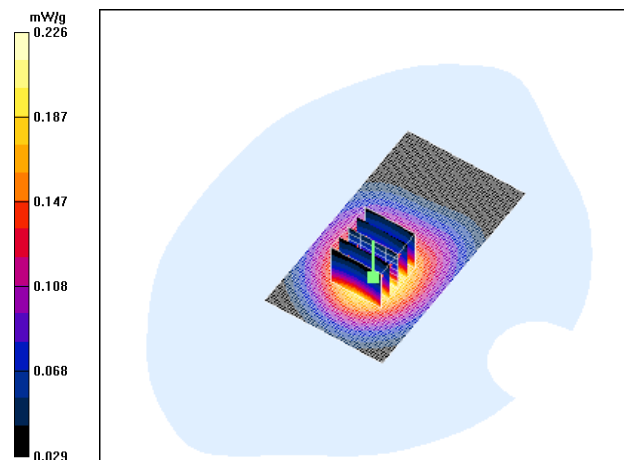
Peak SAR (extrapolated) = 0.254 W/kg

**SAR(1 g) = 0.212 mW/g**

**SAR(10 g) = 0.157 mW/g**

**Power Drift = -0.056 dB**

Maximum value of SAR (measured) = 0.226 mW/g



Date/Time: 2008-12-09 10:38:30

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: WCDMA850**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: MSL 850; Medium Notes: Liquid temperature= 21.3C

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.983 \text{ mho/m}$ ;  $\epsilon_r = 52.8$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(6.01, 6.01, 6.01); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Body, Middle, No accessory, Back facing phantom, Sony Battery, Flip closed/Area Scan (51x91x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.528 mW/g

**Body, Middle, No accessory, Back facing phantom, Sony Battery, Flip closed/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 22.6 V/m

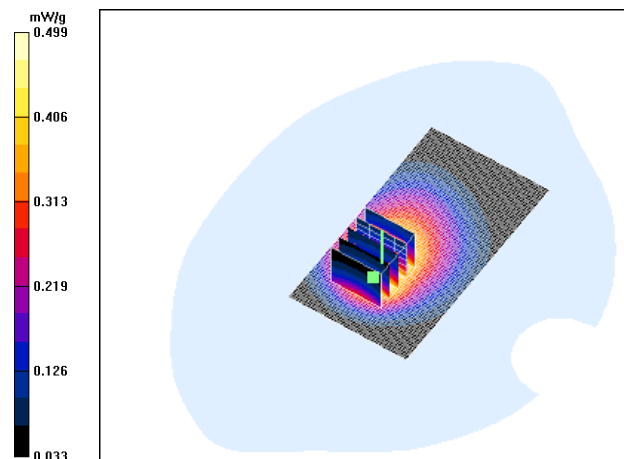
Peak SAR (extrapolated) = 0.595 W/kg

**SAR(1 g) = 0.473 mW/g**

**SAR(10 g) = 0.335 mW/g**

**Power Drift = -0.080 dB**

Maximum value of SAR (measured) = 0.499 mW/g



Date/Time: 2008-12-09 11:12:41

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: WCDMA850**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: MSL 850; Medium Notes: Liquid temperature= 21.3C

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.983 \text{ mho/m}$ ;  $\epsilon_r = 52.8$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(6.01, 6.01, 6.01); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Body, Middle, HS-9, Back facing phantom, Sony Battery, Flip closed/Area Scan (51x91x1):** Measurement grid:  
dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.539 mW/g

**Body, Middle, HS-9, Back facing phantom, Sony Battery, Flip closed/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.6 V/m

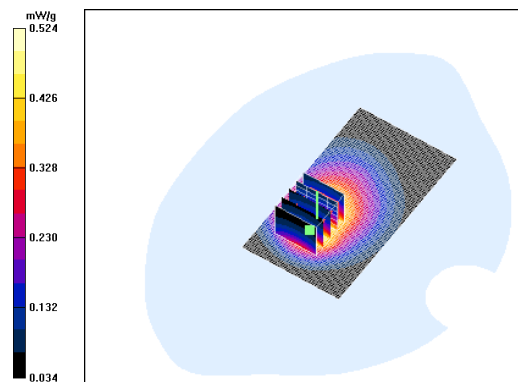
Peak SAR (extrapolated) = 0.640 W/kg

**SAR(1 g) = 0.485 mW/g**

**SAR(10 g) = 0.340 mW/g**

**Power Drift = 0.011 dB**

Maximum value of SAR (measured) = 0.524 mW/g



Date/Time: 2008-12-09 16:11:42

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: 2-slot GPRS850**

Frequency: 848.8 MHz; Duty Cycle: 1:4.2

Medium: MSL 850; Medium Notes: Liquid temperature= 21.3C

Medium parameters used:  $f = 849$  MHz;  $\sigma = 0.991$  mho/m;  $\epsilon_r = 52.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(6.01, 6.01, 6.01); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM2; Type: Twin Phantom; Serial: TP-1279
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Body, High, No accessory, Back facing phantom, Samsung Battery, Flip closed/Area Scan (51x91x1):**

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.791 mW/g

**Body, High, No accessory, Back facing phantom, Samsung Battery, Flip closed/Zoom Scan 2 (6x6x7)/Cube 0:**

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 27.9 V/m

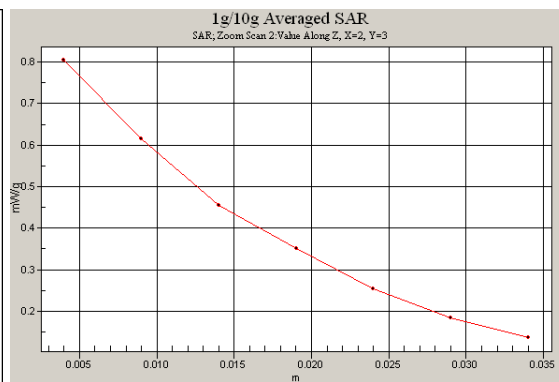
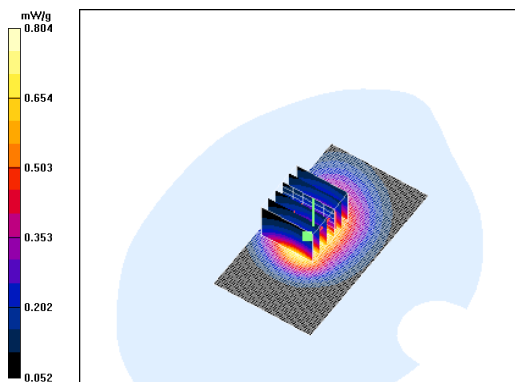
Peak SAR (extrapolated) = 0.969 W/kg

**SAR(1 g) = 0.758 mW/g**

**SAR(10 g) = 0.550 mW/g**

**Power Drift = 0.099 dB**

Maximum value of SAR (measured) = 0.804 mW/g



SAR Report

SD\_SAR\_0850\_01

Applicant: Nokia Corporation

Type: RM-455

Copyright © 2009 TCC Nokia

Date/Time: 2008-12-10 14:49:10

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: 2-slot GPRS1900**

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: MSL 1900; Medium Notes: Liquid temperature= 20.9C

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.49$  mho/m;  $\epsilon_r = 53$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(4.76, 4.76, 4.76); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Body, Middle, No accessory, Display facing phantom, Sony Battery, Flip closed/Area Scan (51x91x1):**

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.174 mW/g

**Body, Middle, No accessory, Display facing phantom, Sony Battery, Flip closed/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.4 V/m

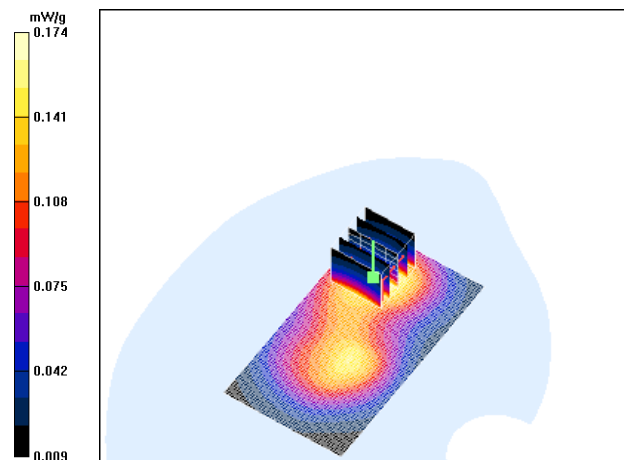
Peak SAR (extrapolated) = 0.255 W/kg

**SAR(1 g) = 0.164 mW/g**

**SAR(10 g) = 0.108 mW/g**

**Power Drift = -0.292 dB**

Maximum value of SAR (measured) = 0.174 mW/g





Date/Time: 2008-12-10 14:37:40

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: 2-slot GPRS1900**

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: MSL 1900; Medium Notes: Liquid temperature= 20.9C

Medium parameters used:  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.49 \text{ mho/m}$ ;  $\epsilon_r = 53$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(4.76, 4.76, 4.76); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Body, Middle, HS-9, Display facing phantom, Sony Battery, Flip closed/Area Scan (51x91x1):** Measurement grid:  
 $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.142 mW/g

**Body, Middle, HS-9, Display facing phantom, Sony Battery, Flip closed/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 8.66 V/m

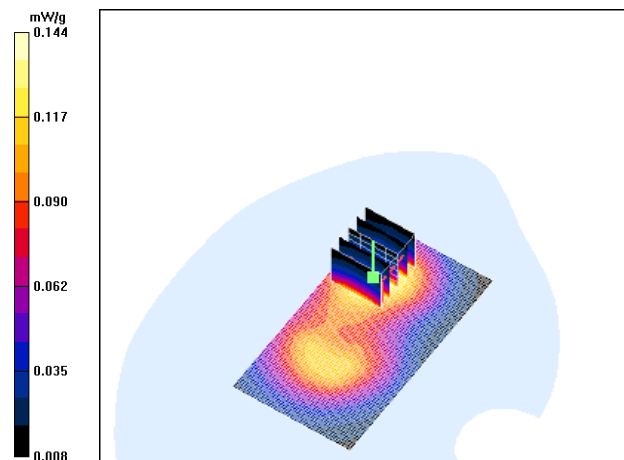
Peak SAR (extrapolated) = 0.207 W/kg

**SAR(1 g) = 0.134 mW/g**

**SAR(10 g) = 0.087 mW/g**

**Power Drift = 0.123 dB**

Maximum value of SAR (measured) = 0.144 mW/g



Date/Time: 2008-12-10 15:12:37

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: 2-slot GPRS1900**

Frequency: 1909.8 MHz; Duty Cycle: 1:4.2

Medium: MSL 1900; Medium Notes: Liquid temperature= 20.9C

Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.52$  mho/m;  $\epsilon_r = 52.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(4.76, 4.76, 4.76); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: TwN Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Body, High, No accessory, Back facing phantom, Sony Battery, Flip closed/Area Scan (51x91x1):** Measurement grid: dx=15mm, dy=15mm

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

**Body, High, No accessory, Back facing phantom, Sony Battery, Flip closed/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 14.1 V/m

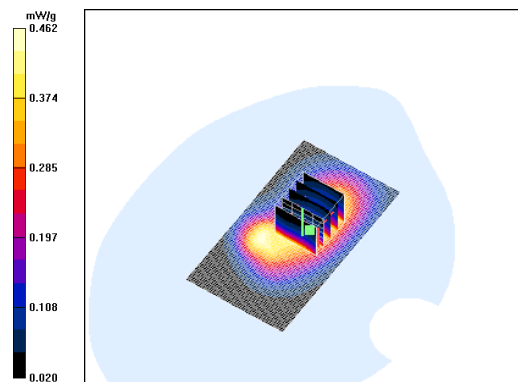
Peak SAR (extrapolated) = 0.673 W/kg

**SAR(1 g) = 0.424 mW/g**

**SAR(10 g) = 0.273 mW/g**

**Power Drift = -0.019 dB**

Maximum value of SAR (measured) = 0.462 mW/g



Date/Time: 2008-12-10 14:22:55

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: 2-slot GPRS1900**

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: MSL 1900; Medium Notes: Liquid temperature= 20.9C

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.49$  mho/m;  $\epsilon_r = 53$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(4.76, 4.76, 4.76); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Body, Middle, HS-9, Back facing phantom, Sony Battery, Flip closed/Area Scan (51x91x1): Measurement grid:**

dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.382 mW/g

**Body, Middle, HS-9, Back facing phantom, Sony Battery, Flip closed/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm**

Reference Value = 12.7 V/m

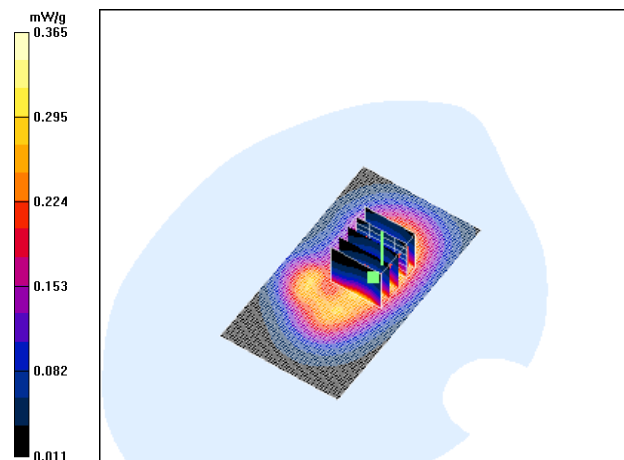
Peak SAR (extrapolated) = 0.525 W/kg

**SAR(1 g) = 0.341 mW/g**

**SAR(10 g) = 0.224 mW/g**

**Power Drift = -0.066 dB**

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



Date/Time: 2008-12-11 9:58:39

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: WCDMA1900**

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: MSL 1900; Medium Notes: Liquid temperature= 21.3C

Medium parameters used:  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.49 \text{ mho/m}$ ;  $\epsilon_r = 52.9$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(4.76, 4.76, 4.76); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Body, Middle, No accessory, Display facing phantom, Sony Battery, Flip closed/Area Scan (51x91x1):**

Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.260 mW/g

**Body, Middle, No accessory, Display facing phantom, Sony Battery, Flip closed/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 13.0 V/m

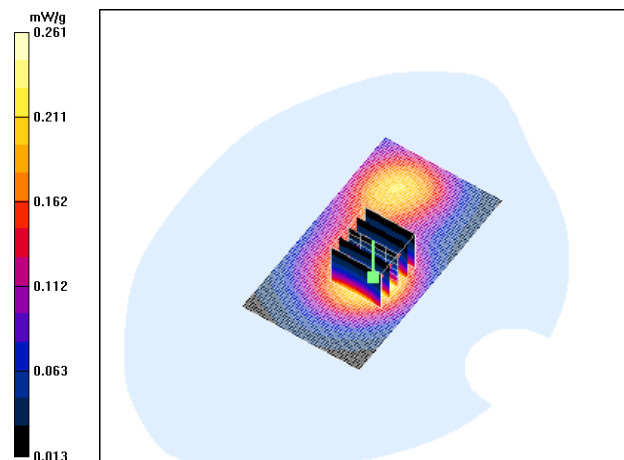
Peak SAR (extrapolated) = 0.393 W/kg

**SAR(1 g) = 0.248 mW/g**

**SAR(10 g) = 0.157 mW/g**

**Power Drift = 0.001 dB**

Maximum value of SAR (measured) = 0.261 mW/g



Date/Time: 2008-12-11 9:46:52

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: WCDMA1900**

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: MSL 1900; Medium Notes: Liquid temperature= 21.3C

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.49$  mho/m;  $\epsilon_r = 52.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(4.76, 4.76, 4.76); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Body, Middle, HS-9, Display facing phantom, Sony Battery, Flip closed/Area Scan (51x91x1):** Measurement grid:  
dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.189 mW/g

**Body, Middle, HS-9, Display facing phantom, Sony Battery, Flip closed/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.1 V/m

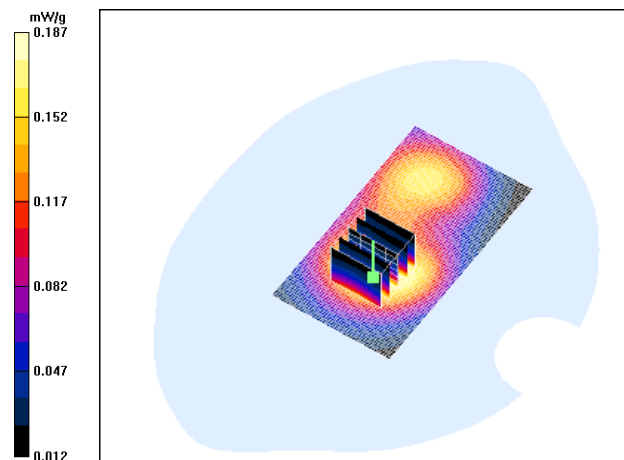
Peak SAR (extrapolated) = 0.265 W/kg

**SAR(1 g) = 0.176 mW/g**

**SAR(10 g) = 0.116 mW/g**

**Power Drift = 0.048 dB**

Maximum value of SAR (measured) = 0.187 mW/g



Date/Time: 2008-12-11 10:30:27

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

Communication System: WCDMA1900

Frequency: 1907.6 MHz; Duty Cycle: 1:1

Medium: MSL 1900; Medium Notes: Liquid temperature= 21.3C

Medium parameters used:  $f = 1908$  MHz;  $\sigma = 1.52$  mho/m;  $\epsilon_r = 52.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(4.76, 4.76, 4.76); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Body, High, No accessory, Back facing phantom, Sony Battery, Flip closed/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm**

Maximum value of SAR (interpolated) = 0.763 mW/g

**Body, High, No accessory, Back facing phantom, Sony Battery, Flip closed/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.1 V/m

Peak SAR (extrapolated) = 1.14 W/kg

**SAR(1 g) = 0.717 mW/g**

**SAR(10 g) = 0.448 mW/g**

**Power Drift = -0.473 dB**

Maximum value of SAR (measured) = 0.774 mW/g

**Body, High, No accessory, Back facing phantom, Sony Battery, Flip closed/Zoom Scan (5x5x7)/Cube 1:**

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.1 V/m

Peak SAR (extrapolated) = 1.26 W/kg

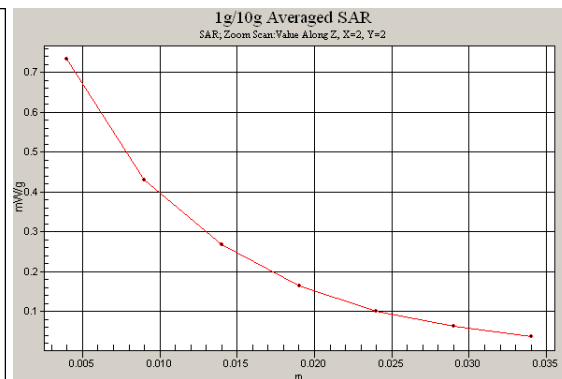
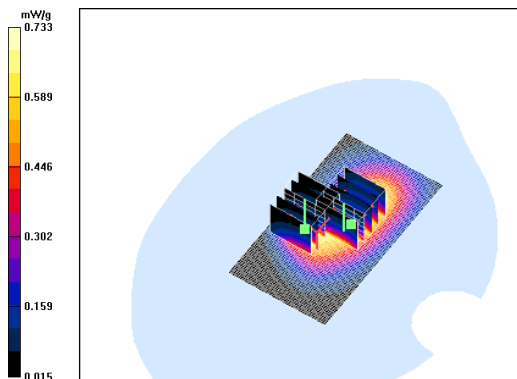
**SAR(1 g) = 0.675 mW/g**

**SAR(10 g) = 0.384 mW/g**

**Power Drift = -0.473 dB**

**Warning: Maximum averaged SAR over 10 g is located on the boundary of the measurement cube. This cube might not incorporate the absolute averaged SAR. Please consider a refinement of the Area Scan measurement.**

Maximum value of SAR (measured) = 0.733 mW/g



SAR Report

SD\_SAR\_0850\_01

Applicant: Nokia Corporation

Type: RM-455

Copyright © 2009 TCC Nokia

Date/Time: 2008-12-11 9:34:25

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

**Communication System: WCDMA1900**

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: MSL 1900; Medium Notes: Liquid temperature= 21.3C

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.49$  mho/m;  $\epsilon_r = 52.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(4.76, 4.76, 4.76); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: Twin Phantom; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Body, Middle, HS-9, Back facing phantom, Sony Battery, Flip closed/Area Scan (51x91x1):** Measurement grid:  
dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.461 mW/g

**Body, Middle, HS-9, Back facing phantom, Sony Battery, Flip closed/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.0 V/m

Peak SAR (extrapolated) = 0.629 W/kg

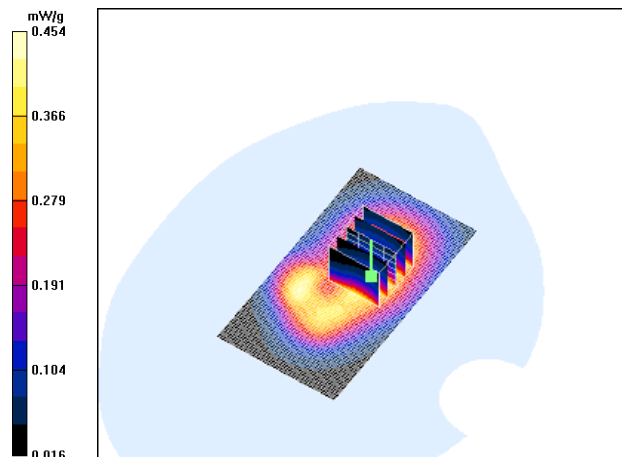
**SAR(1 g) = 0.427 mW/g**

**SAR(10 g) = 0.289 mW/g**

**Power Drift = 0.058 dB**

Warning: Maximum averaged SAR over 10 g is located on the boundary of the measurement cube. This cube might not incorporate the absolute averaged SAR. Please consider a refinement of the Area Scan measurement.

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



Date/Time: 2008-12-11 10:52:06

Test Laboratory: TCC Nokia

Type: RM-455; Serial: 004401/10/307247/2

Communication System: WCDMA1900

Frequency: 1907.6 MHz; Duty Cycle: 1:1

Medium: MSL 1900; Medium Notes: Liquid temperature= 21.3C

Medium parameters used:  $f = 1908$  MHz;  $\sigma = 1.52$  mho/m;  $\epsilon_r = 52.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1516; Probe Notes:
- ConvF(4.76, 4.76, 4.76); Calibrated: 2008-10-21
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2008-06-12
- Phantom: SAM1; Type: SAM; Serial: TP-1035
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 172

**Body, High, No accessory, Back facing phantom, Samsung Battery, Flip closed/Area Scan (51x91x1):**

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.742 mW/g

**Body, High, No accessory, Back facing phantom, Samsung Battery, Flip closed/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.1 V/m

Peak SAR (extrapolated) = 1.08 W/kg

**SAR(1 g) = 0.688 mW/g**

**SAR(10 g) = 0.434 mW/g**

**Power Drift = -0.557 dB**

Maximum value of SAR (measured) = 0.732 mW/g

**Body, High, No accessory, Back facing phantom, Samsung Battery, Flip closed/Zoom Scan (5x5x7)/Cube 1:**

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.1 V/m

Peak SAR (extrapolated) = 1.17 W/kg

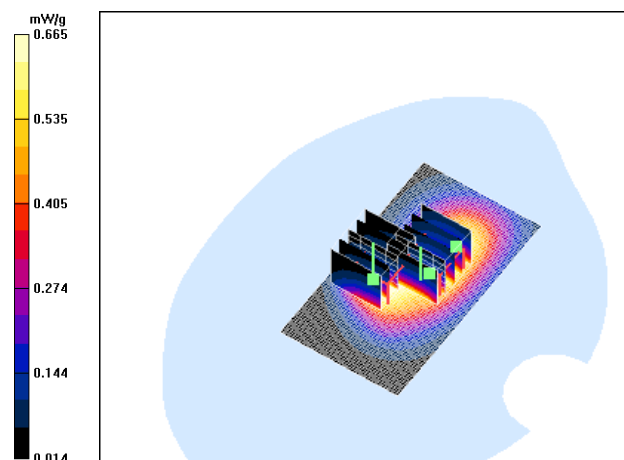
**SAR(1 g) = 0.636 mW/g**

**SAR(10 g) = 0.363 mW/g**

**Power Drift = -0.557 dB**

**Warning:** Maximum averaged SAR over 10 g is located on the boundary of the measurement cube. This cube might not incorporate the absolute averaged SAR. Please consider a refinement of the Area Scan measurement.

Maximum value of SAR (measured) = 0.665 mW/g



SAR Report

SD\_SAR\_0850\_01

Applicant: Nokia Corporation

Type: RM-455

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**APPENDIX C: RELEVANT PAGES FROM PROBE CALIBRATION REPORT(S)**

**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 **Nokia SD TCC**

Certificate No: **ET3-1516\_Oct08**

## CALIBRATION CERTIFICATE

Object **ET3DV6 - SN:1516**

Calibration procedure(s) **QA CAL-01.v6 and QA CAL-23.v3  
Calibration procedure for dosimetric E-field probes**

Calibration date: **October 21, 2008**

Condition of the calibrated item **In Tolerance**

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  $(22 \pm 3)^{\circ}\text{C}$  and humidity  $< 70\%$ .

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards          | ID #            | Cal Date (Certificate No.)        | Scheduled Calibration  |
|----------------------------|-----------------|-----------------------------------|------------------------|
| Power meter E4419B         | GB41293874      | 1-Apr-08 (No. 217-00788)          | Apr-09                 |
| Power sensor E4412A        | MY41495277      | 1-Apr-08 (No. 217-00788)          | Apr-09                 |
| Power sensor E4412A        | MY41498087      | 1-Apr-08 (No. 217-00788)          | Apr-09                 |
| Reference 3 dB Attenuator  | SN: S5054 (3c)  | 1-Jul-08 (No. 217-00865)          | Jul-09                 |
| Reference 20 dB Attenuator | SN: S5086 (20b) | 31-Mar-08 (No. 217-00787)         | Apr-09                 |
| Reference 30 dB Attenuator | SN: S5129 (30b) | 1-Jul-08 (No. 217-00866)          | Jul-09                 |
| Reference Probe ES3DV2     | SN: 3013        | 2-Jan-08 (No. ES3-3013_Jan08)     | Jan-09                 |
| DAE4                       | SN: 660         | 9-Sep-08 (No. DAE4-660_Sep08)     | Sep-09                 |
| Secondary Standards        | ID #            | Check Date (in house)             | Scheduled Check        |
| RF generator HP 8648C      | US3642U01700    | 4-Aug-99 (in house check Oct-07)  | In house check: Oct-09 |
| Network Analyzer HP 8753E  | US37390585      | 18-Oct-01 (in house check Oct-07) | In house check: Oct-08 |

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

Issued: October 21, 2008

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

Certificate No: ET3-1516\_Oct08

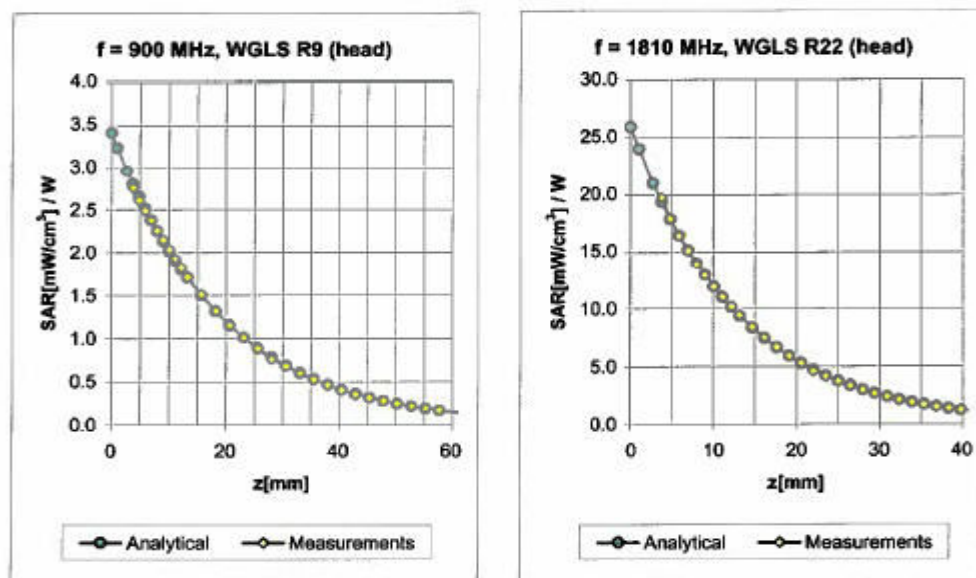
Page 1 of 9

SAR Report  
SD\_SAR\_0850\_01  
Applicant: Nokia Corporation

Type: RM-455

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## Conversion Factor Assessment



| f [MHz] | Validity [MHz] <sup>c</sup> | TSL  | Permittivity | Conductivity | Alpha | Depth | ConvF | Uncertainty   |
|---------|-----------------------------|------|--------------|--------------|-------|-------|-------|---------------|
| 900     | ± 50 / ± 100                | Head | 41.5 ± 5%    | 0.97 ± 5%    | 0.39  | 3.35  | 6.26  | ± 11.0% (k=2) |
| 1810    | ± 50 / ± 100                | Head | 40.0 ± 5%    | 1.40 ± 5%    | 0.55  | 2.34  | 5.10  | ± 11.0% (k=2) |
| 1950    | ± 50 / ± 100                | Head | 40.0 ± 5%    | 1.40 ± 5%    | 0.58  | 2.29  | 4.81  | ± 11.0% (k=2) |
| 2450    | ± 50 / ± 100                | Head | 39.2 ± 5%    | 1.80 ± 5%    | 0.90  | 1.80  | 4.29  | ± 11.0% (k=2) |
| 900     | ± 50 / ± 100                | Body | 55.0 ± 5%    | 1.05 ± 5%    | 0.63  | 2.67  | 6.01  | ± 11.0% (k=2) |
| 1810    | ± 50 / ± 100                | Body | 53.3 ± 5%    | 1.52 ± 5%    | 0.65  | 2.23  | 4.76  | ± 11.0% (k=2) |
| 1950    | ± 50 / ± 100                | Body | 53.3 ± 5%    | 1.52 ± 5%    | 0.65  | 2.24  | 4.66  | ± 11.0% (k=2) |
| 2450    | ± 50 / ± 100                | Body | 52.7 ± 5%    | 1.95 ± 5%    | 0.99  | 1.80  | 3.83  | ± 11.0% (k=2) |

<sup>c</sup> The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

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**APPENDIX D: RELEVANT PAGES FROM DIPOLE VALIDATION KIT REPORT(S)**



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



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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **Nokia SD TCC**

Certificate No: **D835V2-486\_Oct08**

## CALIBRATION CERTIFICATE

Object **D835V2 - SN: 486**

Calibration procedure(s) **QA CAL-05.v7  
Calibration procedure for dipole validation kits**

Calibration date: **October 22, 2008**

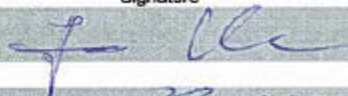
Condition of the calibrated item **In Tolerance**

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  $(22 \pm 3)^{\circ}\text{C}$  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         | 08-Oct-08 (No. 217-00898)         | Oct-09                 |
| Power sensor HP 8481A       | US37292783         | 08-Oct-08 (No. 217-00898)         | Oct-09                 |
| Reference 20 dB Attenuator  | SN: 5086 (20g)     | 01-Jul-08 (No. 217-00864)         | Jul-09                 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 01-Jul-08 (No. 217-00867)         | Jul-09                 |
| Reference Probe ES3DV2      | SN: 3025           | 28-Apr-08 (No. ES3-3025_Apr08)    | Apr-09                 |
| DAE4                        | SN: 601            | 14-Mar-08 (No. DAE4-601_Mar08)    | Mar-09                 |
| Secondary Standards         | ID #               | Check Date (in house)             | Scheduled Check        |
| Power sensor HP 8481A       | MY41092317         | 18-Oct-02 (in house check Oct-07) | In house check: Oct-09 |
| RF generator R&S SMT-06     | 100005             | 4-Aug-99 (in house check Oct-07)  | In house check: Oct-09 |
| Network Analyzer HP 8753E   | US37390585 S4206   | 18-Oct-01 (in house check Oct-07) | In house check: Oct-08 |

|                |                |                       |                                                                                       |
|----------------|----------------|-----------------------|---------------------------------------------------------------------------------------|
|                | <b>Name</b>    | <b>Function</b>       | <b>Signature</b>                                                                      |
| Calibrated by: | Jeton Kastrati | Laboratory Technician |   |
| Approved by:   | Katja Pokovic  | Technical Manager     |  |

Issued: October 22, 2008

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

## DASY5 Validation Report for Head TSL

Date/Time: 22.10.2008 11:34:32

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:486**

Communication System: CW-835; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL 900 MHz

Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.9$  mho/m;  $\epsilon_r = 40.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC)

### DASY5 Configuration:

- Probe: ES3DV2 - SN3025; ConvF(5.97, 5.97, 5.97); Calibrated: 28.04.2008
- Sensor-Surface: 3.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 14.03.2008
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

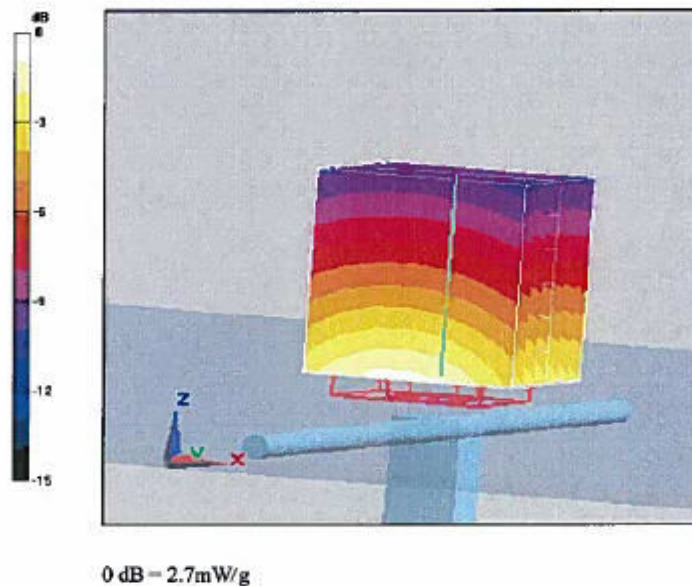
**Pin=250mW; dip=15mm; dist=3.4mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm**

Reference Value = 55.9 V/m; Power Drift = 0.020 dB

Peak SAR (extrapolated) = 3.52 W/kg

**SAR(1 g) = 2.39 mW/g; SAR(10 g) = 1.57 mW/g**

Maximum value of SAR (measured) = 2.7 mW/g



## DASY5 Validation Report for Body TSL

Date/Time: 20.10.2008 10:14:40

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:486**

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: MSL900

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 1 \text{ mho/m}$ ;  $\epsilon_r = 53.4$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC)

### DASY5 Configuration:

- Probe: ES3DV2 - SN3025; ConvF(5.9, 5.9, 5.9); Calibrated: 28.04.2008
- Sensor-Surface: 3.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 14.03.2008
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

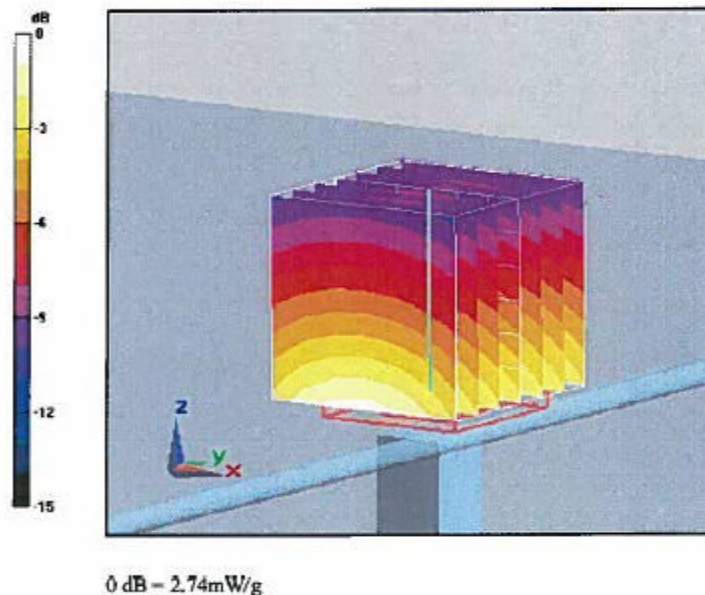
**Pin = 250mW, d = 15mm/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 53.5 V/m; Power Drift = 0.015 dB

Peak SAR (extrapolated) = 3.51 W/kg

**SAR(1 g) = 2.42 mW/g; SAR(10 g) = 1.6 mW/g**

Maximum value of SAR (measured) = 2.74 mW/g





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



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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 **Nokia SD TCC**

Certificate No: **D1900V2-509 Jun08**

## CALIBRATION CERTIFICATE

Object **D1900V2 - SN: 509**

Calibration procedure(s) **QA CAL-05.v7  
Calibration procedure for dipole validation kits**

Calibration date: **June 19, 2008**

Condition of the calibrated item **In Tolerance**

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  $(22 \pm 3)^{\circ}\text{C}$  and humidity  $< 70\%$ .

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards           | ID #               | Cal Date (Calibrated by, Certificate No.) | Scheduled Calibration |
|-----------------------------|--------------------|-------------------------------------------|-----------------------|
| Power meter EPM-442A        | GB37480704         | 04-Oct-07 (No. 217-00736)                 | Oct-08                |
| Power sensor HP 8461A       | US37292783         | 04-Oct-07 (No. 217-00736)                 | Oct-08                |
| Reference 20 dB Attenuator  | SN: 5086 (20g)     | 07-Aug-07 (No. 217-00718)                 | Aug-08                |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 08-Aug-07 (No. 217-00721)                 | Aug-08                |
| Reference Probe ES3DV2      | SN: 3025           | 28-Apr-08 (No. ES3-3025_Apr08)            | Apr-09                |
| DAE4                        | SN: 601            | 14-Mar-08 (No. DAE4-601_Mar08)            | Mar-09                |

| Secondary Standards       | ID #             | Check Date (in house)             | Scheduled Check        |
|---------------------------|------------------|-----------------------------------|------------------------|
| Power sensor HP 8461A     | MY41092317       | 18-Oct-02 (in house check Oct-07) | In house check: Oct-08 |
| RF generator R&S SMT-06   | 100005           | 4-Aug-98 (in house check Oct-07)  | In house check: Oct-09 |
| Network Analyzer HP 8753E | US37390585 S4206 | 18-Oct-01 (in house check Oct-07) | In house check: Oct-08 |

|                |                 |                       |                                                                                       |
|----------------|-----------------|-----------------------|---------------------------------------------------------------------------------------|
|                | Name            | Function              | Signature                                                                             |
| Calibrated by: | Claudio Leubler | Laboratory Technician |  |

|              |               |                   |
|--------------|---------------|-------------------|
| Approved by: | Kajsa Pokovic | Technical Manager |
|--------------|---------------|-------------------|

Issued: June 23, 2008

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



## DASY4 Validation Report for Head TSL

Date/Time: 18.06.2008 14:57:06

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:509**

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL U10 BB;

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.48$  mho/m;  $\epsilon_r = 39.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

### DASY4 Configuration:

- Probe: ES3DV2 - SN3025; ConvF(4.9, 4.9, 4.9); Calibrated: 28.04.2008
- Sensor-Surface: 3.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 14.03.2008
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; ;
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:**

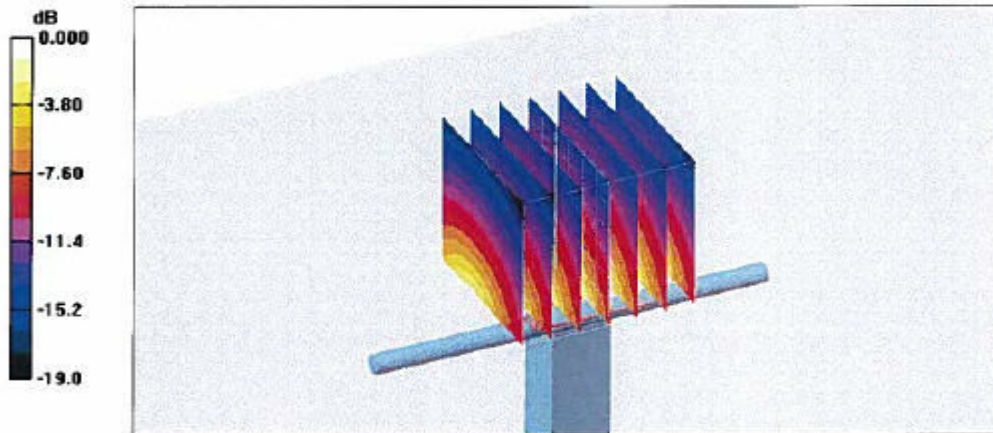
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 87.2 V/m; Power Drift = 0.060 dB

Peak SAR (extrapolated) = 18.5 W/kg

**SAR(1 g) = 9.96 mW/g; SAR(10 g) = 5.12 mW/g**

Maximum value of SAR (measured) = 12.0 mW/g



0 dB = 12.0mW/g

## DASY4 Validation Report for Body TSL

Date/Time: 19.06.2008 15:04:52

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:509**

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: MSL U10 BB;

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.58$  mho/m;  $\epsilon_r = 52.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

### DASY4 Configuration:

- Probe: ES3DV2 - SN3025; ConvF(4.5, 4.5, 4.5); Calibrated: 28.04.2008
- Sensor-Surface: 3.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 14.03.2008
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; ;
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

**Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:**

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

Reference Value = 88.6 V/m; Power Drift = 0.001 dB

Peak SAR (extrapolated) = 17.3 W/kg

**SAR(1 g) = 9.77 mW/g; SAR(10 g) = 5.11 mW/g**

Maximum value of SAR (measured) = 11.6 mW/g

