

## SAR Compliance Test Report

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| <b>Test report no.:</b>                                 | FCC_RM-680_03                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Date of report:</b>         | 2011-04-21                                                                                                                                 |
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| <b>Tested device:</b>                                   | RM-680                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                |                                                                                                                                            |
| <b>FCC ID:</b>                                          | LJPRM-680                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>IC:</b>                     | 661E-RM680                                                                                                                                 |
| <b>Supplement reports:</b>                              | SAR_Photo_RM-680_04                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                |                                                                                                                                            |
| <b>Testing has been carried out in accordance with:</b> | <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 |                                |                                                                                                                                            |
| <b>Documentation:</b>                                   | The documentation of the testing performed on the tested devices is archived for 15 years at TCC Nokia.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                |                                                                                                                                            |
| <b>Test results:</b>                                    | The tested device complies with the requirements in respect of all parameters subject to the test. 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.                                                                                                                                                                                                                                                                                                                                                                                                       |                                |                                                                                                                                            |
| <b>Date and signatures:</b>                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                |                                                                                                                                            |
| For the contents:                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                |                                                                                                                                            |

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## 1. SUMMARY OF SAR TEST REPORT

### 1.1 Test Details

|                                        |                                                                                                                                                  |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Period of test                         | 2011-03-28 to 2011-04-21                                                                                                                         |
| SN, HW and SW numbers of tested device | SN: 004402/13/293336/1, HW: 1122, SW: 0.2011.12-1_TA_RM680, DUT: 15522<br>SN: 004402/13/293375/9, HW: 1122, SW: 0.2011.12-1_TA_RM680, DUT: 15521 |
| Batteries used in testing              | -                                                                                                                                                |
| Headsets used in testing               | WH-701, DUT: 15518, 15519                                                                                                                        |
| 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)  | Conducted power | Position     | Measured SAR value (1g avg) | Scaled* SAR value (1g avg) | SAR limit (1g avg) | Result        |
|----------------------------|---------------|-----------------|--------------|-----------------------------|----------------------------|--------------------|---------------|
| 4-slot GPRS850             | 251 / 848.8   | 29.5 dBm        | Left, Cheek  | 0.308 W/kg                  | <b>0.34 W/kg</b>           | 1.6 W/kg           | <b>PASSED</b> |
| WCDMA850                   | 4233 / 846.6  | 23.5 dBm        | Right, Tilt  | 0.149 W/kg                  | <b>0.17 W/kg</b>           | 1.6 W/kg           | <b>PASSED</b> |
| WCDMA1700/2100             | 1513 / 1752.6 | 23.5 dBm        | Right, Cheek | 0.477 W/kg                  | <b>0.53 W/kg</b>           | 1.6 W/kg           | <b>PASSED</b> |
| 2-slot GPRS1900            | 661 / 1880.0  | 29.5 dBm        | Right, Cheek | 0.717 W/kg                  | <b>0.80 W/kg</b>           | 1.6 W/kg           | <b>PASSED</b> |
| WCDMA1900                  | 9400 / 1880.0 | 23.5 dBm        | Right, Cheek | 0.707 W/kg                  | <b>0.79 W/kg</b>           | 1.6 W/kg           | <b>PASSED</b> |
| WLAN2450                   | 11 / 2462.0   | 18.0 dBm        | Right, Tilt  | 0.539 W/kg                  | <b>0.60 W/kg</b>           | 1.6 W/kg           | <b>PASSED</b> |
| 4-slot GPRS850 + WLAN2450  | -             | -               | Right, Tilt  | 0.579 W/kg                  | <b>0.65 W/kg</b>           | 1.6 W/kg           | <b>PASSED</b> |
| WCDMA850 + WLAN2450        | -             | -               | Right, Tilt  | 0.524 W/kg                  | <b>0.59 W/kg</b>           | 1.6 W/kg           | <b>PASSED</b> |
| WCDMA1700/2100 + WLAN2450  | -             | -               | Right, Cheek | 0.494 W/kg                  | <b>0.55 W/kg</b>           | 1.6 W/kg           | <b>PASSED</b> |
| 2-slot GPRS1900 + WLAN2450 | -             | -               | Right, Cheek | 0.717 W/kg                  | <b>0.80 W/kg</b>           | 1.6 W/kg           | <b>PASSED</b> |
| WCDMA1900 + WLAN2450       | -             | -               | Right, Cheek | 0.707 W/kg                  | <b>0.79 W/kg</b>           | 1.6 W/kg           | <b>PASSED</b> |

## 1.2.2 Body Worn Configuration

| Mode                       | Ch / f (MHz)  | Conducted power | Separation distance | Measured SAR value (1g avg) | Scaled* SAR value (1g avg) | SAR limit (1g avg) | Result        |
|----------------------------|---------------|-----------------|---------------------|-----------------------------|----------------------------|--------------------|---------------|
| 4-slot GPRS850             | 190 / 836.6   | 29.5 dBm        | 1.5 cm              | 1.11 W/kg                   | <b>1.24 W/kg</b>           | 1.6 W/kg           | <b>PASSED</b> |
| WCDMA850                   | 4233 / 846.6  | 23.5 dBm        | 1.5 cm              | 0.547 W/kg                  | <b>0.61 W/kg</b>           | 1.6 W/kg           | <b>PASSED</b> |
| WCDMA1700/2100             | 1513 / 1752.6 | 23.5 dBm        | 1.5 cm              | 0.650 W/kg                  | <b>0.73 W/kg</b>           | 1.6 W/kg           | <b>PASSED</b> |
| 2-slot GPRS1900            | 661 / 1880.0  | 29.5 dBm        | 1.5 cm              | 0.831 W/kg                  | <b>0.93 W/kg</b>           | 1.6 W/kg           | <b>PASSED</b> |
| WCDMA1900                  | 9400 / 1880.0 | 23.5 dBm        | 1.5 cm              | 0.731 W/kg                  | <b>0.82 W/kg</b>           | 1.6 W/kg           | <b>PASSED</b> |
| WLAN2450                   | 11 / 2462.0   | 18.0 dBm        | 1.5 cm              | 0.162 W/kg                  | <b>0.18 W/kg</b>           | 1.6 W/kg           | <b>PASSED</b> |
| 4-slot GPRS850 + WLAN2450  | -             | -               | 1.5 cm              | 1.16 W/kg                   | <b>1.30 W/kg</b>           | 1.6 W/kg           | <b>PASSED</b> |
| WCDMA850 + WLAN2450        | -             | -               | 1.5 cm              | 0.615 W/kg                  | <b>0.69 W/kg</b>           | 1.6 W/kg           | <b>PASSED</b> |
| WCDMA1700/2100 + WLAN2450  | -             | -               | 1.5 cm              | 0.676 W/kg                  | <b>0.76 W/kg</b>           | 1.6 W/kg           | <b>PASSED</b> |
| 2-slot GPRS1900 + WLAN2450 | -             | -               | 1.5 cm              | 0.865 W/kg                  | <b>0.97 W/kg</b>           | 1.6 W/kg           | <b>PASSED</b> |
| WCDMA1900 + WLAN2450       | -             | -               | 1.5 cm              | 0.767 W/kg                  | <b>0.86 W/kg</b>           | 1.6 W/kg           | <b>PASSED</b> |

\* SAR values are scaled up by 12% to cover measurement drift. As a consequence of this upwards correction of the SAR values, the contribution of measurement drift to the overall measurement uncertainty (Section 6) is reduced to zero.

## 1.2.3 Maximum Drift

| Maximum drift covered by 12% scaling up of the SAR values | Maximum drift during measurements |
|-----------------------------------------------------------|-----------------------------------|
| 0.5dB                                                     | 0.30 dB                           |

## 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 4/8 | 824 – 849<br>1850 – 1910                |
| EGPRS              | 850<br>1900                                           | GMSK / 8PSK             | 1/8 to 4/8 | 824 – 849<br>1850 – 1910                |
| WCDMA              | 850 (Band V)<br>1700/2100 (Band IV)<br>1900 (Band II) |                         | 1          | 826 – 847<br>1712 – 1753<br>1852 – 1908 |
| HSUPA              | 850 (Band V)<br>1700/2100 (Band IV)<br>1900 (Band II) |                         | 1          | 826 – 847<br>1712 – 1753<br>1852 – 1908 |
| BT                 | 2450                                                  | GFSK                    | 1          | 2402 – 2480                             |
| WLAN b-mode        | 2450                                                  | Up to<br>11Mbps QPSK    | 1          | 2412 – 2462                             |
| WLAN g-mode        | 2450                                                  | Up to<br>54Mbps 64QAM   | 1          | 2412 – 2462                             |
| WLAN n-mode 20MHz  | 2450                                                  | Up to<br>72.2Mbps 64QAM | 1          | 2412 – 2462                             |

Outside of USA and Canada, the transmitter of the device is capable of operating also in GSM/GPRS/EGPRS900, GSM/GPRS/EGPRS1800, WCDMA900 and WCDMA2100 bands which are not part of this filing.

This device has Voice-over-IP/Dual Transfer Mode capability for use at the ear. Therefore, SAR for multi slot GPRS mode was evaluated against the head profile of the phantom. Dual Transfer Mode is a feature that utilises the multi-slot GPRS capability in this device; it allows simultaneous transmission of voice and data during the same call, using the same transmitter and antenna.

This is a WCDMA HSUPA device, but SAR tests for HSUPA mode have not been performed as no HSUPA Sub-test mode has an average power > 0.25dB above the basic WCDMA 12.2kbps RMC mode. Appendix C of this report gives a summary of the measured WCDMA and HSUPA average powers; a detailed report of these WCDMA and HSUPA conducted power tests is submitted separately.

This is a BT Class 1 device; as its power tuning target is 6dBm (4mW), SAR testing was deemed unnecessary.

This device has Wireless Router “Hotspot” mode capability.

## 2.1 Description of the Antenna

The device has internal antennas for both cellular and WLAN use. The cellular antenna is located at the bottom in the back section of the keypad slide. The WLAN antenna is located at the top in the back section of the keypad slide.

## 3. TEST CONDITIONS

### 3.1 Temperature and Humidity

|                           |             |
|---------------------------|-------------|
| Ambient temperature (°C): | 20.5 – 22.5 |
| Ambient humidity (RH %):  | 35 - 55     |

### 3.2 Test Signal, Frequencies and Output Power

The device was put into operation by using a call tester except for testing WLAN2450 where control software was used. 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. The results are given in the EMC report supporting this application.

The transmission mode of the device in all WLAN b-mode tests was DSSS QPSK 11Mbps. This mode has the highest (or equal highest) time-averaged output power of all the WLAN b and g modulation modes in Nokia devices. In WLAN n-mode, BPSK 6.5Mbps with 20MHz bandwidth was used.

### 3.3 Test Cases and Test Minimisation

The tested device examined in this report may not incorporate all of the features described in the text that follows, but its SAR evaluation will have been subjected to the same considerations and test logic described below.

Whilst it's possible to identify the maximum SAR test cases from inspection of the conducted power levels given in the Results tables (Section 7), different modes in the same band and multi-slot transmit GSM/GPRS modes can create some difficulties. Therefore the sequence of the SAR tests made in evaluating this device has used test logic that is based on measured SAR values. Comparison of measured SAR values in this way, can also allow some test minimization (i.e. test elimination) to be made.

For example, when SAR testing multi-slot GSM/GPRS/EGPRS modes, it is an inefficient use of test resources to fully SAR test every test configuration in each of the different modes as these modes have a fixed power relationship between them that is the same, irrespective of the test configuration. In the case of multi-slot GSM/GPRS modes, a single comparative SAR test - using the same test channel and test configuration - is made in each of the n-slot modes; the mode with the highest measured SAR value is then subjected to full SAR testing in all test configurations. These comparative SAR tests (same frequency, same test configuration) are regarded as extremely accurate as they are relative tests in which the tested device changes neither its frequency nor its position between tests. For different modes that operate in the same band and use the same antenna e.g. GSM/GPRS850 and WCDMA850, full SAR testing is carried out in the GSM/GPRS850 mode but WCDMA850 testing is limited to 3 channel testing in the maximum SAR test configuration for GSM/GPRS850.

Multi-slot SAR testing against the Head is always performed whenever such a device offers Push to Talk over cellular with the internal earpiece active, Dual Transfer Mode (i.e. the ability to transmit voice and data simultaneously using the same transmitter) or has WLAN (which enables a Voice over IP call to take place whilst the device can simultaneously transmit data on a cellular band). Whenever a device has an intended multi-slot use against the head, it is also Head SAR tested in EGPRS mode. It should be noted that EGPRS transmit modes can have either GMSK or 8PSK modulation but, when tested, only 8PSK EGPRS will appear explicitly in the results tables, as GMSK EGPRS mode has identical time-averaged power to the reported GPRS mode.

Devices that have flips or slides are fully SAR tested in all device configurations consistent with their intended usage. For example, flip phones that can receive a call in closed mode are SAR tested against the head in both open and closed configurations. Similarly, slide phones are fully SAR tested in all slide configurations in which calls are intended to be made or received.



In the results tables in Section 7, the maximum SAR value for the ‘basic’ tests (i.e. left cheek, left tilt, right cheek and right tilt in Head SAR testing; with and without headset with the back &/or display side facing the flat phantom in Body SAR testing) is bolded for each band. In some cases, after full testing of the basic SAR test configurations has been completed, additional checking SAR tests are made. These checking tests are always based on the bolded result from the ‘basic’ testing. When the SAR value of a checking test exceeds the maximum value from the basic tests, it is also bolded and used as the basis for any further checking tests that might be needed.

Checking tests are largely voluntary and can cover optional batteries, different camera slide positions, optional covers, etc. In the case of optional batteries, if the construction of the optional battery is significantly different to the battery used in the full testing e.g. if the outer can is floating electrically rather than grounded, then the maximum SAR test configuration in each band is tested with the optional battery in 3 channels. For camera slides, if the slide material is metal, then checking tests in 3 channels are again run for the maximum SAR test configuration in each band. For plastic camera slides, SAR checking is only carried out in the channel that provided the maximum SAR value for the original. Optional front and back covers are tested if their shape differs significantly from the original or if their metallic content varies by more than 15% from the original; in the former case, the testing depends on the extent of the physical differences, whereas in the latter case, 3 channel SAR testing is performed in every band in the max SAR test configuration.

#### 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                          | 538           | 12 months            | 2011-09            |
| DAE 4                          | 555           | 12 months            | 2012-02            |
| DAE 4                          | 793           | 12 months            | 2011-09            |
| E-field Probe ES3DV3           | 3194          | 12 months            | 2011-09            |
| E-field Probe ES3DV3           | 3165          | 12 months            | 2012-02            |
| E-field Probe EX3DV4           | 3573          | 12 months            | 2012-02            |
| Dipole Validation Kit, D835V2  | 480           | 24 months            | 2011-10            |
| Dipole Validation Kit, D1800V2 | 256           | 24 months            | 2011-10            |
| Dipole Validation Kit, D1900V2 | 5d013         | 24 months            | 2012-03            |
| Dipole Validation Kit, D2450V2 | 749           | 24 months            | 2011-10            |
| DASY4 software                 | Version 4.7   | -                    | -                  |

Additional test equipment used in testing:

| Test Equipment          | Model        | Serial Number | Calibration interval | Calibration expiry |
|-------------------------|--------------|---------------|----------------------|--------------------|
| Signal Generator        | SML03        | 101265        | 12 months            | 2011-08            |
| Amplifier               | ZHL-42 (SMA) | N072095-5     | 12 months            | 2011-08            |
| Power Meter             | NRVS         | 838624/032    | 12 months            | 2011-08            |
| Power Sensor            | NRV-Z32      | 839176/020    | 12 months            | 2011-08            |
| Call Tester             | CMU 200      | 101111        | -                    | -                  |
| Call Tester             | CMU 200      | 103293        | -                    | -                  |
| Vector Network Analyzer | 8753E        | US38432928    | 12 months            | 2011-08            |
| Dielectric Probe Kit    | 85070B       | US33020420    | -                    | -                  |
| Signal Generator        | E4436B       | US39260114    | 12 months            | 2011-08            |
| Amplifier               | 5S1G4        | 25583         | 12 months            | 2011-08            |
| Power Meter             | NRVS         | 849305/028    | 12 months            | 2011-08            |
| Power Sensor            | NRV-Z32      | 100067        | 12 months            | 2011-12            |

#### 4.1.1 Isotropic E-field Probe Type ES3DV3

|                      |                                                                                                                                                                                              |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Construction</b>  | Symmetrical design with triangular core<br>Interleaved sensors<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 D                                                                                                                                                        |
| <b>Frequency</b>     | 10 MHz to 4 GHz (dosimetry); Linearity: $\pm 0.2$ dB (30 MHz to 4 GHz)                                                                                                                       |
| <b>Directivity</b>   | $\pm 0.2$ dB in HSL (rotation around probe axis)<br>$\pm 0.3$ 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: 20 mm<br>Body diameter: 12 mm<br>Tip diameter: 3.9 mm<br>Distance from probe tip to dipole centers: 2.0 mm                                             |
| <b>Application</b>   | General dosimetry up to 4 GHz<br>Compliance tests of mobile phones<br>Fast automatic scanning in arbitrary phantoms                                                                          |

#### 4.1.2 Isotropic E-field Probe Type EX3DV4

|                      |                                                                                                                                                             |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Construction</b>  | Symmetrical design with triangular core<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents, e.g., DGBE) |
| <b>Calibration</b>   | Calibration certificate in Appendix D                                                                                                                       |
| <b>Frequency</b>     | 10 MHz to >6 GHz (dosimetry); Linearity: $\pm 0.2$ dB (30 MHz to 6 GHz)                                                                                     |
| <b>Directivity</b>   | $\pm 0.3$ dB in HSL (rotation around probe axis)<br>$\pm 0.5$ dB in tissue material (rotation normal to probe axis)                                         |
| <b>Dynamic Range</b> | 10 $\mu$ W/g to > 100 mW/g, Linearity: $\pm 0.2$ dB                                                                                                         |
| <b>Dimensions</b>    | Overall length: 330 mm<br>Tip length: 10 mm<br>Body diameter: 12 mm<br>Tip diameter: 2.5 mm<br>Distance from probe tip to dipole centers: 1.0 mm            |
| <b>Application</b>   | General dosimetry up to 6 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 at least 15.0 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                  |

##### 1800MHz band

| Ingredient      | Head<br>(% by weight) | Body<br>(% by weight) |
|-----------------|-----------------------|-----------------------|
| Deionised Water | 54.0                  | 70.20                 |
| Tween 20        | 45.6                  | 29.37                 |
| Salt            | 0.4                   | 0.43                  |

##### 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                  |

##### 2450MHz band

| Ingredient      | Head<br>(% by weight) | Body<br>(% by weight) |
|-----------------|-----------------------|-----------------------|
| Deionised Water | 56.0                  | 70.20                 |
| Tween 20        | 44.0                  | 29.62                 |
| Salt            | -                     | 0.18                  |

#### 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**

| <b>f [MHz]</b> | <b>Description</b> | <b>SAR [W/kg],<br/>1g</b> | <b>Dielectric Parameters</b>   |                                  | <b>Temp<br/>[°C]</b> |
|----------------|--------------------|---------------------------|--------------------------------|----------------------------------|----------------------|
|                |                    |                           | <b><math>\epsilon_r</math></b> | <b><math>\sigma</math> [S/m]</b> |                      |
| 835            | Reference result   | 2.36                      | 40.5                           | 0.88                             |                      |
|                | ± 10% window       | 2.12 – 2.60               |                                |                                  |                      |
|                | 2011-03-29         | 2.38                      | 40.7                           | 0.89                             | 21.0                 |
|                | 2011-04-04         | 2.45                      | 40.6                           | 0.90                             | 21.0                 |
| 1800           | Reference result   | 9.90                      | 40.0                           | 1.40                             |                      |
|                | ± 10% window       | 8.91 – 10.89              |                                |                                  |                      |
|                | 2011-03-31         | 10.8                      | 38.1                           | 1.39                             | 21.0                 |
|                | 2011-04-05         | 10.5                      | 38.9                           | 1.39                             | 21.0                 |
| 1900           | Reference result   | 10.2                      | 41.2                           | 1.45                             |                      |
|                | ± 10% window       | 9.2 – 11.2                |                                |                                  |                      |
|                | 2011-03-28         | 11.1                      | 39.5                           | 1.39                             | 21.0                 |
|                | 2011-04-07         | 10.8                      | 39.2                           | 1.40                             | 21.0                 |
| 2450           | Reference result   | 13.2                      | 39.1                           | 1.78                             |                      |
|                | ± 10% window       | 11.9 – 14.5               |                                |                                  |                      |
|                | 2011-03-28         | 13.9                      | 37.5                           | 1.83                             | 21.0                 |
|                | 2011-03-29         | 14.0                      | 37.7                           | 1.85                             | 21.0                 |

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 | 2.52              | 53.2                  | 1.01           |              |
|         | ± 10% window     | 2.27 – 2.77       |                       |                |              |
|         | 2011-04-09       | 2.59              | 53.0                  | 1.01           | 21.0         |
|         | 2011-04-11       | 2.52              | 53.0                  | 1.01           | 21.0         |
|         | 2011-04-12       | 2.54              | 52.9                  | 1.00           | 21.0         |
|         | 2011-04-20       | 2.52              | 52.8                  | 1.00           | 21.0         |
| 1800    | Reference result | 9.61              | 53.5                  | 1.50           |              |
|         | ± 10% window     | 8.65 – 10.57      |                       |                |              |
|         | 2011-04-06       | 10.5              | 51.4                  | 1.53           | 21.0         |
| 1900    | Reference result | 10.4              | 55.0                  | 1.58           |              |
|         | ± 10% window     | 9.4 – 11.4        |                       |                |              |
|         | 2011-03-30       | 11.3              | 53.0                  | 1.51           | 21.0         |
|         | 2011-04-07       | 10.8              | 52.5                  | 1.54           | 21.0         |
|         | 2011-04-10       | 11.0              | 52.6                  | 1.55           | 21.0         |
|         | 2011-04-11       | 11.3              | 52.5                  | 1.52           | 21.0         |
| 2450    | Reference result | 12.5              | 52.7                  | 1.98           |              |
|         | ± 10% window     | 11.2 – 13.8       |                       |                |              |
|         | 2011-03-30       | 13.3              | 50.2                  | 2.04           | 21.0         |
|         | 2011-03-31       | 13.2              | 50.5                  | 2.01           | 21.0         |
|         | 2011-04-01       | 13.4              | 50.6                  | 2.00           | 21.0         |

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] |              |
| 835        | Recommended value | 41.5                  | 0.90           |              |
|            | $\pm 5\%$ window  | 39.4 – 43.6           | 0.86 – 0.95    |              |
|            | 2011-04-04        | 40.6                  | 0.90           | 21.0         |
| 836        | Recommended value | 41.5                  | 0.90           |              |
|            | $\pm 5\%$ window  | 39.4 – 43.6           | 0.86 – 0.95    |              |
|            | 2011-03-29        | 40.6                  | 0.88           | 21.0         |
| 1732       | Recommended value | 40.1                  | 1.36           |              |
|            | $\pm 5\%$ window  | 38.1 – 42.1           | 1.29 – 1.43    |              |
|            | 2011-03-31        | 38.4                  | 1.33           | 21.0         |
|            | 2011-04-05        | 39.2                  | 1.32           | 21.0         |
| 1880       | Recommended value | 40.0                  | 1.40           |              |
|            | $\pm 5\%$ window  | 38.0 – 42.0           | 1.33 – 1.47    |              |
|            | 2011-03-28        | 39.5                  | 1.37           | 21.0         |
|            | 2011-04-07        | 39.3                  | 1.38           | 21.0         |
| 2442       | Recommended value | 39.2                  | 1.79           |              |
|            | $\pm 5\%$ window  | 37.3 – 41.2           | 1.70 – 1.88    |              |
|            | 2011-03-28        | 37.5                  | 1.82           | 21.0         |
|            | 2011-03-29        | 37.8                  | 1.84           | 21.0         |



**Body tissue simulant measurements**

| f<br>[MHz] | Description       | Dielectric Parameters |                | Temp<br>[°C] |
|------------|-------------------|-----------------------|----------------|--------------|
|            |                   | $\epsilon_r$          | $\sigma$ [S/m] |              |
| 835        | Recommended value | 55.2                  | 0.97           |              |
|            | ± 5% window       | 52.4 – 58.0           | 0.92 – 1.02    |              |
|            | 2011-04-04        | 53.2                  | 0.99           | 21.0         |
|            | 2011-04-09        | 53.0                  | 1.01           | 21.0         |
| 836        | Recommended value | 55.2                  | 0.97           |              |
|            | ± 5% window       | 52.4 – 58.0           | 0.92 – 1.02    |              |
|            | 2011-04-11        | 53.0                  | 1.01           | 21.0         |
|            | 2011-04-12        | 52.9                  | 1.00           | 21.0         |
|            | 2011-04-20        | 52.8                  | 1.00           | 21.0         |
| 1732       | Recommended value | 53.5                  | 1.48           |              |
|            | ± 5% window       | 50.8 – 56.2           | 1.40 – 1.55    |              |
|            | 2011-04-06        | 51.7                  | 1.44           | 21.0         |
| 1880       | Recommended value | 53.3                  | 1.52           |              |
|            | ± 5% window       | 50.6 – 56.0           | 1.44 – 1.60    |              |
|            | 2011-03-30        | 53.0                  | 1.49           | 21.0         |
|            | 2011-04-07        | 52.6                  | 1.52           | 21.0         |
|            | 2011-04-10        | 52.7                  | 1.53           | 21.0         |
|            | 2011-04-11        | 52.6                  | 1.50           | 21.0         |
| 2442       | Recommended value | 52.7                  | 1.94           |              |
|            | ± 5% window       | 50.1 – 55.3           | 1.85 – 2.04    |              |
|            | 2011-03-30        | 50.2                  | 2.03           | 21.0         |
|            | 2011-03-31        | 50.5                  | 2.00           | 21.0         |
|            | 2011-04-01        | 50.6                  | 1.99           | 21.0         |

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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

separation distance indicated in Section 1.2.2 using a separate flat spacer that was removed before the start of the measurements. For testing of the cellular bands, the device was oriented with its back side facing the phantom because this orientation gives the highest results. For WLAN, both sides of the device were tested.

Nokia body-worn accessories are commonly available for the separation distance used in this testing.

#### 5.2.2.1 Body Worn Configuration for assessment of Wireless Router mode

The device was placed in the SPEAG holder and positioned below the flat section of the phantom. In turn, the display side, the back side and the 4 edges were oriented to be facing the flat phantom at 10mm separation distance. The SAR test data from these tests is given in Appendix F.

### 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 | $C_i$           | $C_i \cdot U_i$ (%) | $V_i$ |
|---------------------------------------------------------------------------------|----------------------|----------|-----------|-----|-----------------|---------------------|-------|
| <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**

| Mode                     | 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>Conducted Power</b> |       | -                            | <b>32.5 dBm</b>     | -                   |
| Slide closed             | Left                   | Cheek | -                            | 0.144               | -                   |
|                          |                        | Tilt  | -                            | -                   | -                   |
|                          | Right                  | Cheek | -                            | -                   | -                   |
|                          |                        | Tilt  | -                            | -                   | -                   |
| <b>2-slot GPRS</b>       | <b>Conducted Power</b> |       | -                            | <b>32.5 dBm</b>     | -                   |
| Slide closed             | Left                   | Cheek | -                            | 0.267               | -                   |
|                          |                        | Tilt  | -                            | -                   | -                   |
|                          | Right                  | Cheek | -                            | -                   | -                   |
|                          |                        | Tilt  | -                            | -                   | -                   |
| <b>3-slot GPRS</b>       | <b>Conducted Power</b> |       | -                            | <b>30.7 dBm</b>     | -                   |
| Slide closed             | Left                   | Cheek | -                            | 0.260               | -                   |
|                          |                        | Tilt  | -                            | -                   | -                   |
|                          | Right                  | Cheek | -                            | -                   | -                   |
|                          |                        | Tilt  | -                            | -                   | -                   |
| <b>4-slot GPRS</b>       | <b>Conducted Power</b> |       | <b>29.5 dBm</b>              | <b>29.5 dBm</b>     | <b>29.5 dBm</b>     |
| Slide closed             | Left                   | Cheek | 0.223                        | 0.267               | <b>0.308</b>        |
|                          |                        | Tilt  | -                            | 0.229               | -                   |
|                          | Right                  | Cheek | -                            | 0.252               | -                   |
|                          |                        | Tilt  | -                            | 0.236               | -                   |
| <b>4-slot 8PSK EGPRS</b> | <b>Conducted Power</b> |       | -                            | -                   | <b>27.0 dBm</b>     |
| Slide closed             | Left                   | Cheek | -                            | -                   | 0.074               |
|                          |                        | Tilt  | -                            | -                   | -                   |
|                          | Right                  | Cheek | -                            | -                   | -                   |
|                          |                        | Tilt  | -                            | -                   | -                   |

(850MHz Table continues)

(850MHz Table continues)

| Mode         | 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 |
| WCDMA        | Conducted Power    |       | 23.5 dBm                     | 23.5 dBm             | 23.5 dBm             |
| Slide closed | Left               | Cheek | -                            | 0.106                | -                    |
|              |                    | Tilt  | -                            | 0.097                | -                    |
|              | Right              | Cheek | -                            | 0.107                | -                    |
|              |                    | Tilt  | 0.111                        | 0.111                | <b>0.149</b>         |

1700/2100MHz Head SAR results

| Mode         | Test configuration |       | SAR, averaged over 1g (W/kg) |                       |                       |
|--------------|--------------------|-------|------------------------------|-----------------------|-----------------------|
|              |                    |       | Ch 1312<br>1712.4 MHz        | Ch 1412<br>1732.4 MHz | Ch 1513<br>1752.6 MHz |
| WCDMA        | Conducted Power    |       | 23.5 dBm                     | 23.5 dBm              | 23.5 dBm              |
| Slide closed | Left               | Cheek | -                            | 0.339                 | -                     |
|              |                    | Tilt  | -                            | 0.307                 | -                     |
|              | Right              | Cheek | 0.408                        | 0.435                 | <b>0.477</b>          |
|              |                    | Tilt  | -                            | 0.225                 | -                     |

**1900MHz Head SAR results**

| Mode                     | 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>Conducted Power</b> |       | -                            | 30.5 dBm              | -                     |
| Slide closed             | Left                   | Cheek | -                            | 0.318                 | -                     |
|                          |                        | Tilt  | -                            | -                     | -                     |
|                          | Right                  | Cheek | -                            | -                     | -                     |
|                          |                        | Tilt  | -                            | -                     | -                     |
| <b>2-slot GPRS</b>       | <b>Conducted Power</b> |       | 29.5 dBm                     | 29.5 dBm              | 29.5 dBm              |
| Slide closed             | Left                   | Cheek | -                            | 0.496                 | -                     |
|                          |                        | Tilt  | -                            | 0.462                 | -                     |
|                          | Right                  | Cheek | 0.661                        | <b>0.717</b>          | 0.649                 |
|                          |                        | Tilt  | -                            | 0.269                 | -                     |
| <b>3-slot GPRS</b>       | <b>Conducted Power</b> |       | -                            | 27.5 dBm              | -                     |
| Slide closed             | Left                   | Cheek | -                            | 0.465                 | -                     |
|                          |                        | Tilt  | -                            | -                     | -                     |
|                          | Right                  | Cheek | -                            | -                     | -                     |
|                          |                        | Tilt  | -                            | -                     | -                     |
| <b>4-slot GPRS</b>       | <b>Conducted Power</b> |       | -                            | 26.5 dBm              | -                     |
| Slide closed             | Left                   | Cheek | -                            | 0.469                 | -                     |
|                          |                        | Tilt  | -                            | -                     | -                     |
|                          | Right                  | Cheek | -                            | -                     | -                     |
|                          |                        | Tilt  | -                            | -                     | -                     |
| <b>2-slot 8PSK EGPRS</b> | <b>Conducted Power</b> |       | -                            | 26.0 dBm              | -                     |
| Slide closed             | Left                   | Cheek | -                            | -                     | -                     |
|                          |                        | Tilt  | -                            | -                     | -                     |
|                          | Right                  | Cheek | -                            | 0.297                 | -                     |
|                          |                        | Tilt  | -                            | -                     | -                     |
| Mode                     | 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>Conducted Power</b> |       | 23.5 dBm                     | 23.5 dBm              | 23.5 dBm              |
| Slide closed             | Left                   | Cheek |                              | 0.520                 |                       |
|                          |                        | Tilt  |                              | 0.459                 |                       |
|                          | Right                  | Cheek | 0.623                        | <b>0.707</b>          | 0.616                 |
|                          |                        | Tilt  |                              | 0.298                 |                       |

### 2450MHz Head SAR results

| Mode                         | Test configuration     |       | SAR, averaged over 1g (W/kg) |                    |                     |
|------------------------------|------------------------|-------|------------------------------|--------------------|---------------------|
|                              |                        |       | Ch 1<br>2412.0 MHz           | Ch 7<br>2442.0 MHz | Ch 11<br>2462.0 MHz |
| <b>WLAN b-mode</b>           | <b>Conducted Power</b> |       | <b>18.0 dBm</b>              | <b>18.0 dBm</b>    | <b>18.0 dBm</b>     |
| Slide closed                 | Left                   | Cheek | -                            | 0.203              | -                   |
|                              |                        | Tilt  | -                            | 0.250              | -                   |
|                              | Right                  | Cheek | -                            | 0.402              | -                   |
|                              |                        | Tilt  | 0.475                        | 0.487              | <b>0.539</b>        |
| <b>WLAN n-mode<br/>20MHz</b> | <b>Conducted Power</b> |       | <b>17.5 dBm</b>              | <b>17.5 dBm</b>    | <b>17.5 dBm</b>     |
| Slide closed                 | Left                   | Cheek | -                            | -                  | -                   |
|                              |                        | Tilt  | -                            | -                  | -                   |
|                              | Right                  | Cheek | -                            | -                  | -                   |
|                              |                        | Tilt  | 0.188                        | 0.373              | 0.209               |



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

**850MHz Body SAR results**

| Mode         | 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  |
| 4-slot GPRS  |                        | Conducted Power    | 29.5 dBm                     | 29.5 dBm             | 29.5 dBm             |
| Slide closed | Display facing phantom | Without headset    | -                            | -                    | -                    |
|              |                        | Headset WH-701     | -                            | -                    | -                    |
|              | Back facing phantom    | Without headset    | 0.986                        | 1.11                 | 1.07                 |
|              |                        | Headset WH-701     | 0.724                        | 0.809                | 0.812                |
| Mode         | 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 |
| WCDMA        |                        | Conducted Power    | 23.5 dBm                     | 23.5 dBm             | 23.5 dBm             |
| Slide closed | Display facing phantom | Without headset    | -                            | -                    | -                    |
|              |                        | Headset WH-701     | -                            | -                    | -                    |
|              | Back facing phantom    | Without headset    | 0.514                        | 0.477                | 0.547                |
|              |                        | Headset WH-701     | -                            | 0.327                | -                    |

**1700/2100MHz Body SAR results**

| Mode         | Device orientation     | Test configuration | SAR, averaged over 1g (W/kg) |                       |                       |
|--------------|------------------------|--------------------|------------------------------|-----------------------|-----------------------|
|              |                        |                    | Ch 1312<br>1712.4 MHz        | Ch 1412<br>1732.4 MHz | Ch 1513<br>1752.6 MHz |
| WCDMA        |                        | Conducted Power    | 23.5 dBm                     | 23.5 dBm              | 23.5 dBm              |
| Slide closed | Display facing phantom | Without headset    | -                            | -                     | -                     |
|              |                        | Headset WH-701     | -                            | -                     | -                     |
|              | Back facing phantom    | Without headset    | 0.542                        | 0.611                 | <b>0.650</b>          |
|              |                        | Headset WH-701     | -                            | 0.549                 | -                     |

### 1900MHz Body SAR results

| Mode         | Device orientation     | 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  |
| 2-slot GPRS  |                        | Conducted Power    | 29.5 dBm                     | 29.5 dBm              | 29.5 dBm              |
| Slide closed | Display facing phantom | Without headset    | -                            | -                     | -                     |
|              |                        | Headset WH-701     | -                            | -                     | -                     |
|              | Back facing phantom    | Without headset    | 0.823                        | 0.831                 | 0.759                 |
|              |                        | Headset WH-701     | 0.811                        | 0.802                 | 0.735                 |
| Mode         | Device orientation     | 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 |
| WCDMA        |                        | Conducted Power    | 23.5 dBm                     | 23.5 dBm              | 23.5 dBm              |
| Slide closed | Display facing phantom | Without headset    | -                            | -                     | -                     |
|              |                        | Headset WH-701     | -                            | -                     | -                     |
|              | Back facing phantom    | Without headset    | 0.657                        | 0.731                 | 0.563                 |
|              |                        | Headset WH-701     | -                            | 0.592                 | -                     |

### 2450MHz Body SAR results

| Mode                 | Device orientation        | Test configuration | SAR, averaged over 1g (W/kg) |                    |                     |
|----------------------|---------------------------|--------------------|------------------------------|--------------------|---------------------|
|                      |                           |                    | Ch 1<br>2412.0 MHz           | Ch 7<br>2442.0 MHz | Ch 11<br>2462.0 MHz |
| WLAN<br>b-mode       |                           | Conducted Power    | 18.0 dBm                     | 18.0 dBm           | 18.0 dBm            |
| Slide closed         | Display facing<br>phantom | Without headset    | -                            | 0.060              | -                   |
|                      |                           | Headset WH-701     | -                            | 0.044              | -                   |
|                      | Back facing<br>phantom    | Without headset    | 0.145                        | 0.144              | <b>0.162</b>        |
|                      |                           | Headset WH-701     | -                            | 0.106              | -                   |
| WLAN<br>n-mode 20MHz |                           | Conducted Power    | 17.5 dBm                     | 17.5 dBm           | 17.5 dBm            |
| Slide closed         | Display facing<br>phantom | Without headset    | -                            | -                  | -                   |
|                      |                           | Headset WH-701     | -                            | -                  | -                   |
|                      | Back facing<br>phantom    | Without headset    | 0.058                        | 0.106              | 0.063               |
|                      |                           | Headset WH-701     | -                            | -                  | -                   |

**Simultaneous transmissions: Combined SAR results –  
Individual band Max results**

| Test configuration                            | Max. 1g SAR results |                |           |                 |                 |            |
|-----------------------------------------------|---------------------|----------------|-----------|-----------------|-----------------|------------|
|                                               | WLAN                | 4-slot GPRS850 | WCDMA 850 | WCDMA 1700/2100 | 2-slot GPRS1900 | WCDMA 1900 |
| Head: Left, Cheek                             | 0.203               | 0.308          | 0.106     | 0.339           | 0.496           | 0.520      |
| Head: Left, Tilt                              | 0.250               | 0.229          | 0.097     | 0.307           | 0.462           | 0.459      |
| Head: Right, Cheek                            | 0.402               | 0.252          | 0.107     | 0.477           | 0.717           | 0.707      |
| Head: Right, Tilt                             | 0.539               | 0.236          | 0.149     | 0.225           | 0.269           | 0.298      |
| Body: Display facing phantom, Without Headset | 0.060               | -              | -         | -               | -               | -          |
| Body: Display facing phantom, Headset WH-701  | 0.044               | -              | -         | -               | -               | -          |
| Body: Back facing phantom, Without Headset    | 0.162               | 1.11           | 0.547     | 0.650           | 0.831           | 0.731      |
| Body: Back facing phantom, Headset WH-701     | 0.106               | 0.812          | 0.327     | 0.549           | 0.811           | 0.592      |

**Simultaneous transmissions: Combined SAR results –  
Max + Max combined results**

| Test configuration                            | Max. 1g SAR results   |                  |                        |                        |                   |
|-----------------------------------------------|-----------------------|------------------|------------------------|------------------------|-------------------|
|                                               | 4-slot GPRS850 + WLAN | WCDMA 850 + WLAN | WCDMA 1700/2100 + WLAN | 2-slot GPRS1900 + WLAN | WCDMA 1900 + WLAN |
| Head: Left, Cheek                             | 0.511                 | 0.309            | 0.542                  | 0.699                  | 0.723             |
| Head: Left, Tilt                              | 0.479                 | 0.347            | 0.557                  | 0.712                  | 0.709             |
| Head: Right, Cheek                            | 0.654                 | 0.509            | <b>0.879</b>           | <b>1.119</b>           | <b>1.109</b>      |
| Head: Right, Tilt                             | <b>0.775</b>          | <b>0.688</b>     | 0.764                  | 0.808                  | 0.837             |
| Body: Display facing phantom, Without Headset | -                     | -                | -                      | -                      | -                 |
| Body: Display facing phantom, Headset WH-701  | -                     | -                | -                      | -                      | -                 |
| Body: Back facing phantom, Without Headset    | <b>1.272</b>          | <b>0.709</b>     | <b>0.812</b>           | <b>0.993</b>           | <b>0.893</b>      |
| Body: Back facing phantom, Headset WH-701     | 0.918                 | 0.433            | 0.655                  | 0.917                  | 0.698             |

The following table gives a more accurate assessment of the SAR values for simultaneous transmission. These values have been calculated using the SPEAG Combined Multiband algorithm, which is based on area scans. It a) converts the 2D area scans into 3D volume scans by assuming frequency-dependent decay characteristics for the E-field, b) sums the SAR values for WLAN2450 and the cellular bands point-by-point and c) calculates the combined average SAR values.

**Simultaneous transmissions: Combined SAR results –  
SPEAG Combined Multiband algorithm results**

| Test configuration                               | Max. 1g SAR results         |                        |                              |                              |                         |
|--------------------------------------------------|-----------------------------|------------------------|------------------------------|------------------------------|-------------------------|
|                                                  | 4-slot<br>GPRS850<br>+ WLAN | WCDMA<br>850<br>+ WLAN | WCDMA<br>1700/2100<br>+ WLAN | 2-slot<br>GPRS1900<br>+ WLAN | WCDMA<br>1900<br>+ WLAN |
| Head: Left, Cheek                                | -                           | -                      | -                            | -                            | -                       |
| Head: Left, Tilt                                 | -                           | -                      | -                            | -                            | -                       |
| Head: Right, Cheek                               | -                           | -                      | <b>0.494</b>                 | <b>0.698</b>                 | <b>0.694</b>            |
| Head: Right, Tilt                                | <b>0.579</b>                | <b>0.524</b>           | -                            | -                            | -                       |
| Body: Display facing phantom,<br>Without Headset | -                           | -                      | -                            | -                            | -                       |
| Body: Display facing phantom,<br>Headset WH-701  | -                           | -                      | -                            | -                            | -                       |
| Body: Back facing phantom,<br>Without Headset    | <b>1.16</b>                 | <b>0.615</b>           | <b>0.676</b>                 | <b>0.865</b>                 | <b>0.767</b>            |
| Body: Back facing phantom,<br>Headset WH-701     | -                           | -                      | -                            | -                            | -                       |

Some of the Combined SAR values in the above table are less than the maximum SAR values for the contributing cellular band. This is due to a) minimal overlap of the SAR distributions of the cellular band with WLAN2450 and b) uncertainties associated with the different methods of calculation. In these cases, the maximum SAR values given for the combined Modes in the Summary table in Section 1.2 are those for the individual cellular band.

Note: Simultaneous Transmission Procedures as described in KDB648474 are not required for this product. The Combined SAR data given in the tables above has been voluntarily calculated.

Plots of the Measurement scans are given in Appendix B.

## APPENDIX A: SYSTEM CHECKING SCANS

Date/Time: 2011-03-29 08:35:55

Test Laboratory: TCC Nokia  
Type: D835V2; Serial: D835V2 - SN:480

### Communication System: CW835

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes:  $t = 21.1$  C

Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.887$  mho/m;  $\epsilon_r = 40.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

#### DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(6.09, 6.09, 6.09); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**d=15mm, Pin=250mW/Area Scan (61x81x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.50 mW/g

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

Reference Value = 53.5 V/m

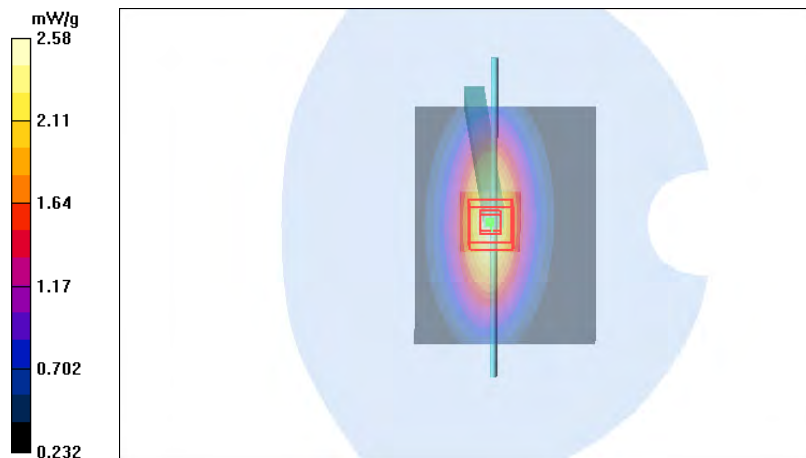
Peak SAR (extrapolated) = 3.62 W/kg

**SAR(1 g) = 2.38 mW/g**

**SAR(10 g) = 1.54 mW/g**

**Power Drift = 0.080 dB**

Maximum value of SAR (measured) = 2.58 mW/g



Date/Time: 2011-04-04 08:34:03

Test Laboratory: TCC Nokia  
Type: D835V2; Serial: D835V2 - SN:480

**Communication System: CW835**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes:  $t = 21.0$  C

Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.896$  mho/m;  $\epsilon_r = 40.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(6.09, 6.09, 6.09); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**d=15mm, Pin=250mW/Area Scan (61x81x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.59 mW/g

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

Reference Value = 54.1 V/m

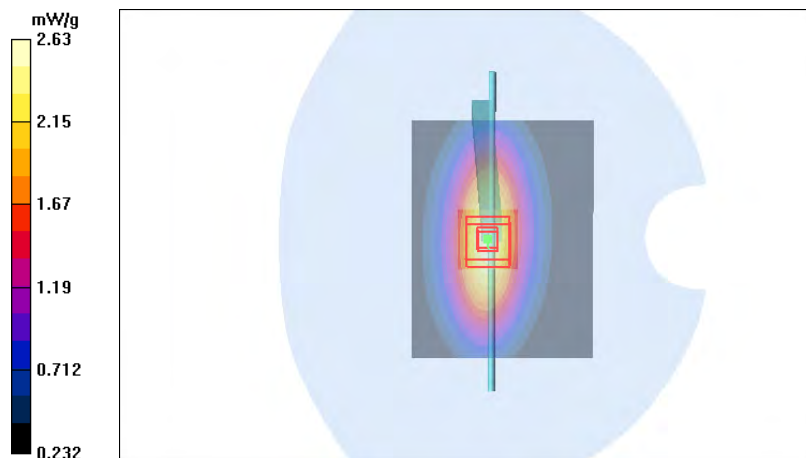
Peak SAR (extrapolated) = 3.71 W/kg

**SAR(1 g) = 2.45 mW/g**

**SAR(10 g) = 1.59 mW/g**

**Power Drift = 0.054 dB**

Maximum value of SAR (measured) = 2.63 mW/g



Date/Time: 2011-03-31 12:39:54

Test Laboratory: TCC Nokia  
Type: D1800V2; Serial: D1800V2 - SN:256

**Communication System: CW1800**

Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: HSL1800; Medium Notes: t= 21.5 C

Medium parameters used: f = 1800 MHz;  $\sigma$  = 1.39 mho/m;  $\epsilon_r$  = 38.1;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.19, 5.19, 5.19); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**d=15mm, Pin=250mW/Area Scan (61x81x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 12.5 mW/g

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

Reference Value = 94.5 V/m

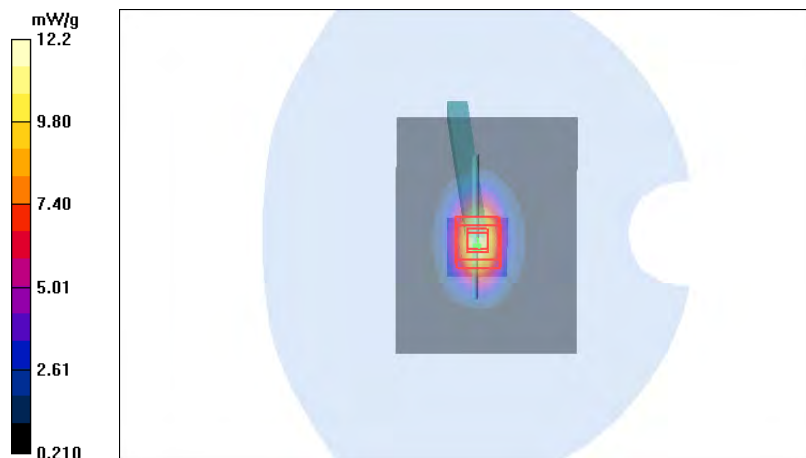
Peak SAR (extrapolated) = 20.2 W/kg

**SAR(1 g) = 10.8 mW/g**

**SAR(10 g) = 5.59 mW/g**

**Power Drift = 0.068 dB**

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





Date/Time: 2011-04-05 09:02:50

Test Laboratory: TCC Nokia  
Type: D1800V2; Serial: D1800V2 - SN:256

**Communication System: CW1800**

Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: HSL1800; Medium Notes:  $t = 21.3$  C

Medium parameters used:  $f = 1800$  MHz;  $\sigma = 1.39$  mho/m;  $\epsilon_r = 38.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.19, 5.19, 5.19); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**d=15mm, Pin=250mW/Area Scan (61x81x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 12.1 mW/g

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

Reference Value = 92.5 V/m

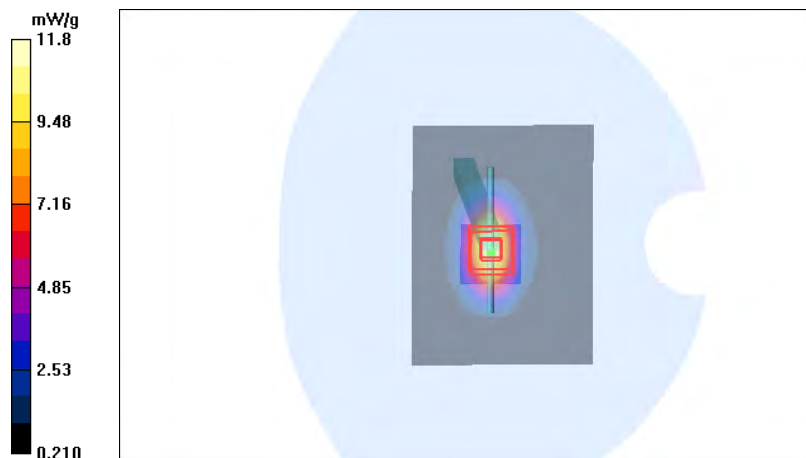
Peak SAR (extrapolated) = 19.7 W/kg

**SAR(1 g) = 10.5 mW/g**

**SAR(10 g) = 5.44 mW/g**

**Power Drift = 0.108 dB**

Maximum value of SAR (measured) = 11.8 mW/g



Date/Time: 2011-03-28 10:04:12

Test Laboratory: TCC Nokia

Type: D1900V2; Serial: D1900V2 - SN:5d013

**Communication System: CW1900**

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes:  $t = 21.6$  C

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.39$  mho/m;  $\epsilon_r = 39.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.03, 5.03, 5.03); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**d=15mm, Pin=250mW/Area Scan (61x81x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 13.1 mW/g

**d=15mm, Pin=250mW/Zoom Scan 2 (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 96.0 V/m

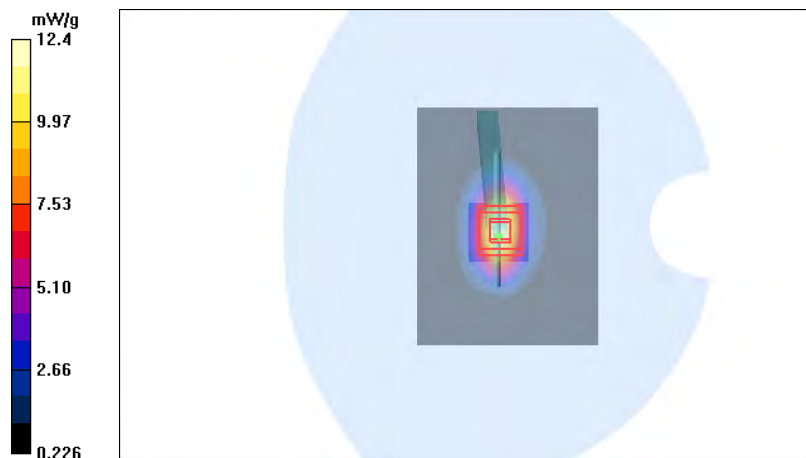
Peak SAR (extrapolated) = 20.8 W/kg

**SAR(1 g) = 11.1 mW/g**

**SAR(10 g) = 5.74 mW/g**

**Power Drift = -0.079 dB**

Maximum value of SAR (measured) = 12.4 mW/g



Date/Time: 2011-04-07 09:02:39

Test Laboratory: TCC Nokia  
Type: D1900V2; Serial: D1900V2 - SN:5d013

**Communication System: CW1900**

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes:  $t = 21.6$  C

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.4$  mho/m;  $\epsilon_r = 39.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.03, 5.03, 5.03); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**d=15mm, Pin=250mW/Area Scan (61x81x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 12.5 mW/g

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

Reference Value = 91.2 V/m

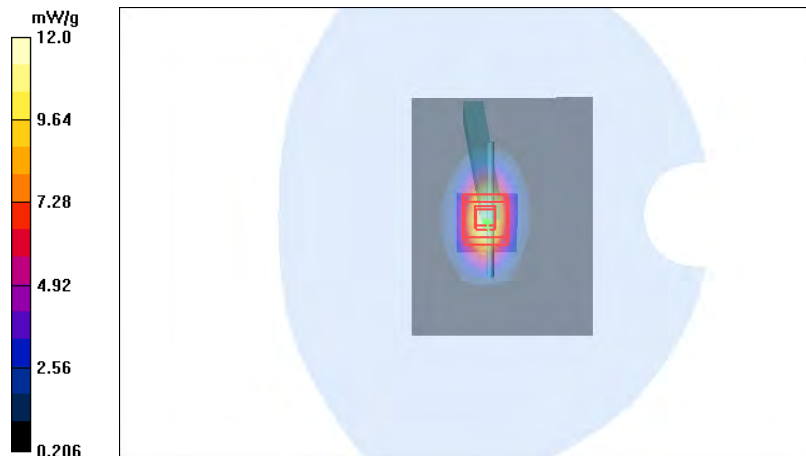
Peak SAR (extrapolated) = 20.5 W/kg

**SAR(1 g) = 10.8 mW/g**

**SAR(10 g) = 5.56 mW/g**

**Power Drift = 0.118 dB**

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



Date/Time: 2011-03-28 08:59:03

Test Laboratory: TCC Nokia  
Type: D2450V2; Serial: D2450V2 - SN:749

**Communication System: CW2450**

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes:  $t = 20.4\text{ C}$

Medium parameters used:  $f = 2450\text{ MHz}$ ;  $\sigma = 1.83\text{ mho/m}$ ;  $\epsilon_r = 37.5$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: EX3DV4 - SN3573
- ConvF(6.69, 6.69, 6.69); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2010-09-08
- Phantom: SAM1; Type: SAM; Serial: TP-1126
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**d=15mm, Pin=250mW/Area Scan (61x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 17.3 mW/g

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

Reference Value = 86.4 V/m

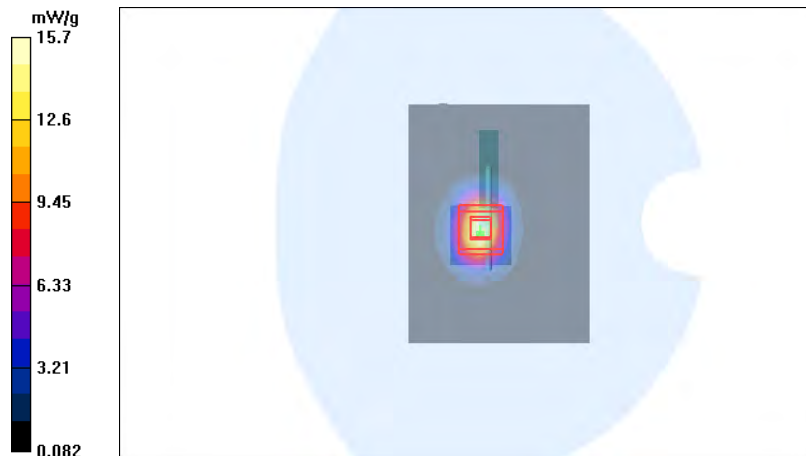
Peak SAR (extrapolated) = 29.2 W/kg

**SAR(1 g) = 13.9 mW/g**

**SAR(10 g) = 6.4 mW/g**

**Power Drift = 0.065 dB**

Maximum value of SAR (measured) = 15.7 mW/g



Date/Time: 2011-03-29 09:35:39

Test Laboratory: TCC Nokia

Type: D2450V2; Serial: D2450V2 - SN:749

**Communication System: CW2450**

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: t= 20.5 C

Medium parameters used: f = 2450 MHz;  $\sigma$  = 1.85 mho/m;  $\epsilon_r$  = 37.7;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3573
- ConvF(6.69, 6.69, 6.69); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2010-09-08
- Phantom: SAM1; Type: SAM; Serial: TP-1126
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**d=15mm, Pin=250mW/Area Scan (61x81x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 17.7 mW/g

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

Reference Value = 85.5 V/m

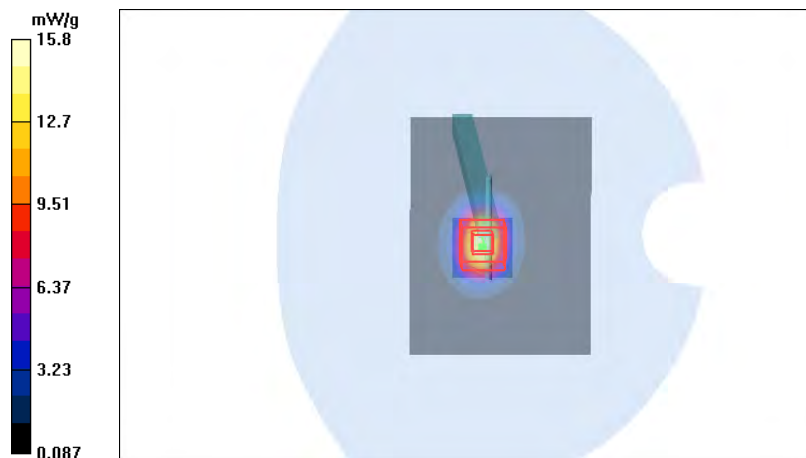
Peak SAR (extrapolated) = 29.5 W/kg

**SAR(1 g) = 14 mW/g**

**SAR(10 g) = 6.49 mW/g**

**Power Drift = 0.073 dB**

Maximum value of SAR (measured) = 15.8 mW/g



Date/Time: 2011-04-09 09:56:20

Test Laboratory: TCC Nokia  
Type: D835V2; Serial: D835V2 - SN:480

**Communication System: CW835**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 21.6 C

Medium parameters used: f = 835 MHz;  $\sigma$  = 1.01 mho/m;  $\epsilon_r$  = 53;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(5.95, 5.95, 5.95); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**d=15mm, Pin=250mW/Area Scan (61x81x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.76 mW/g

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

Reference Value = 52.5 V/m

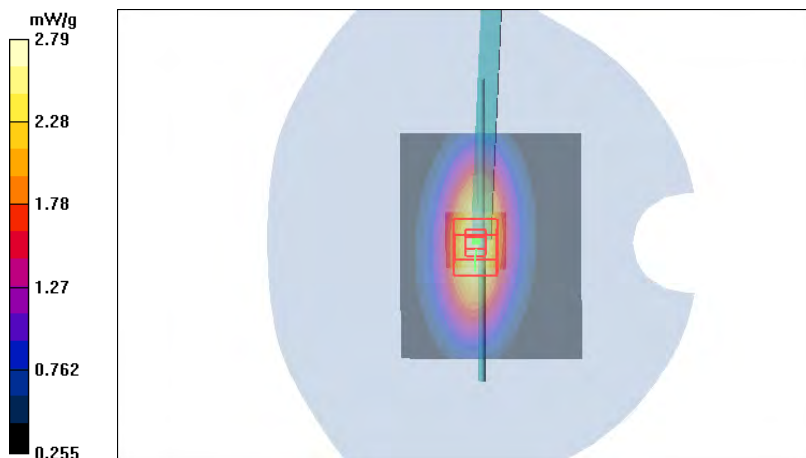
Peak SAR (extrapolated) = 3.90 W/kg

**SAR(1 g) = 2.59 mW/g**

**SAR(10 g) = 1.68 mW/g**

**Power Drift = 0.059 dB**

Maximum value of SAR (measured) = 2.79 mW/g



Date/Time: 2011-04-11 09:12:39

Test Laboratory: TCC Nokia  
Type: D835V2; Serial: D835V2 - SN:480

**Communication System: CW835**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 21.2 C

Medium parameters used: f = 835 MHz;  $\sigma$  = 1.01 mho/m;  $\epsilon_r$  = 53;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(5.95, 5.95, 5.95); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**d=15mm, Pin=250mW/Area Scan (61x81x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.70 mW/g

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

Reference Value = 51.8 V/m

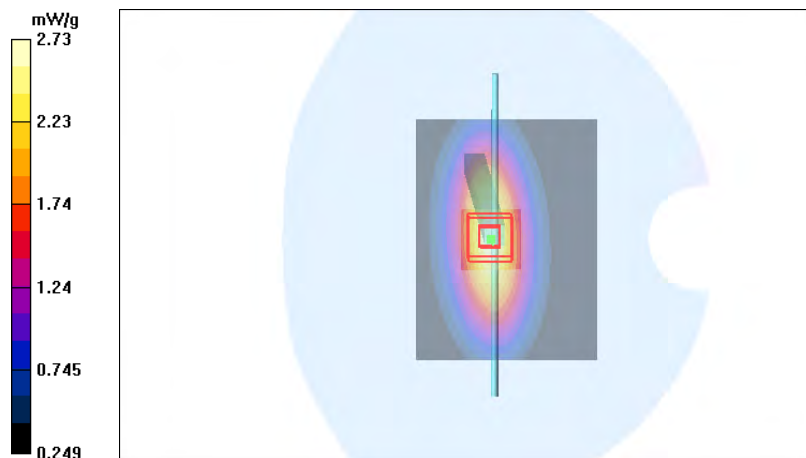
Peak SAR (extrapolated) = 3.80 W/kg

**SAR(1 g) = 2.52 mW/g**

**SAR(10 g) = 1.65 mW/g**

**Power Drift = 0.022 dB**

Maximum value of SAR (measured) = 2.73 mW/g



Date/Time: 2011-04-12 08:51:09

Test Laboratory: TCC Nokia  
Type: D835V2; Serial: D835V2 - SN:480

**Communication System: CW835**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes:  $t = 21.2$  C

Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.997$  mho/m;  $\epsilon_r = 52.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(5.95, 5.95, 5.95); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**d=15mm, Pin=250mW/Area Scan (61x81x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.71 mW/g

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

Reference Value = 52.5 V/m

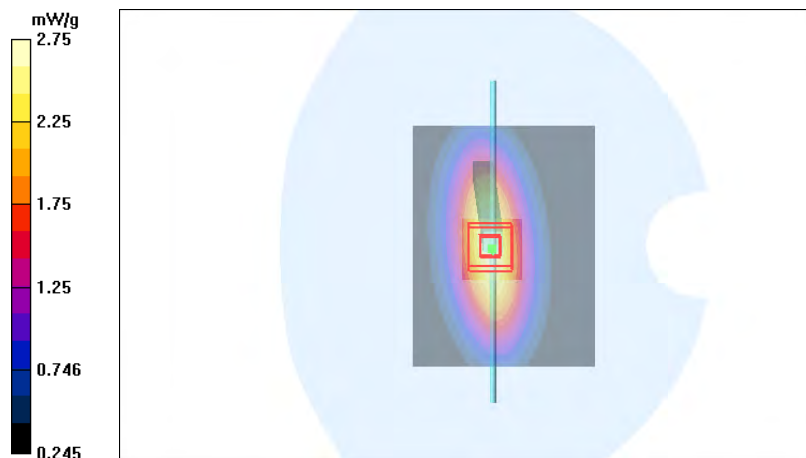
Peak SAR (extrapolated) = 3.84 W/kg

**SAR(1 g) = 2.54 mW/g**

**SAR(10 g) = 1.65 mW/g**

**Power Drift = 0.027 dB**

Maximum value of SAR (measured) = 2.75 mW/g





Date/Time: 2011-04-20 10:38:32

Test Laboratory: TCC Nokia

Type: D835V2; Serial: D835V2 - SN:480

**Communication System: CW835**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: BSL900; Medium Notes: t= 21.4 C

Medium parameters used: f = 835 MHz;  $\sigma$  = 1 mho/m;  $\epsilon_r$  = 52.8;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(5.95, 5.95, 5.95); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**d=15mm, Pin=250mW/Area Scan (61x81x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.71 mW/g

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

Reference Value = 52.4 V/m

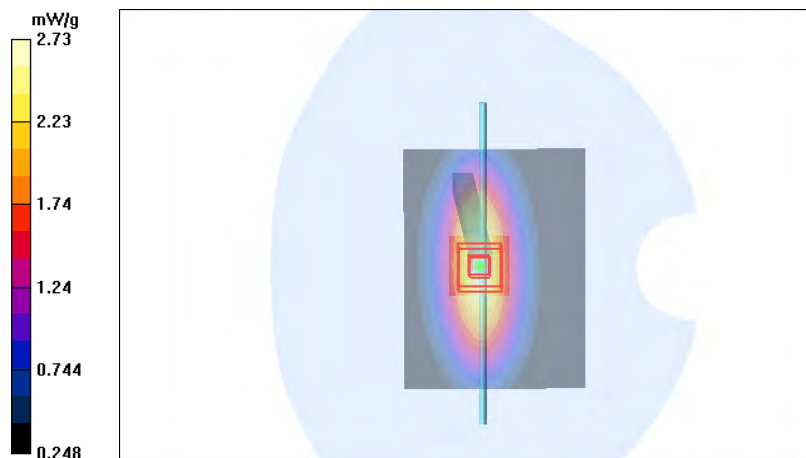
Peak SAR (extrapolated) = 3.81 W/kg

**SAR(1 g) = 2.52 mW/g**

**SAR(10 g) = 1.64 mW/g**

**Power Drift = -0.027 dB**

Maximum value of SAR (measured) = 2.73 mW/g



SAR Report

FCC\_RM-680\_03

Applicant: Nokia Corporation

Type: RM-680

Copyright © 2011 TCC Nokia

Date/Time: 2011-04-06 09:26:03

Test Laboratory: TCC Nokia  
Type: D1800V2; Serial: D1800V2 - SN:256

**Communication System: CW1800**

Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: BSL1800; Medium Notes:  $t = 21.0\text{ }^{\circ}\text{C}$

Medium parameters used:  $f = 1800\text{ MHz}$ ;  $\sigma = 1.53\text{ mho/m}$ ;  $\epsilon_r = 51.4$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.91, 4.91, 4.91); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**d=15mm, Pin=250mW/Area Scan (61x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 12.5 mW/g

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

Reference Value = 87.9 V/m

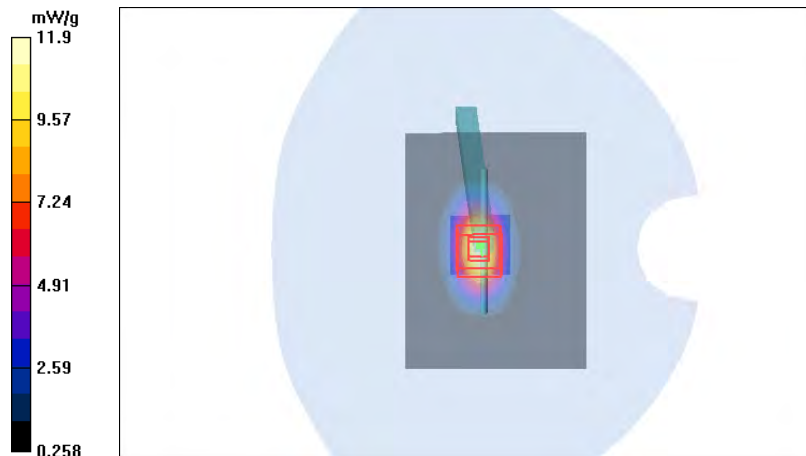
Peak SAR (extrapolated) = 18.2 W/kg

**SAR(1 g) = 10.5 mW/g**

**SAR(10 g) = 5.54 mW/g**

**Power Drift = 0.104 dB**

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



Date/Time: 2011-03-30 09:15:01

Test Laboratory: TCC Nokia  
Type: D1900V2; Serial: D1900V2 - SN:5d013

**Communication System: CW1900**

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes:  $t = 21.7\text{ }^{\circ}\text{C}$

Medium parameters used:  $f = 1900\text{ MHz}$ ;  $\sigma = 1.51\text{ mho/m}$ ;  $\epsilon_r = 53$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**d=15mm, Pin=250mW/Area Scan (61x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 13.1 mW/g

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

Reference Value = 92.4 V/m

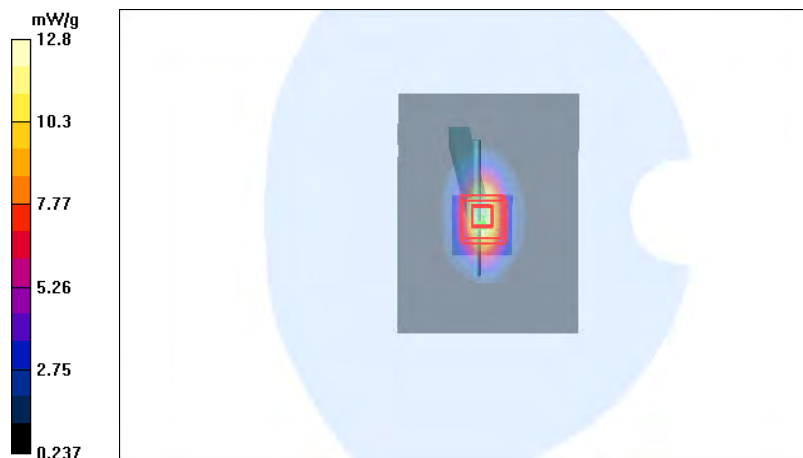
Peak SAR (extrapolated) = 19.9 W/kg

**SAR(1 g) = 11.3 mW/g**

**SAR(10 g) = 5.93 mW/g**

**Power Drift = 0.109 dB**

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



Date/Time: 2011-04-07 13:54:19

Test Laboratory: TCC Nokia  
Type: D1900V2; Serial: D1900V2 - SN:5d013

**Communication System: CW1900**

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes:  $t = 20.7\text{ C}$

Medium parameters used:  $f = 1900\text{ MHz}$ ;  $\sigma = 1.54\text{ mho/m}$ ;  $\epsilon_r = 52.5$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**d=15mm, Pin=250mW/Area Scan (61x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) =  $12.5\text{ mW/g}$

**d=15mm, Pin=250mW/Zoom Scan 2 (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $90.4\text{ V/m}$

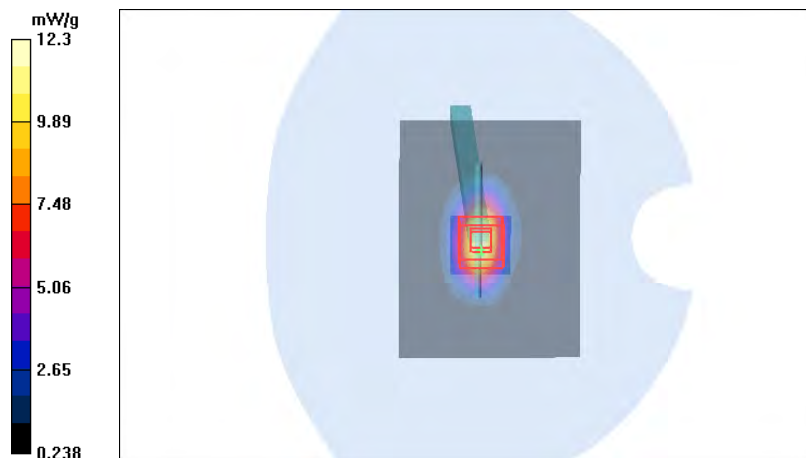
Peak SAR (extrapolated) =  $19.1\text{ W/kg}$

**SAR(1 g) =  $10.8\text{ mW/g}$**

**SAR(10 g) =  $5.62\text{ mW/g}$**

**Power Drift =  $0.200\text{ dB}$**

Maximum value of SAR (measured) =  $12.3\text{ mW/g}$



Date/Time: 2011-04-10 09:53:54

Test Laboratory: TCC Nokia

Type: **D1900V2**; Serial: **D1900V2 - SN:5d013**

**Communication System: CW1900**

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes:  $t = 21.5\text{ }^{\circ}\text{C}$

Medium parameters used:  $f = 1900\text{ MHz}$ ;  $\sigma = 1.55\text{ mho/m}$ ;  $\epsilon_r = 52.6$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**d=15mm, Pin=250mW/Area Scan (61x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 12.9 mW/g

**d=15mm, Pin=250mW/Zoom Scan 2 (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 91.4 V/m

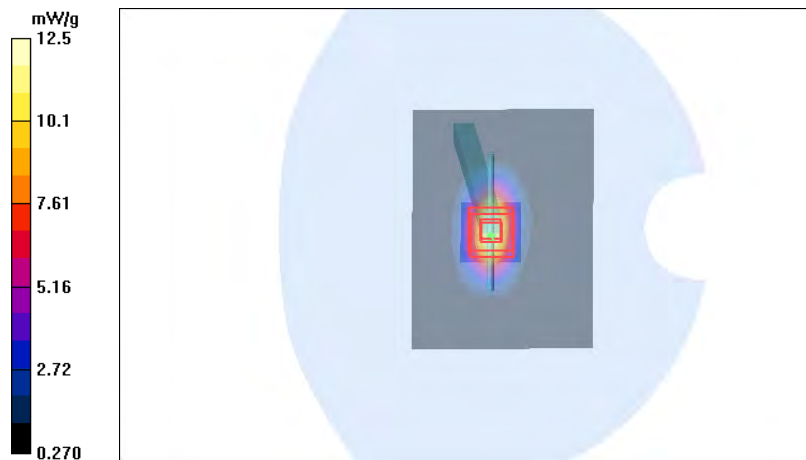
Peak SAR (extrapolated) = 19.5 W/kg

**SAR(1 g) = 11 mW/g**

**SAR(10 g) = 5.74 mW/g**

**Power Drift = 0.148 dB**

Maximum value of SAR (measured) = 12.5 mW/g



Date/Time: 2011-04-11 08:19:47

Test Laboratory: TCC Nokia

Type: D1900V2; Serial: D1900V2 - SN:5d013

**Communication System: CW1900**

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes:  $t = 21.5\text{ C}$

Medium parameters used:  $f = 1900\text{ MHz}$ ;  $\sigma = 1.52\text{ mho/m}$ ;  $\epsilon_r = 52.5$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**d=15mm, Pin=250mW/Area Scan (61x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 13.3 mW/g

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

Reference Value = 92.8 V/m

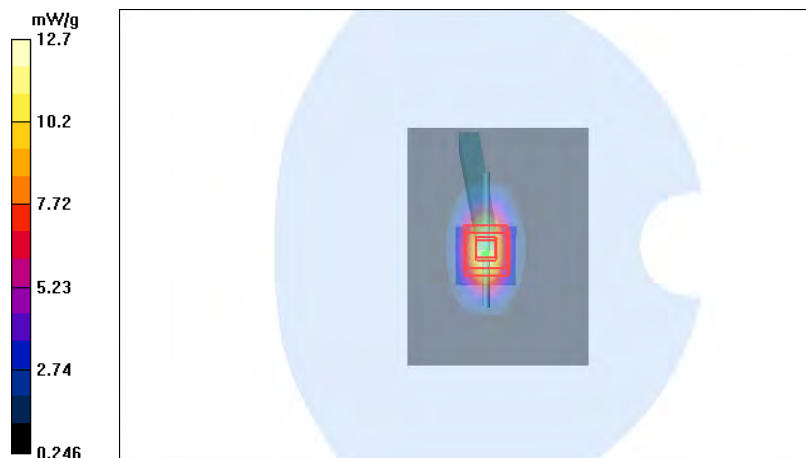
Peak SAR (extrapolated) = 19.8 W/kg

**SAR(1 g) = 11.3 mW/g**

**SAR(10 g) = 5.9 mW/g**

**Power Drift = 0.137 dB**

Maximum value of SAR (measured) = 12.7 mW/g



Date/Time: 2011-03-30 09:51:55

Test Laboratory: TCC Nokia

Type: D2450V2; Serial: D2450V2 - SN:749

**Communication System: CW2450**

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes:  $t = 20.6\text{ }^{\circ}\text{C}$

Medium parameters used:  $f = 2450\text{ MHz}$ ;  $\sigma = 2.04\text{ mho/m}$ ;  $\epsilon_r = 50.2$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3573
- ConvF(6.8, 6.8, 6.8); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2010-09-08
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**d=15mm, Pin=250mW/Area Scan (61x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 15.9 mW/g

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

Reference Value = 79.1 V/m

Peak SAR (extrapolated) = 27.3 W/kg

**SAR(1 g) = 13.3 mW/g**

**SAR(10 g) = 6.15 mW/g**

**Power Drift = 0.100 dB**

Maximum value of SAR (measured) = 15.2 mW/g



Date/Time: 2011-03-31 10:01:43

Test Laboratory: TCC Nokia  
Type: D2450V2; Serial: D2450V2 - SN:749

**Communication System: CW2450**

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes:  $t = 20.6\text{ }^{\circ}\text{C}$

Medium parameters used:  $f = 2450\text{ MHz}$ ;  $\sigma = 2.01\text{ mho/m}$ ;  $\epsilon_r = 50.5$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: EX3DV4 - SN3573
- ConvF(6.8, 6.8, 6.8); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2010-09-08
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**d=15mm, Pin=250mW/Area Scan (61x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 15.6 mW/g

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

Reference Value = 77.8 V/m

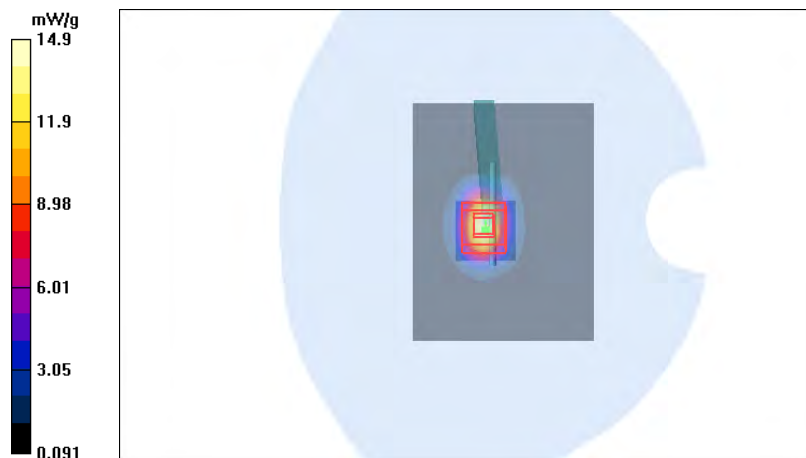
Peak SAR (extrapolated) = 26.8 W/kg

**SAR(1 g) = 13.2 mW/g**

**SAR(10 g) = 6.11 mW/g**

**Power Drift = 0.071 dB**

Maximum value of SAR (measured) = 14.9 mW/g





Date/Time: 2011-04-01 09:55:42

Test Laboratory: TCC Nokia  
Type: D2450V2; Serial: D2450V2 - SN:749

**Communication System: CW2450**

Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes:  $t = 20.4\text{ }^{\circ}\text{C}$

Medium parameters used:  $f = 2450\text{ MHz}$ ;  $\sigma = 2\text{ mho/m}$ ;  $\epsilon_r = 50.6$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: EX3DV4 - SN3573
- ConvF(6.8, 6.8, 6.8); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2010-09-08
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**d=15mm, Pin=250mW/Area Scan (61x81x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 15.7 mW/g

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

Reference Value = 76.7 V/m

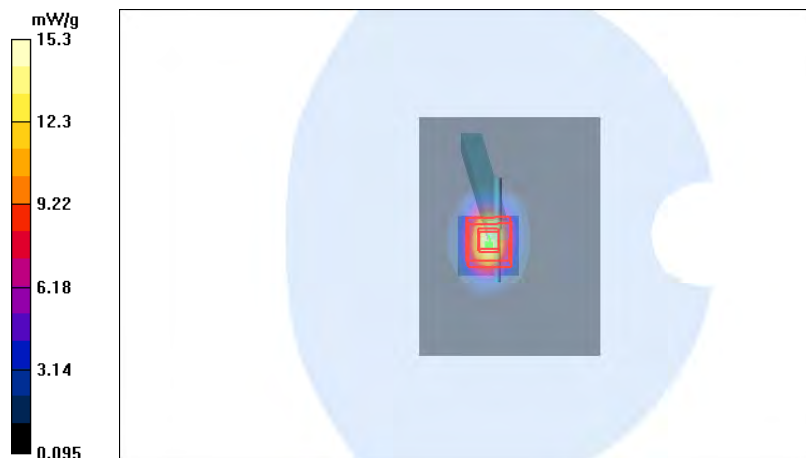
Peak SAR (extrapolated) = 27.2 W/kg

**SAR(1 g) = 13.4 mW/g**

**SAR(10 g) = 6.19 mW/g**

**Power Drift = 0.075 dB**

Maximum value of SAR (measured) = 15.3 mW/g



## APPENDIX B: MEASUREMENT SCANS

Date/Time: 2011-03-29 09:01:51

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

### Communication System: GSM850

Frequency: 836.6 MHz; Duty Cycle: 1:8.3

Medium: HSL850; Medium Notes: t= 21.1 C

Medium parameters used: f = 837 MHz;  $\sigma$  = 0.886 mho/m;  $\epsilon_r$  = 40.6;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Left Section

#### DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(6.09, 6.09, 6.09); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Cheek – Middle – Slide closed/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.151 mW/g

**Cheek – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 6.86 V/m

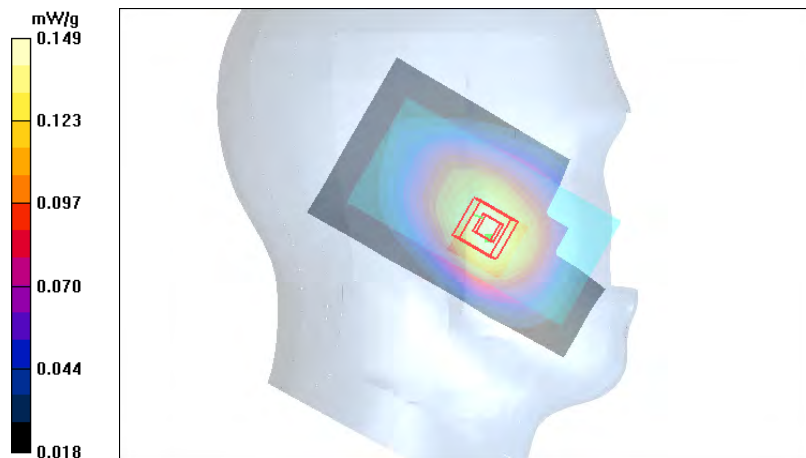
Peak SAR (extrapolated) = 0.182 W/kg

**SAR(1 g) = 0.144 mW/g**

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

**Power Drift = -0.146 dB**

Maximum value of SAR (measured) = 0.149 mW/g



Date/Time: 2011-03-29 09:27:17

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 2-slot GPRS850**

Frequency: 836.6 MHz; Duty Cycle: 1:4.2

Medium: HSL850; Medium Notes: t= 21.1 C

Medium parameters used: f = 837 MHz;  $\sigma$  = 0.886 mho/m;  $\epsilon_r$  = 40.6;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Left Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(6.09, 6.09, 6.09); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Cheek – Middle – Slide closed /Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.282 mW/g

**Cheek – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.25 V/m

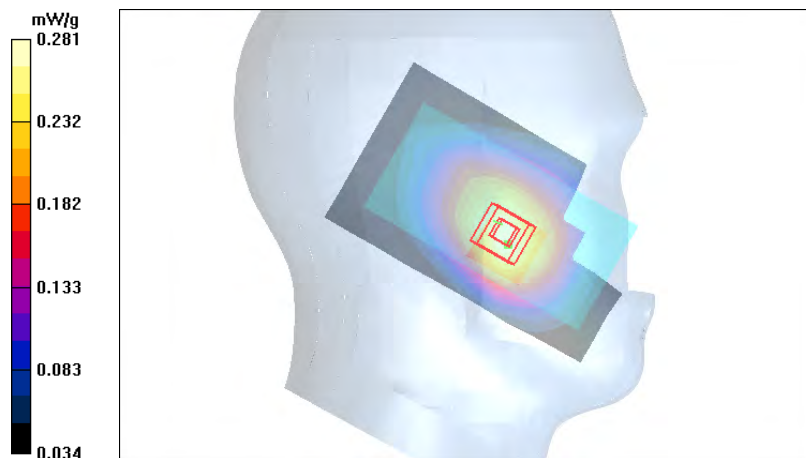
Peak SAR (extrapolated) = 0.338 W/kg

**SAR(1 g) = 0.267 mW/g**

**SAR(10 g) = 0.202 mW/g**

**Power Drift = -0.088 dB**

Maximum value of SAR (measured) = 0.281 mW/g



Date/Time: 2011-03-29 09:42:34

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 3-slot GPRS850**

Frequency: 836.6 MHz; Duty Cycle: 1:2.8

Medium: HSL850; Medium Notes: t= 21.1 C

Medium parameters used: f = 837 MHz;  $\sigma$  = 0.886 mho/m;  $\epsilon_r$  = 40.6;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Left Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(6.09, 6.09, 6.09); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Cheek – Middle – Slide closed /Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.276 mW/g

**Cheek – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.13 V/m

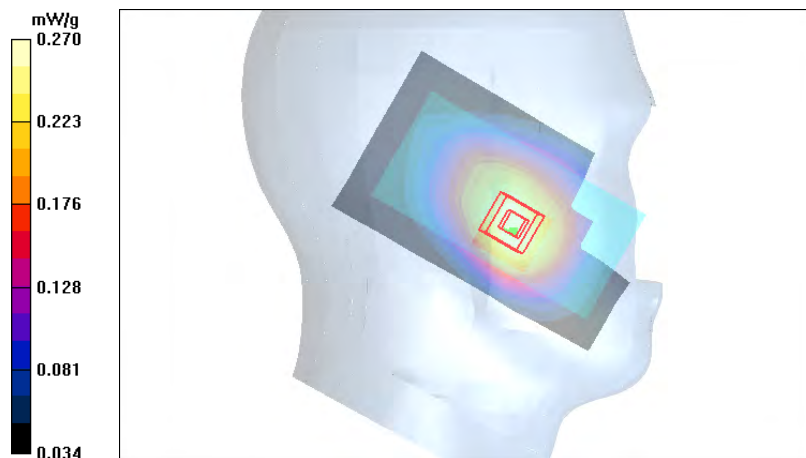
Peak SAR (extrapolated) = 0.335 W/kg

**SAR(1 g) = 0.260 mW/g**

**SAR(10 g) = 0.198 mW/g**

**Power Drift = 0.083 dB**

Maximum value of SAR (measured) = 0.270 mW/g



Date/Time: 2011-03-29 13:56:16

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 4-slot GPRS850**

Frequency: 848.8 MHz; Duty Cycle: 1:2.1

Medium: HSL850; Medium Notes: t= 21.1 C

Medium parameters used:  $f = 849 \text{ MHz}$ ;  $\sigma = 0.895 \text{ mho/m}$ ;  $\epsilon_r = 40.6$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(6.09, 6.09, 6.09); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Cheek – High – Slide closed /Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.320 mW/g

**Cheek – High – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 10.7 V/m

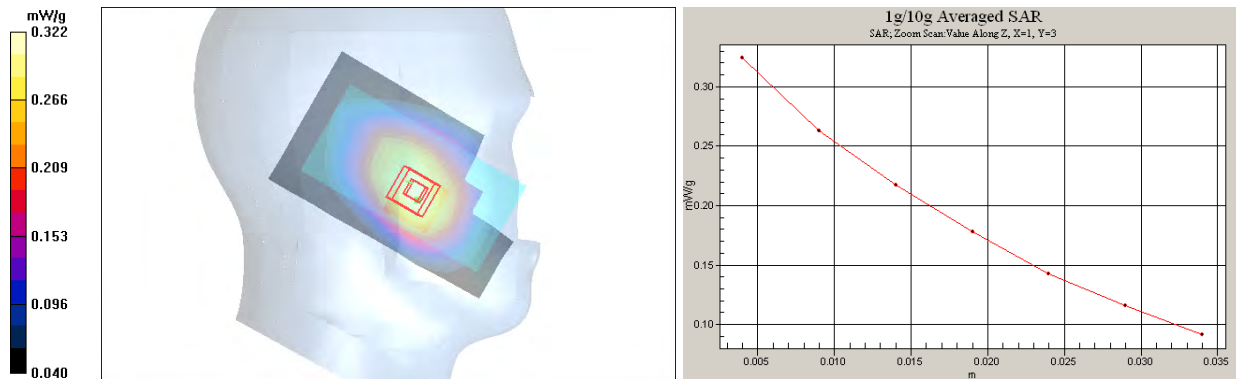
Peak SAR (extrapolated) = 0.383 W/kg

**SAR(1 g) = 0.308 mW/g**

**SAR(10 g) = 0.236 mW/g**

**Power Drift = -0.100 dB**

Maximum value of SAR (measured) = 0.322 mW/g



SAR Report

FCC\_RM-680\_03

Applicant: Nokia Corporation

Type: RM-680

Copyright © 2011 TCC Nokia

Date/Time: 2011-03-29 12:08:47

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 4-slot GPRS850**

Frequency: 836.6 MHz; Duty Cycle: 1:2.1

Medium: HSL850; Medium Notes: t= 21.1 C

Medium parameters used:  $f = 837 \text{ MHz}$ ;  $\sigma = 0.886 \text{ mho/m}$ ;  $\epsilon_r = 40.6$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(6.09, 6.09, 6.09); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Tilt – Middle – Slide closed /Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

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

**Tilt – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 15.6 V/m

Peak SAR (extrapolated) = 0.488 W/kg

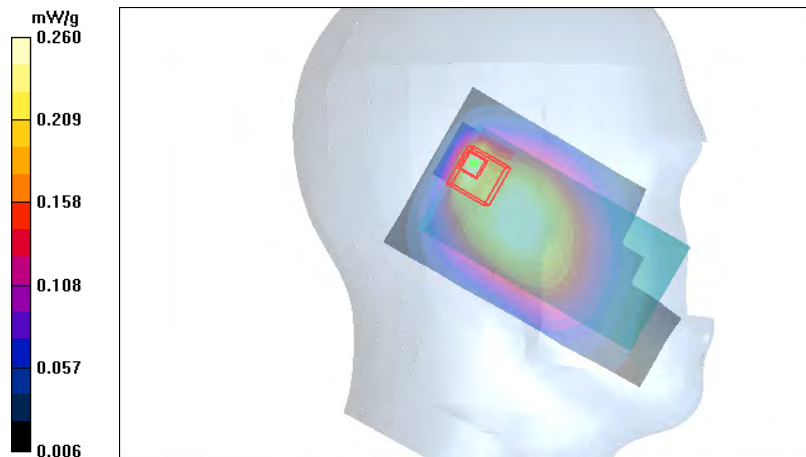
**SAR(1 g) = 0.229 mW/g**

**SAR(10 g) = 0.147 mW/g**

**Power Drift = -0.107 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) = 0.260 mW/g



Date/Time: 2011-03-29 12:23:58

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 4-slot GPRS850**

Frequency: 836.6 MHz; Duty Cycle: 1:2.1

Medium: HSL850; Medium Notes: t= 21.1 C

Medium parameters used: f = 837 MHz;  $\sigma$  = 0.886 mho/m;  $\epsilon_r$  = 40.6;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Right Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(6.09, 6.09, 6.09); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Cheek – Middle – Slide closed /Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

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

**Cheek – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 8.66 V/m

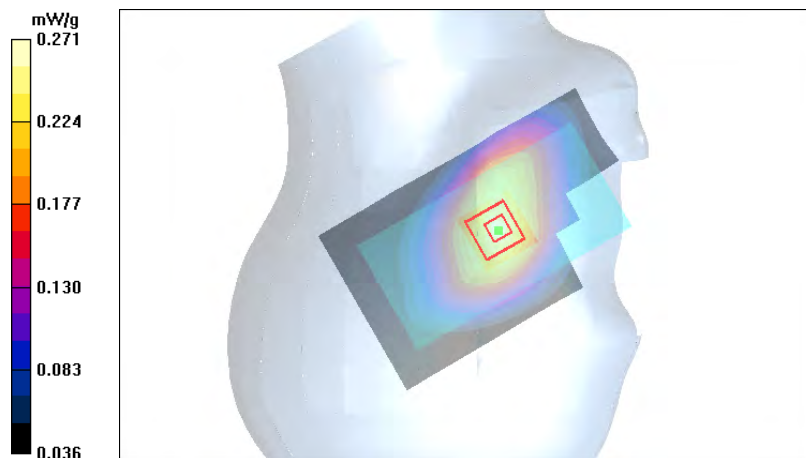
Peak SAR (extrapolated) = 0.316 W/kg

**SAR(1 g) = 0.252 mW/g**

**SAR(10 g) = 0.191 mW/g**

**Power Drift = -0.077 dB**

Maximum value of SAR (measured) = 0.271 mW/g



Date/Time: 2011-03-29 12:39:00

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 4-slot GPRS850**

Frequency: 836.6 MHz; Duty Cycle: 1:2.1

Medium: HSL850; Medium Notes: t= 21.1 C

Medium parameters used: f = 837 MHz;  $\sigma$  = 0.886 mho/m;  $\epsilon_r$  = 40.6;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Right Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(6.09, 6.09, 6.09); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Tilt – Middle – Slide closed /Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm**

Maximum value of SAR (interpolated) = 0.245 mW/g

**Tilt – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm**

Reference Value = 14.4 V/m

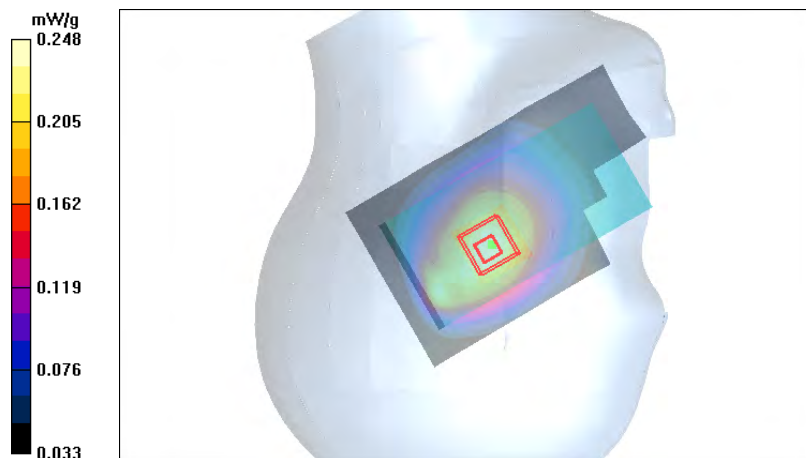
Peak SAR (extrapolated) = 0.302 W/kg

**SAR(1 g) = 0.236 mW/g**

**SAR(10 g) = 0.177 mW/g**

**Power Drift = 0.057 dB**

Maximum value of SAR (measured) = 0.248 mW/g





Date/Time: 2011-03-29 14:12:03

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 4-slot 8PSK EGPRS850**

Frequency: 848.8 MHz; Duty Cycle: 1:2.1

Medium: HSL850; Medium Notes: t= 21.1 C

Medium parameters used: f = 849 MHz;  $\sigma$  = 0.895 mho/m;  $\epsilon_r$  = 40.6;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(6.09, 6.09, 6.09); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Cheek – High – Slide closed /Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.077 mW/g

**Cheek – High – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 5.28 V/m

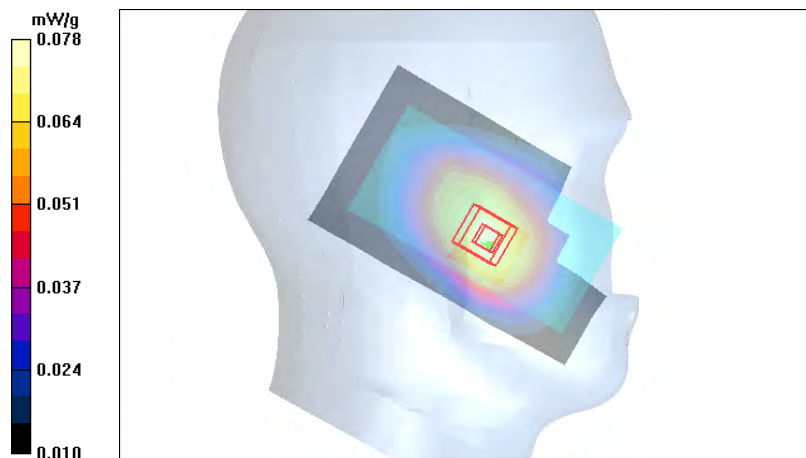
Peak SAR (extrapolated) = 0.094 W/kg

**SAR(1 g) = 0.074 mW/g**

**SAR(10 g) = 0.057 mW/g**

**Power Drift = 0.086 dB**

Maximum value of SAR (measured) = 0.078 mW/g



Date/Time: 2011-04-04 08:58:48

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA850**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 21.0 C

Medium parameters used: f = 835 MHz;  $\sigma$  = 0.896 mho/m;  $\epsilon_r$  = 40.6;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Left Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(6.09, 6.09, 6.09); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Cheek – Middle – Slide closed /Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.112 mW/g

**Cheek – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 5.96 V/m

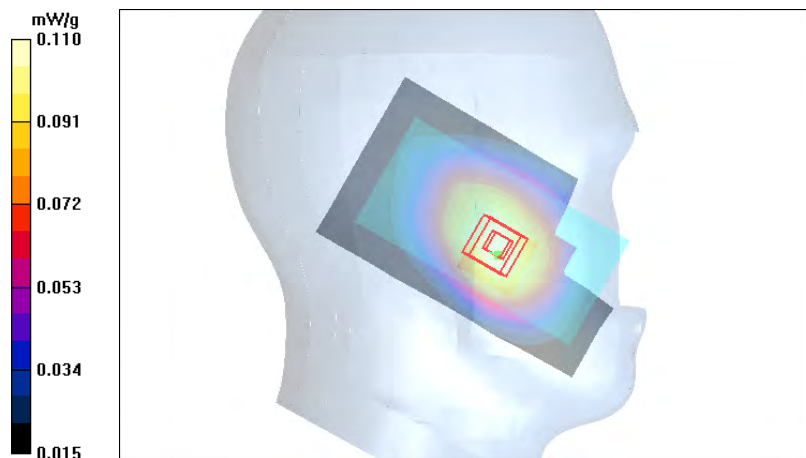
Peak SAR (extrapolated) = 0.136 W/kg

**SAR(1 g) = 0.106 mW/g**

**SAR(10 g) = 0.081 mW/g**

**Power Drift = -0.124 dB**

Maximum value of SAR (measured) = 0.110 mW/g



Date/Time: 2011-04-04 09:13:46

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA850**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 21.0 C

Medium parameters used: f = 835 MHz;  $\sigma = 0.896$  mho/m;  $\epsilon_r = 40.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(6.09, 6.09, 6.09); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Tilt – Middle – Slide closed /Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.104 mW/g

**Tilt – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.52 V/m

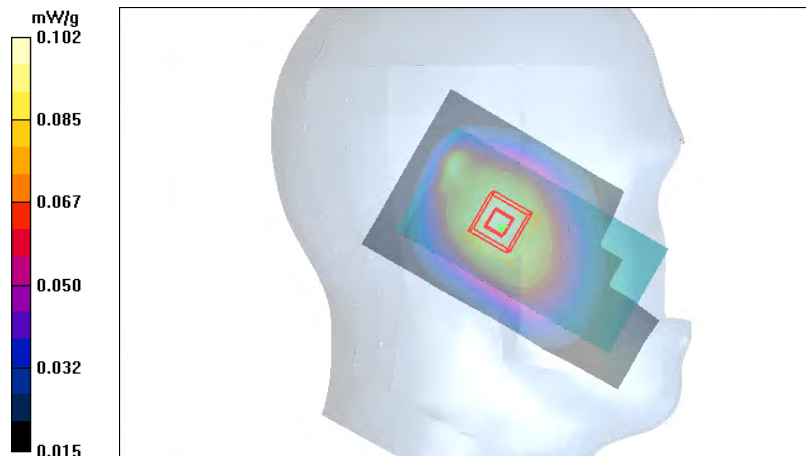
Peak SAR (extrapolated) = 0.122 W/kg

**SAR(1 g) = 0.097 mW/g**

**SAR(10 g) = 0.074 mW/g**

**Power Drift = -0.176 dB**

Maximum value of SAR (measured) = 0.102 mW/g



Date/Time: 2011-04-04 09:28:45

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA850**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 21.0 C

Medium parameters used: f = 835 MHz;  $\sigma$  = 0.896 mho/m;  $\epsilon_r$  = 40.6;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Right Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(6.09, 6.09, 6.09); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Cheek – Middle – Slide closed /Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.113 mW/g

**Cheek – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 5.58 V/m

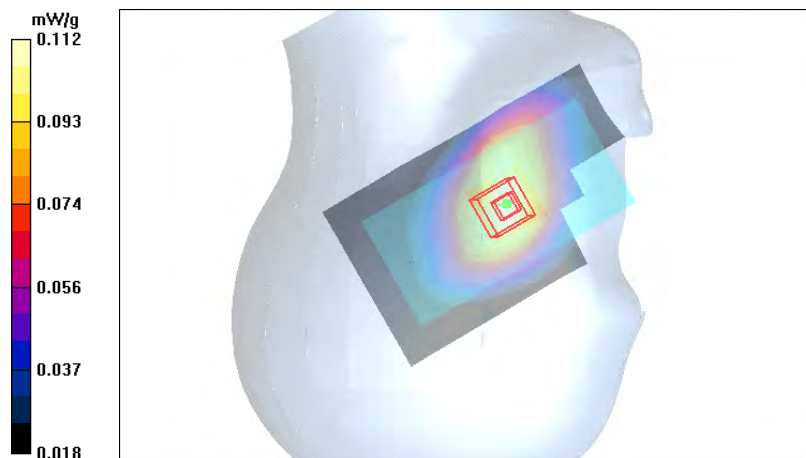
Peak SAR (extrapolated) = 0.131 W/kg

**SAR(1 g) = 0.107 mW/g**

**SAR(10 g) = 0.083 mW/g**

**Power Drift = -0.065 dB**

Maximum value of SAR (measured) = 0.112 mW/g



Date/Time: 2011-04-04 11:54:49

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA850**

Frequency: 846.6 MHz; Duty Cycle: 1:1

Medium: HSL850; Medium Notes: t= 21.0 C

Medium parameters used: f = 847 MHz;  $\sigma$  = 0.905 mho/m;  $\epsilon_r$  = 40.5;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Right Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(6.09, 6.09, 6.09); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Tilt -High - Slide closed /Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.156 mW/g

**Tilt -High - Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 11.5 V/m

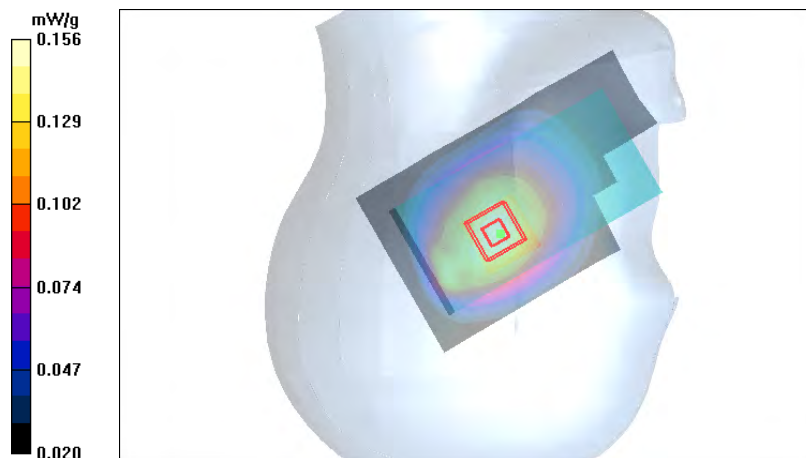
Peak SAR (extrapolated) = 0.189 W/kg

**SAR(1 g) = 0.149 mW/g**

**SAR(10 g) = 0.113 mW/g**

**Power Drift = -0.021 dB**

Maximum value of SAR (measured) = 0.156 mW/g



Date/Time: 2011-04-01 08:10:15

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1700/2100**

Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: HSL1800; Medium Notes: t= 21.5 C

Medium parameters used (interpolated): f = 1732.4 MHz;  $\sigma = 1.33$  mho/m;  $\epsilon_r = 38.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(5.19, 5.19, 5.19); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Cheek – Middle – Slide closed /Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

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

**Cheek – Middle – Slide closed /Zoom Scan 3 (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 8.15 V/m

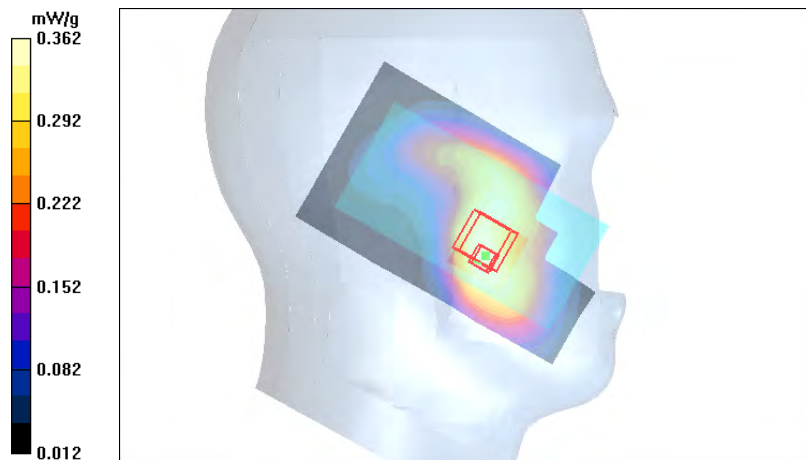
Peak SAR (extrapolated) = 0.513 W/kg

**SAR(1 g) = 0.339 mW/g**

**SAR(10 g) = 0.233 mW/g**

**Power Drift = 0.052 dB**

Maximum value of SAR (measured) = 0.362 mW/g



Date/Time: 2011-04-01 08:36:15

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1700/2100**

Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: HSL1800; Medium Notes: t= 21.5 C

Medium parameters used (interpolated): f = 1732.4 MHz;  $\sigma = 1.33$  mho/m;  $\epsilon_r = 38.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(5.19, 5.19, 5.19); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Tilt – Middle – Slide closed /Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm**

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

**Tilt – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm**

Reference Value = 12.5 V/m

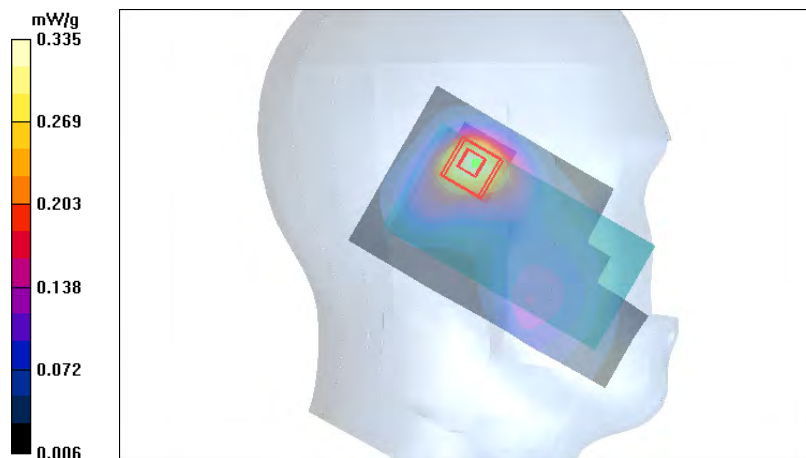
Peak SAR (extrapolated) = 0.473 W/kg

**SAR(1 g) = 0.307 mW/g**

**SAR(10 g) = 0.189 mW/g**

**Power Drift = -0.103 dB**

Maximum value of SAR (measured) = 0.335 mW/g





Date/Time: 2011-04-05 09:30:02

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1700/2100**

Frequency: 1752.6 MHz; Duty Cycle: 1:1

Medium: HSL1800; Medium Notes: t= 21.3 C

Medium parameters used: f = 1753 MHz;  $\sigma = 1.35$  mho/m;  $\epsilon_r = 39.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(5.19, 5.19, 5.19); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Cheek – High – Slide closed /Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm**

Maximum value of SAR (interpolated) = 0.552 mW/g

**Cheek – High – Slide closed /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm**

Reference Value = 10.2 V/m

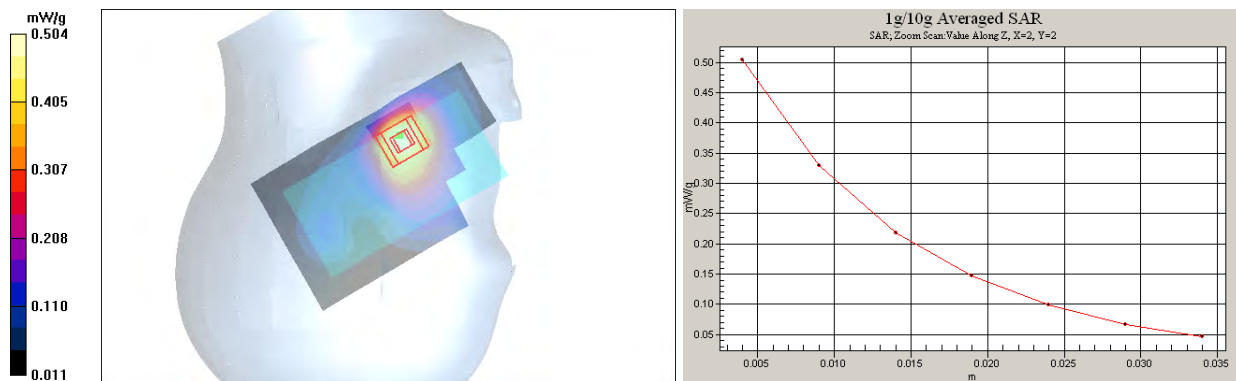
Peak SAR (extrapolated) = 0.727 W/kg

**SAR(1 g) = 0.477 mW/g**

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

**Power Drift = -0.060 dB**

Maximum value of SAR (measured) = 0.504 mW/g





Date/Time: 2011-04-01 09:06:28

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1700/2100**

Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: HSL1800; Medium Notes: t= 21.5 C

Medium parameters used (interpolated): f = 1732.4 MHz;  $\sigma$  = 1.33 mho/m;  $\epsilon_r$  = 38.4;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Right Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(5.19, 5.19, 5.19); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1018
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Tilt – Middle – Slide closed /Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.249 mW/g

**Tilt – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 13.6 V/m

Peak SAR (extrapolated) = 0.377 W/kg

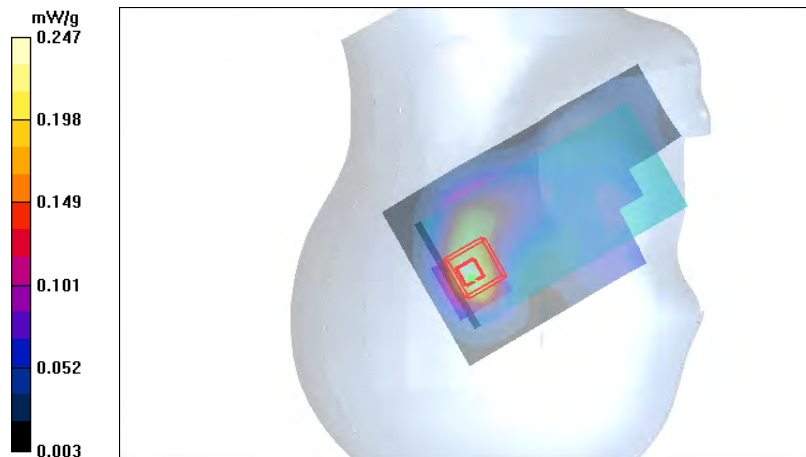
**SAR(1 g) = 0.225 mW/g**

**SAR(10 g) = 0.130 mW/g**

**Power Drift = -0.003 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) = 0.247 mW/g



Date/Time: 2011-04-07 09:39:10

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: GSM1900**

Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium: HSL1900; Medium Notes:  $t = 21.8$  C

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(5.03, 5.03, 5.03); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Cheek – Middle – Slide closed /Area Scan (61x101x1):** Measurement grid:  $dx=15$ mm,  $dy=15$ mm

Maximum value of SAR (interpolated) = 0.344 mW/g

**Cheek – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 7.39 V/m

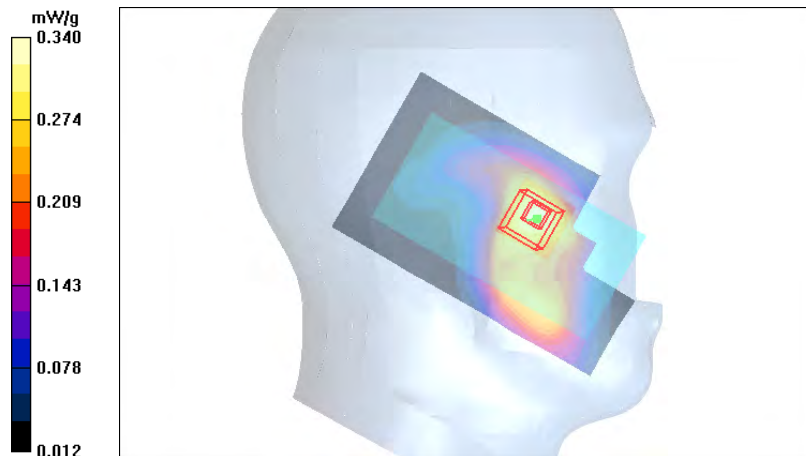
Peak SAR (extrapolated) = 0.476 W/kg

**SAR(1 g) = 0.318 mW/g**

**SAR(10 g) = 0.206 mW/g**

**Power Drift = -0.260 dB**

Maximum value of SAR (measured) = 0.340 mW/g



Date/Time: 2011-04-07 09:58:01

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 2-slot GPRS1900**

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: HSL1900; Medium Notes:  $t = 21.8$  C

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.03, 5.03, 5.03); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Cheek – Middle – Slide closed /Area Scan (61x101x1):** Measurement grid:  $dx=15$ mm,  $dy=15$ mm

Maximum value of SAR (interpolated) = 0.541 mW/g

**Cheek – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 9.12 V/m

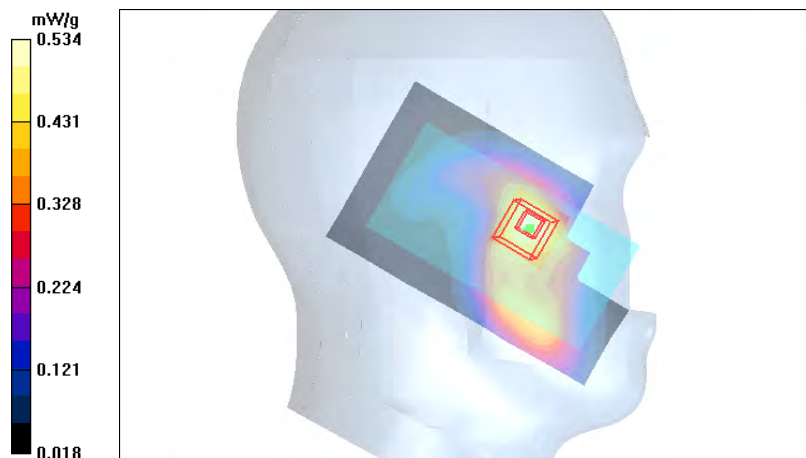
Peak SAR (extrapolated) = 0.734 W/kg

**SAR(1 g) = 0.496 mW/g**

**SAR(10 g) = 0.322 mW/g**

**Power Drift = -0.114 dB**

Maximum value of SAR (measured) = 0.534 mW/g



Date/Time: 2011-04-07 12:04:58

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 2-slot GPRS1900**

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: HSL1900; Medium Notes: t= 21.8 C

Medium parameters used: f = 1880 MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(5.03, 5.03, 5.03); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Tilt – Middle – Slide closed /Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm**

Maximum value of SAR (interpolated) = 0.555 mW/g

**Tilt – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm**

Reference Value = 14.8 V/m

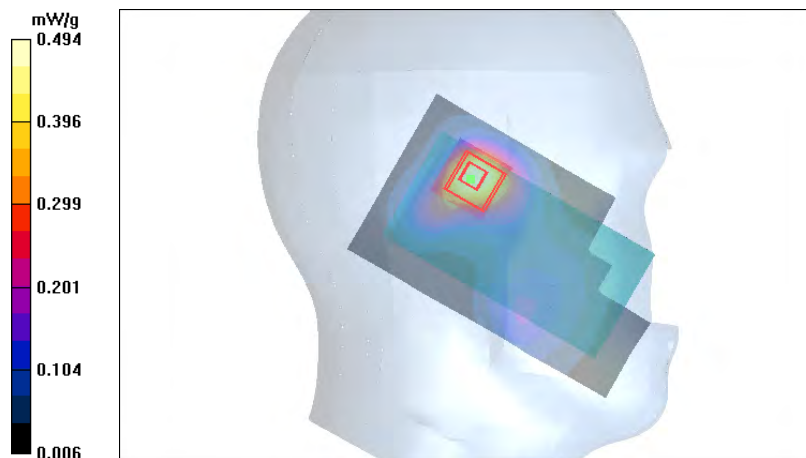
Peak SAR (extrapolated) = 0.746 W/kg

**SAR(1 g) = 0.462 mW/g**

**SAR(10 g) = 0.274 mW/g**

**Power Drift = -0.003 dB**

Maximum value of SAR (measured) = 0.494 mW/g



Date/Time: 2011-04-07 12:28:41

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 2-slot GPRS1900**

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: HSL1900; Medium Notes: t= 21.6 C

Medium parameters used: f = 1880 MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.03, 5.03, 5.03); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Cheek – Middle – Slide closed/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.769 mW/g

**Cheek – Middle – Slide closed/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.16 V/m

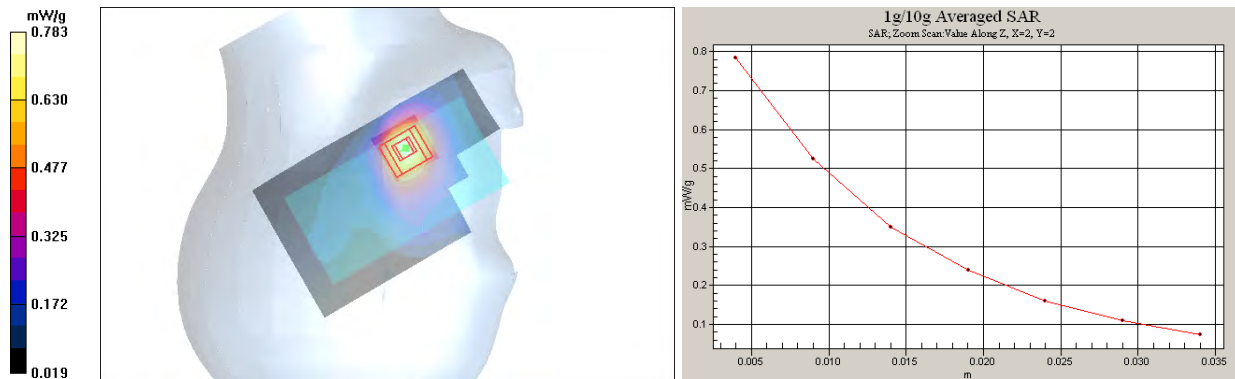
Peak SAR (extrapolated) = 1.12 W/kg

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

**SAR(10 g) = 0.443 mW/g**

**Power Drift = 0.114 dB**

Maximum value of SAR (measured) = 0.783 mW/g



Date/Time: 2011-04-07 12:45:19

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 2-slot GPRS1900**

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: HSL1900; Medium Notes: t= 21.6 C

Medium parameters used: f = 1880 MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(5.03, 5.03, 5.03); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Tilt – Middle – Slide closed/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.293 mW/g

**Tilt – Middle – Slide closed/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 14.4 V/m

Peak SAR (extrapolated) = 0.451 W/kg

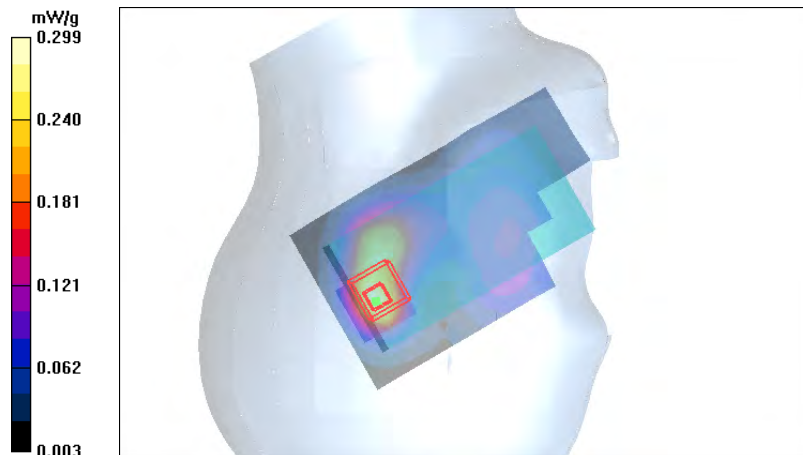
**SAR(1 g) = 0.269 mW/g**

**SAR(10 g) = 0.156 mW/g**

**Power Drift = 0.013 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) = 0.299 mW/g



Date/Time: 2011-04-07 10:15:32

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 3-slot GPRS1900**

Frequency: 1880 MHz; Duty Cycle: 1:2.8

Medium: HSL1900; Medium Notes:  $t = 21.8$  C

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(5.03, 5.03, 5.03); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Cheek – Middle – Slide closed /Area Scan (61x101x1):** Measurement grid:  $dx=15$ mm,  $dy=15$ mm

Maximum value of SAR (interpolated) = 0.504 mW/g

**Cheek – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 8.70 V/m

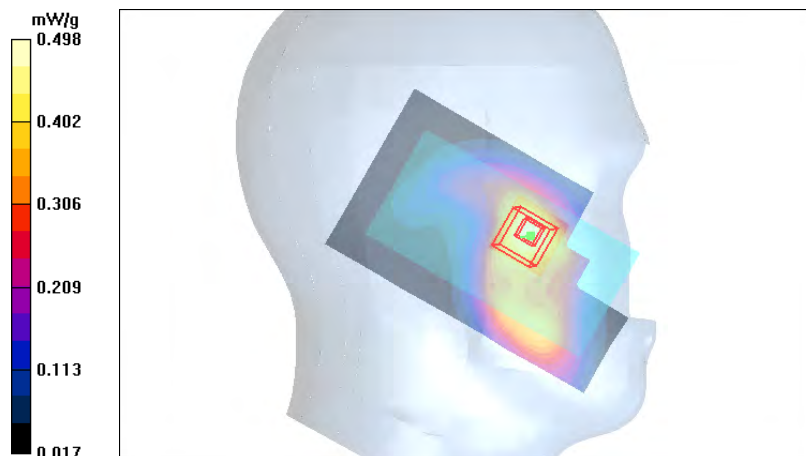
Peak SAR (extrapolated) = 0.694 W/kg

**SAR(1 g) = 0.465 mW/g**

**SAR(10 g) = 0.301 mW/g**

**Power Drift = 0.073 dB**

Maximum value of SAR (measured) = 0.498 mW/g





Date/Time: 2011-04-07 11:45:42

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 4-slot GPRS1900**

Frequency: 1880 MHz; Duty Cycle: 1:2.1

Medium: HSL1900; Medium Notes: t= 21.8 C

Medium parameters used: f = 1880 MHz;  $\sigma$  = 1.38 mho/m;  $\epsilon_r$  = 39.3;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Left Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(5.03, 5.03, 5.03); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Cheek – Middle – Slide closed /Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.510 mW/g

**Cheek – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.60 V/m

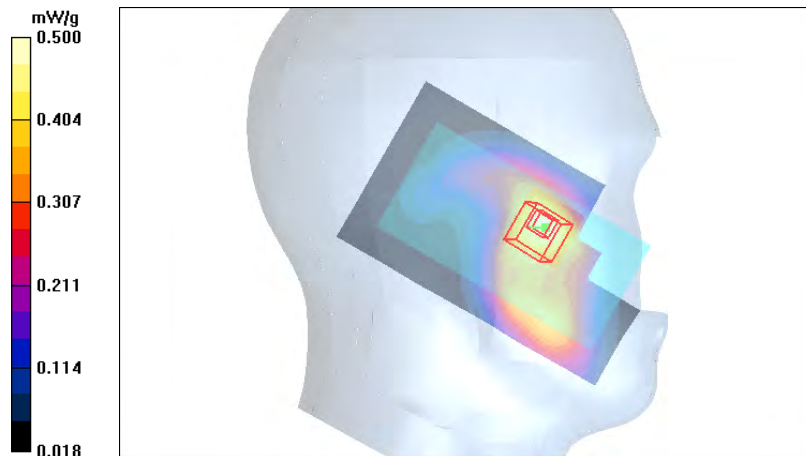
Peak SAR (extrapolated) = 0.705 W/kg

**SAR(1 g) = 0.469 mW/g**

**SAR(10 g) = 0.304 mW/g**

**Power Drift = -0.158 dB**

Maximum value of SAR (measured) = 0.500 mW/g





Date/Time: 2011-04-07 14:49:33

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

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

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: HSL1900; Medium Notes: t= 21.6 C

Medium parameters used: f = 1880 MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.03, 5.03, 5.03); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Cheek – Middle – Slide closed/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.330 mW/g

**Cheek – Middle – Slide closed/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 6.61 V/m

Peak SAR (extrapolated) = 0.456 W/kg

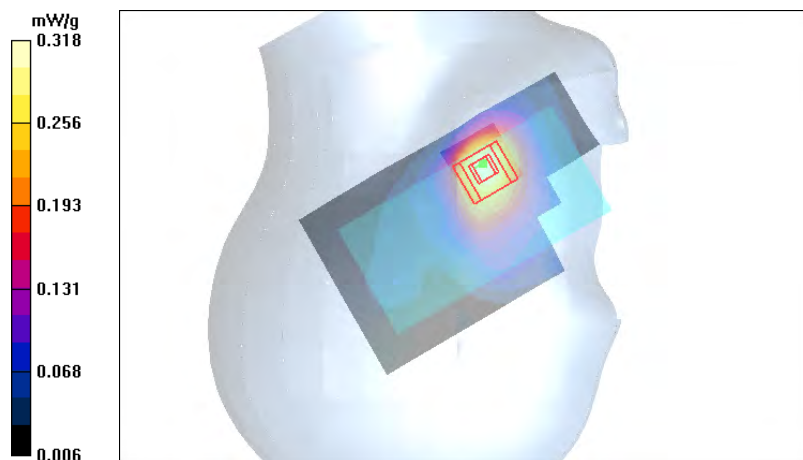
**SAR(1 g) = 0.297 mW/g**

**SAR(10 g) = 0.188 mW/g**

**Power Drift = -0.170 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) = 0.318 mW/g



Date/Time: 2011-03-28 14:42:00

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1900**

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes:  $t = 21.6$  C

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.37$  mho/m;  $\epsilon_r = 39.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(5.03, 5.03, 5.03); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Cheek – Middle – Slide closed /Area Scan (61x101x1):** Measurement grid:  $dx=15$ mm,  $dy=15$ mm

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

**Cheek – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 9.66 V/m

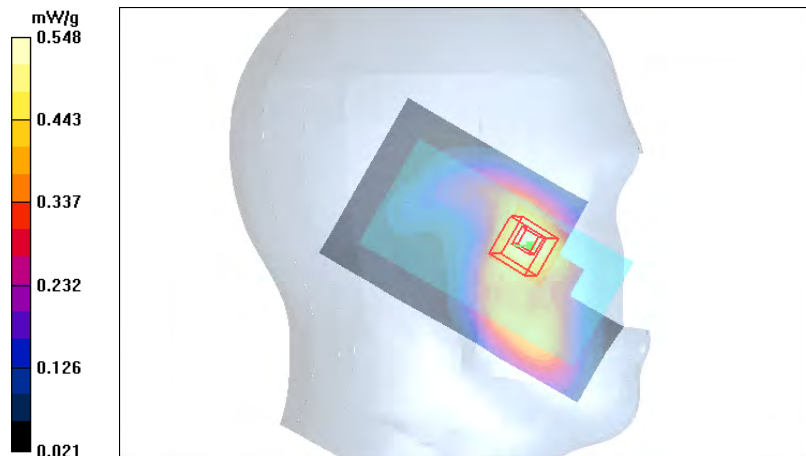
Peak SAR (extrapolated) = 0.771 W/kg

**SAR(1 g) = 0.520 mW/g**

**SAR(10 g) = 0.337 mW/g**

**Power Drift = -0.295 dB**

Maximum value of SAR (measured) = 0.548 mW/g



Date/Time: 2011-03-28 14:58:32

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1900**

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes:  $t = 21.6$  C

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.37$  mho/m;  $\epsilon_r = 39.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(5.03, 5.03, 5.03); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Tilt – Middle – Slide closed /Area Scan (61x101x1):** Measurement grid:  $dx=15$ mm,  $dy=15$ mm

Maximum value of SAR (interpolated) = 0.555 mW/g

**Tilt – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 15.1 V/m

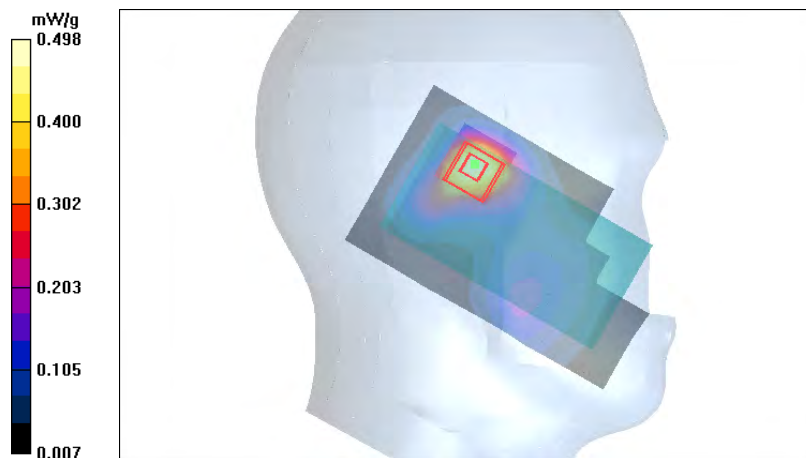
Peak SAR (extrapolated) = 0.727 W/kg

**SAR(1 g) = 0.459 mW/g**

**SAR(10 g) = 0.276 mW/g**

**Power Drift = -0.150 dB**

Maximum value of SAR (measured) = 0.498 mW/g



Date/Time: 2011-03-28 15:13:12

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1900**

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes:  $t = 21.6$  C

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.37$  mho/m;  $\epsilon_r = 39.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(5.03, 5.03, 5.03); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Cheek – Middle – Slide closed /Area Scan (61x101x1):** Measurement grid:  $dx=15$ mm,  $dy=15$ mm

Maximum value of SAR (interpolated) = 0.768 mW/g

**Cheek – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 10.1 V/m

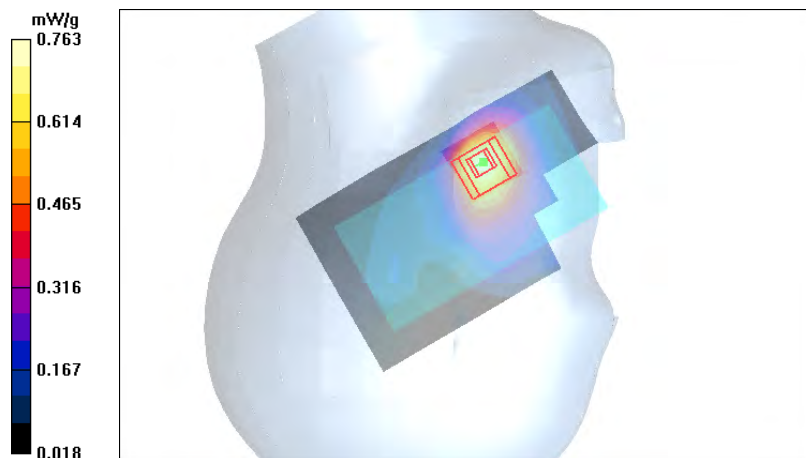
Peak SAR (extrapolated) = 1.10 W/kg

**SAR(1 g) = 0.707 mW/g**

**SAR(10 g) = 0.445 mW/g**

**Power Drift = 0.011 dB**

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



Date/Time: 2011-03-28 15:59:19

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1900**

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: HSL1900; Medium Notes: t= 21.6 C

Medium parameters used: f = 1880 MHz;  $\sigma = 1.37$  mho/m;  $\epsilon_r = 39.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(5.03, 5.03, 5.03); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Tilt – Middle – Slide closed /Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.335 mW/g

**Tilt – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 15.8 V/m

Peak SAR (extrapolated) = 0.501 W/kg

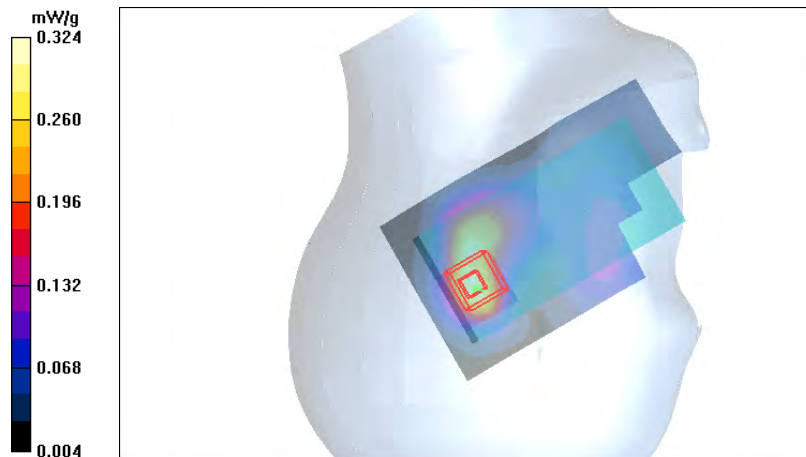
**SAR(1 g) = 0.298 mW/g**

**SAR(10 g) = 0.172 mW/g**

**Power Drift = 0.106 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) = 0.324 mW/g



Date/Time: 2011-03-28 12:42:10

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293336/1

**Communication System: WLAN2450 b-mode**

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes:  $t = 20.4\text{ C}$

Medium parameters used:  $f = 2442\text{ MHz}$ ;  $\sigma = 1.82\text{ mho/m}$ ;  $\epsilon_r = 37.5$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Left Section

**DASY4 Configuration:**

- Probe: EX3DV4 - SN3573
- ConvF(6.69, 6.69, 6.69); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2010-09-08
- Phantom: SAM1; Type: SAM; Serial: TP-1126
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Cheek – Middle – Slide closed /Area Scan (61x101x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.213 mW/g

**Cheek – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 9.44 V/m

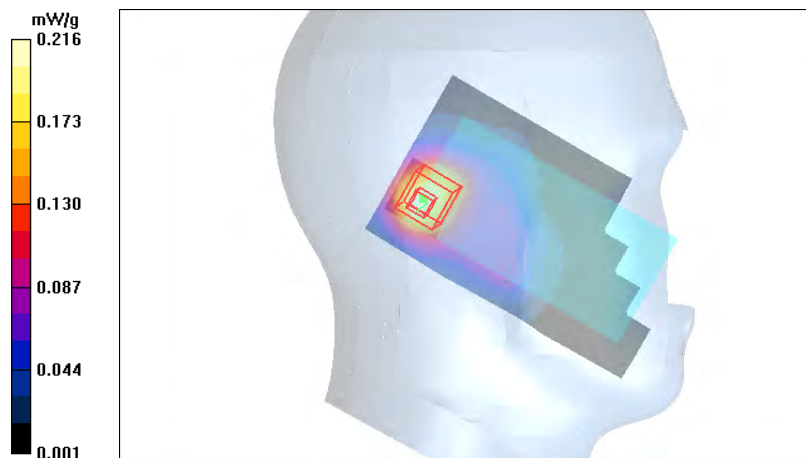
Peak SAR (extrapolated) = 0.391 W/kg

**SAR(1 g) = 0.203 mW/g**

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

**Power Drift = 0.016 dB**

Maximum value of SAR (measured) = 0.216 mW/g



Date/Time: 2011-03-28 12:58:40

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293336/1

**Communication System: WLAN2450 b-mode**

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: t= 20.4 C

Medium parameters used: f = 2442 MHz;  $\sigma = 1.82$  mho/m;  $\epsilon_r = 37.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

**DASY4 Configuration:**

- Probe: EX3DV4 - SN3573
- ConvF(6.69, 6.69, 6.69); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2010-09-08
- Phantom: SAM1; Type: SAM; Serial: TP-1126
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Tilt – Middle – Slide closed /Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

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

**Tilt – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 10.7 V/m

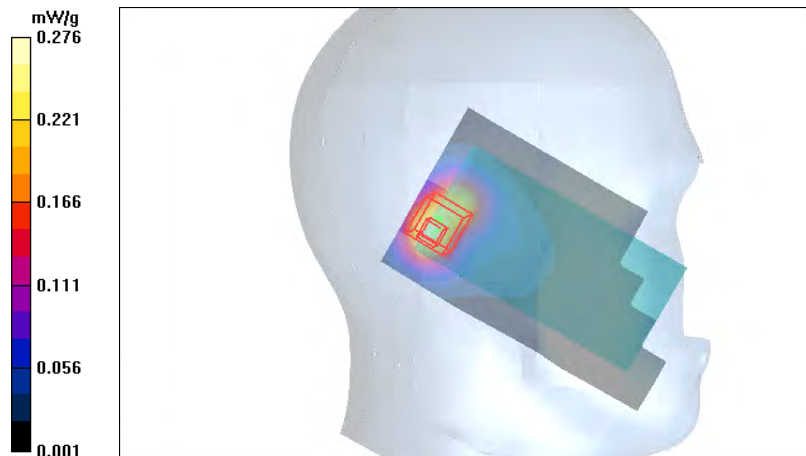
Peak SAR (extrapolated) = 0.507 W/kg

**SAR(1 g) = 0.250 mW/g**

**SAR(10 g) = 0.128 mW/g**

**Power Drift = 0.068 dB**

Maximum value of SAR (measured) = 0.276 mW/g





Date/Time: 2011-03-28 13:16:06

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293336/1

**Communication System: WLAN2450 b-mode**

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes:  $t = 20.4\text{ C}$

Medium parameters used:  $f = 2442\text{ MHz}$ ;  $\sigma = 1.82\text{ mho/m}$ ;  $\epsilon_r = 37.5$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Right Section

**DASY4 Configuration:**

- Probe: EX3DV4 - SN3573
- ConvF(6.69, 6.69, 6.69); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2010-09-08
- Phantom: SAM1; Type: SAM; Serial: TP-1126
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Cheek – Middle – Slide closed /Area Scan (61x101x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) =  $0.416\text{ mW/g}$

**Cheek – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $9.01\text{ V/m}$

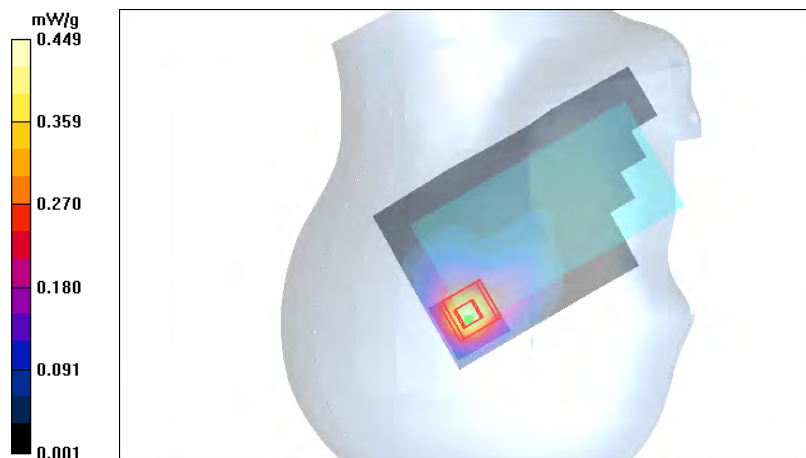
Peak SAR (extrapolated) =  $0.912\text{ W/kg}$

**SAR(1 g) =  $0.402\text{ mW/g}$**

**SAR(10 g) =  $0.187\text{ mW/g}$**

**Power Drift =  $0.018\text{ dB}$**

Maximum value of SAR (measured) =  $0.449\text{ mW/g}$





Date/Time: 2011-03-29 10:42:29

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293336/1

**Communication System: WLAN2450 b-mode**  
Frequency: 2462 MHz; Duty Cycle: 1:1  
Medium: HSL2450; Medium Notes: t= 20.5 C  
Medium parameters used: f = 2462 MHz;  $\sigma = 1.87$  mho/m;  $\epsilon_r = 37.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Right Section

DASY4 Configuration:  
- Probe: EX3DV4 - SN3573  
- ConvF(6.69, 6.69, 6.69); Calibrated: 2011-02-17  
- Sensor-Surface: 4mm (Mechanical Surface Detection)  
- Electronics: DAE4 Sn793; Calibrated: 2010-09-08  
- Phantom: SAM1; Type: SAM; Serial: TP-1126  
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Tilt – High – Slide closed /Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (interpolated) = 0.546 mW/g

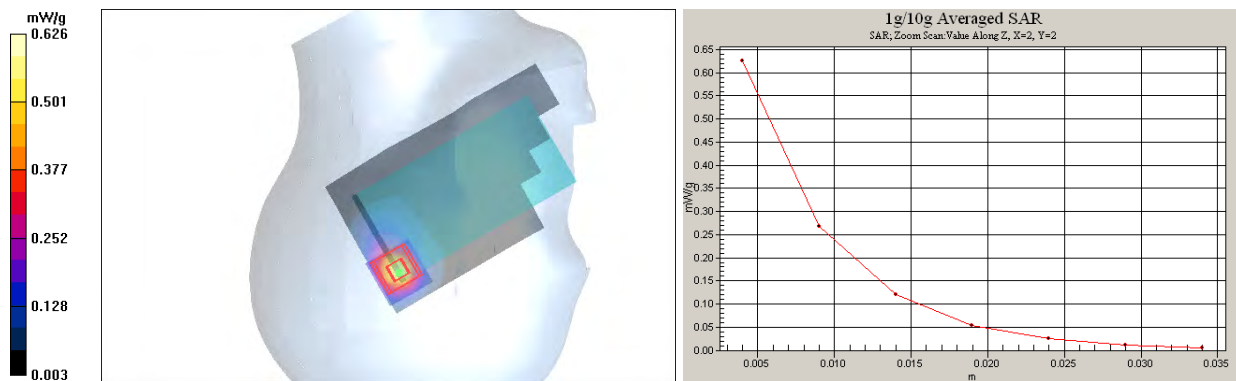
**Tilt – High – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm  
Reference Value = 9.00 V/m  
Peak SAR (extrapolated) = 1.31 W/kg

**SAR(1 g) = 0.539 mW/g**

**SAR(10 g) = 0.231 mW/g**

**Power Drift = -0.092 dB**

Maximum value of SAR (measured) = 0.626 mW/g



Date/Time: 2011-03-29 13:37:51

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293336/1

**Communication System: WLAN2450 n-mode**

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL2450; Medium Notes: t= 20.5 C

Medium parameters used: f = 2442 MHz;  $\sigma = 1.84$  mho/m;  $\epsilon_r = 37.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

**DASY4 Configuration:**

- Probe: EX3DV4 - SN3573
- ConvF(6.69, 6.69, 6.69); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2010-09-08
- Phantom: SAM1; Type: SAM; Serial: TP-1126
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Tilt – Middle – Slide closed /Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.367 mW/g

**Tilt – Middle – Slide closed /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 7.75 V/m

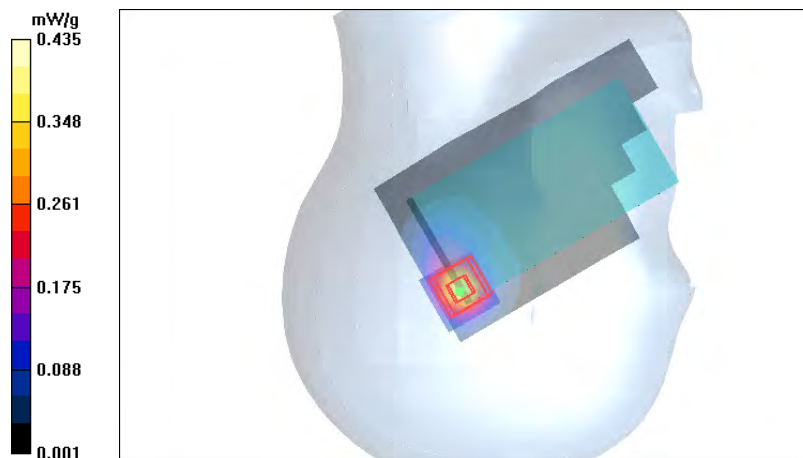
Peak SAR (extrapolated) = 0.898 W/kg

**SAR(1 g) = 0.373 mW/g**

**SAR(10 g) = 0.160 mW/g**

**Power Drift = 0.133 dB**

Maximum value of SAR (measured) = 0.435 mW/g



Date/Time: 2011-04-11 13:11:50

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 4-slot GPRS850**

Frequency: 836.6 MHz; Duty Cycle: 1:2.1

Medium: BSL850; Medium Notes: t= 21.2 C

Medium parameters used:  $f = 837$  MHz;  $\sigma = 1.01$  mho/m;  $\epsilon_r = 53$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(5.95, 5.95, 5.95); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body – Middle – Slide closed - No Accessory - Back Facing Phantom/Area Scan (61x101x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.17 mW/g

**Body – Middle – Slide closed - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 14.4 V/m

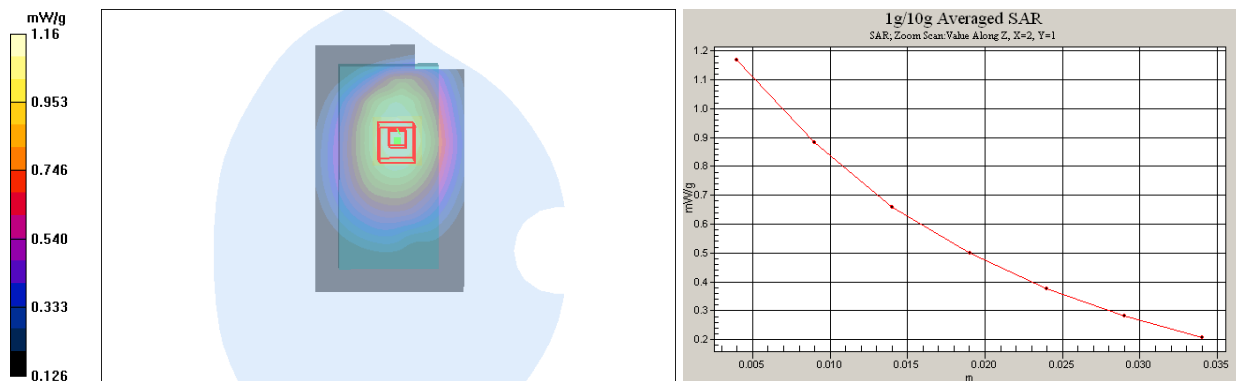
Peak SAR (extrapolated) = 1.43 W/kg

**SAR(1 g) = 1.11 mW/g**

**SAR(10 g) = 0.820 mW/g**

**Power Drift = -0.162 dB**

Maximum value of SAR (measured) = 1.16 mW/g



Date/Time: 2011-04-21 08:45:32

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 4-slot GPRS850**

Frequency: 848.8 MHz; Duty Cycle: 1:2.1

Medium: BSL850; Medium Notes: t= 21.2 C

Medium parameters used: f = 849 MHz;  $\sigma = 1.01$  mho/m;  $\epsilon_r = 52.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(5.95, 5.95, 5.95); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - High - Slide closed - WH-701 - Back Facing Phantom/Area Scan (61x101x1): Measurement grid:**

dx=15mm, dy=15mm

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

**Body - High - Slide closed - WH-701 - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid:**

dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 12.7 V/m

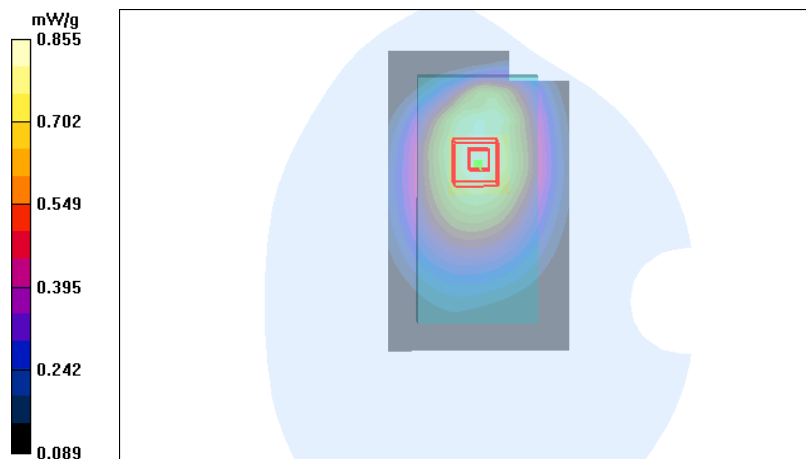
Peak SAR (extrapolated) = 1.08 W/kg

**SAR(1 g) = 0.812 mW/g**

**SAR(10 g) = 0.593 mW/g**

**Power Drift = -0.028 dB**

Maximum value of SAR (measured) = 0.855 mW/g



Date/Time: 2011-04-04 14:08:10

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA850**

Frequency: 846.6 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.9C

Medium parameters used: f = 847 MHz;  $\sigma = 0.998$  mho/m;  $\epsilon_r = 53.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(5.95, 5.95, 5.95); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body – High – Slide closed - No Accessory - Back Facing Phantom/Area Scan (61x101x1):** Measurement grid:  
dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.575 mW/g

**Body – High – Slide closed - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 10.5 V/m

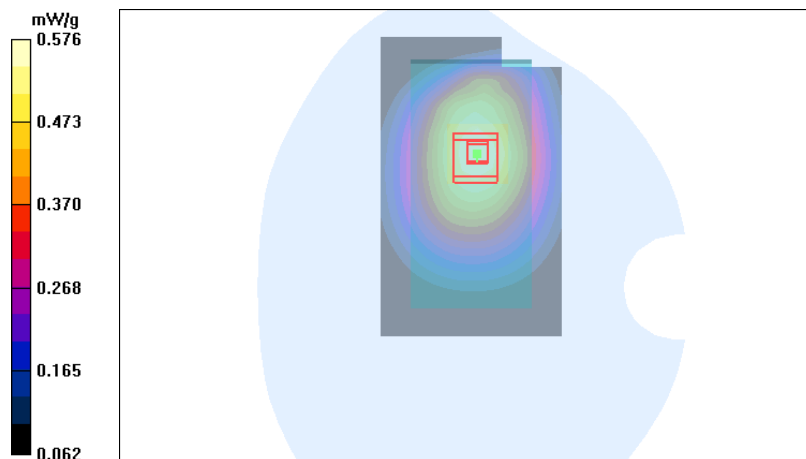
Peak SAR (extrapolated) = 0.707 W/kg

**SAR(1 g) = 0.547 mW/g**

**SAR(10 g) = 0.406 mW/g**

**Power Drift = -0.032 dB**

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



Date/Time: 2011-04-04 13:46:04

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA850**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 20.9C

Medium parameters used: f = 835 MHz;  $\sigma$  = 0.99 mho/m;  $\epsilon_r$  = 53.2;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(5.95, 5.95, 5.95); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body – Middle – Slide closed - WH-701 - Back Facing Phantom/Area Scan (61x101x1): Measurement grid:**

dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.330 mW/g

**Body - Middle – Slide closed - WH-701 - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid:**

dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.16 V/m

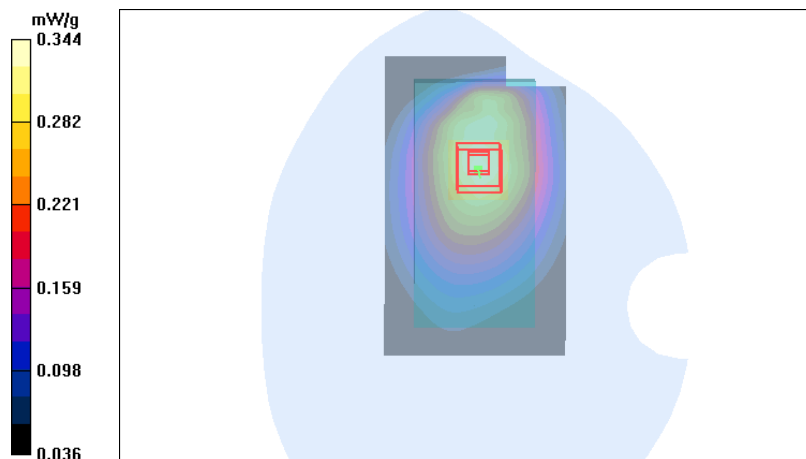
Peak SAR (extrapolated) = 0.429 W/kg

**SAR(1 g) = 0.327 mW/g**

**SAR(10 g) = 0.239 mW/g**

**Power Drift = 0.035 dB**

Maximum value of SAR (measured) = 0.344 mW/g



Date/Time: 2011-04-06 10:42:13

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1700/2100**

Frequency: 1752.6 MHz; Duty Cycle: 1:1

Medium: BSL1800; Medium Notes: t= 21.0 C

Medium parameters used: f = 1753 MHz;  $\sigma = 1.47$  mho/m;  $\epsilon_r = 51.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(4.91, 4.91, 4.91); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body – High – Slide closed - No Accessory - Back Facing Phantom/Area Scan (61x101x1):** Measurement grid:  
dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.712 mW/g

**Body – High – Slide closed - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 12.9 V/m

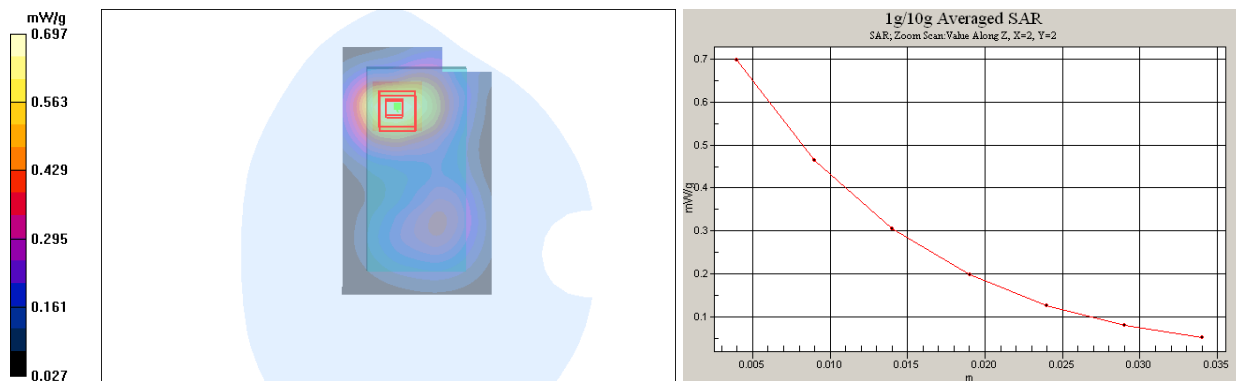
Peak SAR (extrapolated) = 0.970 W/kg

**SAR(1 g) = 0.650 mW/g**

**SAR(10 g) = 0.417 mW/g**

**Power Drift = 0.086 dB**

Maximum value of SAR (measured) = 0.697 mW/g



Date/Time: 2011-04-06 10:18:22

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1700/2100**

Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: BSL1800; Medium Notes:  $t = 21.0$  C

Medium parameters used (interpolated):  $f = 1732.4$  MHz;  $\sigma = 1.44$  mho/m;  $\epsilon_r = 51.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(4.91, 4.91, 4.91); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body – Middle – Slide closed - WH-701 - Back Facing Phantom/Area Scan (61x101x1): Measurement grid:**

$dx=15$ mm,  $dy=15$ mm

Maximum value of SAR (interpolated) = 0.606 mW/g

**Body – Middle – Slide closed - WH-701 - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid:**

$dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 11.1 V/m

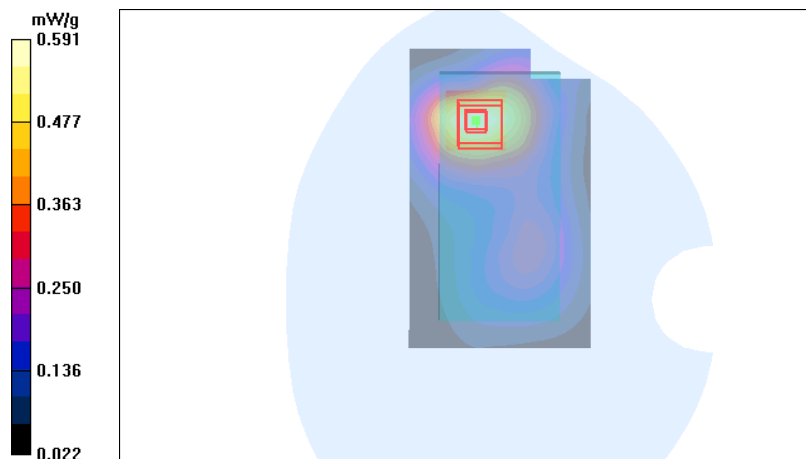
Peak SAR (extrapolated) = 0.812 W/kg

**SAR(1 g) = 0.549 mW/g**

**SAR(10 g) = 0.353 mW/g**

**Power Drift = -0.083 dB**

Maximum value of SAR (measured) = 0.591 mW/g





Date/Time: 2011-04-11 11:32:12

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 2-slot GPRS1900**

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: BSL1900; Medium Notes:  $t = 21.5$  C

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.5$  mho/m;  $\epsilon_r = 52.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body – Middle – Slide closed - No accessory - Back Facing Phantom/Area Scan (61x101x1):** Measurement grid:  
 $dx=15$ mm,  $dy=15$ mm

Maximum value of SAR (interpolated) = 0.902 mW/g

**Body - Middle – Slide closed - No accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 13.5 V/m

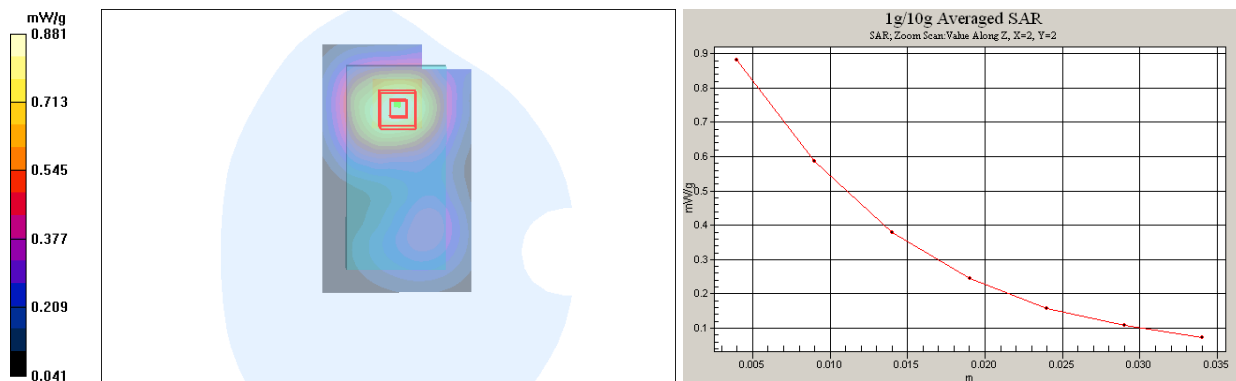
Peak SAR (extrapolated) = 1.23 W/kg

**SAR(1 g) = 0.831 mW/g**

**SAR(10 g) = 0.543 mW/g**

**Power Drift = -0.054 dB**

Maximum value of SAR (measured) = 0.881 mW/g



Date/Time: 2011-04-11 09:22:27

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 2-slot GPRS1900**

Frequency: 1850.2 MHz; Duty Cycle: 1:4.2

Medium: BSL1900; Medium Notes:  $t = 21.5$  C

Medium parameters used (interpolated):  $f = 1850.2$  MHz;  $\sigma = 1.48$  mho/m;  $\epsilon_r = 52.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body – Low – Slide closed - WH-701 - Back Facing Phantom/Area Scan (61x101x1): Measurement grid:**

$dx=15$ mm,  $dy=15$ mm

Maximum value of SAR (interpolated) = 0.885 mW/g

**Body – Low – Slide closed - WH-701 - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid:**

$dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 12.6 V/m

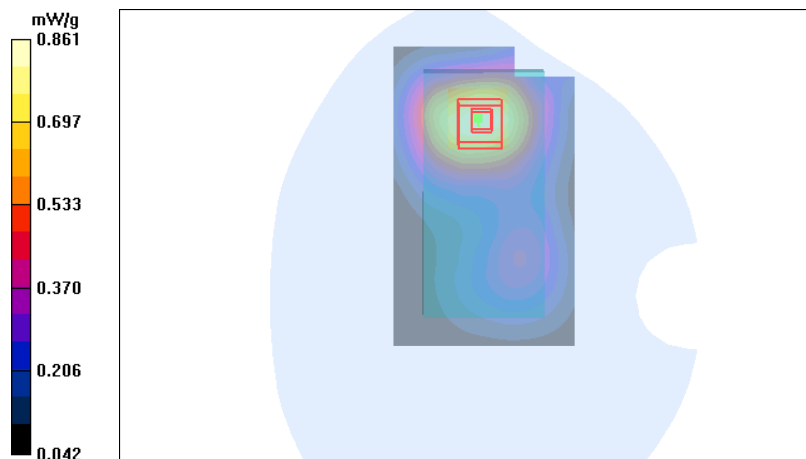
Peak SAR (extrapolated) = 1.21 W/kg

**SAR(1 g) = 0.811 mW/g**

**SAR(10 g) = 0.530 mW/g**

**Power Drift = -0.025 dB**

Maximum value of SAR (measured) = 0.861 mW/g



Date/Time: 2011-03-30 13:58:18

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1900**

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes:  $t = 21.7\text{ C}$

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: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body – Middle – Slide closed - No Accessory - Back Facing Phantom/Area Scan (61x101x1):** Measurement grid:  
 $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.803 mW/g

**Body – Middle – Slide closed - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 14.0 V/m

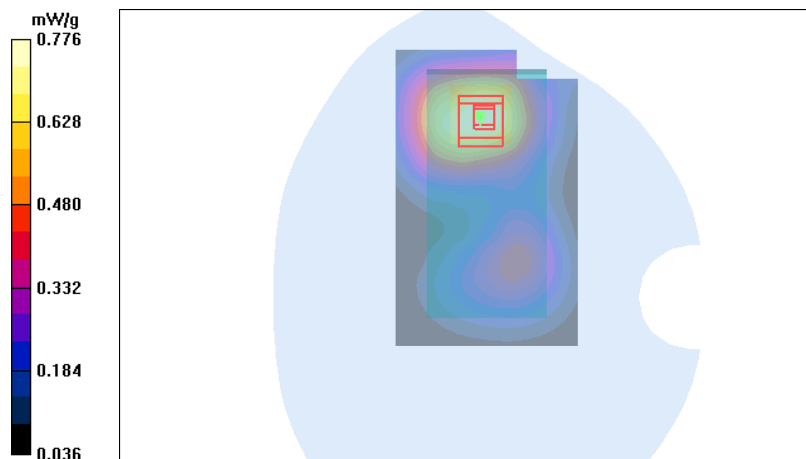
Peak SAR (extrapolated) = 1.09 W/kg

**SAR(1 g) = 0.731 mW/g**

**SAR(10 g) = 0.477 mW/g**

**Power Drift = -0.078 dB**

Maximum value of SAR (measured) = 0.776 mW/g



Date/Time: 2011-03-30 14:12:53

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1900**

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes:  $t = 21.7\text{ C}$

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: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body – Middle – Slide closed - WH-701 - Back Facing Phantom/Area Scan (61x101x1): Measurement grid:**

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

Maximum value of SAR (interpolated) = 0.645 mW/g

**Body – Middle – Slide closed - WH-701 - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid:**

$dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 13.1 V/m

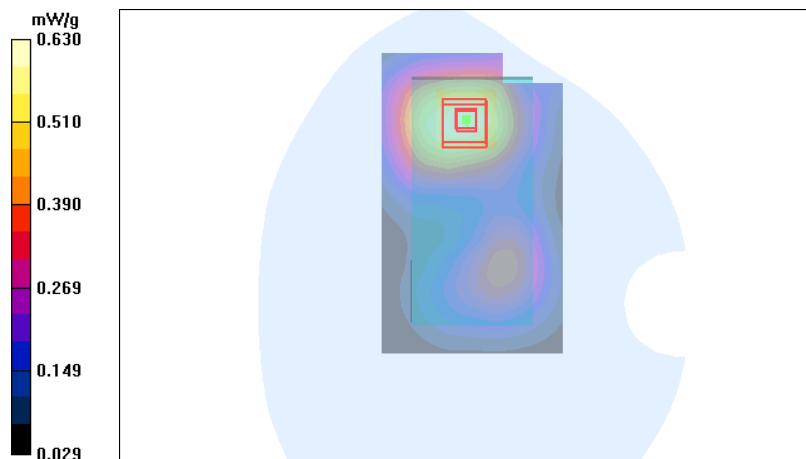
Peak SAR (extrapolated) = 0.882 W/kg

**SAR(1 g) = 0.592 mW/g**

**SAR(10 g) = 0.387 mW/g**

**Power Drift = -0.027 dB**

Maximum value of SAR (measured) = 0.630 mW/g



Date/Time: 2011-03-30 13:01:43

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293336/1

**Communication System: WLAN2450 b-mode**

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes:  $t = 20.6\text{ }^{\circ}\text{C}$

Medium parameters used:  $f = 2442\text{ MHz}$ ;  $\sigma = 2.03\text{ mho/m}$ ;  $\epsilon_r = 50.2$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: EX3DV4 - SN3573
- ConvF(6.8, 6.8, 6.8); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2010-09-08
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body – Middle – Slide closed - No accessory - Display Facing Phantom/Area Scan (61x101x1): Measurement**  
grid:  $dx=15\text{ mm}$ ,  $dy=15\text{ mm}$

Maximum value of SAR (interpolated) = 0.065 mW/g

**Body - Middle – Slide closed - No accessory - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement**  
grid:  $dx=7.5\text{ mm}$ ,  $dy=7.5\text{ mm}$ ,  $dz=5\text{ mm}$

Reference Value = 4.79 V/m

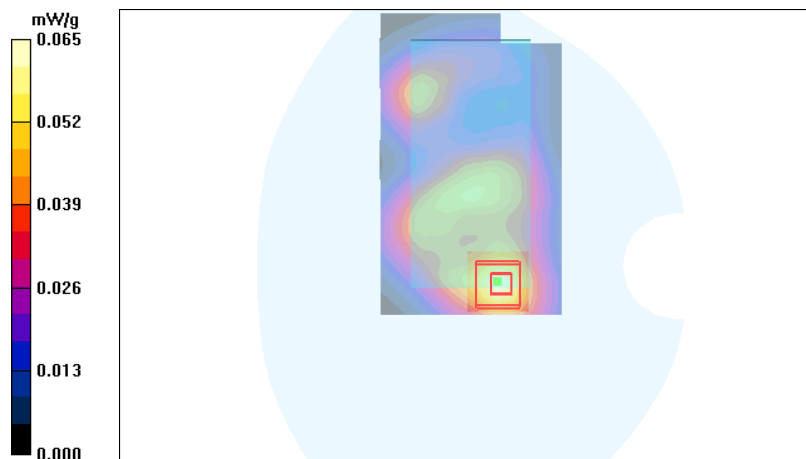
Peak SAR (extrapolated) = 0.111 W/kg

**SAR(1 g) = 0.060 mW/g**

**SAR(10 g) = 0.033 mW/g**

**Power Drift = 0.092 dB**

Maximum value of SAR (measured) = 0.065 mW/g



Date/Time: 2011-03-30 11:27:56

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293336/1

**Communication System: WLAN2450 b-mode**

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes:  $t = 20.6\text{ C}$

Medium parameters used:  $f = 2442\text{ MHz}$ ;  $\sigma = 2.03\text{ mho/m}$ ;  $\epsilon_r = 50.2$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: EX3DV4 - SN3573
- ConvF(6.8, 6.8, 6.8); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2010-09-08
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body – Middle – Slide closed - WH-701 - Display Facing Phantom/Area Scan (61x101x1):** Measurement grid:  
 $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.047 mW/g

**Body – Middle – Slide closed - WH-701 - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 3.48 V/m

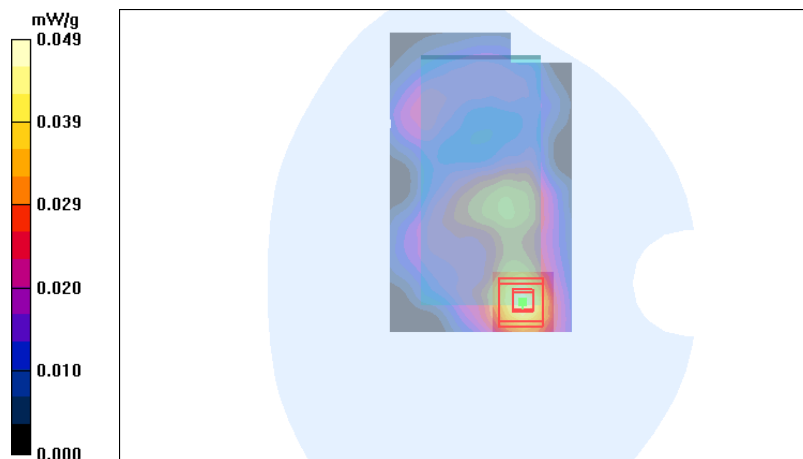
Peak SAR (extrapolated) = 0.082 W/kg

**SAR(1 g) = 0.044 mW/g**

**SAR(10 g) = 0.024 mW/g**

**Power Drift = -0.144 dB**

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



Date/Time: 2011-03-30 13:16:30

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293336/1

**Communication System: WLAN2450 b-mode**

Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes:  $t = 20.6\text{ }^{\circ}\text{C}$

Medium parameters used:  $f = 2462\text{ MHz}$ ;  $\sigma = 2.05\text{ mho/m}$ ;  $\epsilon_r = 50.2$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: EX3DV4 - SN3573
- ConvF(6.8, 6.8, 6.8); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2010-09-08
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - High- Slide closed - No Accessory - Back Facing Phantom/Area Scan (61x101x1):** Measurement grid:  
 $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.183 mW/g

**Body - High - Slide closed - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 7.47 V/m

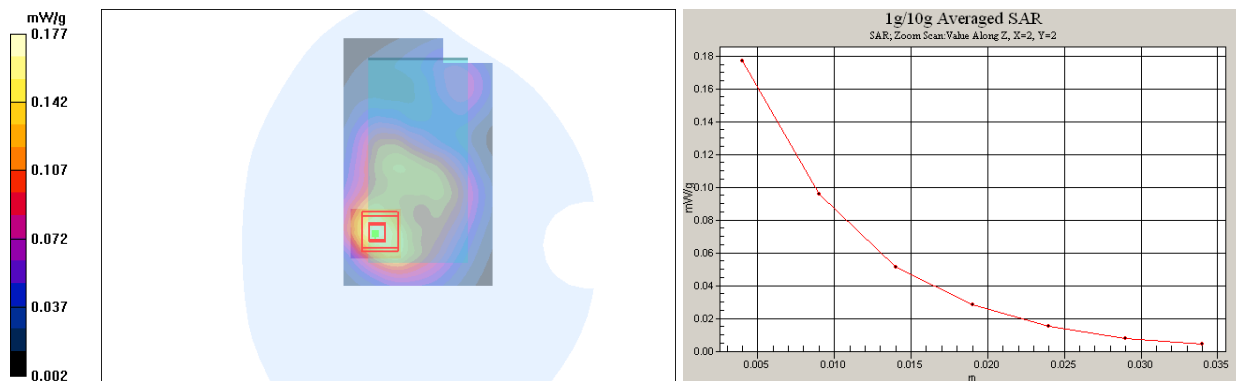
Peak SAR (extrapolated) = 0.293 W/kg

**SAR(1 g) = 0.162 mW/g**

**SAR(10 g) = 0.090 mW/g**

**Power Drift = -0.087 dB**

Maximum value of SAR (measured) = 0.177 mW/g



Date/Time: 2011-03-30 11:09:59

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293336/1

**Communication System: WLAN2450 b-mode**

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes:  $t = 20.6\text{ }^{\circ}\text{C}$

Medium parameters used:  $f = 2442\text{ MHz}$ ;  $\sigma = 2.03\text{ mho/m}$ ;  $\epsilon_r = 50.2$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: EX3DV4 - SN3573
- ConvF(6.8, 6.8, 6.8); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2010-09-08
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle – Slide closed - WH-701 - Back Facing Phantom/Area Scan (61x101x1): Measurement grid:**

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

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

**Body - Middle – Slide closed - WH-701 - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid:**

$dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 5.47 V/m

Peak SAR (extrapolated) = 0.197 W/kg

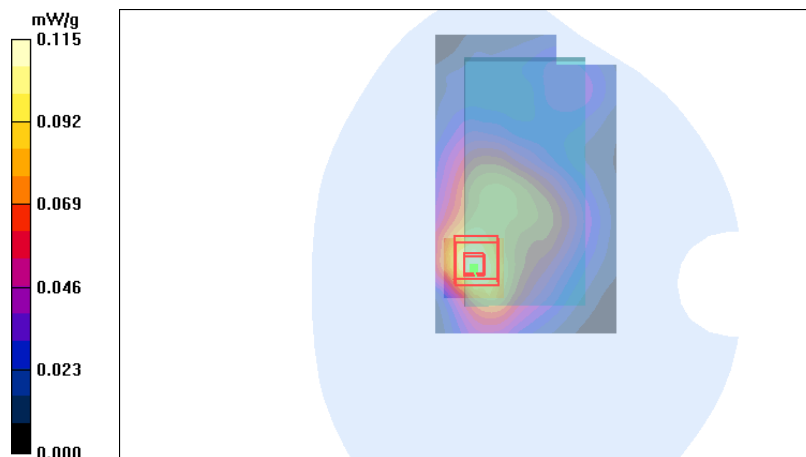
**SAR(1 g) = 0.106 mW/g**

**SAR(10 g) = 0.059 mW/g**

**Power Drift = -0.019 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





Date/Time: 2011-03-30 15:55:55

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293336/1

**Communication System: WLAN2450 n-mode**

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes:  $t = 20.6\text{ }^{\circ}\text{C}$

Medium parameters used:  $f = 2442\text{ MHz}$ ;  $\sigma = 2.03\text{ mho/m}$ ;  $\epsilon_r = 50.2$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: EX3DV4 - SN3573
- ConvF(6.8, 6.8, 6.8); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2010-09-08
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle – Slide closed - No Accessory - Back Facing Phantom/Area Scan (61x101x1):** Measurement grid:  
 $dx=15\text{ mm}$ ,  $dy=15\text{ mm}$

Maximum value of SAR (interpolated) = 0.120 mW/g

**Body - Middle – Slide closed - No Accessory - Back Facing Phantom/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5\text{ mm}$ ,  $dy=7.5\text{ mm}$ ,  $dz=5\text{ mm}$

Reference Value = 6.32 V/m

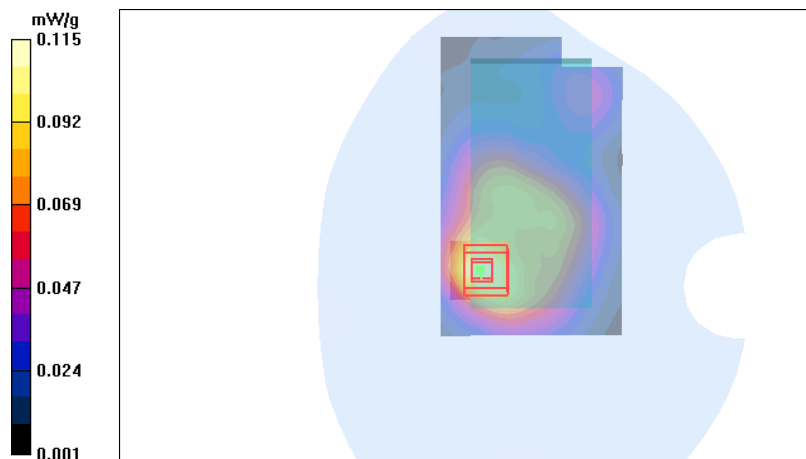
Peak SAR (extrapolated) = 0.193 W/kg

**SAR(1 g) = 0.106 mW/g**

**SAR(10 g) = 0.060 mW/g**

**Power Drift = -0.113 dB**

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



Date/Time: 2011-03-29 12:39:00, Date/Time: 2011-03-29 10:42:29

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9, Serial: 004402/13/293336/1

**Communication System: 4-slot GPRS850, Communication System: WLAN2450 b-mode**

Frequency: 836.6 MHz, Frequency: 2462 MHz; Duty Cycle: 1:2.1, Duty Cycle: 1:1

Medium: HSL850, Medium: HSL2450; Medium Notes: t= 21.1 C, Medium Notes: t= 20.5 C

Medium parameters used: f = 837 MHz;  $\sigma$  = 0.886 mho/m;  $\epsilon_r$  = 40.6;  $\rho$  = 1000 kg/m<sup>3</sup>, Medium parameters used:  
f = 2462 MHz;  $\sigma$  = 1.87 mho/m;  $\epsilon_r$  = 37.7;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194, Probe: EX3DV4 - SN3573
- ConvF(6.09, 6.09, 6.09), ConvF(6.69, 6.69, 6.69); Calibrated: 2010-09-09, Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538, Electronics: DAE4 Sn793; Calibrated: 2010-09-09, Calibrated: 2010-09-08
- Phantom: SAM 3, Phantom: SAM1; Type: Twin SAM 040 CA, Type: SAM; Serial: TP-1179, Serial: TP-1126
- ; SEMCAD X Version 14.0 Build 61

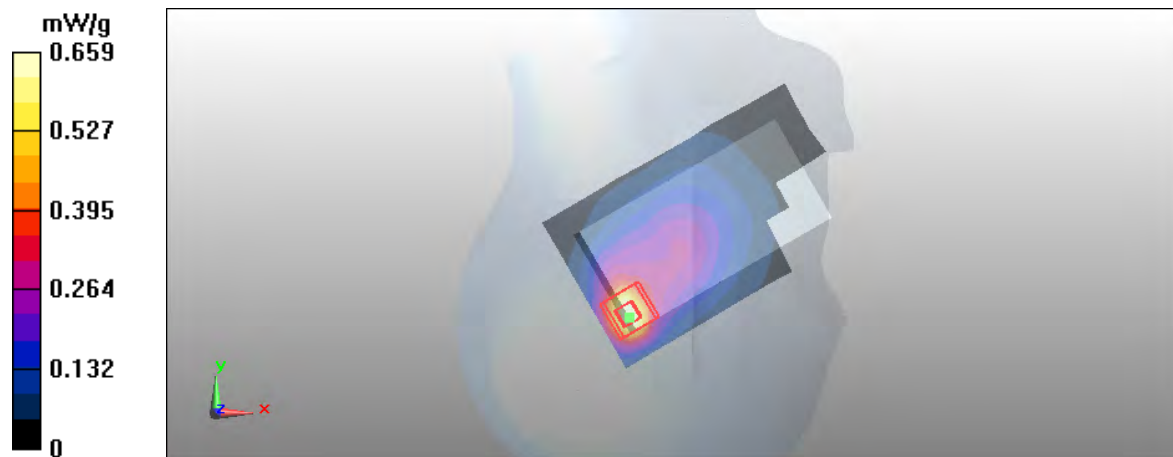
**Configuration/Tilt – Middle – Slide closed /Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm**

**Configuration/Tilt – High – Slide closed /Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm**

**Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.579 mW/g**

**SAR(10 g) = 0.299 mW/g**

Maximum value of SAR (measured) = 0.659 mW/g



Date/Time: 2011-04-04 11:54:49, Date/Time: 2011-03-29 10:42:29

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9, Serial: 004402/13/293336/1

**Communication System: WCDMA850, Communication System: WLAN2450 b-mode**

Frequency: 846.6 MHz, Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: HSL850, Medium: HSL2450; Medium Notes: t= 21.0 C, Medium Notes: t= 20.5 C

Medium parameters used: f = 847 MHz;  $\sigma$  = 0.905 mho/m;  $\epsilon_r$  = 40.5;  $\rho$  = 1000 kg/m<sup>3</sup>, Medium parameters used:  
f = 2462 MHz;  $\sigma$  = 1.87 mho/m;  $\epsilon_r$  = 37.7;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194, Probe: EX3DV4 - SN3573
- ConvF(6.09, 6.09, 6.09), ConvF(6.69, 6.69, 6.69); Calibrated: 2010-09-09, Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538, Electronics: DAE4 Sn793; Calibrated: 2010-09-09, Calibrated: 2010-09-08
- Phantom: SAM 3, Phantom: SAM1; Type: Twin SAM 040 CA, Type: SAM; Serial: TP-1179, Serial: TP-1126
- ; SEMCAD X Version 14.0 Build 61

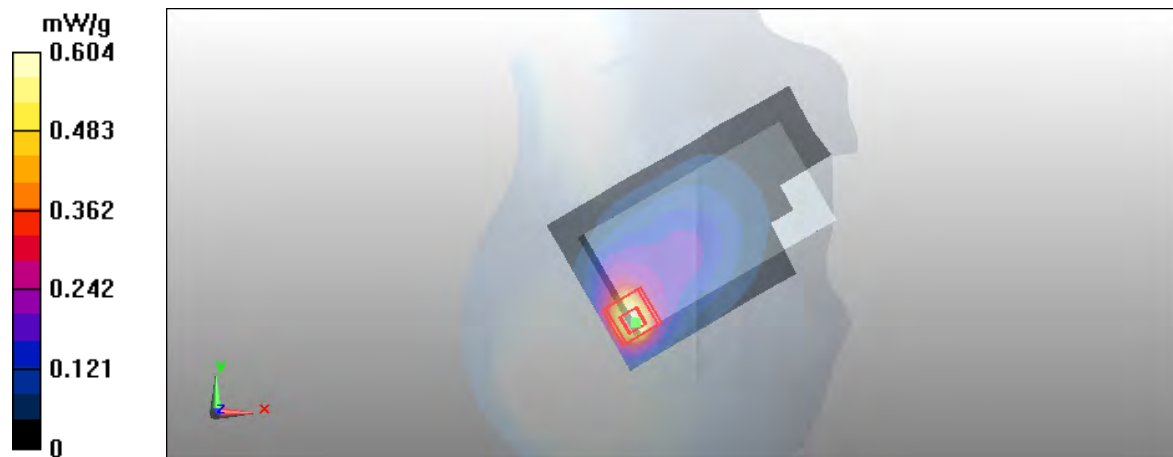
**Configuration/Tilt –High – Slide closed /Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm**

**Configuration/Tilt – High – Slide closed /Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm**

**Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.524 mW/g**

**SAR(10 g) = 0.262 mW/g**

Maximum value of SAR (measured) = 0.604 mW/g



Date/Time: 2011-04-05 09:30:02, Date/Time: 2011-03-28 13:16:06

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9, Serial: 004402/13/293336/1

**Communication System: WCDMA1700/2100, Communication System: WLAN2450 b-mode**

Frequency: 1752.6 MHz, Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL1800, Medium: HSL2450; Medium Notes: t= 21.3 C, Medium Notes: t= 20.4 C

Medium parameters used: f = 1753 MHz;  $\sigma = 1.35$  mho/m;  $\epsilon_r = 39.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>, Medium parameters used:  
f = 2442 MHz;  $\sigma = 1.82$  mho/m;  $\epsilon_r = 37.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165, Probe: EX3DV4 - SN3573
- ConvF(5.19, 5.19, 5.19), ConvF(6.69, 6.69, 6.69); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555, Electronics: DAE4 Sn793; Calibrated: 2011-02-22, Calibrated: 2010-09-08
- Phantom: SAM 4, Phantom: SAM1; Type: Twin SAM 040 CA, Type: SAM; Serial: TP-1018, Serial: TP-1126
- ; SEMCAD X Version 14.0 Build 61

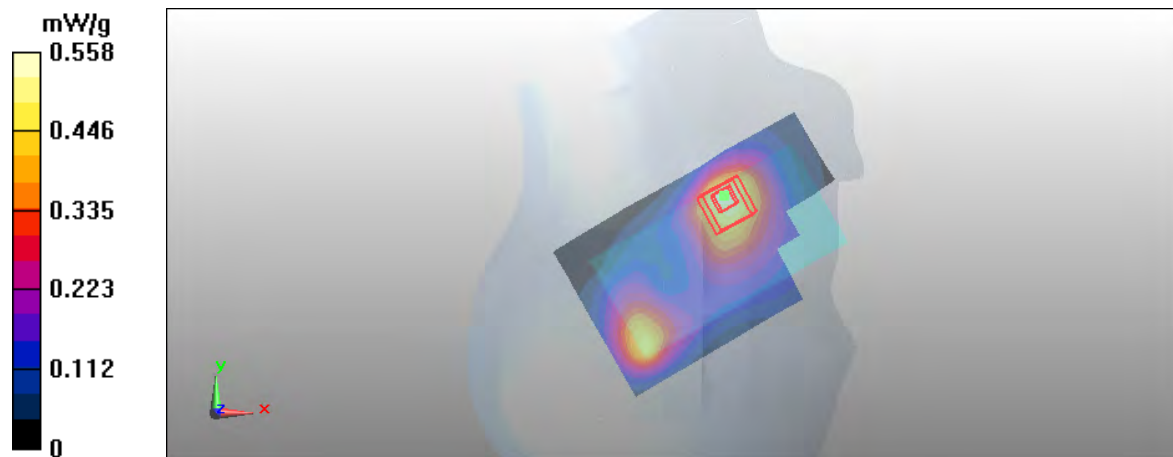
**Configuration/Cheek – High – Slide closed /Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm**

**Configuration/Cheek – Middle – Slide closed /Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm**

**Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.494 mW/g**

**SAR(10 g) = 0.297 mW/g**

Maximum value of SAR (measured) = 0.558 mW/g



Date/Time: 2011-04-07 12:28:41, Date/Time: 2011-03-28 13:16:06

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9, Serial: 004402132933361

**Communication System: 2-slot GPRS1900, Communication System: WLAN2450 b-mode**

Frequency: 1880 MHz, Frequency: 2442 MHz; Duty Cycle: 1:4.2, Duty Cycle: 1:1

Medium: HSL1900, Medium: HSL2450; Medium Notes: t= 21.6 C, Medium Notes: t= 20.4 C

Medium parameters used: f = 1880 MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 39.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>, Medium parameters used:  
f = 2442 MHz;  $\sigma = 1.82$  mho/m;  $\epsilon_r = 37.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

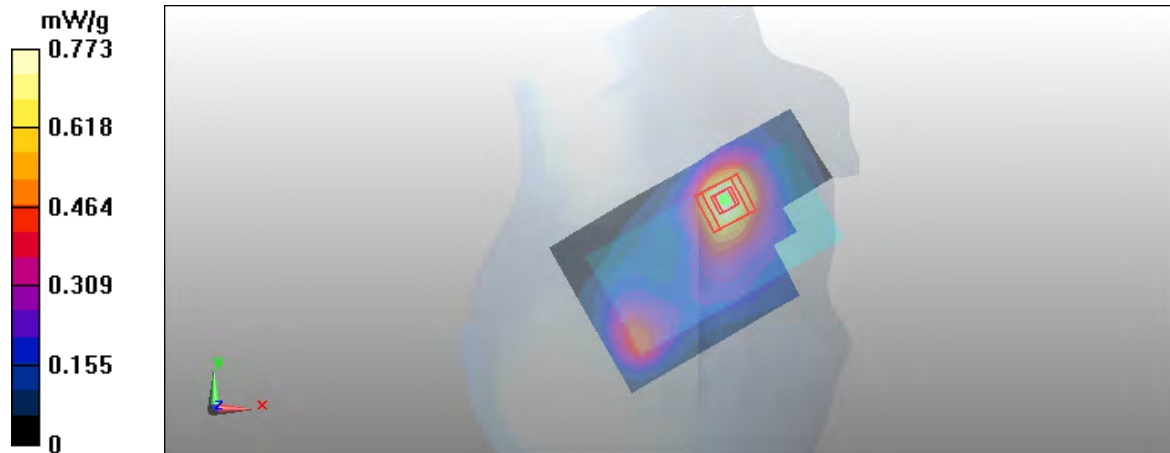
- Probe: ES3DV3 - SN3165, Probe: EX3DV4 - SN3573
- ConvF(5.03, 5.03, 5.03), ConvF(6.69, 6.69, 6.69); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555, Electronics: DAE4 Sn793; Calibrated: 2011-02-22, Calibrated: 2010-09-08
- Phantom: SAM 1, Phantom: SAM1; Type: Twin SAM 040 CA, Type: SAM; Serial: TP-1449, Serial: TP-1126
- ; SEMCAD X Version 14.0 Build 61

**Configuration/Cheek - Middle/Area Scan (7x11x1):** Measurement grid: dx=15mm, dy=15mm

**Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.698 mW/g**

**SAR(10 g) = 0.408 mW/g**

Maximum value of SAR (measured) = 0.773 mW/g



Date/Time: 2011-03-28 15:13:12, Date/Time: 2011-03-28 13:16:06

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9, Serial: 004402/13/293336/1

**Communication System: WCDMA1900, Communication System: WLAN2450 b-mode**

Frequency: 1880 MHz, Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: HSL1900, Medium: HSL2450; Medium Notes:  $t = 21.6$  C, Medium Notes:  $t = 20.4$  C

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.37$  mho/m;  $\epsilon_r = 39.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>, Medium parameters used:  
 $f = 2442$  MHz;  $\sigma = 1.82$  mho/m;  $\epsilon_r = 37.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section

DASY4 Configuration:

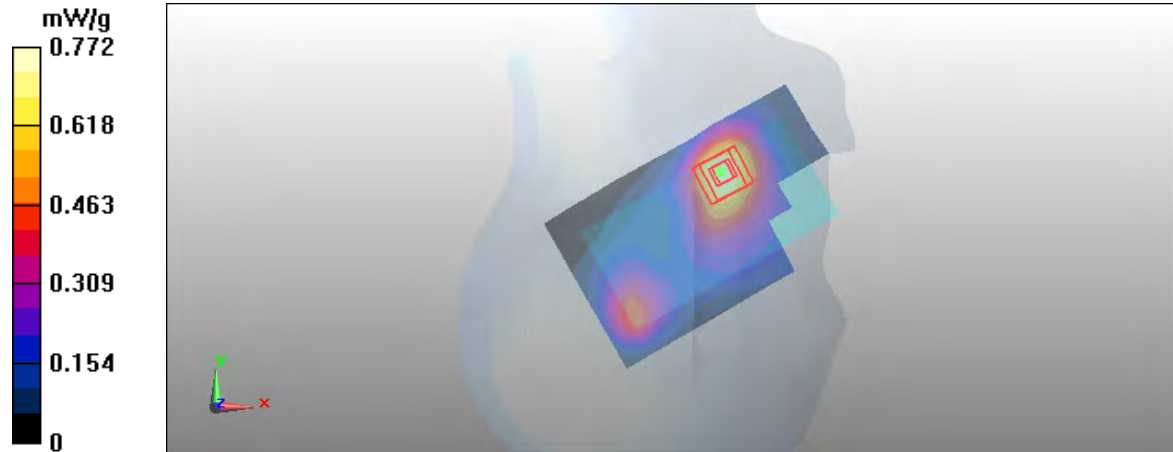
- Probe: ES3DV3 - SN3165, Probe: EX3DV4 - SN3573
- ConvF(5.03, 5.03, 5.03), ConvF(6.69, 6.69, 6.69); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555, Electronics: DAE4 Sn793; Calibrated: 2011-02-22, Calibrated: 2010-09-08
- Phantom: SAM 1, Phantom: SAM1; Type: Twin SAM 040 CA, Type: SAM; Serial: TP-1449, Serial: TP-1126
- ; SEMCAD X Version 14.0 Build 61

**Configuration/Cheek – Middle – Slide closed /Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm**

**Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.694 mW/g**

**SAR(10 g) = 0.410 mW/g**

Maximum value of SAR (measured) = 0.772 mW/g



Date/Time: 2011-04-11 13:11:50, Date/Time: 2011-03-30 13:16:30

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9, Serial: 004402/13/293336/1

**Communication System: 4-slot GPRS850, Communication System: WLAN2450 b-mode**

Frequency: 836.6 MHz, Frequency: 2462 MHz; Duty Cycle: 1:2.1, Duty Cycle: 1:1

Medium: BSL850, Medium: BSL2450; Medium Notes:  $t = 21.2$  C, Medium Notes:  $t = 20.6$  C

Medium parameters used:  $f = 837$  MHz;  $\sigma = 1.01$  mho/m;  $\epsilon_r = 53$ ;  $\rho = 1000$  kg/m<sup>3</sup>, Medium parameters used:  $f = 2462$  MHz;  $\sigma = 2.05$  mho/m;  $\epsilon_r = 50.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194, Probe: EX3DV4 - SN3573
- ConvF(5.95, 5.95, 5.95), ConvF(6.8, 6.8, 6.8); Calibrated: 2010-09-09, Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn538, Electronics: DAE4 Sn793; Calibrated: 2010-09-09, Calibrated: 2010-09-08
- Phantom: SAM 1, Phantom: SAM2; Type: Twin SAM 040 CA, Type: SAM; Serial: TP-1179, Serial: TP-1570
- ; SEMCAD X Version 14.0 Build 61

**Configuration/Body – Middle – Slide closed - No Accessory - Back Facing Phantom/Area Scan (7x11x1):**

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

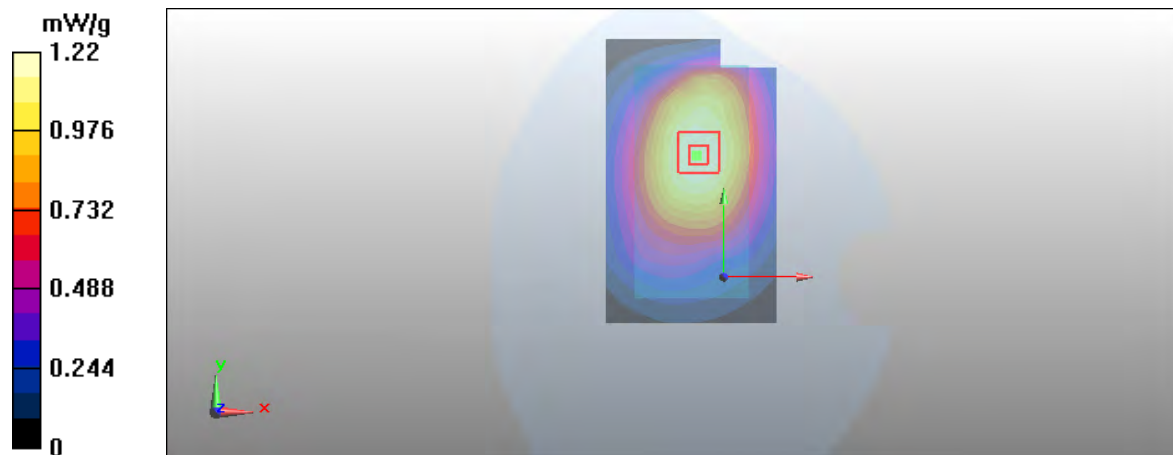
**Configuration/Body – High – Slide closed - No Accessory - Back Facing Phantom/Area Scan (7x11x1):**

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

**Motorola Fast SAR of Combined Scans: SAR(1 g) = 1.16 mW/g**

**SAR(10 g) = 0.823 mW/g**

Maximum value of SAR (measured) = 1.22 mW/g





Date/Time: 2011-04-04 14:08:10, Date/Time: 2011-03-30 13:16:30

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9, Serial: 004402/13/293336/1

**Communication System: WCDMA850, Communication System: WLAN2450 b-mode**

Frequency: 846.6 MHz, Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: BSL850, Medium: BSL2450; Medium Notes:  $t = 20.9^\circ\text{C}$ , Medium Notes:  $t = 20.6^\circ\text{C}$

Medium parameters used:  $f = 847\text{ MHz}$ ;  $\sigma = 0.998\text{ mho/m}$ ;  $\epsilon_r = 53.1$ ;  $\rho = 1000\text{ kg/m}^3$ , Medium parameters used:  
 $f = 2462\text{ MHz}$ ;  $\sigma = 2.05\text{ mho/m}$ ;  $\epsilon_r = 50.2$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194, Probe: EX3DV4 - SN3573
- ConvF(5.95, 5.95, 5.95), ConvF(6.8, 6.8, 6.8); Calibrated: 2010-09-09, Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn538, Electronics: DAE4 Sn793; Calibrated: 2010-09-09, Calibrated: 2010-09-08
- Phantom: SAM 1, Phantom: SAM2; Type: Twin SAM 040 CA, Type: SAM; Serial: TP-1179, Serial: TP-1570
- ; SEMCAD X Version 14.0 Build 61

**Configuration/Body – High – Slide closed - No Accessory - Back Facing Phantom/Area Scan (7x11x1):**

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

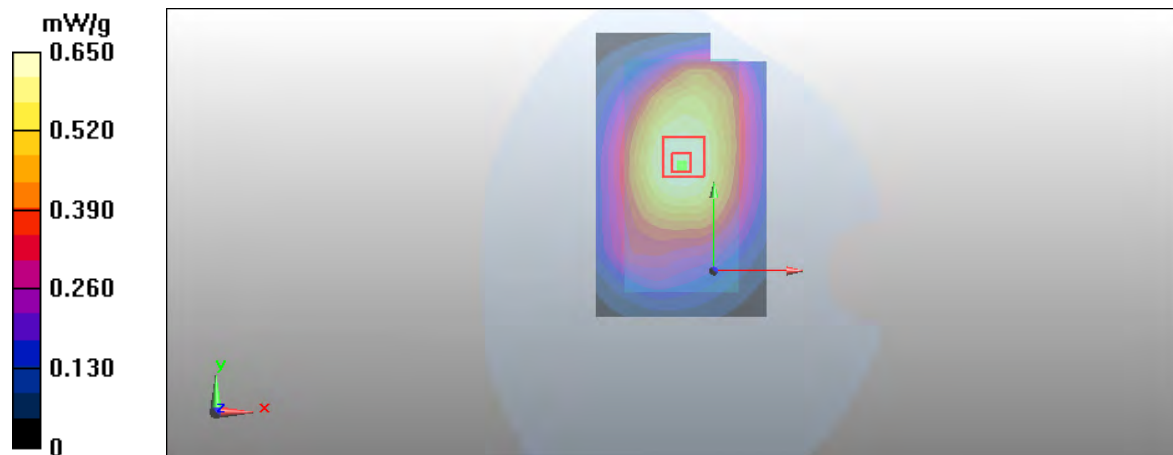
**Configuration/Body – High – Slide closed - No Accessory - Back Facing Phantom/Area Scan (7x11x1):**

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

**Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.615 mW/g**

**SAR(10 g) = 0.429 mW/g**

Maximum value of SAR (measured) = 0.650 mW/g





Date/Time: 2011-04-06 10:42:13, Date/Time: 2011-03-30 13:16:30

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9, Serial: 004402/13/293336/1

**Communication System: WCDMA1700/2100, Communication System: WLAN2450 b-mode**

Frequency: 1752.6 MHz, Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: BSL1800, Medium: BSL2450; Medium Notes: t= 21.0 C, Medium Notes: t= 20.6 C

Medium parameters used: f = 1753 MHz;  $\sigma$  = 1.47 mho/m;  $\epsilon_r$  = 51.7;  $\rho$  = 1000 kg/m<sup>3</sup>, Medium parameters used:  
f = 2462 MHz;  $\sigma$  = 2.05 mho/m;  $\epsilon_r$  = 50.2;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165, Probe: EX3DV4 - SN3573
- ConvF(4.91, 4.91, 4.91), ConvF(6.8, 6.8, 6.8); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn555, Electronics: DAE4 Sn793; Calibrated: 2011-02-22, Calibrated: 2010-09-08
- Phantom: SAM 3, Phantom: SAM2; Type: Twin SAM 040 CA, Type: SAM; Serial: TP-1179, Serial: TP-1570
- ; SEMCAD X Version 14.0 Build 61

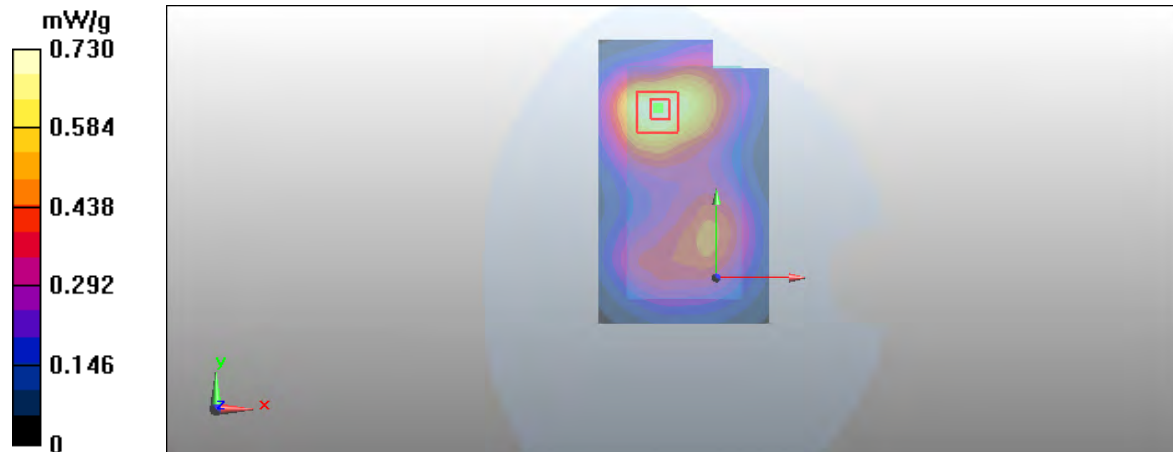
**Configuration/Body – High – Slide closed - No Accessory - Back Facing Phantom/Area Scan (7x11x1):**

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

**Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.676 mW/g**

**SAR(10 g) = 0.419 mW/g**

Maximum value of SAR (measured) = 0.730 mW/g



Date/Time: 2011-04-11 11:32:12, Date/Time: 2011-03-30 13:16:30

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9, Serial: 004402/13/293336/1

**Communication System: 2-slot GPRS1900, Communication System: WLAN2450 b-mode**

Frequency: 1880 MHz, Frequency: 2462 MHz; Duty Cycle: 1:4.2, Duty Cycle: 1:1

Medium: BSL1900, Medium: BSL2450; Medium Notes: t= 21.5 C, Medium Notes: t= 20.6 C

Medium parameters used: f = 1880 MHz;  $\sigma = 1.5$  mho/m;  $\epsilon_r = 52.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>, Medium parameters used:  
f = 2462 MHz;  $\sigma = 2.05$  mho/m;  $\epsilon_r = 50.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165, Probe: EX3DV4 - SN3573
- ConvF(4.61, 4.61, 4.61), ConvF(6.8, 6.8, 6.8); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE4 Sn555, Electronics: DAE4 Sn793; Calibrated: 2011-02-22, Calibrated: 2010-09-08
- Phantom: SAM 2, Phantom: SAM2; Type: Twin SAM 040 CA, Type: SAM; Serial: TP - 1177, Serial: TP-1570
- ; SEMCAD X Version 14.0 Build 61

**Configuration/Body - Middle - Slide closed - No accessory - Back Facing Phantom/Area Scan (7x11x1):**

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

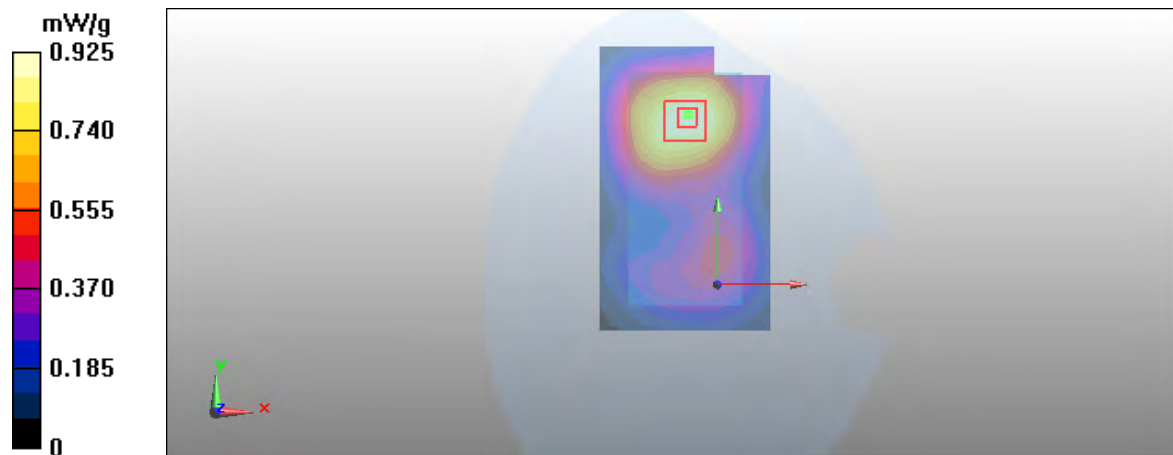
**Configuration/Body - High - Slide closed - No Accessory - Back Facing Phantom/Area Scan (7x11x1):**

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

**Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.865 mW/g**

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

Maximum value of SAR (measured) = 0.925 mW/g



Date/Time: 2011-03-30 13:58:18, Date/Time: 2011-03-30 13:16:30

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9, Serial: 004402/13/293336/1

**Communication System: WCDMA1900, Communication System: WLAN2450 b-mode**

Frequency: 1880 MHz, Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: BSL1900, Medium: BSL2450; Medium Notes: t= 21.7 C, Medium Notes: t= 20.6 C

Medium parameters used: f = 1880 MHz;  $\sigma = 1.49$  mho/m;  $\epsilon_r = 53$ ;  $\rho = 1000$  kg/m<sup>3</sup>, Medium parameters used: f = 2462 MHz;  $\sigma = 2.05$  mho/m;  $\epsilon_r = 50.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165, Probe: EX3DV4 - SN3573

- ConvF(4.61, 4.61, 4.61), ConvF(6.8, 6.8, 6.8); Calibrated: 2011-02-17

- Sensor-Surface: 4mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))

- Electronics: DAE4 Sn555, Electronics: DAE4 Sn793; Calibrated: 2011-02-22, Calibrated: 2010-09-08

- Phantom: SAM 2, Phantom: SAM2; Type: Twin SAM 040 CA, Type: SAM; Serial: TP - 1177, Serial: TP-1570

- ; SEMCAD X Version 14.0 Build 61

**Configuration/Body - Middle – Slide closed - No Accessory - Back Facing Phantom/Area Scan (7x11x1):**

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

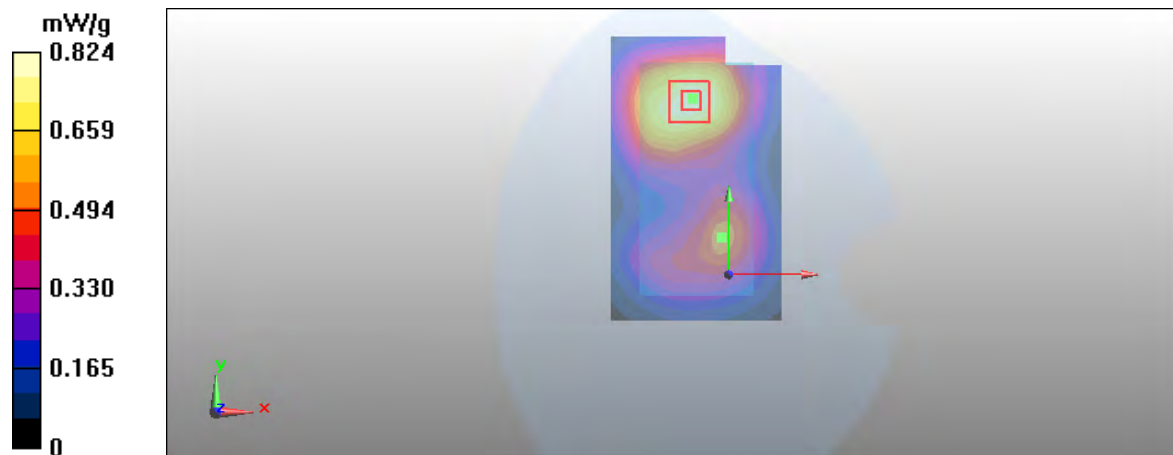
**Configuration/Body - High – Slide closed - No Accessory - Back Facing Phantom/Area Scan (7x11x1):**

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

**Motorola Fast SAR of Combined Scans: SAR(1 g) = 0.767 mW/g**

**SAR(10 g) = 0.473 mW/g**

Maximum value of SAR (measured) = 0.824 mW/g



## APPENDIX C: CONDUCTED AVERAGE POWER MEASUREMENTS FOR WCDMA AND HSUPA

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 650491/77/713065/2, HW: 1122 SW: 0.2011.12-1\_TA\_RM680

### C.1. WCDMA850 Test results

#### Average power

| Ch / f (MHz) | P [dBm] |
|--------------|---------|
| 4133         | 23.41   |
| 4175         | 23.29   |
| 4232         | 23.45   |

### C.2. HSUPA850 Test results

#### Average power

| Ch / f (MHz) | P [dBm]        |                |                |                |                |
|--------------|----------------|----------------|----------------|----------------|----------------|
|              | Subtest mode 1 | Subtest mode 2 | Subtest mode 3 | Subtest mode 4 | Subtest mode 5 |
| 4133         | 20.24          | 19.66          | 20.71          | 19.72          | 21.50          |
| 4175         | 20.15          | 19.87          | 20.93          | 20.20          | 21.76          |
| 4232         | 20.05          | 19.77          | 20.30          | 19.84          | 21.61          |

Note: In HSUPA operation, the output power is reduced relative to the tuning target power for WCDMA. This device runs two separate HSUPA power control routines: MPR and E-TFC MPR. In each Subtest mode, the routine with the higher power reduction dominates. In addition, to ensure linearity of the PA output, a further 1dB power reduction for all Subtest modes is implemented. As a result, the MPR for each of the Subtest modes is as follows:

| Maximum Power Reduction (MPR) |                |                |                |                |
|-------------------------------|----------------|----------------|----------------|----------------|
| Subtest mode 1                | Subtest mode 2 | Subtest mode 3 | Subtest mode 4 | Subtest mode 5 |
| 2.5dB                         | 3.0dB          | 2.0dB          | 3.0dB          | 1.0dB          |

### C.3. WCDMA1700/2100 Test results

#### Average power

| Ch / f (MHz) | P [dBm] |
|--------------|---------|
| 1313         | 23.09   |
| 1450         | 23.13   |
| 1512         | 22.95   |

### C.4. HSUPA1700/2100 Test results

#### Average power

| Ch / f (MHz) | P [dBm]        |                |                |                |                |
|--------------|----------------|----------------|----------------|----------------|----------------|
|              | Subtest mode 1 | Subtest mode 2 | Subtest mode 3 | Subtest mode 4 | Subtest mode 5 |
| 1313         | 19.72          | 19.10          | 19.68          | 19.15          | 21.07          |
| 1450         | 19.93          | 19.30          | 20.16          | 19.41          | 21.21          |
| 1512         | 19.49          | 18.88          | 19.98          | 18.97          | 20.90          |

Note: In HSUPA operation, the output power is reduced relative to the tuning target power for WCDMA. This device runs two separate HSUPA power control routines: MPR and E-TFC MPR. In each Subtest mode, the routine with the higher power reduction dominates. In addition, to ensure linearity of the PA output, a further 1dB power reduction for all Subtest modes is implemented. As a result, the MPR for each of the Subtest modes is as follows:

| Maximum Power Reduction (MPR) |                |                |                |                |
|-------------------------------|----------------|----------------|----------------|----------------|
| Subtest mode 1                | Subtest mode 2 | Subtest mode 3 | Subtest mode 4 | Subtest mode 5 |
| 2.5dB                         | 3.0dB          | 2.0dB          | 3.0dB          | 1.0dB          |

## C.5. WCDMA1900 Test results

### Average power

| Ch / f (MHz) | P [dBm] |
|--------------|---------|
| 9263         | 23.16   |
| 9400         | 23.04   |
| 9537         | 23.01   |

## C.6. HSUPA1900 Test results

### Average power

| Ch / f (MHz) | P [dBm]        |                |                |                |                |
|--------------|----------------|----------------|----------------|----------------|----------------|
|              | Subtest mode 1 | Subtest mode 2 | Subtest mode 3 | Subtest mode 4 | Subtest mode 5 |
| 9263         | 20.06          | 19.49          | 20.04          | 19.59          | 21.48          |
| 9400         | 20.18          | 19.48          | 20.36          | 19.61          | 21.41          |
| 9537         | 19.83          | 19.25          | 19.84          | 19.10          | 21.26          |

Note: In HSUPA operation, the output power is reduced relative to the tuning target power for WCDMA. This device runs two separate HSUPA power control routines: MPR and E-TFC MPR. In each Subtest mode, the routine with the higher power reduction dominates. In addition, to ensure linearity of the PA output, a further 1dB power reduction for all Subtest modes is implemented. As a result, the MPR for each of the Subtest modes is as follows:

| Maximum Power Reduction (MPR) |                |                |                |                |
|-------------------------------|----------------|----------------|----------------|----------------|
| Subtest mode 1                | Subtest mode 2 | Subtest mode 3 | Subtest mode 4 | Subtest mode 5 |
| 2.5dB                         | 3.0dB          | 2.0dB          | 3.0dB          | 1.0dB          |

---

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



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

The Swiss Accreditation Service is one of the signatories to the EA  
Multilateral Agreement for the recognition of calibration certificates

Client **Nokia Salo TCC**

Certificate No: **ES3-3194\_Sep10**

## CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3194**

Calibration procedure(s) **QA CAL-01.v6, QA CAL-23.v3 and QA CAL-25.v2  
Calibration procedure for dosimetric E-field probes**

Calibration date: **September 9, 2010**

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

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

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards          | ID #            | Cal Date (Certificate No.)     | Scheduled Calibration |
|----------------------------|-----------------|--------------------------------|-----------------------|
| Power meter E4419B         | GB41293874      | 1-Apr-10 (No. 217-01136)       | Apr-11                |
| Power sensor E4412A        | MY41495277      | 1-Apr-10 (No. 217-01136)       | Apr-11                |
| Power sensor E4412A        | MY41498087      | 1-Apr-10 (No. 217-01136)       | Apr-11                |
| Reference 3 dB Attenuator  | SN: S5054 (3c)  | 30-Mar-10 (No. 217-01159)      | Mar-11                |
| Reference 20 dB Attenuator | SN: S5086 (20b) | 30-Mar-10 (No. 217-01161)      | Mar-11                |
| Reference 30 dB Attenuator | SN: S5129 (30b) | 30-Mar-10 (No. 217-01160)      | Mar-11                |
| Reference Probe ES3DV2     | SN: 3013        | 30-Dec-09 (No. ES3-3013_Dec09) | Dec-10                |
| DAE4                       | SN: 660         | 20-Apr-10 (No. DAE4-660_Apr10) | Apr-11                |

| Secondary Standards       | ID #         | Check Date (in house)             | Scheduled Check        |
|---------------------------|--------------|-----------------------------------|------------------------|
| RF generator HP 8648C     | US3642U01700 | 4-Aug-99 (in house check Oct-09)  | In house check: Oct-11 |
| Network Analyzer HP 8753E | US37390585   | 18-Oct-01 (in house check Oct-09) | In house check: Oct10  |

|                |                               |                                          |               |
|----------------|-------------------------------|------------------------------------------|---------------|
| Calibrated by: | Name<br><b>Jeton Kastrati</b> | Function<br><b>Laboratory Technician</b> | Signature<br> |
|----------------|-------------------------------|------------------------------------------|---------------|

|              |                      |                          |  |
|--------------|----------------------|--------------------------|--|
| Approved by: | <b>Katja Pokovic</b> | <b>Technical Manager</b> |  |
|--------------|----------------------|--------------------------|--|

Issued: September 9, 2010

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



**DASY/EASY - Parameters of Probe: ES3DV3 SN:3194****Basic Calibration Parameters**

|                                                    | Sensor X | Sensor Y | Sensor Z | Unc (k=2)    |
|----------------------------------------------------|----------|----------|----------|--------------|
| Norm ( $\mu\text{V}/(\text{V/m})^2$ ) <sup>A</sup> | 1.39     | 1.28     | 1.37     | $\pm 10.1\%$ |
| DCP (mV) <sup>B</sup>                              | 95.7     | 93.2     | 88.0     |              |

**Modulation Calibration Parameters**

| UID   | Communication System Name | PAR  |   | A<br>dB | B<br>dBuV | C    | VR<br>mV | Unc <sup>E</sup><br>(k=2) |
|-------|---------------------------|------|---|---------|-----------|------|----------|---------------------------|
| 10000 | CW                        | 0.00 | X | 0.00    | 0.00      | 1.00 | 300.0    | $\pm 1.5\%$               |
|       |                           |      | Y | 0.00    | 0.00      | 1.00 | 300.0    |                           |
|       |                           |      | Z | 0.00    | 0.00      | 1.00 | 300.0    |                           |

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

<sup>A</sup> The uncertainties of NormX,Y,Z do not affect the E<sup>2</sup>-field uncertainty inside TSL (see Pages 5 and 6).

<sup>B</sup> Numerical linearization parameter: uncertainty not required.

<sup>E</sup> Uncertainty is determined using the maximum deviation from linear response applying recatangular distribution and is expressed for the square of the field value.

## DASY/EASY - Parameters of Probe: ES3DV3 SN:3194

### Calibration Parameter Determined in Head Tissue Simulating Media

| f [MHz] | Validity [MHz] <sup>c</sup> | Permittivity | Conductivity | ConvF X | ConvF Y | ConvF Z | Alpha | Depth Unc (k=2) |
|---------|-----------------------------|--------------|--------------|---------|---------|---------|-------|-----------------|
| 835     | ± 50 / ± 100                | 41.5 ± 5%    | 0.90 ± 5%    | 6.09    | 6.09    | 6.09    | 0.99  | 1.05 ± 11.0%    |
| 1750    | ± 50 / ± 100                | 40.1 ± 5%    | 1.37 ± 5%    | 5.14    | 5.14    | 5.14    | 0.45  | 1.74 ± 11.0%    |
| 1900    | ± 50 / ± 100                | 40.0 ± 5%    | 1.40 ± 5%    | 4.93    | 4.93    | 4.93    | 0.44  | 1.85 ± 11.0%    |
| 2450    | ± 50 / ± 100                | 39.2 ± 5%    | 1.80 ± 5%    | 4.30    | 4.30    | 4.30    | 0.41  | 1.99 ± 11.0%    |

<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.

## DASY/EASY - Parameters of Probe: ES3DV3 SN:3194

### Calibration Parameter Determined in Body Tissue Simulating Media

| f [MHz] | Validity [MHz] <sup>C</sup> | Permittivity | Conductivity | ConvF X | ConvF Y | ConvF Z | Alpha | Depth Unc (k=2) |
|---------|-----------------------------|--------------|--------------|---------|---------|---------|-------|-----------------|
| 835     | ± 50 / ± 100                | 55.2 ± 5%    | 0.97 ± 5%    | 5.95    | 5.95    | 5.95    | 0.84  | 1.15 ± 11.0%    |
| 1750    | ± 50 / ± 100                | 53.4 ± 5%    | 1.49 ± 5%    | 4.81    | 4.81    | 4.81    | 0.35  | 2.12 ± 11.0%    |
| 1900    | ± 50 / ± 100                | 53.3 ± 5%    | 1.52 ± 5%    | 4.58    | 4.58    | 4.58    | 0.35  | 2.32 ± 11.0%    |
| 2450    | ± 50 / ± 100                | 52.7 ± 5%    | 1.95 ± 5%    | 4.24    | 4.24    | 4.24    | 0.77  | 1.20 ± 11.0%    |

<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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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client **Nokia Salo TCC** Certificate No: **ES3-3165\_Feb11**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3165**

Calibration procedure(s) **QA CAL-01.v7, QA CAL-23.v4, QA CAL-25.v3  
Calibration procedure for dosimetric E-field probes**

Calibration date: **February 17, 2011**

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

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

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards          | ID              | Cal Date (Certificate No.)        | Scheduled Calibration  |
|----------------------------|-----------------|-----------------------------------|------------------------|
| Power meter E4419B         | GB41293874      | 01-Apr-10 (No. 217-01136)         | Apr-11                 |
| Power sensor E4412A        | MY41495277      | 01-Apr-10 (No. 217-01136)         | Apr-11                 |
| Power sensor E4412A        | MY41498087      | 01-Apr-10 (No. 217-01136)         | Apr-11                 |
| Reference 3 dB Attenuator  | SN: S5054 (3c)  | 30-Mar-10 (No. 217-01159)         | Mar-11                 |
| Reference 20 dB Attenuator | SN: S5086 (20b) | 30-Mar-10 (No. 217-01161)         | Mar-11                 |
| Reference 30 dB Attenuator | SN: S5129 (30b) | 30-Mar-10 (No. 217-01160)         | Mar-11                 |
| Reference Probe ES3DV2     | SN: 3013        | 29-Dec-10 (No. ES3-3013_Dec10)    | Dec-11                 |
| DAE4                       | SN: 654         | 23-Apr-10 (No. DAE4-654_Apr10)    | Apr-11                 |
| Secondary Standards        | ID              | Check Date (in house)             | Scheduled Check        |
| RF generator HP 8648C      | US3642U01700    | 4-Aug-99 (in house check Oct-09)  | In house check: Oct-11 |
| Network Analyzer HP 8753E  | US37390585      | 18-Oct-01 (in house check Oct-10) | In house check: Oct-11 |

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

Issued: February 22, 2011

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DASY/EASY - Parameters of Probe: ES3DV3 - SN:3165

Calibration Parameter Determined in Head Tissue Simulating Media

| f (MHz) <sup>C</sup> | Relative Permittivity <sup>F</sup> | Conductivity (S/m) <sup>F</sup> | ConvF X | ConvF Y | ConvF Z | Alpha | Depth (mm) | Unci. (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|-------|------------|-------------|
| 835                  | 41.5                               | 0.90                            | 6.09    | 6.09    | 6.09    | 0.43  | 1.44       | ± 12.0 %    |
| 1750                 | 40.1                               | 1.37                            | 5.19    | 5.19    | 5.19    | 0.35  | 1.84       | ± 12.0 %    |
| 1900                 | 40.0                               | 1.40                            | 5.03    | 5.03    | 5.03    | 0.64  | 1.34       | ± 12.0 %    |
| 2450                 | 39.2                               | 1.80                            | 4.44    | 4.44    | 4.44    | 0.79  | 1.13       | ± 12.0 %    |

<sup>C</sup> Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

<sup>F</sup> At frequencies below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

DASY/EASY - Parameters of Probe: ES3DV3- SN:3165

Calibration Parameter Determined in Body Tissue Simulating Media

| f (MHz) <sup>C</sup> | Relative Permittivity <sup>F</sup> | Conductivity (S/m) <sup>F</sup> | ConvF X | ConvF Y | ConvF Z | Alpha | Depth (mm) | Unct. (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|-------|------------|-------------|
| 835                  | 55.2                               | 0.97                            | 6.04    | 6.04    | 6.04    | 0.50  | 1.43       | ± 12.0 %    |
| 1750                 | 53.4                               | 1.49                            | 4.91    | 4.91    | 4.91    | 0.36  | 2.50       | ± 12.0 %    |
| 1900                 | 53.3                               | 1.52                            | 4.61    | 4.61    | 4.61    | 0.34  | 2.38       | ± 12.0 %    |
| 2450                 | 52.7                               | 1.95                            | 4.18    | 4.18    | 4.18    | 0.79  | 0.83       | ± 12.0 %    |

<sup>C</sup> Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

<sup>F</sup> At frequencies below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.





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Accreditation No.: SCS 108

Client Nokia Salo TCC

Certificate No: EX3-3573\_Feb11

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:3573

Calibration procedure(s) QA CAL-01.v7, QA CAL-23.v4, QA CAL-25.v3  
Calibration procedure for dosimetric E-field probes

Calibration date: February 17, 2011

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

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

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards          | ID              | Cal Date (Certificate No.)        | Scheduled Calibration  |
|----------------------------|-----------------|-----------------------------------|------------------------|
| Power meter E4419B         | GB41293874      | 01-Apr-10 (No. 217-01136)         | Apr-11                 |
| Power sensor E4412A        | MY41495277      | 01-Apr-10 (No. 217-01136)         | Apr-11                 |
| Power sensor E4412A        | MY41498087      | 01-Apr-10 (No. 217-01136)         | Apr-11                 |
| Reference 3 dB Attenuator  | SN: S5054 (3c)  | 30-Mar-10 (No. 217-01159)         | Mar-11                 |
| Reference 20 dB Attenuator | SN: S5086 (20b) | 30-Mar-10 (No. 217-01161)         | Mar-11                 |
| Reference 30 dB Attenuator | SN: S5129 (30b) | 30-Mar-10 (No. 217-01160)         | Mar-11                 |
| Reference Probe ES3DV2     | SN: 3013        | 29-Dec-10 (No. ES3-3013_Dec10)    | Dec-11                 |
| DAE4                       | SN: 654         | 23-Apr-10 (No. DAE4-654_Apr10)    | Apr-11                 |
| Secondary Standards        | ID              | Check Date (in house)             | Scheduled Check        |
| RF generator HP 8648C      | US3642U01700    | 4-Aug-99 (in house check Oct-09)  | In house check: Oct-11 |
| Network Analyzer HP 8753E  | US37390585      | 18-Oct-01 (in house check Oct-10) | In house check: Oct-11 |

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

Issued: February 22, 2011

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3573

Calibration Parameter Determined in Head Tissue Simulating Media

| f (MHz) <sup>C</sup> | Relative Permittivity <sup>F</sup> | Conductivity (S/m) <sup>F</sup> | ConvF X | ConvF Y | ConvF Z | Alpha | Depth (mm) | Unct. (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|-------|------------|-------------|
| 835                  | 41.5                               | 0.90                            | 8.39    | 8.39    | 8.39    | 0.71  | 0.69       | ± 12.0 %    |
| 1750                 | 40.1                               | 1.37                            | 7.66    | 7.66    | 7.66    | 0.79  | 0.65       | ± 12.0 %    |
| 1900                 | 40.0                               | 1.40                            | 7.37    | 7.37    | 7.37    | 0.79  | 0.66       | ± 12.0 %    |
| 2450                 | 39.2                               | 1.80                            | 6.69    | 6.69    | 6.69    | 0.74  | 0.63       | ± 12.0 %    |

<sup>C</sup> Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

<sup>F</sup> At frequencies below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.



DASY/EASY - Parameters of Probe: EX3DV4- SN:3573

Calibration Parameter Determined in Body Tissue Simulating Media

| f (MHz) <sup>C</sup> | Relative Permittivity <sup>F</sup> | Conductivity (S/m) <sup>F</sup> | ConvF X | ConvF Y | ConvF Z | Alpha | Depth (mm) | Unct. (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|-------|------------|-------------|
| 835                  | 55.2                               | 0.97                            | 8.42    | 8.42    | 8.42    | 0.70  | 0.77       | ± 12.0 %    |
| 1750                 | 53.4                               | 1.49                            | 7.56    | 7.56    | 7.56    | 0.79  | 0.69       | ± 12.0 %    |
| 1900                 | 53.3                               | 1.52                            | 7.16    | 7.16    | 7.16    | 0.79  | 0.68       | ± 12.0 %    |
| 2450                 | 52.7                               | 1.95                            | 6.80    | 6.80    | 6.80    | 0.79  | 0.62       | ± 12.0 %    |

<sup>C</sup> Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

<sup>F</sup> At frequencies below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

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



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

The Swiss Accreditation Service is one of the signatories to the EA  
Multilateral Agreement for the recognition of calibration certificates

Client **Nokia Salo TCC**

Certificate No: **D835V2-480\_Oct09**

## CALIBRATION CERTIFICATE

Object **D835V2 - SN: 480**

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

Calibration date: **October 19, 2009**

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

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

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards           | ID #               | Cal Date (Certificate No.)     | Scheduled Calibration |
|-----------------------------|--------------------|--------------------------------|-----------------------|
| Power meter EPM-442A        | GB37480704         | 06-Oct-09 (No. 217-01086)      | Oct-10                |
| Power sensor HP 8481A       | US37292783         | 06-Oct-09 (No. 217-01086)      | Oct-10                |
| Reference 20 dB Attenuator  | SN: 5086 (20g)     | 31-Mar-09 (No. 217-01025)      | Mar-10                |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 31-Mar-09 (No. 217-01029)      | Mar-10                |
| Reference Probe ES3DV3      | SN: 3205           | 26-Jun-09 (No. ES3-3205_Jun09) | Jun-10                |
| DAE4                        | SN: 601            | 07-Mar-09 (No. DAE4-601_Mar09) | Mar-10                |

| Secondary Standards       | ID #             | Check Date (in house)             | Scheduled Check        |
|---------------------------|------------------|-----------------------------------|------------------------|
| Power sensor HP 8481A     | MY41092317       | 18-Oct-02 (in house check Oct-09) | In house check: Oct-11 |
| RF generator R&S SMT-06   | 100005           | 4-Aug-99 (in house check Oct-09)  | In house check: Oct-11 |
| Network Analyzer HP 8753E | US37390585 S4206 | 18-Oct-01 (in house check Oct-09) | In house check: Oct-10 |

|                |                |                       |           |
|----------------|----------------|-----------------------|-----------|
|                | Name           | Function              | Signature |
| Calibrated by: | Jeton Kastrati | Laboratory Technician |           |

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

Issued: October 19, 2009

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## DASY5 Validation Report for Head TSL

Date/Time: 19.10.2009 10:11:32

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:480**

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

Medium: HSL900

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.88 \text{ mho/m}$ ;  $\epsilon_r = 40.5$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

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

### DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.04, 6.04, 6.04); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

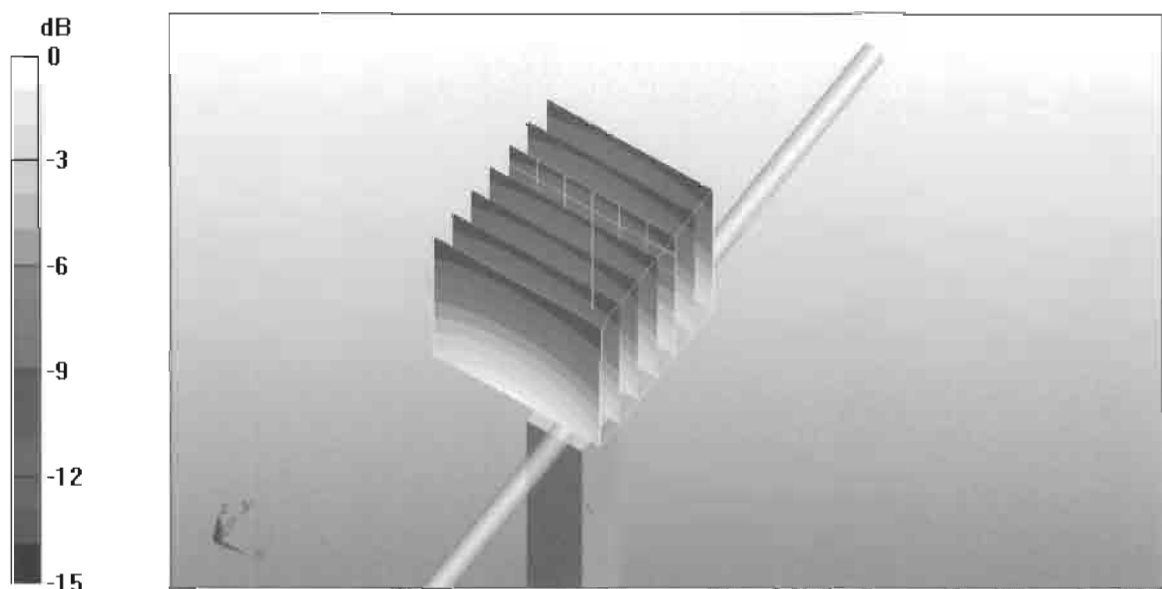
**Pin=250 mW /d=15mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 57.6 V/m; Power Drift = 0.00856 dB

Peak SAR (extrapolated) = 3.53 W/kg

**SAR(1 g) = 2.36 mW/g; SAR(10 g) = 1.55 mW/g**

Maximum value of SAR (measured) = 2.76 mW/g



0 dB = 2.76mW/g

## DASY5 Validation Report for Body

Date/Time: 19.10.2009 13:40:30

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:480**

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

Medium: MSL900

Medium parameters used:  $f = 835$  MHz;  $\sigma = 1.01$  mho/m;  $\epsilon_r = 53.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.97, 5.97, 5.97); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

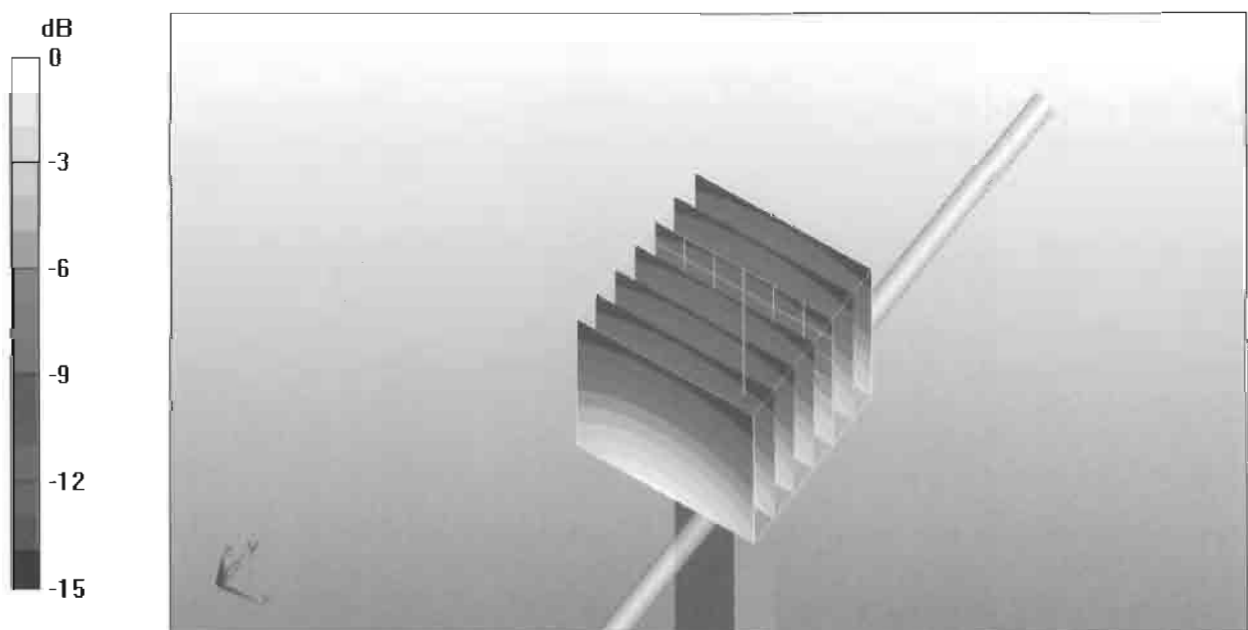
**Pin250 mW /d=15mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 55.5 V/m; Power Drift = 0.014 dB

Peak SAR (extrapolated) = 3.74 W/kg

**SAR(1 g) = 2.52 mW/g; SAR(10 g) = 1.65 mW/g**

Maximum value of SAR (measured) = 2.94 mW/g



0 dB = 2.94mW/g



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

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 Multilateral Agreement for the recognition of calibration certificates

Client **Nokia Salo TCC**

Certificate No: **D1800V2-256\_Oct09**

## CALIBRATION CERTIFICATE

Object **D1800V2 - SN: 256**

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

Calibration date: **October 20, 2009**

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

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

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards           | ID #               | Cal Date (Certificate No.)     | Scheduled Calibration |
|-----------------------------|--------------------|--------------------------------|-----------------------|
| Power meter EPM-442A        | GB37480704         | 06-Oct-09 (No. 217-01086)      | Oct-10                |
| Power sensor HP 8481A       | US37292783         | 06-Oct-09 (No. 217-01086)      | Oct-10                |
| Reference 20 dB Attenuator  | SN: 5086 (20g)     | 31-Mar-09 (No. 217-01025)      | Mar-10                |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 31-Mar-09 (No. 217-01029)      | Mar-10                |
| Reference Probe ES3DV3      | SN: 3205           | 26-Jun-09 (No. ES3-3205_Jun09) | Jun-10                |
| DAE4                        | SN: 601            | 07-Mar-09 (No. DAE4-601_Mar09) | Mar-10                |

| Secondary Standards       | ID #             | Check Date (in house)             | Scheduled Check        |
|---------------------------|------------------|-----------------------------------|------------------------|
| Power sensor HP 8481A     | MY41092317       | 18-Oct-02 (in house check Oct-09) | In house check: Oct-11 |
| RF generator R&S SMT-06   | 100005           | 4-Aug-99 (in house check Oct-09)  | In house check: Oct-11 |
| Network Analyzer HP 8753E | US37390585 S4206 | 18-Oct-01 (in house check Oct-09) | In house check: Oct-10 |

|                |                |                       |           |
|----------------|----------------|-----------------------|-----------|
|                | Name           | Function              | Signature |
| Calibrated by: | Jeton Kastrati | Laboratory Technician |           |

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

Issued: October 21, 2009

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## DASY5 Validation Report for Head TSL

Date/Time: 20.10.2009 10:26:59

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN:256**

Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: HSL U11 BB

Medium parameters used:  $f = 1800$  MHz;  $\sigma = 1.4$  mho/m;  $\epsilon_r = 40$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.25, 5.25, 5.25); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

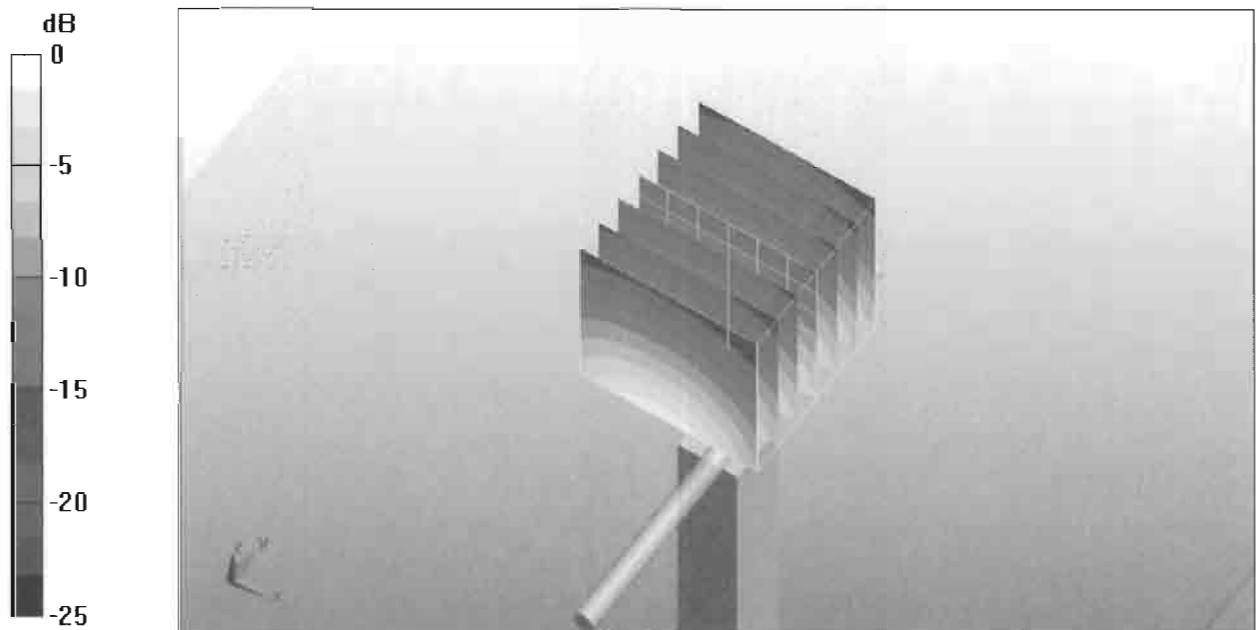
**Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 97.2 V/m; Power Drift = 0.025 dB

Peak SAR (extrapolated) = 17.9 W/kg

**SAR(1 g) = 9.9 mW/g; SAR(10 g) = 5.21 mW/g**

Maximum value of SAR (measured) = 12.4 mW/g



0 dB = 12.4mW/g

## DASY5 Validation Report for Body

Date/Time: 20.10.2009 14:52:33

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN:256**

Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: MSL U10 BB

Medium parameters used:  $f = 1800$  MHz;  $\sigma = 1.5$  mho/m;  $\epsilon_r = 53.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.8, 4.8, 4.8); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

**Pin250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement**

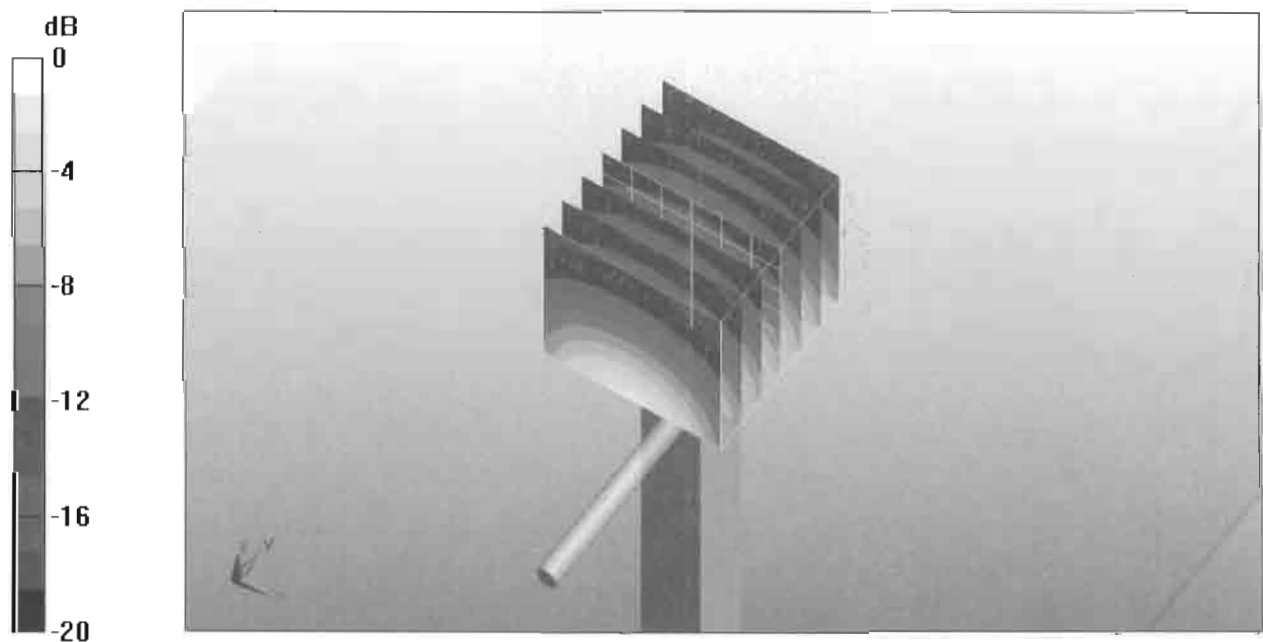
grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 94.2 V/m; Power Drift = 0.020 dB

Peak SAR (extrapolated) = 16.8 W/kg

**SAR(1 g) = 9.61 mW/g; SAR(10 g) = 5.07 mW/g**

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



0 dB = 12.2mW/g





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Client **Nokia Salo TCC**

Certificate No: **D1900V2-5d013\_Mar10**

## CALIBRATION CERTIFICATE

Object **D1900V2 - SN: 5d013**

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

Calibration date: **March 23, 2010**

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

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

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards           | ID #               | Cal Date (Certificate No.)        | Scheduled Calibration  |
|-----------------------------|--------------------|-----------------------------------|------------------------|
| Power meter EPM-442A        | GB37480704         | 06-Oct-09 (No. 217-01086)         | Oct-10                 |
| Power sensor HP 8481A       | US37292783         | 06-Oct-09 (No. 217-01086)         | Oct-10                 |
| Reference 20 dB Attenuator  | SN: 5086 (20g)     | 31-Mar-09 (No. 217-01025)         | Mar-10                 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 31-Mar-09 (No. 217-01029)         | Mar-10                 |
| Reference Probe ES3DV3      | SN: 3205           | 26-Jun-09 (No. ES3-3205_Jun09)    | Jun-10                 |
| DAE4                        | SN: 601            | 02-Mar-10 (No. DAE4-601_Mar10)    | Mar-11                 |
| Secondary Standards         | ID #               | Check Date (in house)             | Scheduled Check        |
| Power sensor HP 8481A       | MY41092317         | 18-Oct-02 (in house check Oct-09) | In house check: Oct-11 |
| RF generator R&S SMT-06     | 100005             | 4-Aug-99 (in house check Oct-09)  | In house check: Oct-11 |
| Network Analyzer HP 8753E   | US37390585 S4206   | 18-Oct-01 (in house check Oct-09) | In house check: Oct-10 |

Calibrated by: **Dinco Iliev** Name: **Dinco Iliev** Function: **Laboratory Technician** Signature: *[Signature]*

Approved by: **Katja Pokovic** Name: **Katja Pokovic** Function: **Technical Manager** Signature: *[Signature]*

Issued: March 23, 2010

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## DASY5 Validation Report for Head TSL

Date/Time: 23.03.2010 10:16:39

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d013**

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

Medium: HSL U11 BB

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.45$  mho/m;  $\epsilon_r = 41.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.09, 5.09, 5.09); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

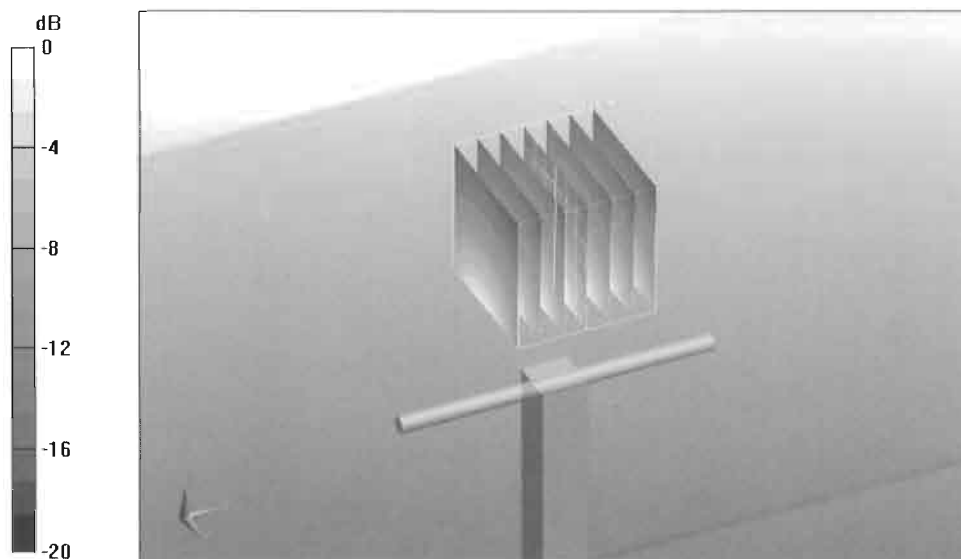
**Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 96.4 V/m; Power Drift = 0.028 dB

Peak SAR (extrapolated) = 18.5 W/kg

**SAR(1 g) = 10.2 mW/g; SAR(10 g) = 5.32 mW/g**

Maximum value of SAR (measured) = 12.6 mW/g



0 dB = 12.6mW/g

## DASY5 Validation Report for Body

Date/Time: 23.03.2010 13:12:18

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d013**

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

Medium: MSL U11 BB

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.58$  mho/m;  $\epsilon_r = 55$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.59, 4.59, 4.59); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

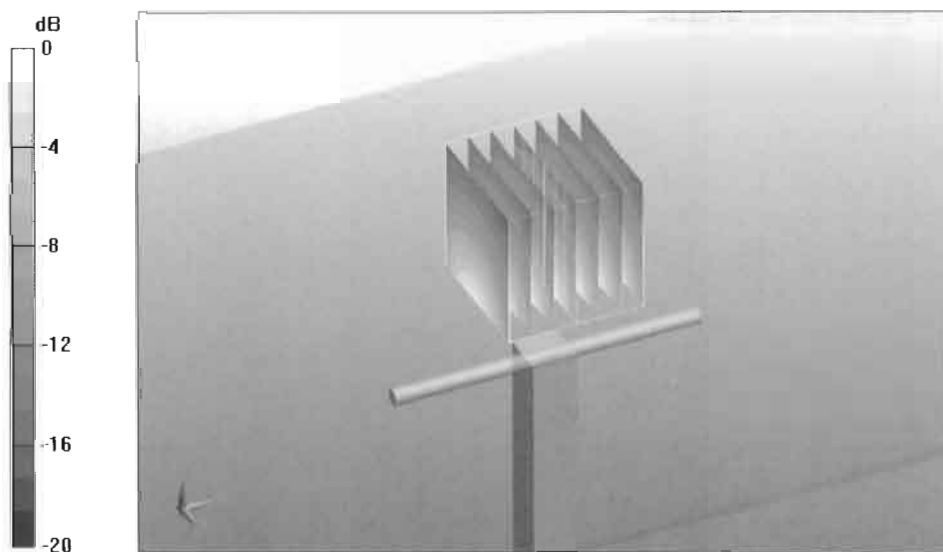
**Pin250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 94.9 V/m; Power Drift = 0.00956 dB

Peak SAR (extrapolated) = 17.5 W/kg

**SAR(1 g) = 10.4 mW/g; SAR(10 g) = 5.58 mW/g**

Maximum value of SAR (measured) = 12.7 mW/g



0 dB = 12.7mW/g



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 Salo TCC** Certificate No: **D2450V2-749\_Oct09**

CALIBRATION CERTIFICATE

Object **D2450V2 - SN: 749**

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

Calibration date: **October 21, 2009**

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

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

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards           | ID #               | Cal Date (Certificate No.)        | Scheduled Calibration  |
|-----------------------------|--------------------|-----------------------------------|------------------------|
| Power meter EPM-442A        | GB37480704         | 06-Oct-09 (No. 217-01086)         | Oct-10                 |
| Power sensor HP 8481A       | US37292783         | 06-Oct-09 (No. 217-01086)         | Oct-10                 |
| Reference 20 dB Attenuator  | SN: 5086 (20g)     | 31-Mar-09 (No. 217-01025)         | Mar-10                 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 31-Mar-09 (No. 217-01029)         | Mar-10                 |
| Reference Probe ES3DV3      | SN: 3205           | 26-Jun-09 (No. ES3-3205_Jun09)    | Jun-10                 |
| DAE4                        | SN: 601            | 07-Mar-09 (No. DAE4-601_Mar09)    | Mar-10                 |
| Secondary Standards         | ID #               | Check Date (in house)             | Scheduled Check        |
| Power sensor HP 8481A       | MY41092317         | 18-Oct-02 (in house check Oct-09) | In house check: Oct-11 |
| RF generator R&S SMT-06     | 100005             | 4-Aug-99 (in house check Oct-09)  | In house check: Oct-11 |
| Network Analyzer HP 8753E   | US37390585 S4206   | 18-Oct-01 (in house check Oct-09) | In house check: Oct-10 |

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

Issued: October 22, 2009

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

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:749**

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

Medium: HSL U11 BB

Medium parameters used:  $f = 2450 \text{ MHz}$ ;  $\sigma = 1.78 \text{ mho/m}$ ;  $\epsilon_r = 39.1$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.53, 4.53, 4.53); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

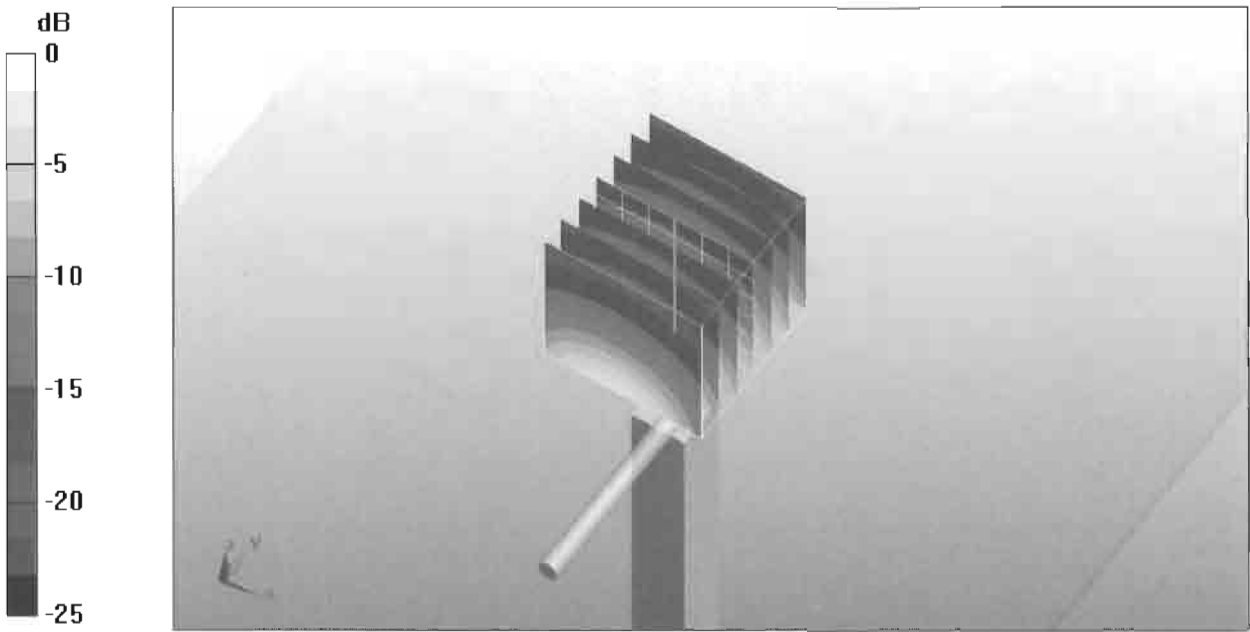
**Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 100.7 V/m; Power Drift = 0.078 dB

Peak SAR (extrapolated) = 26.8 W/kg

**SAR(1 g) = 13.2 mW/g; SAR(10 g) = 6.18 mW/g**

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



0 dB = 16.9mW/g

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:749

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

Medium: MSL U10 BB

Medium parameters used:  $f = 2450 \text{ MHz}$ ;  $\sigma = 1.98 \text{ mho/m}$ ;  $\epsilon_r = 52.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.31, 4.31, 4.31); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

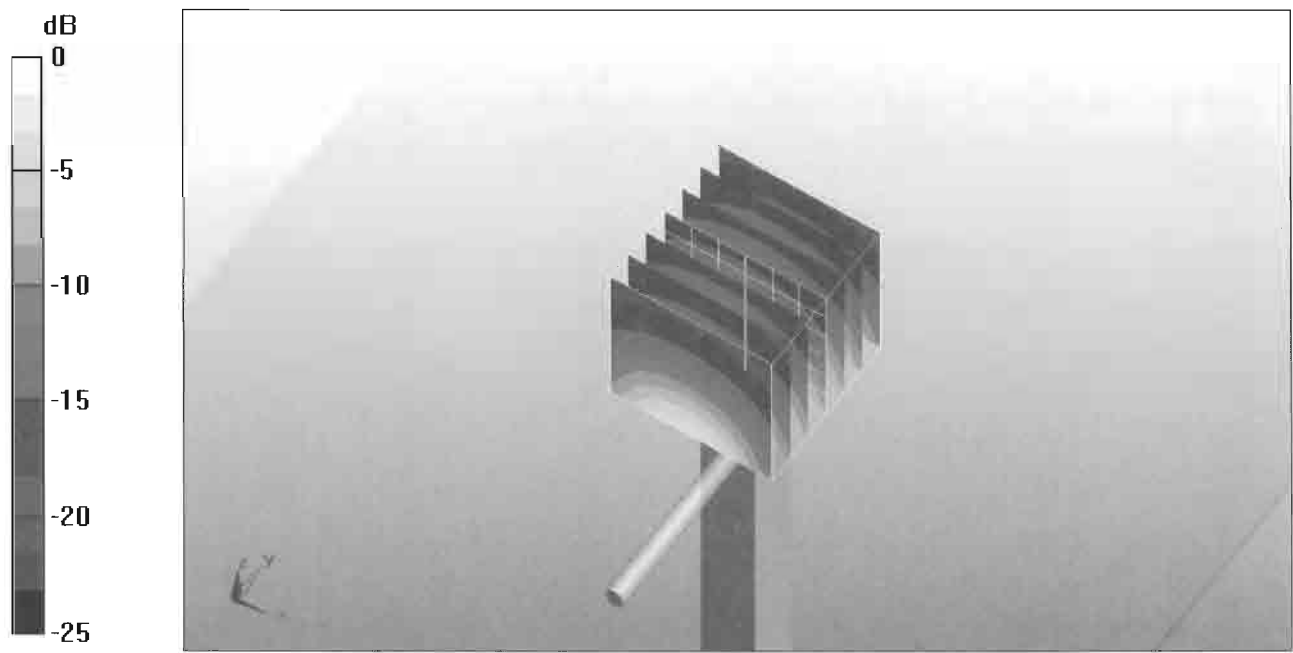
Pin250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 93.9 V/m; Power Drift = 0.046 dB

Peak SAR (extrapolated) = 25.8 W/kg

SAR(1 g) = 12.5 mW/g; SAR(10 g) = 5.81 mW/g

Maximum value of SAR (measured) = 16.4 mW/g



0 dB = 16.4mW/g

## APPENDIX F: WIRELESS ROUTER MODE EVALUATION

### F.1 Body SAR assessment of Wireless Router mode at 10mm separation distance

#### 850MHz Body SAR results

| Option used        | Device orientation         | 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>4-slot GPRS</b> | <b>Conducted Power</b>     | <b>29.5 dBm</b>              | <b>29.5 dBm</b>      | <b>29.5 dBm</b>      |
| Slide closed       | Display facing phantom     | -                            | 0.332                | -                    |
|                    | Back facing phantom        | 1.45                         | 1.55                 | 1.44                 |
|                    | Top edge facing phantom    | -                            | 0.028                | -                    |
|                    | Bottom edge facing phantom | -                            | 0.419                | -                    |
|                    | Left edge facing phantom   | -                            | 0.607                | -                    |
|                    | Right edge facing phantom  | -                            | 0.782                | -                    |
| Option used        | Device orientation         | 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>Conducted Power</b>     | <b>23.5 dBm</b>              | <b>23.5 dBm</b>      | <b>23.5 dBm</b>      |
| Slide closed       | Display facing phantom     | -                            | 0.145                | -                    |
|                    | Back facing phantom        | 0.754                        | 0.658                | 0.736                |
|                    | Top edge facing phantom    | -                            | 0.014                | -                    |
|                    | Bottom edge facing phantom | -                            | 0.179                | -                    |
|                    | Left edge facing phantom   | -                            | 0.204                | -                    |
|                    | Right edge facing phantom  | -                            | 0.295                | -                    |

### 1700/2100MHz Body SAR results

| Option used  | Device orientation         | SAR, averaged over 1g (W/kg) |                       |                       |
|--------------|----------------------------|------------------------------|-----------------------|-----------------------|
|              |                            | Ch 1312<br>1712.4 MHz        | Ch 1412<br>1732.4 MHz | Ch 1513<br>1752.6 MHz |
| <b>WCDMA</b> | <b>Conducted Power</b>     | <b>23.5 dBm</b>              | <b>23.5 dBm</b>       | <b>23.5 dBm</b>       |
| Slide closed | Display facing phantom     | -                            | 0.475                 | -                     |
|              | Back facing phantom        | 1.09                         | 1.19                  | <b>1.27</b>           |
|              | Top edge facing phantom    | -                            | 0.097                 | -                     |
|              | Bottom edge facing phantom | -                            | 0.616                 | -                     |
|              | Left edge facing phantom   | -                            | 0.566                 | -                     |
|              | Right edge facing phantom  | -                            | 0.228                 | -                     |

### 1900MHz Body SAR results

| Option used        | Device orientation         | 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>2-slot GPRS</b> | <b>Conducted Power</b>     | <b>29.5 dBm</b>              | <b>29.5 dBm</b>       | <b>29.5 dBm</b>       |
| Slide closed       | Display facing phantom     | -                            | 0.648                 | -                     |
|                    | Back facing phantom        | 1.46                         | <b>1.46</b>           | 1.37                  |
|                    | Top edge facing phantom    | -                            | 0.038                 | -                     |
|                    | Bottom edge facing phantom | 0.880                        | 0.989                 | 1.07                  |
|                    | Left edge facing phantom   | -                            | 0.765                 | -                     |
|                    | Right edge facing phantom  | -                            | 0.455                 | -                     |
| Option used        | Device orientation         | 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>Conducted Power</b>     | <b>23.5 dBm</b>              | <b>23.5 dBm</b>       | <b>23.5 dBm</b>       |
| Slide closed       | Display facing phantom     | -                            | 0.664                 | -                     |
|                    | Back facing phantom        | <b>1.47</b>                  | 1.21                  | 1.16                  |
|                    | Top edge facing phantom    | -                            | 0.029                 | -                     |
|                    | Bottom edge facing phantom | 0.859                        | 0.940                 | 0.990                 |
|                    | Left edge facing phantom   | -                            | 0.664                 | -                     |
|                    | Right edge facing phantom  | -                            | 0.426                 | -                     |



**2450MHz Body SAR results**

| Option used                      | Device orientation         | SAR, averaged over 1g (W/kg) |                    |                     |
|----------------------------------|----------------------------|------------------------------|--------------------|---------------------|
|                                  |                            | Ch 1<br>2412.0 MHz           | Ch 7<br>2442.0 MHz | Ch 11<br>2462.0 MHz |
| <b>WLAN<br/>b-mode</b>           | <b>Conducted Power</b>     | <b>18.0 dBm</b>              | <b>18.0 dBm</b>    | <b>18.0 dBm</b>     |
| Slide closed                     | Display facing phantom     | -                            | 0.110              | -                   |
|                                  | Back facing phantom        | 0.261                        | 0.293              | <b>0.295</b>        |
|                                  | Top edge facing phantom    | -                            | 0.229              | -                   |
|                                  | Bottom edge facing phantom | -                            | 0.025              | -                   |
|                                  | Left edge facing phantom   | -                            | 0.271              | -                   |
|                                  | Right edge facing phantom  | -                            | 0.056              | -                   |
| <b>WLAN<br/>n-mode<br/>20MHz</b> | <b>Conducted Power</b>     | <b>17.5 dBm</b>              | <b>17.5 dBm</b>    | <b>17.5 dBm</b>     |
| Slide closed                     | Display facing phantom     | -                            | -                  | -                   |
|                                  | Back facing phantom        | 0.104                        | 0.207              | 0.124               |
|                                  | Top edge facing phantom    | -                            | -                  | -                   |
|                                  | Bottom edge facing phantom | -                            | -                  | -                   |
|                                  | Left edge facing phantom   | -                            | -                  | -                   |
|                                  | Right edge facing phantom  | -                            | -                  | -                   |

**Simultaneous transmissions: Combined SAR results – Individual band Max results**

| Test configuration         | Max. 1g SAR results |                |           |                 |                 |            |
|----------------------------|---------------------|----------------|-----------|-----------------|-----------------|------------|
|                            | WLAN                | 4-slot GPRS850 | WCDMA 850 | WCDMA 1700/2100 | 2-slot GPRS1900 | WCDMA 1900 |
| Display facing phantom     | 0.110               | 0.332          | 0.145     | 0.475           | 0.648           | 0.664      |
| Back facing phantom        | 0.295               | 1.55           | 0.754     | 1.27            | 1.46            | 1.47       |
| Top edge facing phantom    | 0.229               | 0.028          | 0.014     | 0.097           | 0.038           | 0.029      |
| Bottom edge facing phantom | 0.025               | 0.419          | 0.179     | 0.616           | 1.07            | 0.990      |
| Left edge facing phantom   | 0.271               | 0.607          | 0.204     | 0.566           | 0.765           | 0.664      |
| Right edge facing phantom  | 0.056               | 0.782          | 0.295     | 0.228           | 0.455           | 0.426      |

**Simultaneous transmissions: Combined SAR results – Max + Max combined results**

| Test configuration         | Max. 1g SAR results   |                 |                        |                        |                  |
|----------------------------|-----------------------|-----------------|------------------------|------------------------|------------------|
|                            | 4-slot GPRS850 + WLAN | WCDMA850 + WLAN | WCDMA 1700/2100 + WLAN | 2-slot GPRS1900 + WLAN | WCDMA1900 + WLAN |
| Display facing phantom     | 0.442                 | 0.255           | 0.585                  | 0.758                  | 0.774            |
| Back facing phantom        | <b>1.845</b>          | <b>1.049</b>    | <b>1.565</b>           | <b>1.755</b>           | <b>1.765</b>     |
| Top edge facing phantom    | 0.257                 | 0.243           | 0.326                  | 0.267                  | 0.258            |
| Bottom edge facing phantom | 0.444                 | 0.204           | 0.641                  | 1.095                  | 1.015            |
| Left edge facing phantom   | 0.878                 | 0.475           | 0.837                  | 1.036                  | 0.935            |
| Right edge facing phantom  | 0.838                 | 0.351           | 0.284                  | 0.511                  | 0.482            |

The maximum 4-slot GPRS850 SAR value + maximum WLAN SAR value > 1.6. However, as the separation between their SAR peaks is 6.72 cm, the ratio of (max Cellular SAR + max WLAN SAR)/separation distance = 0.27. As this ratio is < 0.3, then according to the Simultaneous Transmission Procedures given in KDB648474, combined SAR does not have to be calculated.

The maximum WCDMA850 SAR value + maximum WLAN SAR value < 1.6. Therefore, according to the Simultaneous Transmission Procedures given in KDB648474, combined SAR does not have to be calculated.

The maximum WCDMA1700/2100 SAR value + maximum WLAN SAR value < 1.6. Therefore, according to the Simultaneous Transmission Procedures given in KDB648474, combined SAR does not have to be calculated.

The maximum 2-slot GPRS1900 SAR value + maximum WLAN SAR value > 1.6. However, as the separation between their SAR peaks is 8.55 cm, the ratio of (max Cellular SAR +max WLAN SAR)/separation distance = 0.21. As this ratio is < 0.3, then according to the Simultaneous Transmission Procedures given in KDB648474, combined SAR does not have to be calculated.

The maximum WCDMA1900 SAR value + maximum WLAN SAR value > 1.6. However, as the separation between their SAR peaks is 8.59 cm, the ratio of (max Cellular SAR +max WLAN SAR)/separation distance = 0.21. As this ratio is < 0.3, then according to the Simultaneous Transmission Procedures given in KDB648474, combined SAR does not have to be calculated.

## F.2 Summary of Maximum Results for Wireless Router mode at 10mm

| Mode            | Ch / f (MHz)  | Conducted power | Separation distance | Measured SAR value (1g avg) | SAR limit (1g avg) | Result |
|-----------------|---------------|-----------------|---------------------|-----------------------------|--------------------|--------|
| 4-slot GPRS850  | 190 / 836.6   | 29.5 dBm        | 10 mm               | 1.55 W/kg                   | 1.6 W/kg           | PASSED |
| WCDMA850        | 4132 / 826.4  | 23.5 dBm        | 10 mm               | 0.754 W/kg                  | 1.6 W/kg           | PASSED |
| WCDMA1700/2100  | 1513 / 1752.6 | 23.5 dBm        | 10 mm               | 1.27 W/kg                   | 1.6 W/kg           | PASSED |
| 2-slot GPRS1900 | 661 / 1880.0  | 29.5 dBm        | 10 mm               | 1.46 W/kg                   | 1.6 W/kg           | PASSED |
| WCDMA1900       | 9262 / 1852.4 | 23.5 dBm        | 10 mm               | 1.47 W/kg                   | 1.6 W/kg           | PASSED |
| WLAN2450        | 11 / 2462.0   | 18.0 dBm        | 10 mm               | 0.295 W/kg                  | 1.6 W/kg           | PASSED |

### F.3 SAR plots corresponding to the Wireless Router mode results given above

Date/Time: 2011-04-12 12:01:53

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 4-slot GPRS850**

Frequency: 836.6 MHz; Duty Cycle: 1:2.1

Medium: BSL850; Medium Notes: t= 21.2 C

Medium parameters used: f = 837 MHz;  $\sigma$  = 0.998 mho/m;  $\epsilon_r$  = 52.9;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(5.95, 5.95, 5.95); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle -Slide closed - No Accessory - Display Facing Phantom – 10mm spacer/Area Scan (61x101x1):**

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

Maximum value of SAR (interpolated) = 0.357 mW/g

**Body - Middle – Slide closed - No Accessory - Display Facing Phantom – 10mm spacer/Zoom Scan (5x5x7)/Cube**

**0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 8.47 V/m

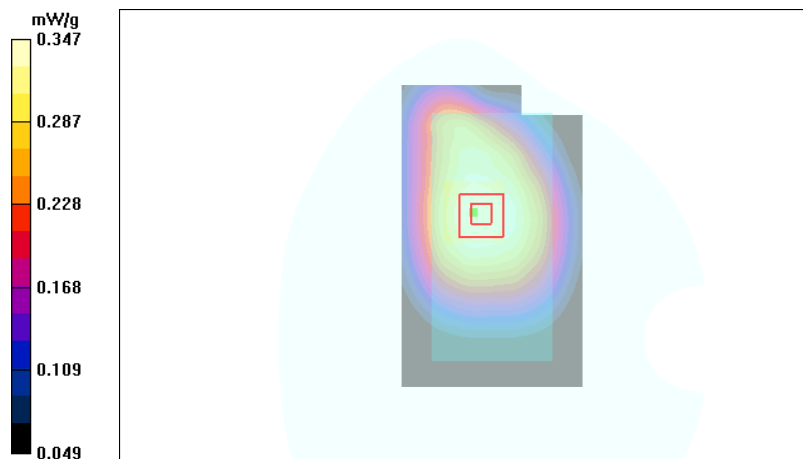
Peak SAR (extrapolated) = 0.424 W/kg

**SAR(1 g) = 0.332 mW/g**

**SAR(10 g) = 0.255 mW/g**

**Power Drift = -0.136 dB**

Maximum value of SAR (measured) = 0.347 mW/g



Date/Time: 2011-04-12 09:22:08

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 4-slot GPRS850**

Frequency: 836.6 MHz; Duty Cycle: 1:2.1

Medium: BSL850; Medium Notes: t= 21.2 C

Medium parameters used: f = 837 MHz;  $\sigma$  = 0.998 mho/m;  $\epsilon_r$  = 52.9;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(5.95, 5.95, 5.95); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle - Slide closed - No Accessory - Back Facing Phantom - 10mm spacer/Area Scan (61x101x1):**

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

Maximum value of SAR (interpolated) = 1.62 mW/g

**Body - Middle - Slide closed - No Accessory - Back Facing Phantom - 10mm spacer/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 15.1 V/m

Peak SAR (extrapolated) = 2.06 W/kg

**SAR(1 g) = 1.55 mW/g**

**SAR(10 g) = 1.14 mW/g**

**Power Drift = -0.084 dB**

Maximum value of SAR (measured) = 1.63 mW/g

**Body - Middle - No Accessory - Back Facing Phantom/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid:**

dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 15.1 V/m

Peak SAR (extrapolated) = 2.11 W/kg

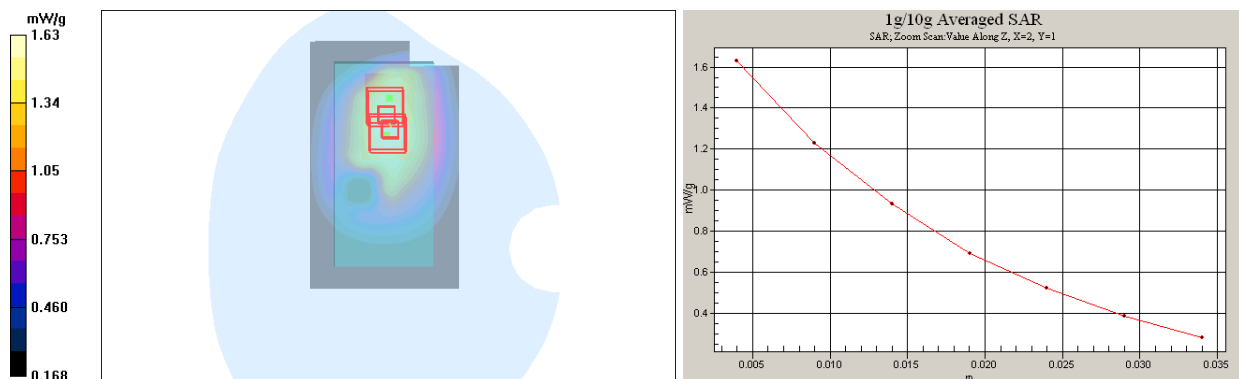
**SAR(1 g) = 1.48 mW/g**

**SAR(10 g) = 1.04 mW/g**

**Power Drift = -0.084 dB**

**Warning:** Maximum averaged SAR over 1 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 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) = 1.61 mW/g



SAR Report

FCC\_RM-680\_03

Applicant: Nokia Corporation

Type: RM-680

Copyright © 2011 TCC Nokia

Date/Time: 2011-04-12 12:18:12

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 4-slot GPRS850**

Frequency: 836.6 MHz; Duty Cycle: 1:2.1

Medium: BSL850; Medium Notes: t= 21.2 C

Medium parameters used: f = 837 MHz;  $\sigma$  = 0.998 mho/m;  $\epsilon_r$  = 52.9;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(5.95, 5.95, 5.95); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle – Slide closed - No Accessory - Top Edge Facing Phantom - 10mm spacer/Area Scan (31x61x1):**

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

Maximum value of SAR (interpolated) = 0.030 mW/g

**Body - Middle – Slide closed No Accessory - Top Edge Facing Phantom - 10mm spacer/Zoom Scan (5x5x7)/Cube**

0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 4.64 V/m

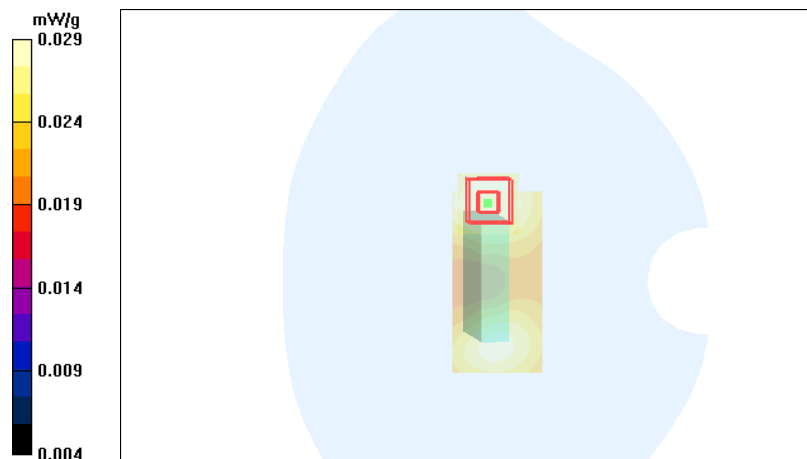
Peak SAR (extrapolated) = 0.038 W/kg

**SAR(1 g) = 0.028 mW/g**

**SAR(10 g) = 0.020 mW/g**

**Power Drift = -0.009 dB**

Maximum value of SAR (measured) = 0.029 mW/g



Date/Time: 2011-04-12 12:35:44

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 4-slot GPRS850**

Frequency: 836.6 MHz; Duty Cycle: 1:2.1

Medium: BSL850; Medium Notes: t= 21.2 C

Medium parameters used: f = 837 MHz;  $\sigma$  = 0.998 mho/m;  $\epsilon_r$  = 52.9;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(5.95, 5.95, 5.95); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle – Slide closed - No Accessory - Bottom Edge Facing Phantom - 10mm spacer/Area Scan**

**(31x61x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.479 mW/g

**Body - Middle – Slide closed - No Accessory - Bottom Edge Facing Phantom - 10mm spacer/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 16.9 V/m

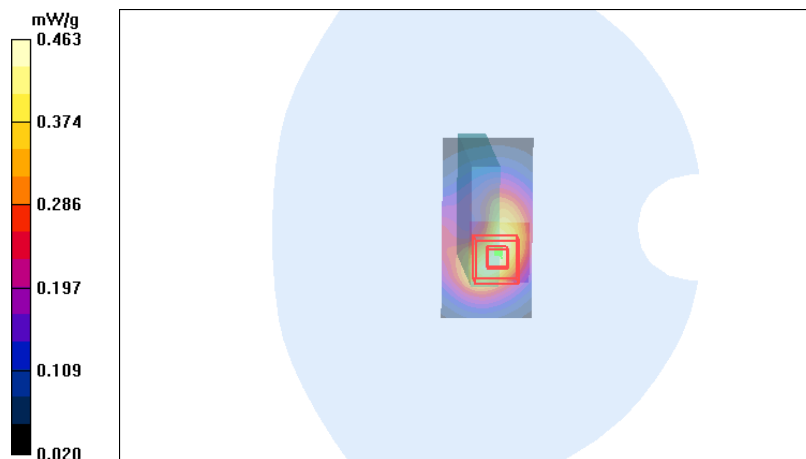
Peak SAR (extrapolated) = 0.716 W/kg

**SAR(1 g) = 0.419 mW/g**

**SAR(10 g) = 0.246 mW/g**

**Power Drift = -0.106 dB**

Maximum value of SAR (measured) = 0.463 mW/g





Date/Time: 2011-04-12 13:42:56

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 4-slot GPRS850**

Frequency: 836.6 MHz; Duty Cycle: 1:2.1

Medium: BSL850; Medium Notes: t= 21.2 C

Medium parameters used: f = 837 MHz;  $\sigma$  = 0.998 mho/m;  $\epsilon_r$  = 52.9;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(5.95, 5.95, 5.95); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle -Slide closed- No Accessory - Left Edge Facing Phantom - 10mm spacer/Area Scan (21x101x1):**

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

Maximum value of SAR (interpolated) = 0.657 mW/g

**Body - Middle -Slide closed - No Accessory - Left Edge Facing Phantom - 10mm spacer/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 13.0 V/m

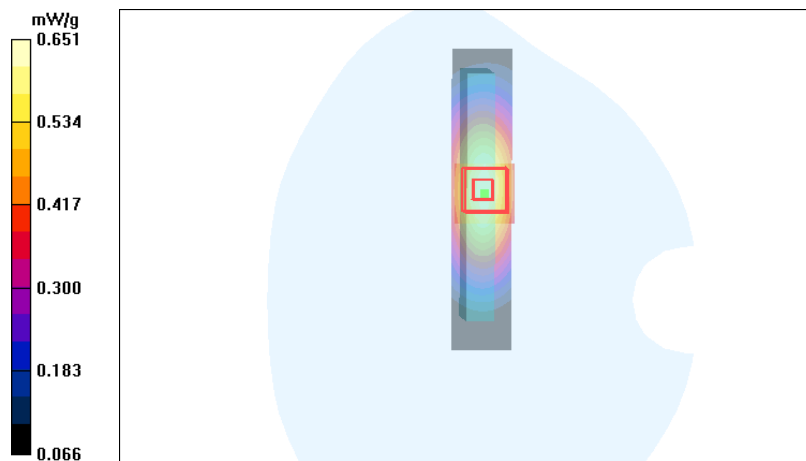
Peak SAR (extrapolated) = 0.879 W/kg

**SAR(1 g) = 0.607 mW/g**

**SAR(10 g) = 0.409 mW/g**

**Power Drift = -0.056 dB**

Maximum value of SAR (measured) = 0.651 mW/g



Date/Time: 2011-04-12 13:54:11

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 4-slot GPRS850**

Frequency: 836.6 MHz; Duty Cycle: 1:2.1

Medium: BSL850; Medium Notes: t= 21.2 C

Medium parameters used: f = 837 MHz;  $\sigma$  = 0.998 mho/m;  $\epsilon_r$  = 52.9;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(5.95, 5.95, 5.95); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle -Slide closed - No Accessory - Right Edge Facing Phantom - 10mm spacer/Area Scan (21x101x1):**

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

Maximum value of SAR (interpolated) = 0.839 mW/g

**Body - Middle -Slide closed - No Accessory - Right Edge Facing Phantom - 10mm spacer/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 13.4 V/m

Peak SAR (extrapolated) = 1.12 W/kg

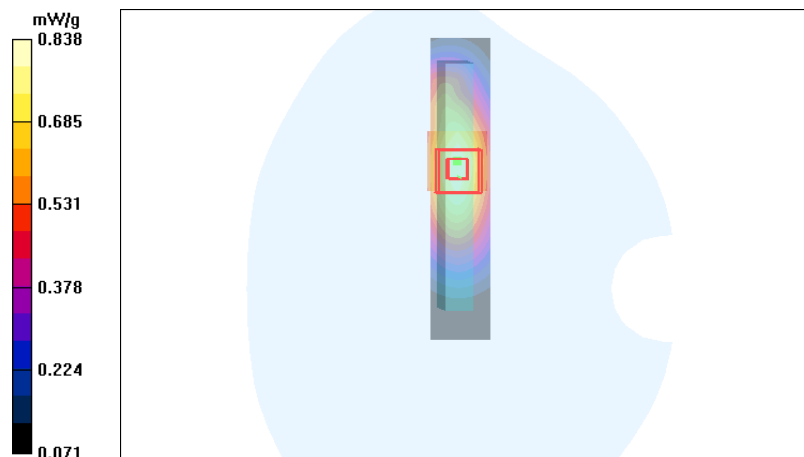
**SAR(1 g) = 0.782 mW/g**

**SAR(10 g) = 0.527 mW/g**

**Power Drift = -0.027 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) = 0.838 mW/g



SAR Report

FCC\_RM-680\_03

Applicant: Nokia Corporation

Type: RM-680

Copyright © 2011 TCC Nokia

Date/Time: 2011-04-09 11:58:58

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA850**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 21.6 C

Medium parameters used: f = 835 MHz;  $\sigma$  = 1.01 mho/m;  $\epsilon_r$  = 53;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(5.95, 5.95, 5.95); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle – Slide closed - No Accessory - Display Facing Phantom – 10mm spacer/Area Scan (61x101x1):**

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

Maximum value of SAR (interpolated) = 0.149 mW/g

**Body - Middle – Slide closed - No Accessory - Display Facing Phantom – 10mm spacer/Zoom Scan (5x5x7)/Cube**

0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 5.73 V/m

Peak SAR (extrapolated) = 0.183 W/kg

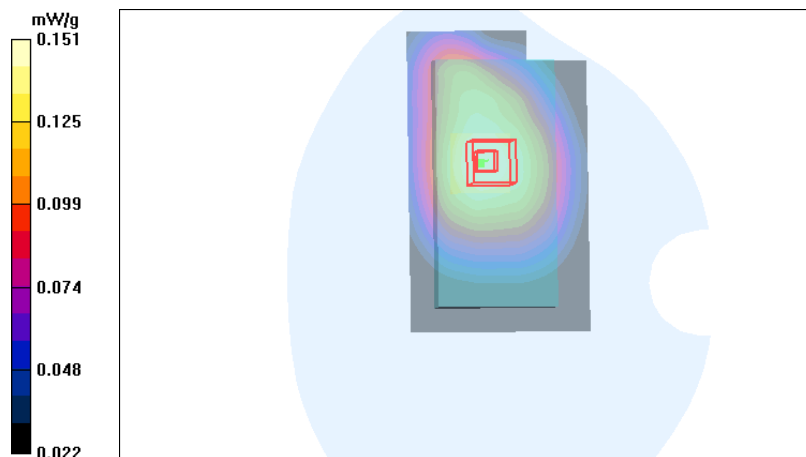
**SAR(1 g) = 0.145 mW/g**

**SAR(10 g) = 0.111 mW/g**

**Power Drift = -0.003 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) = 0.151 mW/g



Date/Time: 2011-04-09 15:36:41

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

Communication System: WCDMA850

Frequency: 826.4 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 21.6 C

Medium parameters used (interpolated): f = 826.4 MHz;  $\sigma$  = 1 mho/m;  $\epsilon_r$  = 53;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3194
- ConvF(5.95, 5.95, 5.95); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)) Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Low - Slide closed - No Accessory - Back Facing Phantom - 10mm spacer/Area Scan (61x101x1):**

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

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

**Body - Low - Slide closed - No Accessory - Back Facing Phantom - 10mm spacer/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 10.7 V/m

Peak SAR (extrapolated) = 0.985 W/kg

**SAR(1 g) = 0.754 mW/g**

**SAR(10 g) = 0.557 mW/g**

**Power Drift = 0.029 dB**

Maximum value of SAR (measured) = 0.792 mW/g

**Body - Low - No Accessory - Back Facing Phantom/Zoom Scan 2 (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm,

dy=7.5mm, dz=5mm

Reference Value = 10.7 V/m

Peak SAR (extrapolated) = 1.08 W/kg

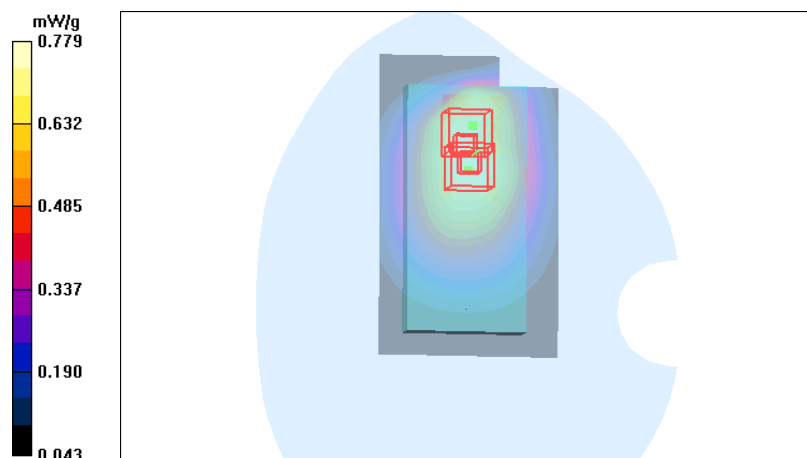
**SAR(1 g) = 0.718 mW/g**

**SAR(10 g) = 0.505 mW/g**

**Power Drift = 0.029 dB**

**Warning:** Maximum averaged SAR over 1 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 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) = 0.779 mW/g



Date/Time: 2011-04-09 12:51:43

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA850**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes:  $t = 21.6$  C

Medium parameters used:  $f = 835$  MHz;  $\sigma = 1.01$  mho/m;  $\epsilon_r = 53$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(5.95, 5.95, 5.95); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle – Slide closed - No Accessory - Top Edge Facing Phantom - 10mm spacer/Area Scan (31x61x1):**

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

Maximum value of SAR (interpolated) = 0.015 mW/g

**Body - Middle – Slide closed - No Accessory - Top Edge Facing Phantom - 10mm spacer/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 3.16 V/m

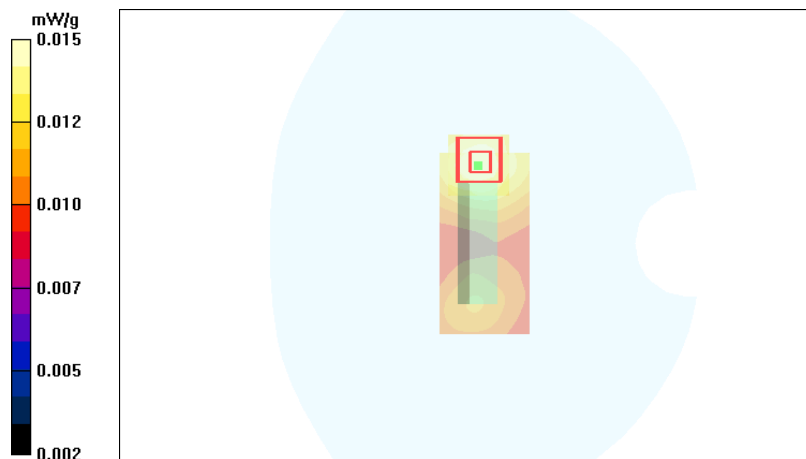
Peak SAR (extrapolated) = 0.019 W/kg

**SAR(1 g) = 0.014 mW/g**

**SAR(10 g) = 0.010 mW/g**

**Power Drift = 0.289 dB**

Maximum value of SAR (measured) = 0.015 mW/g



Date/Time: 2011-04-09 13:08:52

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA850**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 21.6 C

Medium parameters used: f = 835 MHz;  $\sigma$  = 1.01 mho/m;  $\epsilon_r$  = 53;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(5.95, 5.95, 5.95); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle – Slide closed - No Accessory - Bottom Edge Facing Phantom - 10mm spacer/Area Scan (31x61x1):** Measurement grid: dx=15mm, dy=15mm

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

**Body - Middle – Slide closed - No Accessory - Bottom Edge Facing Phantom - 10mm spacer/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 10.9 V/m

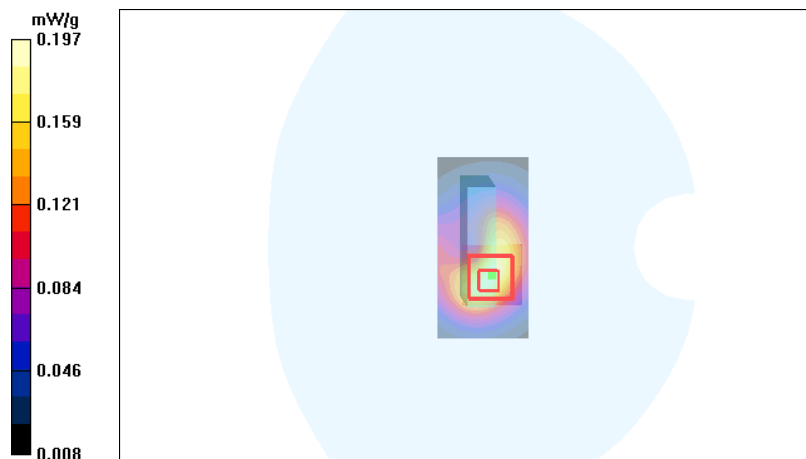
Peak SAR (extrapolated) = 0.309 W/kg

**SAR(1 g) = 0.179 mW/g**

**SAR(10 g) = 0.104 mW/g**

**Power Drift = -0.055 dB**

Maximum value of SAR (measured) = 0.197 mW/g



Date/Time: 2011-04-09 15:04:40

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA850**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 21.6 C

Medium parameters used: f = 835 MHz;  $\sigma$  = 1.01 mho/m;  $\epsilon_r$  = 53;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(5.95, 5.95, 5.95); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle -Slide closed - No Accessory - Left Edge Facing Phantom - 10mm spacer/Area Scan (21x101x1):**

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

Maximum value of SAR (interpolated) = 0.221 mW/g

**Body - Middle -Slide closed - No Accessory - Left Edge Facing Phantom - 10mm spacer/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 6.92 V/m

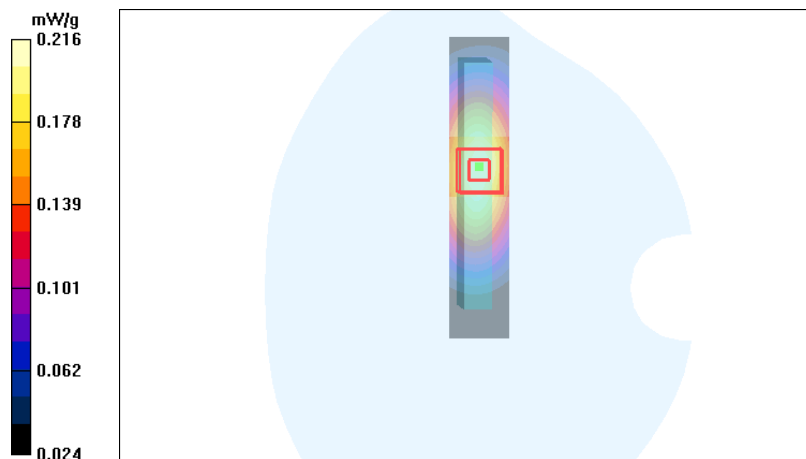
Peak SAR (extrapolated) = 0.292 W/kg

**SAR(1 g) = 0.204 mW/g**

**SAR(10 g) = 0.140 mW/g**

**Power Drift = 0.080 dB**

Maximum value of SAR (measured) = 0.216 mW/g



Date/Time: 2011-04-09 15:18:17

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA850**

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: BSL850; Medium Notes: t= 21.6 C

Medium parameters used: f = 835 MHz;  $\sigma$  = 1.01 mho/m;  $\epsilon_r$  = 53;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3194
- ConvF(5.95, 5.95, 5.95); Calibrated: 2010-09-09
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2010-09-09
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle -Slide closed- No Accessory - Right Edge Facing Phantom - 10mm spacer/Area Scan (21x101x1):**

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

Maximum value of SAR (interpolated) = 0.320 mW/g

**Body - Middle -Slide closed - No Accessory - Right Edge Facing Phantom - 10mm spacer/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 8.22 V/m

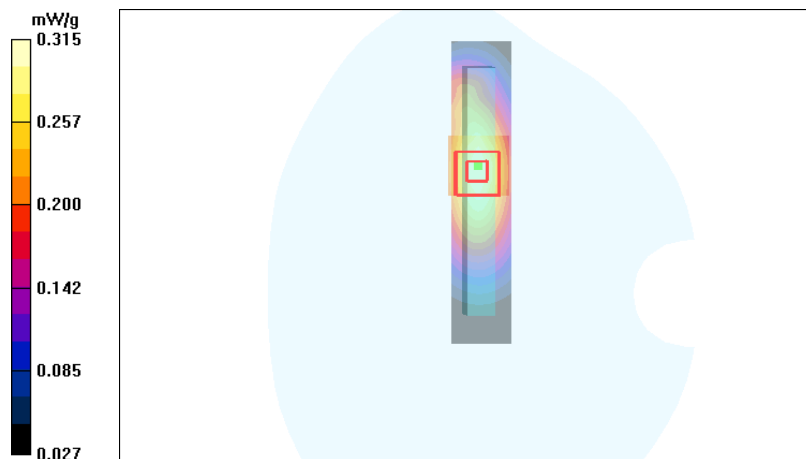
Peak SAR (extrapolated) = 0.427 W/kg

**SAR(1 g) = 0.295 mW/g**

**SAR(10 g) = 0.199 mW/g**

**Power Drift = 0.052 dB**

Maximum value of SAR (measured) = 0.315 mW/g





Date/Time: 2011-04-06 15:13:11

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1700/2100**

Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: BSL1800; Medium Notes: t= 21.0 C

Medium parameters used (interpolated): f = 1732.4 MHz;  $\sigma$  = 1.44 mho/m;  $\epsilon_r$  = 51.7;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.91, 4.91, 4.91); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle – Slide closed - No Accessory - Display Facing Phantom - 10 mm spacer/Area Scan (61x101x1):**

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

Maximum value of SAR (interpolated) = 0.519 mW/g

**Body - Middle – Slide closed - No Accessory - Display Facing Phantom - 10 mm spacer/Zoom Scan (5x5x7)/Cube**

0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 11.1 V/m

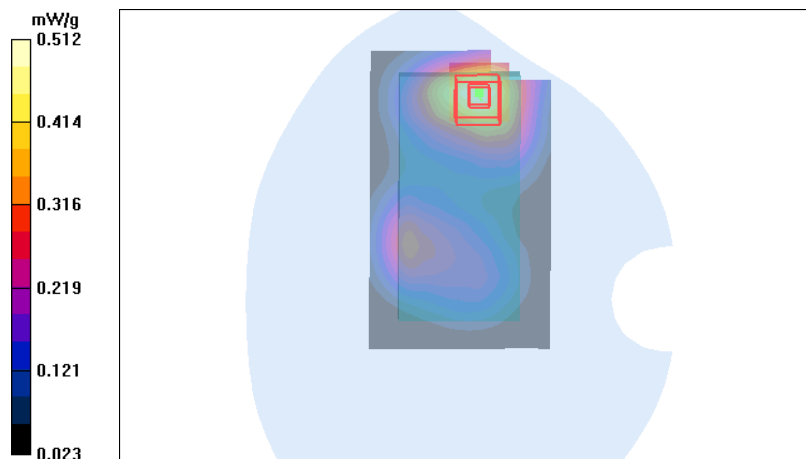
Peak SAR (extrapolated) = 0.697 W/kg

**SAR(1 g) = 0.475 mW/g**

**SAR(10 g) = 0.304 mW/g**

**Power Drift = -0.167 dB**

Maximum value of SAR (measured) = 0.512 mW/g



Date/Time: 2011-04-06 15:51:27

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1700/2100**

Frequency: 1752.6 MHz; Duty Cycle: 1:1

Medium: BSL1800; Medium Notes:  $t = 21.0$  C

Medium parameters used:  $f = 1753$  MHz;  $\sigma = 1.47$  mho/m;  $\epsilon_r = 51.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(4.91, 4.91, 4.91); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - High - Slide closed - No Accessory - Back Facing Phantom - 10 mm spacer/Area Scan (61x101x1):**

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

Maximum value of SAR (interpolated) = 1.40 mW/g

**Body - High - Slide closed - No Accessory - Back Facing Phantom - 10 mm spacer/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 15.1 V/m

Peak SAR (extrapolated) = 1.95 W/kg

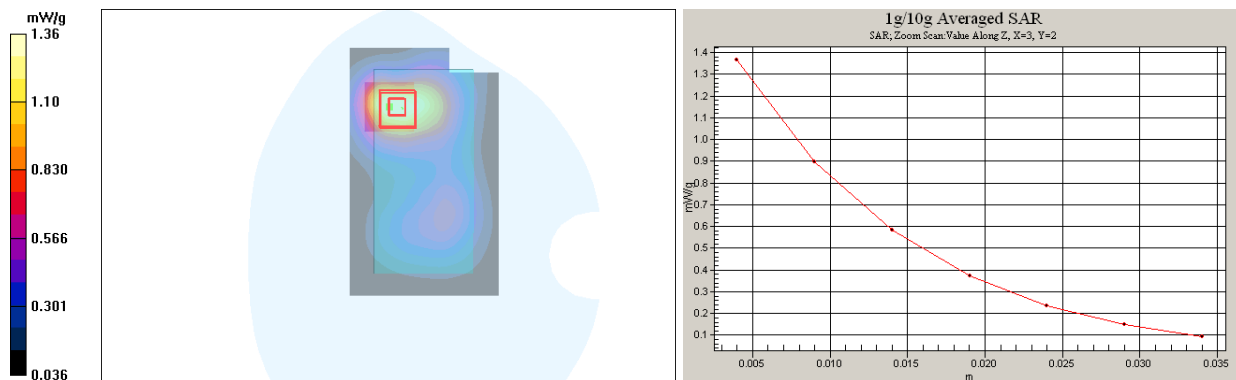
**SAR(1 g) = 1.27 mW/g**

**SAR(10 g) = 0.789 mW/g**

**Power Drift = 0.006 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) = 1.36 mW/g



Date/Time: 2011-04-06 17:05:44

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1700/2100**

Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: BSL1800; Medium Notes:  $t = 21.0$  C

Medium parameters used (interpolated):  $f = 1732.4$  MHz;  $\sigma = 1.44$  mho/m;  $\epsilon_r = 51.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(4.91, 4.91, 4.91); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle – Slide closed - No Accessory - Top Edge Facing Phantom - 10mm spacer/Area Scan (31x61x1):**

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

Maximum value of SAR (interpolated) = 0.112 mW/g

**Body - Middle – Slide closed - No Accessory - Top Edge Facing Phantom - 10mm spacer/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 8.29 V/m

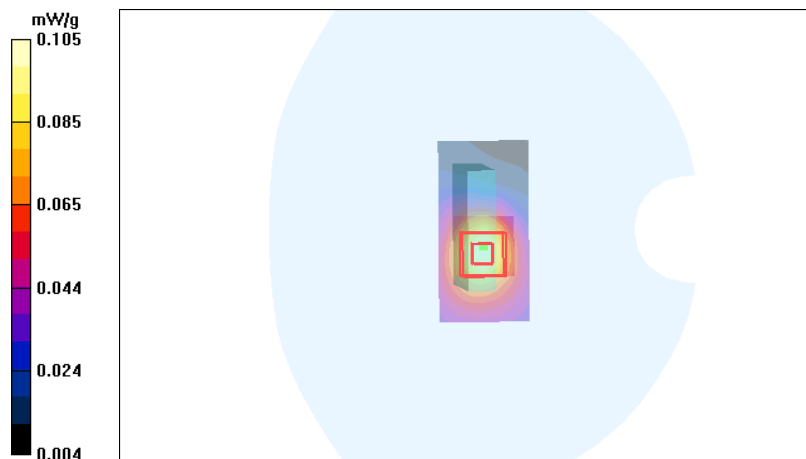
Peak SAR (extrapolated) = 0.148 W/kg

**SAR(1 g) = 0.097 mW/g**

**SAR(10 g) = 0.060 mW/g**

**Power Drift = 0.004 dB**

Maximum value of SAR (measured) = 0.105 mW/g



Date/Time: 2011-04-06 16:48:32

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1700/2100**

Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: BSL1800; Medium Notes: t= 21.0 C

Medium parameters used (interpolated): f = 1732.4 MHz;  $\sigma$  = 1.44 mho/m;  $\epsilon_r$  = 51.7;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.91, 4.91, 4.91); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle – Slide closed - No Accessory - Bottom Edge Facing Phantom - 10mm spacer/Area Scan**

**(31x61x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.761 mW/g

**Body - Middle – Slide closed - No Accessory - Bottom Edge Facing Phantom - 10mm spacer/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 22.4 V/m

Peak SAR (extrapolated) = 0.976 W/kg

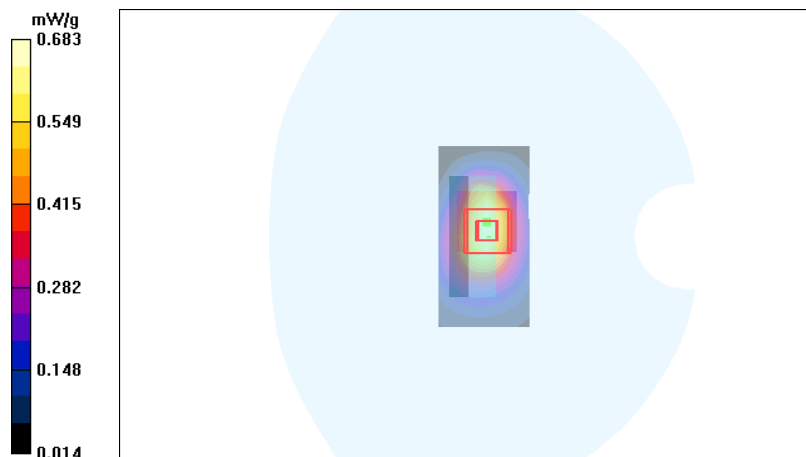
**SAR(1 g) = 0.616 mW/g**

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

**Power Drift = 0.029 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) = 0.683 mW/g



Date/Time: 2011-04-06 17:29:46

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1700/2100**

Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: BSL1800; Medium Notes:  $t = 21.0$  C

Medium parameters used (interpolated):  $f = 1732.4$  MHz;  $\sigma = 1.44$  mho/m;  $\epsilon_r = 51.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(4.91, 4.91, 4.91); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle – Slide closed - No Accessory - Left Edge Facing Phantom – 10mm spacer/Area Scan (21x101x1):**

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

Maximum value of SAR (interpolated) = 0.629 mW/g

**Body - Middle – Slide closed - No Accessory - Left Edge Facing Phantom – 10mm spacer/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 11.5 V/m

Peak SAR (extrapolated) = 0.902 W/kg

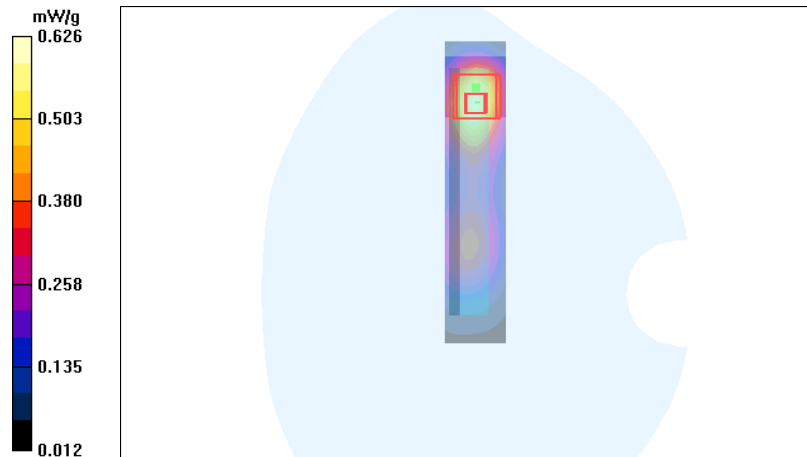
**SAR(1 g) = 0.566 mW/g**

**SAR(10 g) = 0.323 mW/g**

**Power Drift = 0.045 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) = 0.626 mW/g



Date/Time: 2011-04-06 17:18:25

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1700/2100**

Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: BSL1800; Medium Notes:  $t = 21.0$  C

Medium parameters used (interpolated):  $f = 1732.4$  MHz;  $\sigma = 1.44$  mho/m;  $\epsilon_r = 51.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(4.91, 4.91, 4.91); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 3; Type: Twin SAM 040 CA; Serial: TP-1179
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle – Slide closed - No Accessory - Right Edge Facing Phantom – 10mm spacer/Area Scan (21x101x1):** Measurement grid:  $dx=15$ mm,  $dy=15$ mm

Maximum value of SAR (interpolated) = 0.256 mW/g

**Body - Middle –Slide closed - No Accessory - Right Edge Facing Phantom – 10mm spacer/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 8.35 V/m

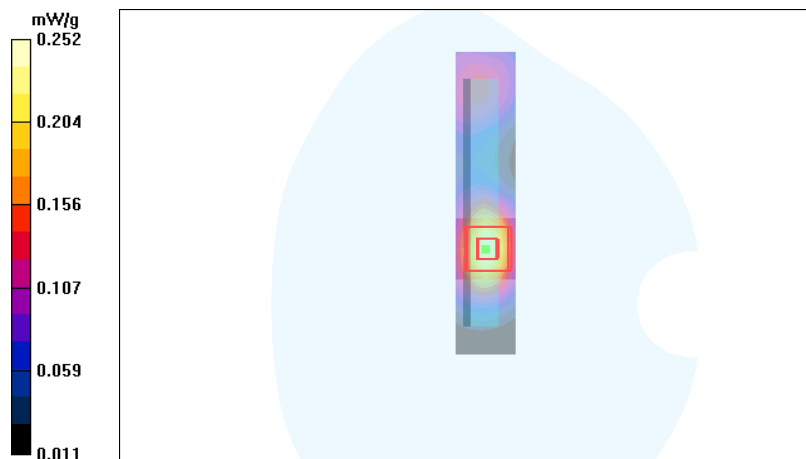
Peak SAR (extrapolated) = 0.351 W/kg

**SAR(1 g) = 0.228 mW/g**

**SAR(10 g) = 0.136 mW/g**

**Power Drift = 0.044 dB**

Maximum value of SAR (measured) = 0.252 mW/g



Date/Time: 2011-04-07 18:58:05

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 2-slot GPRS1900**

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: BSL1900; Medium Notes:  $t = 20.7$  C

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.52$  mho/m;  $\epsilon_r = 52.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle – Slide closed - No Accessory - Display Facing Phantom - 10mm spacer/Area Scan (61x101x1):**

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

Maximum value of SAR (interpolated) = 0.688 mW/g

**Body - Middle – Slide closed - No Accessory - Display Facing Phantom - 10mm spacer/Zoom Scan (5x5x7)/Cube**

0: Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 13.1 V/m

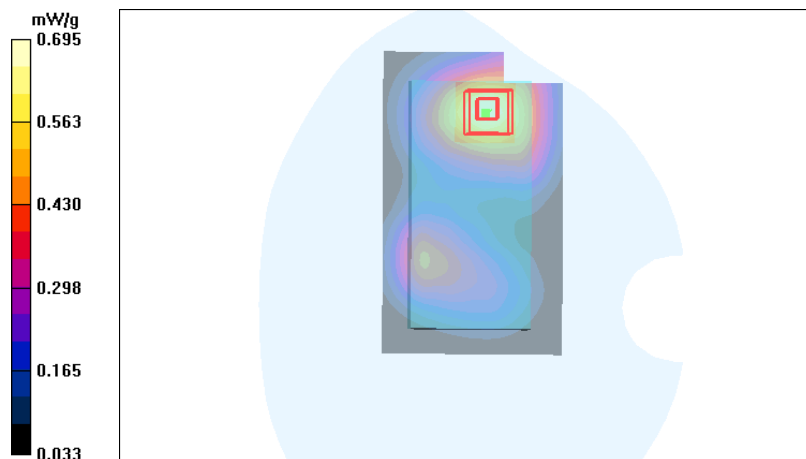
Peak SAR (extrapolated) = 0.968 W/kg

**SAR(1 g) = 0.648 mW/g**

**SAR(10 g) = 0.416 mW/g**

**Power Drift = -0.025 dB**

Maximum value of SAR (measured) = 0.695 mW/g



Date/Time: 2011-04-07 16:05:27

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 2-slot GPRS1900**

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: BSL1900; Medium Notes:  $t = 20.7\text{ }^{\circ}\text{C}$

Medium parameters used:  $f = 1880\text{ MHz}$ ;  $\sigma = 1.52\text{ mho/m}$ ;  $\epsilon_r = 52.6$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle – Slide closed - No Accessory - Back Facing Phantom - 10mm spacer/Area Scan (61x101x1):**

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

Maximum value of SAR (interpolated) = 1.62 mW/g

**Body - Middle – Slide closed - No Accessory - Back Facing Phantom - 10mm spacer/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid:  $dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 15.9 V/m

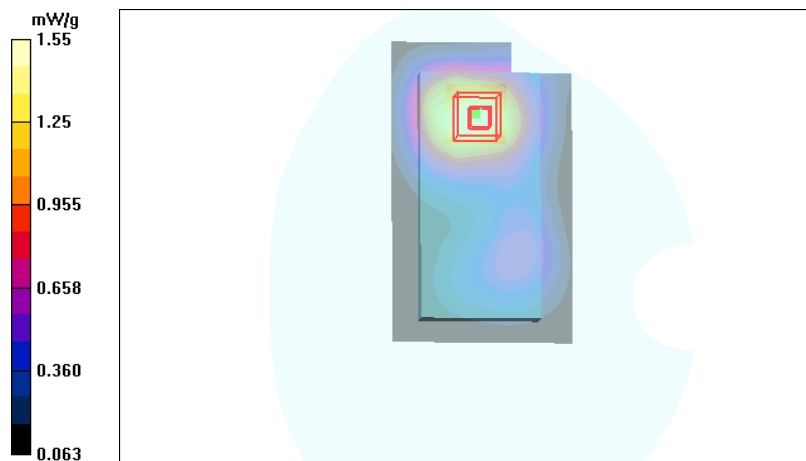
Peak SAR (extrapolated) = 2.20 W/kg

**SAR(1 g) = 1.46 mW/g**

**SAR(10 g) = 0.940 mW/g**

**Power Drift = -0.101 dB**

Maximum value of SAR (measured) = 1.55 mW/g





Date/Time: 2011-04-10 17:05:56

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 2-slot GPRS1900**

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: BSL1900; Medium Notes:  $t = 21.5$  C

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.53$  mho/m;  $\epsilon_r = 52.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle – Slide closed - No Accessory - Top Edge Facing Phantom - 10mm spacer/Area Scan (31x61x1):**

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

Maximum value of SAR (interpolated) = 0.043 mW/g

**Body - Middle – Slide closed - No Accessory - Top Edge Facing Phantom - 10mm spacer/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 4.67 V/m

Peak SAR (extrapolated) = 0.060 W/kg

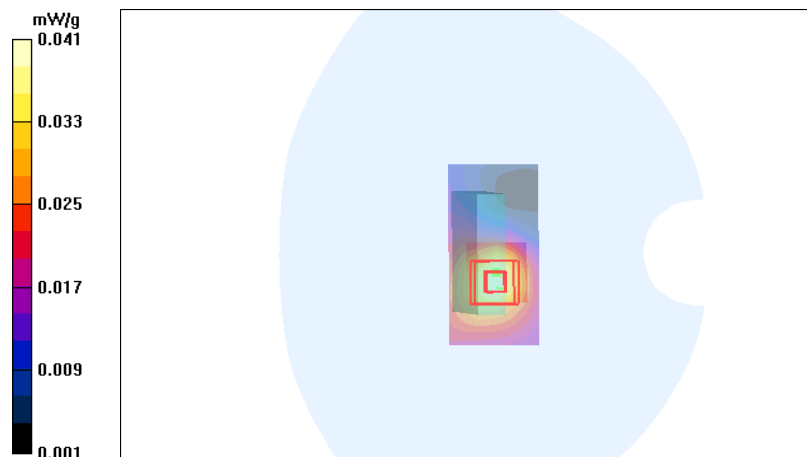
**SAR(1 g) = 0.038 mW/g**

**SAR(10 g) = 0.023 mW/g**

**Power Drift = 0.088 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) = 0.041 mW/g



Date/Time: 2011-04-10 16:53:31

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 2-slot GPRS1900**

Frequency: 1909.8 MHz; Duty Cycle: 1:4.2

Medium: BSL1900; Medium Notes:  $t = 21.5$  C

Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.56$  mho/m;  $\epsilon_r = 52.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - High - Slide closed - No Accessory - Bottom Edge Facing Phantom - 10mm spacer/Area Scan (31x61x1):**

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

Maximum value of SAR (interpolated) = 1.30 mW/g

**Body - High - Slide closed - No Accessory - Bottom Edge Facing Phantom - 10mm spacer/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 25.8 V/m

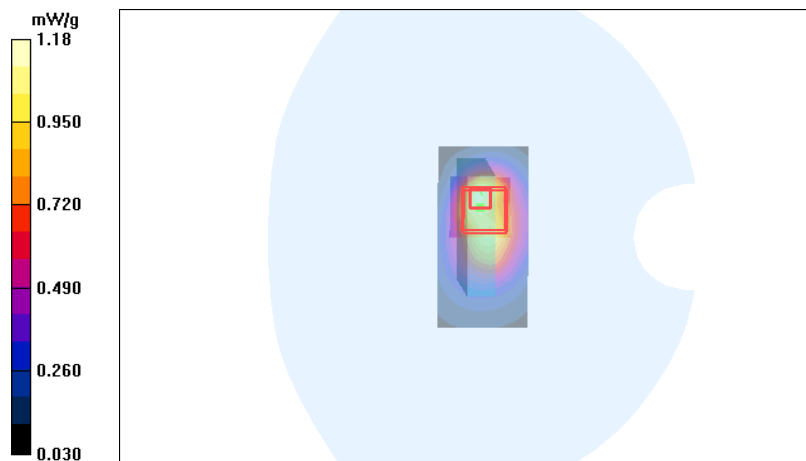
Peak SAR (extrapolated) = 1.93 W/kg

**SAR(1 g) = 1.07 mW/g**

**SAR(10 g) = 0.605 mW/g**

**Power Drift = -0.005 dB**

Maximum value of SAR (measured) = 1.18 mW/g



Date/Time: 2011-04-11 08:56:27

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 2-slot GPRS1900**

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: BSL1900; Medium Notes:  $t = 21.5$  C

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.5$  mho/m;  $\epsilon_r = 52.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle -Slide closed - No Accessory - Left Edge Facing Phantom - 10mm spacer/Area Scan (21x101x1):**

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

Maximum value of SAR (interpolated) = 0.893 mW/g

**Body - Middle -Slide closed - No Accessory - Left Edge Facing Phantom - 10mm spacer/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 15.2 V/m

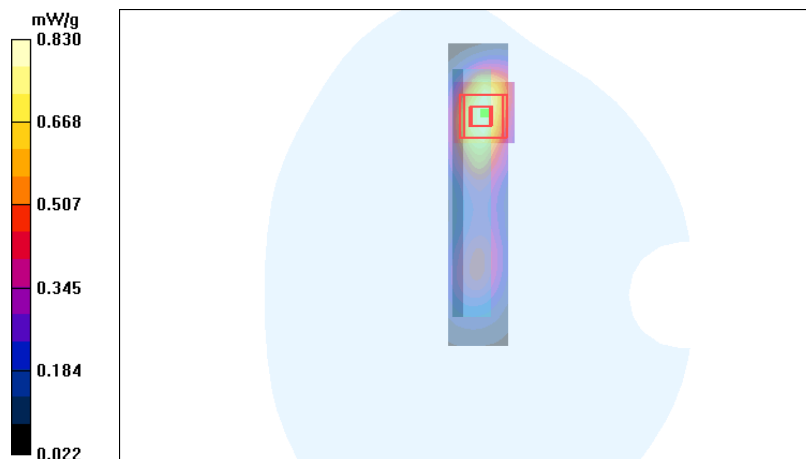
Peak SAR (extrapolated) = 1.26 W/kg

**SAR(1 g) = 0.765 mW/g**

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

**Power Drift = -0.015 dB**

Maximum value of SAR (measured) = 0.830 mW/g



Date/Time: 2011-04-11 08:44:16

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: 2-slot GPRS1900**

Frequency: 1880 MHz; Duty Cycle: 1:4.2

Medium: BSL1900; Medium Notes:  $t = 21.5\text{ }^{\circ}\text{C}$

Medium parameters used:  $f = 1880\text{ MHz}$ ;  $\sigma = 1.5\text{ mho/m}$ ;  $\epsilon_r = 52.6$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle -Slide closed - No Accessory - Right Edge Facing Phantom - 10mm spacer/Area Scan (21x101x1):**

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

Maximum value of SAR (interpolated) = 0.517 mW/g

**Body - Middle -Slide closed - No Accessory - Right Edge Facing Phantom - 10mm spacer/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 12.2 V/m

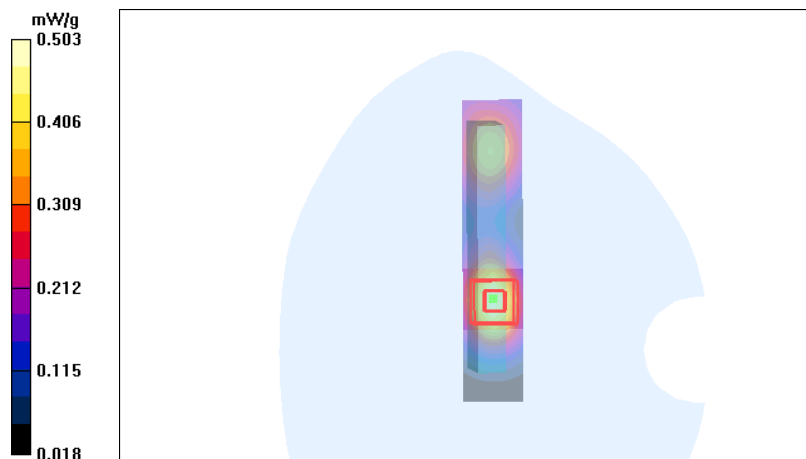
Peak SAR (extrapolated) = 0.715 W/kg

**SAR(1 g) = 0.455 mW/g**

**SAR(10 g) = 0.269 mW/g**

**Power Drift = -0.072 dB**

Maximum value of SAR (measured) = 0.503 mW/g



Date/Time: 2011-04-10 11:24:06

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1900**

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes:  $t = 21.5\text{ C}$

Medium parameters used:  $f = 1880\text{ MHz}$ ;  $\sigma = 1.53\text{ mho/m}$ ;  $\epsilon_r = 52.7$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle – Slide closed - No Accessory - Display Facing Phantom - 10mm spacer/Area Scan (61x101x1):**

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

Maximum value of SAR (interpolated) = 0.699 mW/g

**Body - Middle – Slide closed - No Accessory - Display Facing Phantom - 10mm spacer/Zoom Scan (5x5x7)/Cube**

**0:** Measurement grid:  $dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 12.8 V/m

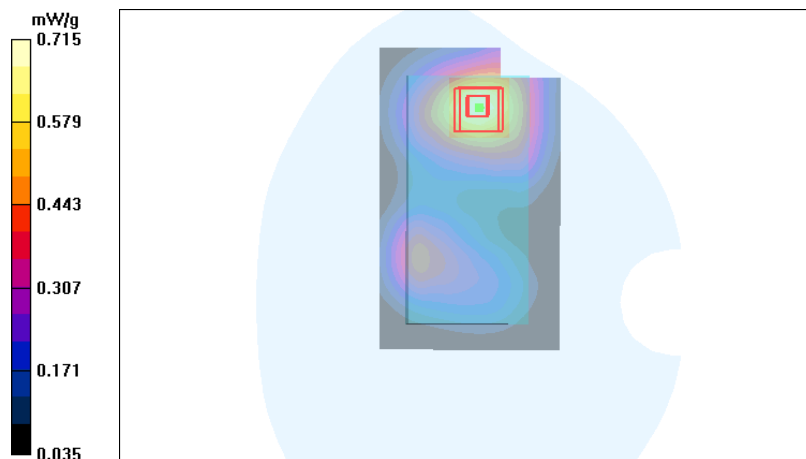
Peak SAR (extrapolated) = 0.982 W/kg

**SAR(1 g) = 0.664 mW/g**

**SAR(10 g) = 0.426 mW/g**

**Power Drift = -0.016 dB**

Maximum value of SAR (measured) = 0.715 mW/g



Date/Time: 2011-04-10 10:53:22

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1900**

Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes: t= 21.5 C

Medium parameters used (interpolated): f = 1852.4 MHz;  $\sigma = 1.5$  mho/m;  $\epsilon_r = 52.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Low - Slide closed - No Accessory - Back Facing Phantom - 10mm spacer/Area Scan (61x101x1):**

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

Maximum value of SAR (interpolated) = 1.61 mW/g

**Body - Low - Slide closed - No Accessory - Back Facing Phantom - 10mm spacer/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 15.1 V/m

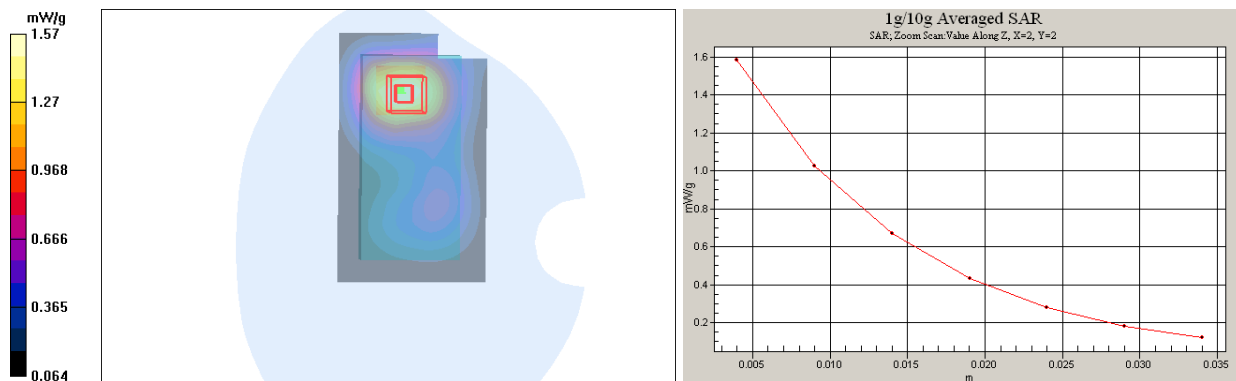
Peak SAR (extrapolated) = 2.24 W/kg

**SAR(1 g) = 1.47 mW/g**

**SAR(10 g) = 0.947 mW/g**

**Power Drift = 0.043 dB**

Maximum value of SAR (measured) = 1.57 mW/g



Date/Time: 2011-04-10 13:02:01

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1900**

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes:  $t = 21.5\text{ C}$

Medium parameters used:  $f = 1880\text{ MHz}$ ;  $\sigma = 1.53\text{ mho/m}$ ;  $\epsilon_r = 52.7$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle – Slide closed - No Accessory - Top Edge Facing Phantom - 10mm spacer/Area Scan (31x61x1):**

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

Maximum value of SAR (interpolated) = 0.035 mW/g

**Body - Middle – Slide closed - No Accessory - Top Edge Facing Phantom - 10mm spacer/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 4.41 V/m

Peak SAR (extrapolated) = 0.048 W/kg

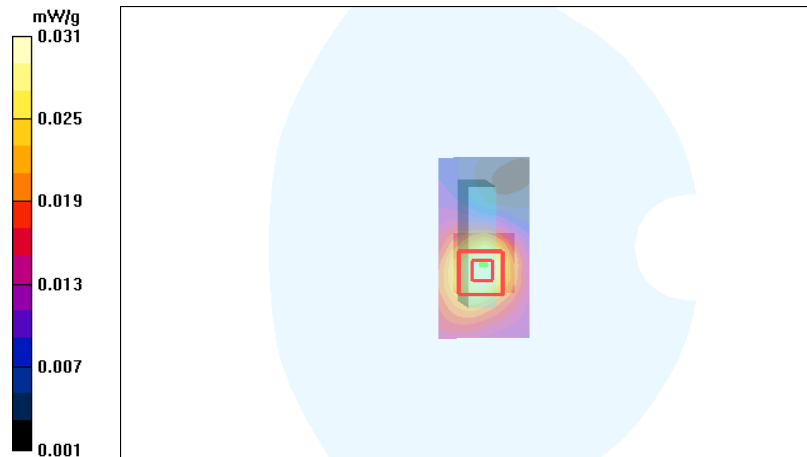
**SAR(1 g) = 0.029 mW/g**

**SAR(10 g) = 0.018 mW/g**

**Power Drift = -0.121 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) = 0.031 mW/g



Date/Time: 2011-04-10 13:36:23

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1900**

Frequency: 1907.6 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes:  $t = 21.5$  C

Medium parameters used:  $f = 1908$  MHz;  $\sigma = 1.56$  mho/m;  $\epsilon_r = 52.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - High - Slide closed - No Accessory - Bottom Edge Facing Phantom - 10mm spacer/Area Scan (31x61x1):**

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

Maximum value of SAR (interpolated) = 1.27 mW/g

**Body - High - Slide closed - No Accessory - Bottom Edge Facing Phantom - 10mm spacer/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 25.9 V/m

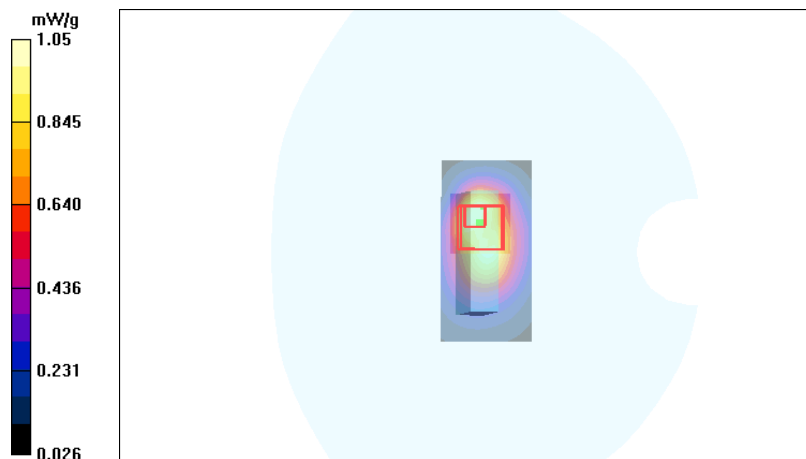
Peak SAR (extrapolated) = 1.76 W/kg

**SAR(1 g) = 0.990 mW/g**

**SAR(10 g) = 0.568 mW/g**

**Power Drift = -0.077 dB**

Maximum value of SAR (measured) = 1.05 mW/g





Date/Time: 2011-04-10 14:50:52

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1900**

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes:  $t = 21.5$  C

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.53$  mho/m;  $\epsilon_r = 52.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle – Slide closed - No Accessory - Left Edge Facing Phantom – 10mm spacer/Area Scan (21x101x1):**

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

Maximum value of SAR (interpolated) = 0.819 mW/g

**Body - Middle –Slide closed - No Accessory - Left Edge Facing Phantom – 10mm spacer/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=7.5$ mm,  $dy=7.5$ mm,  $dz=5$ mm

Reference Value = 12.7 V/m

Peak SAR (extrapolated) = 1.10 W/kg

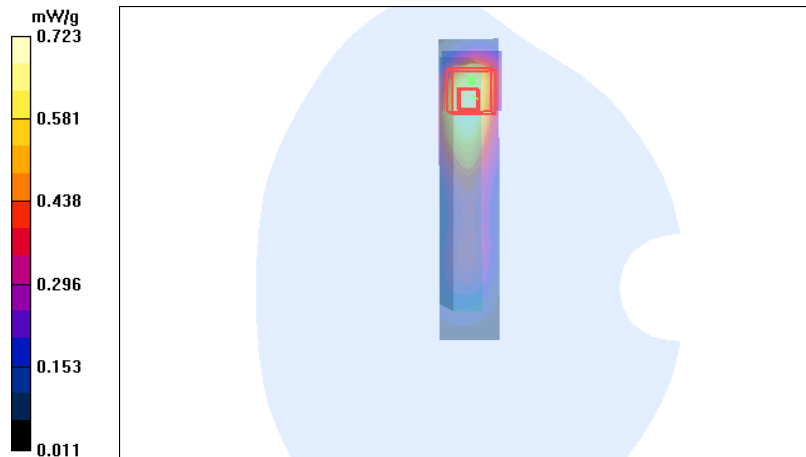
**SAR(1 g) = 0.664 mW/g**

**SAR(10 g) = 0.373 mW/g**

**Power Drift = -0.192 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) = 0.723 mW/g



Date/Time: 2011-04-10 15:06:59

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293375/9

**Communication System: WCDMA1900**

Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: BSL1900; Medium Notes:  $t = 21.5\text{ C}$

Medium parameters used:  $f = 1880\text{ MHz}$ ;  $\sigma = 1.53\text{ mho/m}$ ;  $\epsilon_r = 52.7$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: ES3DV3 - SN3165
- ConvF(4.61, 4.61, 4.61); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2011-02-22
- Phantom: SAM 2; Type: Twin SAM 040 CA; Serial: TP - 1177
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle -Slide closed - No Accessory - Right Edge Facing Phantom - 10mm spacer/Area Scan (21x101x1):**

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

Maximum value of SAR (interpolated) = 0.482 mW/g

**Body - Middle -Slide closed - No Accessory - Right Edge Facing Phantom - 10mm spacer/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid:  $dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 12.3 V/m

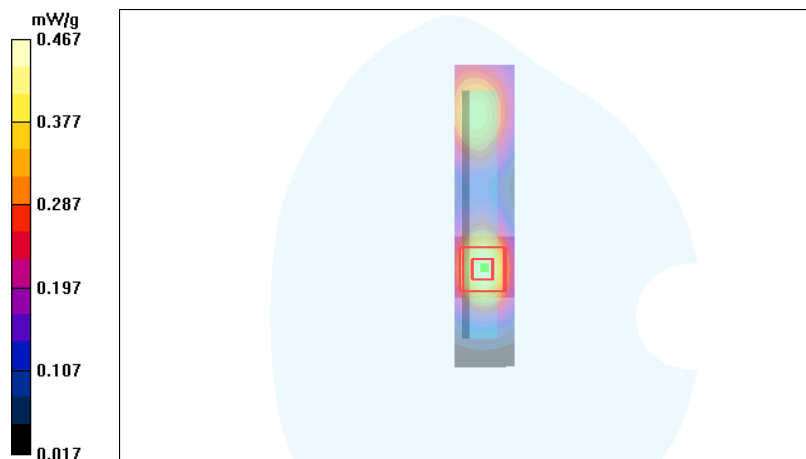
Peak SAR (extrapolated) = 0.668 W/kg

**SAR(1 g) = 0.426 mW/g**

**SAR(10 g) = 0.254 mW/g**

**Power Drift = -0.088 dB**

Maximum value of SAR (measured) = 0.467 mW/g



Date/Time: 2011-03-31 11:26:48

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293336/1

**Communication System: WLAN2450 b-mode**

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes:  $t = 20.5\text{ }^{\circ}\text{C}$

Medium parameters used:  $f = 2442\text{ MHz}$ ;  $\sigma = 2\text{ mho/m}$ ;  $\epsilon_r = 50.5$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3573
- ConvF(6.8, 6.8, 6.8); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2010-09-08
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle – Slide closed - No Accessory - Display Facing Phantom – 10mm spacer/Area Scan (61x101x1):**

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

Maximum value of SAR (interpolated) = 0.122 mW/g

**Body - Middle – Slide closed - No Accessory - Display Facing Phantom – 10mm spacer/Zoom Scan (5x5x7)/Cube**

**0:** Measurement grid:  $dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 6.67 V/m

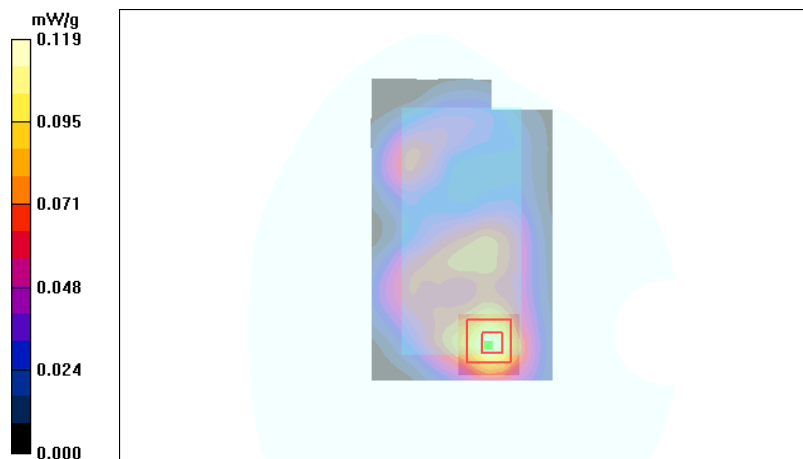
Peak SAR (extrapolated) = 0.205 W/kg

**SAR(1 g) = 0.110 mW/g**

**SAR(10 g) = 0.059 mW/g**

**Power Drift = 0.049 dB**

Maximum value of SAR (measured) = 0.119 mW/g



Date/Time: 2011-04-01 11:06:59

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293336/1

**Communication System: WLAN2450 b-mode**

Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes:  $t = 20.4\text{ }^{\circ}\text{C}$

Medium parameters used:  $f = 2462\text{ MHz}$ ;  $\sigma = 2.02\text{ mho/m}$ ;  $\epsilon_r = 50.6$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: EX3DV4 - SN3573
- ConvF(6.8, 6.8, 6.8); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2010-09-08
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - High - Slide closed - No Accessory - Back Facing Phantom - 10mm spacer/Area Scan (61x101x1):**

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

Maximum value of SAR (interpolated) =  $0.348\text{ mW/g}$

**Body - High - Slide closed - No Accessory - Back Facing Phantom - 10mm spacer/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid:  $dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $9.55\text{ V/m}$

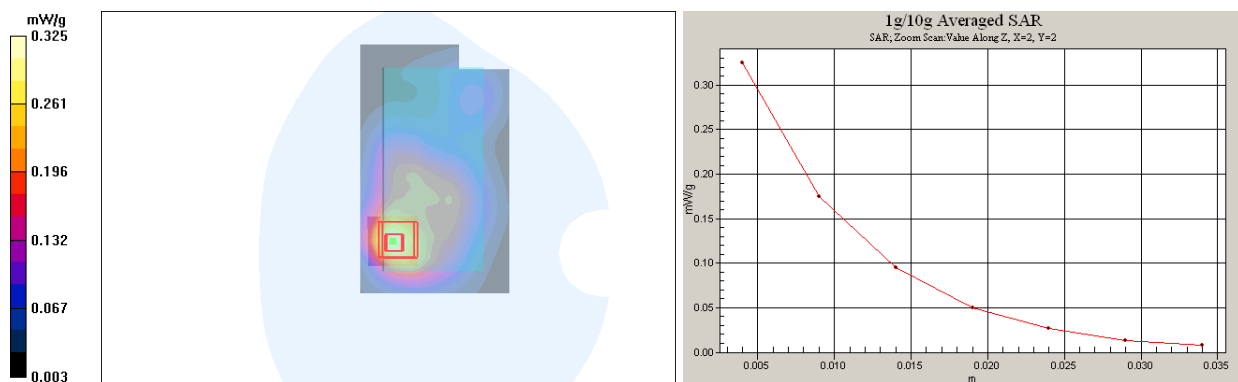
Peak SAR (extrapolated) =  $0.548\text{ W/kg}$

**SAR(1 g) =  $0.295\text{ mW/g}$**

**SAR(10 g) =  $0.162\text{ mW/g}$**

**Power Drift =  $0.007\text{ dB}$**

Maximum value of SAR (measured) =  $0.325\text{ mW/g}$



Date/Time: 2011-03-31 15:27:30

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293336/1

**Communication System: WLAN2450 b-mode**

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes: t= 20.5 C

Medium parameters used: f = 2442 MHz;  $\sigma$  = 2 mho/m;  $\epsilon_r$  = 50.5;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: EX3DV4 - SN3573
- ConvF(6.8, 6.8, 6.8); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2010-09-08
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle – Slide closed - No Accessory - Top Edge Facing Phantom - 10mm spacer/Area Scan (31x61x1):**

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

Maximum value of SAR (interpolated) = 0.267 mW/g

**Body - Middle – Slide closed - No Accessory - Top Edge Facing Phantom - 10mm spacer/Zoom Scan**

**(5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 11.3 V/m

Peak SAR (extrapolated) = 0.421 W/kg

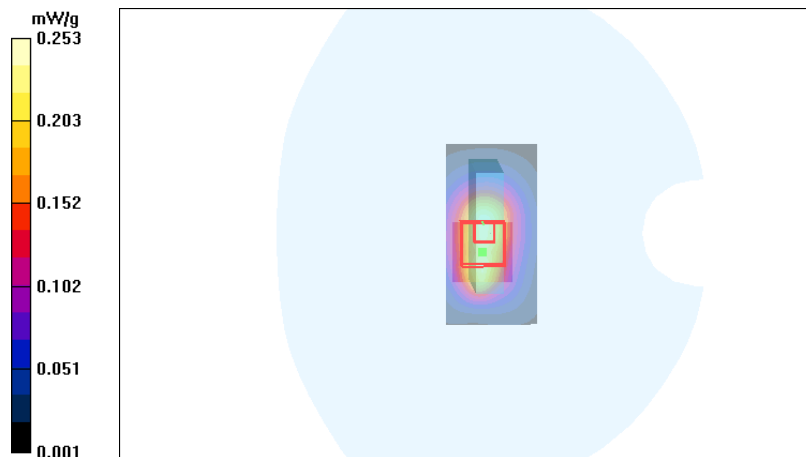
**SAR(1 g) = 0.229 mW/g**

**SAR(10 g) = 0.122 mW/g**

**Power Drift = -0.119 dB**

**Warning:** Maximum averaged SAR over 1 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 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) = 0.253 mW/g



Date/Time: 2011-03-31 15:42:34

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293336/1

**Communication System: WLAN2450 b-mode**

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes:  $t = 20.5\text{ }^{\circ}\text{C}$

Medium parameters used:  $f = 2442\text{ MHz}$ ;  $\sigma = 2\text{ mho/m}$ ;  $\epsilon_r = 50.5$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: EX3DV4 - SN3573
- ConvF(6.8, 6.8, 6.8); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2010-09-08
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle – Slide closed - No Accessory - Bottom Edge Facing Phantom - 10mm spacer/Area Scan (31x61x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.030 mW/g

**Body - Middle – Slide closed - No Accessory - Bottom Edge Facing Phantom - 10mm spacer/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 3.47 V/m

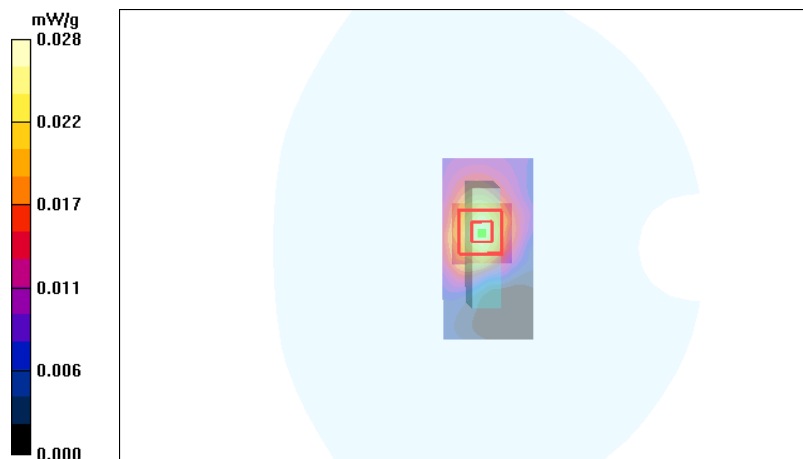
Peak SAR (extrapolated) = 0.049 W/kg

**SAR(1 g) = 0.025 mW/g**

**SAR(10 g) = 0.013 mW/g**

**Power Drift = 0.255 dB**

Maximum value of SAR (measured) = 0.028 mW/g



Date/Time: 2011-03-31 16:24:59

Test Laboratory: TCC Nokia

Type: RM-680; Serial: 004402/13/293336/1

**Communication System: WLAN2450 b-mode**

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes: t= 20.5 C

Medium parameters used: f = 2442 MHz;  $\sigma$  = 2 mho/m;  $\epsilon_r$  = 50.5;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: EX3DV4 - SN3573
- ConvF(6.8, 6.8, 6.8); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2010-09-08
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle –Slide closed - No Accessory - Left Edge Facing Phantom – 10mm spacer/Area Scan (21x101x1):**

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

Maximum value of SAR (interpolated) = 0.310 mW/g

**Body - Middle –Slide closed - No Accessory - Left Edge Facing Phantom – 10mm spacer/Zoom Scan**

**(5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm**

Reference Value = 10.4 V/m

Peak SAR (extrapolated) = 0.488 W/kg

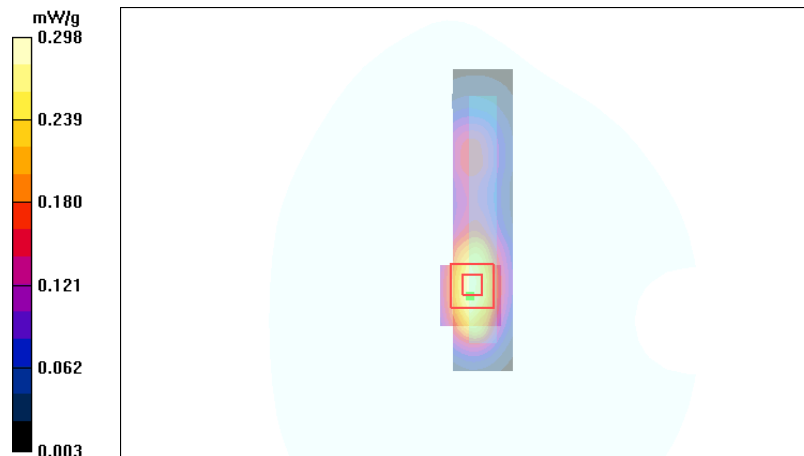
**SAR(1 g) = 0.271 mW/g**

**SAR(10 g) = 0.147 mW/g**

**Power Drift = 0.027 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) = 0.298 mW/g



Date/Time: 2011-03-31 16:13:14

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293336/1

**Communication System: WLAN2450 b-mode**

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes:  $t = 20.5\text{ }^{\circ}\text{C}$

Medium parameters used:  $f = 2442\text{ MHz}$ ;  $\sigma = 2\text{ mho/m}$ ;  $\epsilon_r = 50.5$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: EX3DV4 - SN3573
- ConvF(6.8, 6.8, 6.8); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2010-09-08
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle - Slide closed - No Accessory - Right Edge Facing Phantom - 10mm spacer/Area Scan (21x101x1):**

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

Maximum value of SAR (interpolated) =  $0.064\text{ mW/g}$

**Body - Middle - Slide closed- No Accessory - Right Edge Facing Phantom - 10mm spacer/Zoom Scan (5x5x7)/Cube 0: Measurement grid:  $dx=7.5\text{ mm}$ ,  $dy=7.5\text{ mm}$ ,  $dz=5\text{ mm}$**

Reference Value =  $3.91\text{ V/m}$

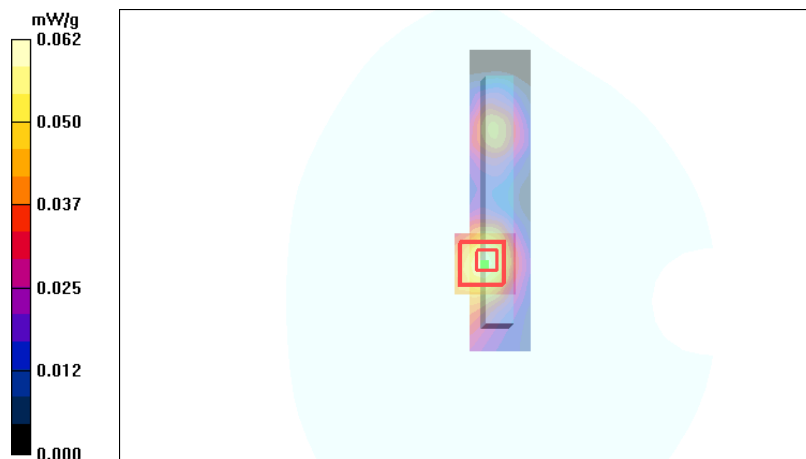
Peak SAR (extrapolated) =  $0.099\text{ W/kg}$

**SAR(1 g) =  $0.056\text{ mW/g}$**

**SAR(10 g) =  $0.031\text{ mW/g}$**

**Power Drift =  $0.043\text{ dB}$**

Maximum value of SAR (measured) =  $0.062\text{ mW/g}$





Date/Time: 2011-04-01 16:30:43

Test Laboratory: TCC Nokia  
Type: RM-680; Serial: 004402/13/293336/1

**Communication System: WLAN2450 n-mode**

Frequency: 2442 MHz; Duty Cycle: 1:1

Medium: BSL2450; Medium Notes:  $t = 20.4\text{ C}$

Medium parameters used:  $f = 2442\text{ MHz}$ ;  $\sigma = 1.99\text{ mho/m}$ ;  $\epsilon_r = 50.6$ ;  $\rho = 1000\text{ kg/m}^3$

Phantom section: Flat Section

**DASY4 Configuration:**

- Probe: EX3DV4 - SN3573
- ConvF(6.8, 6.8, 6.8); Calibrated: 2011-02-17
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2010-09-08
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

**Body - Middle – Slide closed - No Accessory - Back Facing Phantom – 10mm spacer/Area Scan (61x101x1):**

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

Maximum value of SAR (interpolated) = 0.239 mW/g

**Body - Middle – Slide closed - No Accessory - Back Facing Phantom – 10mm spacer/Zoom Scan (5x5x7)/Cube 0:**

Measurement grid:  $dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 8.30 V/m

Peak SAR (extrapolated) = 0.387 W/kg

**SAR(1 g) = 0.207 mW/g**

**SAR(10 g) = 0.114 mW/g**

**Power Drift = 0.042 dB**

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

