

## HAC RF Emissions Test Report

|                                                  |                                                                                                                                                                                                                                                                                |                         |                                                                                                                                                                                       |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test report no.:                                 | RF_RM-917_01                                                                                                                                                                                                                                                                   | Date of report:         | 2013-02-20                                                                                                                                                                            |
| Template version:                                | 11.0                                                                                                                                                                                                                                                                           | Number of pages:        | 35                                                                                                                                                                                    |
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| Tested devices:                                  | RM-917                                                                                                                                                                                                                                                                         |                         |                                                                                                                                                                                       |
| FCC ID:                                          | QTLRM-917                                                                                                                                                                                                                                                                      | IC:                     | -                                                                                                                                                                                     |
| Supplement reports:                              | T-Coil_RM-917_02, HAC_Photo_RM-917_03                                                                                                                                                                                                                                          |                         |                                                                                                                                                                                       |
| Testing has been carried out in accordance with: | <b>ANSI C63.19-2007</b><br>American National Standard for Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids                                                                                                                     |                         |                                                                                                                                                                                       |
| Documentation:                                   | The documentation of the testing performed on the tested devices is archived for 15 years at TCC Nokia.                                                                                                                                                                        |                         |                                                                                                                                                                                       |
| Test results:                                    | <b>The tested device complies with the requirements in respect of all parameters subject to the test.</b> The test results and statements relate only to the items tested. The test report shall not be reproduced except in full, without written approval of the laboratory. |                         |                                                                                                                                                                                       |
| Date and signatures:                             |                                                                                                                                                                                                                                                                                |                         |                                                                                                                                                                                       |
| For the contents:                                |                                                                                                                                                                                                                                                                                |                         |                                                                                                                                                                                       |

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## 1. SUMMARY OF HAC RF EMISSION TEST REPORT

### 1.1 Test Details

|                                             |                                                                        |
|---------------------------------------------|------------------------------------------------------------------------|
| Period of test                              | 2013-02-01                                                             |
| SN, HW, SW and DUT numbers of tested device | SN: 355913/05/000075/6, HW: 0201, SW: 1030.6400.1304.10070, DUT: 17095 |
| Batteries used in testing                   | BL-5J, DUT: 17106, 17105, 17104                                        |
| State of sample                             | Prototype unit                                                         |
| Notes                                       | AWF = -5 for GSM, 0 for WCDMA                                          |

### 1.2 Maximum Results

The maximum measured HAC RF emissions values and categories for electric and magnetic fields are given in section 1.2.1 and 1.2.2 respectively.

#### 1.2.1 Electric field measurements

| Mode           | Ch / Freq [MHz] | Conducted power | Limit of E-field max. value in category M3 [V/m] | Maximum E-field value after exclusion [V/m] | Category  |
|----------------|-----------------|-----------------|--------------------------------------------------|---------------------------------------------|-----------|
| GSM850         | 190 / 836.6     | 32.5 dBm        | 149.6 – 266.1                                    | 257.7                                       | M3 (-5dB) |
| WCDMA850       | 4175 / 835.0    | 23.5 dBm        | 199.5 – 354.8                                    | 88.4                                        | M4 ( 0dB) |
| WCDMA1700/2100 | 1312 / 1712.4   | 24.0 dBm        | 63.1 – 112.2                                     | 65.6                                        | M3 ( 0dB) |
| GSM1900        | 512 / 1850.2    | 28.5 dBm        | 47.3 – 84.1                                      | 77.1                                        | M3 (-5dB) |
| WCDMA1900      | 9262 / 1852.4   | 22.5 dBm        | 63.1 – 112.2                                     | 43.7                                        | M4 ( 0dB) |

#### 1.2.2 Magnetic field measurements

| Mode           | Ch / Freq [MHz] | Conducted power | Limit of H-field max. value in category M3 [A/m] | Maximum H-field value after exclusion [A/m] | Category  |
|----------------|-----------------|-----------------|--------------------------------------------------|---------------------------------------------|-----------|
| GSM850         | 128 / 824.2     | 32.5 dBm        | 0.45 – 0.80                                      | 0.429                                       | M4 (-5dB) |
| WCDMA850       | 4175 / 835.0    | 23.5 dBm        | 0.60 – 1.07                                      | 0.119                                       | M4 ( 0dB) |
| WCDMA1700/2100 | 1312 / 1712.4   | 24.0 dBm        | 0.19 – 0.34                                      | 0.154                                       | M4 ( 0dB) |
| GSM1900        | 512 / 1850.2    | 28.5 dBm        | 0.14 – 0.25                                      | 0.195                                       | M3 (-5dB) |
| WCDMA1900      | 9262 / 1852.4   | 22.5 dBm        | 0.19 – 0.34                                      | 0.114                                       | M4 ( 0dB) |

### 1.2.3 Overall RF emissions category of the tested device

| Mode                  | Combined category<br>(E- and H-fields) | Pass / Fail |
|-----------------------|----------------------------------------|-------------|
| GSM850                | M3                                     | Pass        |
| WCDMA850              | M4                                     | Pass        |
| WCDMA 1700/2100       | M3                                     | Pass        |
| GSM1900               | M3                                     | Pass        |
| WCDMA1900             | M4                                     | Pass        |
| <b>Final Category</b> | <b>M3</b>                              | <b>Pass</b> |

### 1.2.4 Maximum Drift

|                                   |         |
|-----------------------------------|---------|
| Maximum drift during measurements | 0.33 dB |
|-----------------------------------|---------|

### 1.2.5 Measurement Uncertainty

|                                         |        |
|-----------------------------------------|--------|
| Extended Uncertainty (k=2) 95%, E-field | 14.7 % |
| Extended Uncertainty (k=2) 95%, H-field | 10.9 % |

## 2. DESCRIPTION OF THE DEVICE UNDER TEST

| Air-interface | Band (MHz)               | Type | C63.19/ tested | Simultaneous Transmissions<br>Note: not to be tested | Concurrent single transmission      | Reduced power<br>20.19 ( c ) (1) | Voice Over Digital Transport (Data) |
|---------------|--------------------------|------|----------------|------------------------------------------------------|-------------------------------------|----------------------------------|-------------------------------------|
| GSM           | 850                      | VO   | Yes            | Yes<br>BT, WLAN                                      | Yes:<br><br>WCDMA<br>Rated          | No                               | NA                                  |
|               | 1900                     |      |                |                                                      | GPRS/EDGE,<br>BT, WLAN<br>Not rated | No                               | NA                                  |
|               | GPRS/EDGE                | DT   | NA             | Yes<br>BT, WLAN                                      | Yes:<br>* see note                  | NA*                              | NO                                  |
| WCDMA         | 850<br>1700/2100<br>1900 | V/D  | Yes            | Yes<br>BT, WLAN                                      | Yes:<br><br>GSM<br>Rated            | No                               | NO                                  |
| BT            | 2450                     | DT   | NA             | Yes<br>GSM, GPRS/EDGE,<br>WCDMA                      | NA*                                 | NA*                              | NO                                  |
| WLAN          | 2450                     | DT   | NA             | Yes<br>GSM, GPRS/EDGE,<br>WCDMA                      | NA*                                 | NA*                              | NO                                  |

VO Voice CMRS/PSTN Service Only

V/D Voice CMRS/PSTN and Data Service

DT Digital Transport

\*HAC Rating was not based on concurrent voice and data modes, Non current mode was found to represent worst case rating for both M and T rating.

Outside of USA the transmitter of the device is capable of operating also in 900MHz and 1800MHz, which are not part of this filing.

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## 2.1 Picture of Device

See separate report HAC\_Photo\_RM-917\_03.

## 3. TEST CONDITIONS

### 3.1 Temperature and Humidity

|                           |              |
|---------------------------|--------------|
| Ambient temperature [°C]: | 21.0 to 23.0 |
| Ambient humidity [RH %]:  | 30 to 60     |

### 3.2 Test Signal, Frequencies, and Output Power

The transmitter of the device was put into operation by using a call tester. Communications between the device and the call tester were 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 WCDMA HAC RF emission tests was configured to 12.2kbps RMC with all TPC bits set as “1”.

The measurements were performed on lowest, middle and highest channels.

The radiated output power of the device was measured by a separate test laboratory. The results are given in the EMC report supporting this application.

#### 4. DESCRIPTION OF THE TEST EQUIPMENT

##### 4.1 Measurement system and components

The measurements were performed using an automated near-field scanning system, DASY5, manufactured by Schmid & Partner Engineering AG (SPEAG) in Switzerland.

The following table lists calibration dates of SPEAG components:

| Test Equipment                  | Serial Number | Calibration interval | Calibration expiry |
|---------------------------------|---------------|----------------------|--------------------|
| DAE 4                           | 1316          | 12 months            | 2013-02            |
| E-field Probe ER3DV6            | 2333          | 12 months            | 2013-04            |
| H-field Probe H3DV6             | 6053          | 12 months            | 2013-04            |
| Dipole Validation Kit, CD835V3  | 1005          | 24 months            | 2014-08            |
| Dipole Validation Kit, CD1880V3 | 1004          | 24 months            | 2014-08            |
| DASY52 software                 | Version 52.8  | -                    | -                  |
| DASY52 software                 | Version 52.6  | -                    | -                  |

Additional test equipment used in testing and validation:

| Test Equipment   | Model   | Serial Number | Calibration interval | Calibration expiry |
|------------------|---------|---------------|----------------------|--------------------|
| Signal Generator | SMB100A | 105735        | 12 months            | 2013-08            |
| Power Meter      | NRP     | 100714        | 12 months            | 2013-08            |
| Power Sensor     | NRP-Z92 | 100085        | 12 months            | 2013-08            |
| Call Tester      | CMU 200 | 101111        | -                    | -                  |

#### 4.1.1 Isotropic E-field probe ER3DV6

|                      |                                                                                                                                                                                   |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Construction</b>  | One dipole parallel, two dipoles normal to probe axis<br>Built-in shielding against static charges<br>PEEK enclosure material                                                     |
| <b>Frequency</b>     | In air 100 MHz to >6 GHz; Linearity: $\pm 0.2$ dB (100 MHz to 3 GHz)                                                                                                              |
| <b>Directivity</b>   | $\pm 0.2$ dB in air (rotation around probe axis)<br>$\pm 0.4$ dB in air (rotation normal to probe axis)                                                                           |
| <b>Dynamic Range</b> | 2 V/m to > 1000 V/m; Linearity: $\pm 0.2$ dB                                                                                                                                      |
| <b>Dimensions</b>    | Overall length: 330 mm<br>Tip length: 16 mm<br>Body diameter: 12 mm<br>Tip diameter: 8 mm                                                                                         |
| <b>Application</b>   | Distance from probe tip to nearest point of dipole: 1.25 mm<br>General near-field measurements up to 6 GHz<br>Field component measurements<br>Fast automatic scanning in phantoms |

#### 4.1.2 Isotropic H-field probe H3DV6

|                      |                                                                                                                                                                                                                                     |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Construction</b>  | Three concentric loop sensors with 3.8 mm loop diameters<br>Resistively loaded detector diodes for linear response<br>Built-in shielding against static charges<br>PEEK enclosure material                                          |
| <b>Frequency</b>     | 200 MHz to 3 GHz; Output linearized (absolute accuracy $\pm 6.0\%$ , $k=2$ )                                                                                                                                                        |
| <b>Directivity</b>   | $\pm 0.25$ dB (spherical isotropy error)                                                                                                                                                                                            |
| <b>Dynamic Range</b> | 10 mA/m to 2 A/m at 1 GHz                                                                                                                                                                                                           |
| <b>Dimensions</b>    | Overall length: 330 mm<br>Tip length: 40 mm<br>Body diameter: 12 mm<br>Tip diameter: 6 mm                                                                                                                                           |
| <b>Application</b>   | Distance from probe tip to nearest point of dipole: 1.1 mm<br>General magnetic near-field measurements up to 3 GHz<br>Field component measurements, surface current measurements<br>Measurements in air or liquids, low interaction |

#### 4.1.3 Device Holder

The Device Holder and Test Arch are manufactured by Speag ([www.speag.com](http://www.speag.com)). Test arch is used for all tests i.e. for both validation testing and device testing. The holder and test arch conforms to the requirements of ANSI C63.19.

The SPEAG device holder (see Section 5.1) was used to position the test device in all tests.

#### 4.2 Validation of the System

The manufacturer calibrates the probes annually. Validation measurements are made regularly using the dipole validation kit. The power level used by manufacturer in dipole calibration is supplied to the dipole antenna. The antenna is scanned at 10mm distance between top surface of the dipole and calibration point of the probe.

**System Validation, H-field and E-field**

| f [MHz]            | Description      | E-field [V/m] | H-field [A/m] |
|--------------------|------------------|---------------|---------------|
| 835                | Reference result | 160.5         | 0.448         |
|                    | ± 10% window     | 144.5 – 176.6 | 0.403 – 0.493 |
|                    | 2013-01-30       | 170.5         | 0.459         |
| 1880<br>1700/2100* | Reference result | 137.0         | 0.454         |
|                    | ± 10% window     | 123.3 – 150.7 | 0.409 – 0.499 |
|                    | 2013-01-30       | 138.2         | 0.464         |

\* No specific solution provided by system vendor to verify system performance on WCDMA 1700/2100 frequency band. However the frequency is in range of  $1880 \pm 10\%$  in which probes (ER3DV6, H3DV6) are found practically linear according to the calibration documentation. Therefore system validation and probe modulation factor determination results of WCDMA1900 have been applied.

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

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## 5. DESCRIPTION OF THE TEST PROCEDURE

### 5.1 Test Arch and Device Holder

The test device was placed in the Device Holder (illustrated below) that is supplied by SPEAG. Using this positioner the tested device is positioned under Test Arch.



Device holder and Test Arch supplied by SPEAG

### 5.2 Test Positions

#### 5.2.1 Scan area centered at the acoustic output

The device was positioned such that Device Reference plane was touching the bottom of the Test Arch. The scan is centered at the acoustic output by aligning the acoustic output with the intersection of the Test Arch's middle bar and dielectric wire.

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### 5.3 Scan Procedures

Near field scans of 5cm x 5cm were used for determination of the field distribution. Measurement plane distance from WD reference plane is 15mm. Scans were performed for both E- and H-field using appropriate probe. DASY software divides detected values into 3 x 3 sub grids as described in the C63.19 standard.

### 5.4 Probe Modulation Factor

All raw measurements in DASY52 system are presented as RMS values. The measurement software then applies Probe Modulation Factor (PMF) to convert readings to “slot averaged” peak values as required by C63.19 standard. Modulation specific PMF values are included in the probe calibration parameters.

### 5.5 Sub-grid Exclusion

The measurement grid defined in C63.19 consists of 9 evenly sized blocks, which are used to define permissible exclusion areas. For both E- and H-field measurements three contiguous blocks may be excluded from the measurements except the center block may never be excluded. There must be 4 blocks left that are common for both E- and H-field measurements, so maximum of 5 different blocks can be excluded.

## 5.6 Category Limits

From remaining maximum values after exclusion process, Hearing Aid M-category is defined according to the category limits of C63.19 – 2007.

|          |          | Limits for RF-parameters <960MHz |               |
|----------|----------|----------------------------------|---------------|
| Category | AWF [dB] | E-field [V/m]                    | H-field [A/m] |
| M1       | 0        | 631.0 to 1122.0                  | 1.91 to 3.39  |
|          | -5       | 473.2 to 841.4                   | 1.43 to 2.54  |
| M2       | 0        | 354.8 to 631.0                   | 1.07 to 1.91  |
|          | -5       | 266.1 to 473.2                   | 0.80 to 1.43  |
| M3       | 0        | 199.5 to 354.8                   | 0.60 to 1.07  |
|          | -5       | 149.6 to 266.1                   | 0.45 to 0.80  |
| M4       | 0        | <199.5                           | <0.60         |
|          | -5       | <149.6                           | <0.45         |

|          |          | Limits for RF-parameters >960MHz |               |
|----------|----------|----------------------------------|---------------|
| Category | AWF [dB] | E-field [V/m]                    | H-field [A/m] |
| M1       | 0        | 199.5 to 354.8                   | 0.60 to 1.07  |
|          | -5       | 149.6 to 266.1                   | 0.45 to 0.80  |
| M2       | 0        | 112.2 to 199.5                   | 0.34 to 0.60  |
|          | -5       | 84.1 to 149.6                    | 0.25 to 0.45  |
| M3       | 0        | 63.1 to 112.2                    | 0.19 to 0.34  |
|          | -5       | 47.3 to 84.1                     | 0.14 to 0.25  |
| M4       | 0        | <63.1                            | <0.19         |
|          | -5       | <47.3                            | <0.14         |

## 6. MEASUREMENT UNCERTAINTY

| Source of Uncertainty              | Tolerance<br>±% | Prob.<br>Dist. | Div. | ci<br>E | ci<br>H | Standard<br>Uncertainty<br>±%, E | Standard<br>Uncertainty<br>±%, H | Remark |
|------------------------------------|-----------------|----------------|------|---------|---------|----------------------------------|----------------------------------|--------|
| <b>MEASUREMENT SYSTEM</b>          |                 |                |      |         |         |                                  |                                  |        |
| Probe Calibration                  | 5.1             | N              | 1    | 1       | 1       | 5.1                              | 5.1                              |        |
| Axial Isotropy                     | 4.7             | R              | √3   | 1       | 1       | 2.7                              | 2.7                              |        |
| Sensor Displacement                | 16.5            | R              | √3   | 1       | 0.145   | 9.5                              | 1.4                              |        |
| Boundary Effect                    | 2.4             | R              | √3   | 1       | 1       | 1.4                              | 1.4                              |        |
| Linearity                          | 4.7             | R              | √3   | 1       | 1       | 2.7                              | 2.7                              | SAR    |
| Scaling to Peak Envelope Power     | 2.0             | R              | √3   | 1       | 1       | 1.2                              | 1.2                              |        |
| System Detection Limit             | 1.0             | R              | √3   | 1       | 1       | 0.6                              | 0.6                              |        |
| Readout Electronics                | 0.3             | N              | 1    | 1       | 1       | 0.3                              | 0.3                              | SAR    |
| Response Time                      | 0.8             | R              | √3   | 1       | 1       | 0.5                              | 0.5                              |        |
| Integration Time                   | 2.6             | R              | √3   | 1       | 1       | 1.5                              | 1.5                              | SAR    |
| RF Ambient Conditions              | 3.0             | R              | √3   | 1       | 1       | 1.7                              | 1.7                              | SAR    |
| RF Reflections                     | 12.0            | R              | √3   | 1       | 1       | 6.9                              | 6.9                              |        |
| Probe Positioner                   | 1.2             | R              | √3   | 1       | 0.67    | 0.7                              | 0.5                              |        |
| Probe Positioning                  | 4.7             | R              | √3   | 1       | 0.67    | 2.7                              | 1.8                              |        |
| Extrapolation and Interpolation    | 1.0             | R              | √3   | 1       | 1       | 0.6                              | 0.6                              | SAR    |
| <b>TEST SAMPLE RELATED</b>         |                 |                |      |         |         |                                  |                                  |        |
| Device Positioning Vertical        | 4.7             | R              | √3   | 1       | 0.67    | 2.7                              | 1.8                              |        |
| Device Positioning Lateral         | 1.0             | R              | √3   | 1       | 1       | 0.6                              | 0.6                              |        |
| Device Holder and Test Arch        | 2.4             | R              | √3   | 1       | 1       | 1.4                              | 1.4                              |        |
| Power Drift                        | 5.0             | R              | √3   | 1       | 1       | 2.9                              | 2.9                              | SAR    |
| <b>TEST ARCH AND SETUP RELATED</b> |                 |                |      |         |         |                                  |                                  |        |
| Test Arch Thickness                | 2.4             | R              | √3   | 1       | 0.67    | 1.4                              | 0.9                              |        |
| Combined Standard Uncertainty      |                 |                |      |         |         | 14.7                             | 10.9                             |        |
| Expanded Uncertainty on Power      |                 |                |      |         |         | 29.4                             | 21.8                             |        |
| Expanded Uncertainty on Field      |                 |                |      |         |         | 14.7                             | 10.9                             |        |

## 7. RESULTS

The calculated maximum field values for the test device are tabulated below:

### GSM850, RF emissions results

| Mode   | Test configuration | Ch 128<br>824.2 MHz | Ch 190<br>836.6 MHz | Ch 251<br>848.8 MHz |
|--------|--------------------|---------------------|---------------------|---------------------|
| GSM850 | Power              | 32.5 dBm            | 32.5 dBm            | 32.5 dBm            |
|        | E-field [V/m]      | 212.5               | <b>257.7</b>        | 228.2               |
|        | H-field [A/m]      | <b>0.429</b>        | 0.349               | 0.350               |
|        | Category           | M3 (-5 dB)          | M3 (-5 dB)          | M3 (-5 dB)          |

### WCDMA850, RF emissions results

| Mode     | Test configuration | Ch 4132<br>826.4 MHz | Ch 4175<br>835.0 MHz | Ch 4233<br>846.6 MHz |
|----------|--------------------|----------------------|----------------------|----------------------|
| WCDMA850 | Power              | 23.5 dBm             | 23.5 dBm             | 23.5 dBm             |
|          | E-field [V/m]      | 67.5                 | <b>88.4</b>          | 79.2                 |
|          | H-field [A/m]      | 0.088                | <b>0.119</b>         | 0.112                |
|          | Category           | M4 (0 dB)            | M4 (0 dB)            | M4 (0 dB)            |

### WCDMA1700/2100, RF emissions results

| Mode               | Test configuration | Ch 1312<br>1712.4 MHz | Ch 1413<br>1732.6 MHz | Ch 1513<br>1752.6 MHz |
|--------------------|--------------------|-----------------------|-----------------------|-----------------------|
| WCDMA<br>1700/2100 | Power              | 24.0 dBm              | 24.0 dBm              | 24.0 dBm              |
|                    | E-field [V/m]      | <b>65.6</b>           | 57.0                  | 62.0                  |
|                    | H-field [A/m]      | <b>0.154</b>          | 0.138                 | 0.149                 |
|                    | Category           | M3 (0 dB)             | M4 (0 dB)             | M4 (0 dB)             |

### GSM1900, RF emissions results

| Mode    | Test configuration | Ch 512<br>1850.2MHz | Ch 661<br>1880.0MHz | Ch 810<br>1909.8MHz |
|---------|--------------------|---------------------|---------------------|---------------------|
| GSM1900 | Power              | 28.5 dBm            | 28.5 dBm            | 28.5 dBm            |
|         | E-field [V/m]      | <b>77.1</b>         | 66.5                | 66.4                |
|         | H-field [A/m]      | <b>0.195</b>        | 0.171               | 0.165               |
|         | Category           | M3 (-5 dB)          | M3 (-5 dB)          | M3 (-5 dB)          |

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**WCDMA1900, RF emissions results**

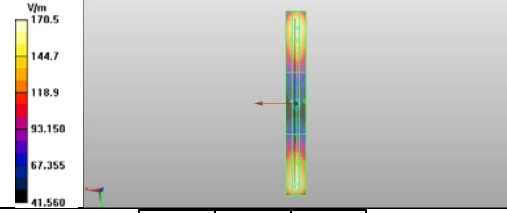
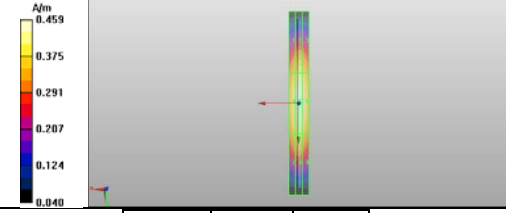
| Mode      | Test configuration | Ch 9262<br>1852.4MHz | Ch 9400<br>1880.0MHz | Ch 9538<br>1907.6MHz |
|-----------|--------------------|----------------------|----------------------|----------------------|
| WCDMA1900 | Power              | 22.5 dBm             | 22.5 dBm             | 22.5 dBm             |
|           | E-field [V/m]      | <b>43.7</b>          | 39.5                 | 37.8                 |
|           | H-field [A/m]      | <b>0.114</b>         | 0.100                | 0.094                |
|           | Category           | M4 (0 dB)            | M4 (0 dB)            | M4 (0 dB)            |

Plots of the measurement scans are shown in **Appendix B**. Excluded cells are colored orange.

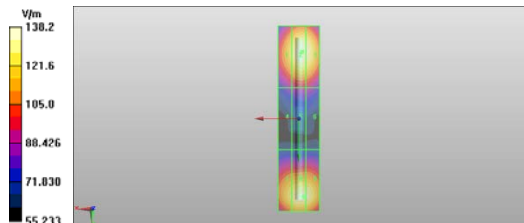
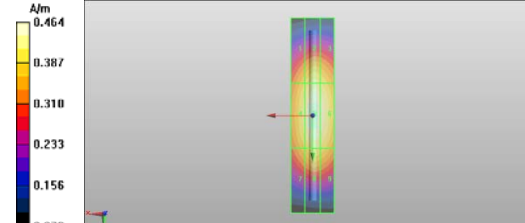
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## APPENDIX A: SYSTEM VALIDATION SCANS

## SYSTEM VALIDATION DATA 850MHz

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                       |                       |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                       |                       |                       |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------|-----------------------|-----------------------|--|
| <p>Date/Time: 2013-01-30 14:43:30<br/>Test Laboratory: TCC Nokia<br/><b>Type: CD835V3; Serial: 1005</b></p> <p>Communication System: CW<br/>Frequency: 835 MHz; Duty Cycle: 1:1<br/>Medium: Air; Medium Notes: Not Specified<br/>Medium parameters used: <math>\sigma = 0</math> S/m, <math>\epsilon_r = 1</math>; <math>\rho = 0</math> kg/m<sup>3</sup><br/>Phantom section: RF Section</p> <p>DASY Configuration:<br/>- Probe: ER3DV6 - SN2333<br/>- ConvF(1, 1, 1); Calibrated: 2012-04-19;<br/>- Sensor-Surface: (Fix Surface)<br/>- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15<br/>- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA; -<br/>Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)</p> <p><b>Dipole E-Field measurement 835MHz/E Scan - measurement distance from the probe sensor center to CD835 Dipole = 10mm/Hearing Aid Compatibility Test (41x361x1):</b><br/>Interpolated grid: dx=0.5000 mm, dy=0.5000 mm<br/>Device Reference Point: 0, 0, -6.3 mm<br/>Reference Value = 114.3 V/m; Power Drift = 0.01 dB<br/>PMR not calibrated. PMF = 1.000 is applied.<br/>E-field emissions = 170.5 V/m<br/>Near-field category: M4 (AWF 0 dB)</p>  |                       |                       |                       | <p>Date/Time: 2013-01-30 14:56:25<br/>Test Laboratory: TCC Nokia<br/><b>Type: CD835V3; Serial: 1005</b></p> <p>Communication System: CW<br/>Frequency: 835 MHz; Duty Cycle: 1:1<br/>Medium: Air; Medium Notes: Not Specified<br/>Medium parameters used: <math>\sigma = 0</math> S/m, <math>\epsilon_r = 1</math>; <math>\rho = 0</math> kg/m<sup>3</sup><br/>Phantom section: RF Section</p> <p>DASY Configuration:<br/>- Probe: H3DV6 - SN6053<br/>- ; Calibrated: 2012-04-18<br/>- Sensor-Surface: (Fix Surface)<br/>- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15<br/>- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA; -<br/>Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)</p> <p><b>Dipole H-Field measurement 835MHz/H Scan - measurement distance from the probe sensor center to CD835 Dipole = 10mm/Hearing Aid Compatibility Test (41x361x1):</b><br/>Interpolated grid: dx=0.5000 mm, dy=0.5000 mm<br/>Device Reference Point: 0, 0, -6.3 mm<br/>Reference Value = 0.4880 A/m; Power Drift = -0.03 dB<br/>PMR not calibrated. PMF = 1.000 is applied.<br/>H-field emissions = 0.4589 A/m<br/>Near-field category: M4 (AWF 0 dB)</p>  |  |                       |                       |                       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 1<br>M4<br>159.5 | Grid 2<br>M4<br>170.5 | Grid 3<br>M4<br>167.4 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  | Grid 1<br>M4<br>0.376 | Grid 2<br>M4<br>0.405 | Grid 3<br>M4<br>0.391 |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 4<br>M4<br>87.51 | Grid 5<br>M4<br>93.02 | Grid 6<br>M4<br>91.34 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  | Grid 4<br>M4<br>0.432 | Grid 5<br>M4<br>0.459 | Grid 6<br>M4<br>0.441 |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 7<br>M4<br>166.2 | Grid 8<br>M4<br>169.6 | Grid 9<br>M4<br>166.4 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  | Grid 7<br>M4<br>0.381 | Grid 8<br>M4<br>0.403 | Grid 9<br>M4<br>0.385 |  |

## SYSTEM VALIDATION DATA 1900MHz

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                       |                       |                       |                       |                       |                       |                       |                       |                                                                                                                                                                                                                                                                                                                                            |                       |                       |                       |                       |                       |                       |                       |                       |                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <div>Date/Time: 2013-01-30 15:21:23<br/>Test Laboratory: TCC Nokia<br/>Type: CD1880V3; Serial: 1004<br/>Communication System: CW<br/>Frequency: 1880 MHz; Duty Cycle: 1:1<br/>Medium: Air; Medium Notes: Not Specified<br/>Medium parameters used: <math>\sigma = 0 \text{ S/m}</math>, <math>\epsilon_r = 1</math>; <math>\rho = 0 \text{ kg/m}^3</math><br/>Phantom section: RF Section<br/><br/>DASY Configuration:<br/>Probe: ER3DV6 - SN2333<br/>- ConvF(1, 1, 1); Calibrated: 2012-04-19;<br/>- Sensor-Surface: (Fix Surface)<br/>- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15<br/>- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;<br/>- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)<br/><br/>Dipole E-Field measurement 1880MHz/E Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm/Hearing Aid Compatibility Test (41x181x1):<br/>Interpolated grid: dx=0.5000 mm, dy=0.5000 mm<br/>Device Reference Point: 0, 0, -6.3 mm<br/>Reference Value = 151.1 V/m; Power Drift = -0.00 dB<br/>PMR not calibrated. PMF = 1.000 is applied.<br/>E-field emissions = 138.2 V/m<br/>Near-field category: M2 (AWF 0 dB)</div> | <div>Date/Time: 2013-01-30 15:11:05<br/>Test Laboratory: TCC Nokia<br/>Type: CD1880V3; Serial: 1004<br/>Communication System: CW<br/>Frequency: 1880 MHz; Duty Cycle: 1:1<br/>Medium: Air; Medium Notes: Not Specified<br/>Medium parameters used: <math>\sigma = 0 \text{ S/m}</math>, <math>\epsilon_r = 1</math>; <math>\rho = 0 \text{ kg/m}^3</math><br/>Phantom section: RF Section<br/><br/>DASY Configuration:<br/>- Probe: H3DV6 - SN6053<br/>- ; Calibrated: 2012-04-18<br/>- Sensor-Surface: (Fix Surface)<br/>- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15<br/>- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;<br/>- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)<br/><br/>Dipole H-Field measurement 1880MHz/H Scan - measurement distance from the probe sensor center to CD1880 Dipole = 10mm/Hearing Aid Compatibility Test (41x181x1):<br/>Interpolated grid: dx=0.5000 mm, dy=0.5000 mm<br/>Device Reference Point: 0, 0, -6.3 mm<br/>Reference Value = 0.4890 A/m; Power Drift = -0.01 dB<br/>PMR not calibrated. PMF = 1.000 is applied.<br/>H-field emissions = 0.4639 A/m<br/>Near-field category: M2 (AWF 0 dB)</div> |                       |                       |                       |                       |                       |                       |                       |                       |                                                                                                                                                                                                                                                                                                                                            |                       |                       |                       |                       |                       |                       |                       |                       |                       |
| <div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                       |                       |                       |                       |                       |                       |                       |                       |                                                                                                                                                                                                                                                                                                                                            |                       |                       |                       |                       |                       |                       |                       |                       |                       |
| <table><tr><td>Grid 1<br/>M2<br/>126.5</td><td>Grid 2<br/>M2<br/>138.2</td><td>Grid 3<br/>M2<br/>136.7</td></tr><tr><td>Grid 4<br/>M3<br/>87.12</td><td>Grid 5<br/>M3<br/>93.09</td><td>Grid 6<br/>M3<br/>91.61</td></tr><tr><td>Grid 7<br/>M2<br/>129.0</td><td>Grid 8<br/>M2<br/>135.3</td><td>Grid 9<br/>M2<br/>134.7</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Grid 1<br>M2<br>126.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Grid 2<br>M2<br>138.2 | Grid 3<br>M2<br>136.7 | Grid 4<br>M3<br>87.12 | Grid 5<br>M3<br>93.09 | Grid 6<br>M3<br>91.61 | Grid 7<br>M2<br>129.0 | Grid 8<br>M2<br>135.3 | Grid 9<br>M2<br>134.7 | <table><tr><td>Grid 1<br/>M2<br/>0.391</td><td>Grid 2<br/>M2<br/>0.424</td><td>Grid 3<br/>M2<br/>0.415</td></tr><tr><td>Grid 4<br/>M2<br/>0.431</td><td>Grid 5<br/>M2<br/>0.464</td><td>Grid 6<br/>M2<br/>0.454</td></tr><tr><td>Grid 7<br/>M2<br/>0.385</td><td>Grid 8<br/>M2<br/>0.416</td><td>Grid 9<br/>M2<br/>0.407</td></tr></table> | Grid 1<br>M2<br>0.391 | Grid 2<br>M2<br>0.424 | Grid 3<br>M2<br>0.415 | Grid 4<br>M2<br>0.431 | Grid 5<br>M2<br>0.464 | Grid 6<br>M2<br>0.454 | Grid 7<br>M2<br>0.385 | Grid 8<br>M2<br>0.416 | Grid 9<br>M2<br>0.407 |
| Grid 1<br>M2<br>126.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Grid 2<br>M2<br>138.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Grid 3<br>M2<br>136.7 |                       |                       |                       |                       |                       |                       |                       |                                                                                                                                                                                                                                                                                                                                            |                       |                       |                       |                       |                       |                       |                       |                       |                       |
| Grid 4<br>M3<br>87.12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Grid 5<br>M3<br>93.09                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Grid 6<br>M3<br>91.61 |                       |                       |                       |                       |                       |                       |                       |                                                                                                                                                                                                                                                                                                                                            |                       |                       |                       |                       |                       |                       |                       |                       |                       |
| Grid 7<br>M2<br>129.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Grid 8<br>M2<br>135.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Grid 9<br>M2<br>134.7 |                       |                       |                       |                       |                       |                       |                       |                                                                                                                                                                                                                                                                                                                                            |                       |                       |                       |                       |                       |                       |                       |                       |                       |
| Grid 1<br>M2<br>0.391                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Grid 2<br>M2<br>0.424                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Grid 3<br>M2<br>0.415 |                       |                       |                       |                       |                       |                       |                       |                                                                                                                                                                                                                                                                                                                                            |                       |                       |                       |                       |                       |                       |                       |                       |                       |
| Grid 4<br>M2<br>0.431                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Grid 5<br>M2<br>0.464                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Grid 6<br>M2<br>0.454 |                       |                       |                       |                       |                       |                       |                       |                                                                                                                                                                                                                                                                                                                                            |                       |                       |                       |                       |                       |                       |                       |                       |                       |
| Grid 7<br>M2<br>0.385                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Grid 8<br>M2<br>0.416                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Grid 9<br>M2<br>0.407 |                       |                       |                       |                       |                       |                       |                       |                                                                                                                                                                                                                                                                                                                                            |                       |                       |                       |                       |                       |                       |                       |                       |                       |

## APPENDIX B: MEASUREMENT SCANS

| MEASUREMENT DATA GSM850, CHANNEL LOW (824.2 MHz)                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |                                                                                                                                                                                                                                                                                                                                                                                                           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| <p>Date/Time: 2013-02-01 07:56:23<br/>Test Laboratory: TCC Nokia<br/><b>Type: RM-917; Serial: 355913/05/000075/6</b><br/>Communication System: GSM-FDD (TDMA, GMSK)<br/>Frequency: 824.2 MHz; Duty Cycle: 1:8.31764<br/>Medium: Air; Medium Notes: Not Specified<br/>Medium parameters used: <math>\sigma = 0</math> S/m, <math>\epsilon_r = 1</math>; <math>\rho = 0</math> kg/m<sup>3</sup><br/>Phantom section: RF Section</p> | <p>Date/Time: 2013-02-01 11:29:40<br/>Test Laboratory: TCC Nokia<br/><b>Type: RM-917; Serial: 355913/05/000075/6</b><br/>Communication System: GSM-FDD (TDMA, GMSK)<br/>Frequency: 824.2 MHz; Duty Cycle: 1:8.31764<br/>Medium: Air; Medium Notes: Not Specified<br/>Medium parameters used: <math>\sigma = 0</math> S/m, <math>\epsilon_r = 1</math>; <math>\rho = 0</math> kg/m<sup>3</sup><br/>Phantom section: RF Section</p> |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |                                                                                                                                                                                                                                                                                                                                                                                                           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
| <p>DASY Configuration:<br/>- Probe: ER3DV6 - SN2333<br/>- ConvF(1, 1, 1); Calibrated: 2012-04-19;<br/>- Sensor-Surface: (Fix Surface)<br/>- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15<br/>- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;<br/>- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)</p>                                                                                      | <p>DASY Configuration:<br/>- Probe: H3DV6 - SN6053<br/>- ; Calibrated: 2012-04-18<br/>- Sensor-Surface: (Fix Surface)<br/>- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15<br/>- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;<br/>- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)</p>                                                                                                      |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |                                                                                                                                                                                                                                                                                                                                                                                                           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
| <p><b>Device E-Field measurement with ER probe/E Scan - GSM850 - Low/Hearing Aid Compatibility Test (101x101x1):</b><br/>Interpolated grid: dx=0.5000 mm, dy=0.5000 mm<br/>Device Reference Point: 0, 0, -6.3 mm<br/>Reference Value = 99.15 V/m; Power Drift = 0.00 dB<br/>PMR calibrated. Calibrated PMF = 2.948 is applied.<br/>E-field emissions = 212.5 V/m<br/>Near-field category: M3 (AWF -5 dB)</p>                      | <p><b>Device H-Field measurement with H3DV6 probe/H Scan - GSM850 - Low/Hearing Aid Compatibility Test (101x101x1):</b><br/>Interpolated grid: dx=0.5000 mm, dy=0.5000 mm<br/>Device Reference Point: 0, 0, -6.3 mm<br/>Reference Value = 0.06700 A/m; Power Drift = 0.04 dB<br/>PMR calibrated. Calibrated PMF = 2.948 is applied.<br/>H-field emissions = 0.4286 A/m<br/>Near-field category: M4 (AWF -5 dB)</p>                |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |                                                                                                                                                                                                                                                                                                                                                                                                           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
| <table><tr><td>Grid 1 M3</td><td>Grid 2 M3</td><td>Grid 3 M3</td></tr><tr><td>191.3 V/m</td><td>205.1 V/m</td><td>195.7 V/m</td></tr><tr><td>Grid 4 M3</td><td>Grid 5 M3</td><td>Grid 6 M3</td></tr><tr><td>199.2 V/m</td><td>212.5 V/m</td><td>202.1 V/m</td></tr><tr><td>Grid 7 M3</td><td>Grid 8 M3</td><td>Grid 9 M3</td></tr><tr><td>196.6 V/m</td><td>207.9 V/m</td><td>197.2 V/m</td></tr></table>                         | Grid 1 M3                                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 2 M3 | Grid 3 M3 | 191.3 V/m | 205.1 V/m | 195.7 V/m | Grid 4 M3 | Grid 5 M3 | Grid 6 M3 | 199.2 V/m | 212.5 V/m | 202.1 V/m | Grid 7 M3 | Grid 8 M3 | Grid 9 M3 | 196.6 V/m | 207.9 V/m | 197.2 V/m | <table><tr><td>Grid 1 M4</td><td>Grid 2 M4</td><td>Grid 3 M4</td></tr><tr><td>0.429 A/m</td><td>0.302 A/m</td><td>0.179 A/m</td></tr><tr><td>Grid 4 M4</td><td>Grid 5 M4</td><td>Grid 6 M4</td></tr><tr><td>0.363 A/m</td><td>0.254 A/m</td><td>0.154 A/m</td></tr><tr><td>Grid 7 M4</td><td>Grid 8 M4</td><td>Grid 9 M4</td></tr><tr><td>0.409 A/m</td><td>0.278 A/m</td><td>0.164 A/m</td></tr></table> | Grid 1 M4 | Grid 2 M4 | Grid 3 M4 | 0.429 A/m | 0.302 A/m | 0.179 A/m | Grid 4 M4 | Grid 5 M4 | Grid 6 M4 | 0.363 A/m | 0.254 A/m | 0.154 A/m | Grid 7 M4 | Grid 8 M4 | Grid 9 M4 | 0.409 A/m | 0.278 A/m | 0.164 A/m |
| Grid 1 M3                                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 2 M3                                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 3 M3 |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |                                                                                                                                                                                                                                                                                                                                                                                                           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
| 191.3 V/m                                                                                                                                                                                                                                                                                                                                                                                                                         | 205.1 V/m                                                                                                                                                                                                                                                                                                                                                                                                                         | 195.7 V/m |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |                                                                                                                                                                                                                                                                                                                                                                                                           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Grid 4 M3                                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 5 M3                                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 6 M3 |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |                                                                                                                                                                                                                                                                                                                                                                                                           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
| 199.2 V/m                                                                                                                                                                                                                                                                                                                                                                                                                         | 212.5 V/m                                                                                                                                                                                                                                                                                                                                                                                                                         | 202.1 V/m |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |                                                                                                                                                                                                                                                                                                                                                                                                           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Grid 7 M3                                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 8 M3                                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 9 M3 |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |                                                                                                                                                                                                                                                                                                                                                                                                           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
| 196.6 V/m                                                                                                                                                                                                                                                                                                                                                                                                                         | 207.9 V/m                                                                                                                                                                                                                                                                                                                                                                                                                         | 197.2 V/m |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |                                                                                                                                                                                                                                                                                                                                                                                                           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Grid 1 M4                                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 2 M4                                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 3 M4 |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |                                                                                                                                                                                                                                                                                                                                                                                                           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
| 0.429 A/m                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.302 A/m                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.179 A/m |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |                                                                                                                                                                                                                                                                                                                                                                                                           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Grid 4 M4                                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 5 M4                                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 6 M4 |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |                                                                                                                                                                                                                                                                                                                                                                                                           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
| 0.363 A/m                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.254 A/m                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.154 A/m |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |                                                                                                                                                                                                                                                                                                                                                                                                           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Grid 7 M4                                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 8 M4                                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 9 M4 |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |                                                                                                                                                                                                                                                                                                                                                                                                           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
| 0.409 A/m                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.278 A/m                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.164 A/m |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |                                                                                                                                                                                                                                                                                                                                                                                                           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
| <div><div><div>dB</div><div>0</div><div>-1.10</div><div>-2.19</div><div>-3.29</div><div>-4.38</div><div>-5.48</div></div><div></div></div>                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |                                                                                                                                                                                                                                                                                                                                                                                                           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |

## MEASUREMENT DATA GSM850, CHANNEL MIDDLE (836.6 MHz)

|                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                   |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| <p>Date/Time: 2013-02-01 07:51:22<br/>Test Laboratory: TCC Nokia<br/><b>Type: RM-917; Serial: 355913/05/000075/6</b><br/>Communication System: GSM-FDD (TDMA, GMSK)<br/>Frequency: 836.6 MHz; Duty Cycle: 1:8.31764<br/>Medium: Air; Medium Notes: Not Specified<br/>Medium parameters used: <math>\sigma = 0</math> S/m, <math>\epsilon_r = 1</math>; <math>\rho = 0</math> kg/m<sup>3</sup><br/>Phantom section: RF Section</p> | <p>Date/Time: 2013-02-01 11:24:42<br/>Test Laboratory: TCC Nokia<br/><b>Type: RM-917; Serial: 355913/05/000075/6</b><br/>Communication System: GSM-FDD (TDMA, GMSK)<br/>Frequency: 836.6 MHz; Duty Cycle: 1:8.31764<br/>Medium: Air; Medium Notes: Not Specified<br/>Medium parameters used: <math>\sigma = 0</math> S/m, <math>\epsilon_r = 1</math>; <math>\rho = 0</math> kg/m<sup>3</sup><br/>Phantom section: RF Section</p> |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <p>DASY Configuration:<br/>- Probe: ER3DV6 - SN2333<br/>- ConvF(1, 1, 1); Calibrated: 2012-04-19;<br/>- Sensor-Surface: (Fix Surface)<br/>- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15<br/>- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;<br/>- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)</p>                                                                                      | <p>DASY Configuration:<br/>- Probe: H3DV6 - SN6053<br/>- ; Calibrated: 2012-04-18<br/>- Sensor-Surface: (Fix Surface)<br/>- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15<br/>- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;<br/>- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)</p>                                                                                                      |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <p><b>Device E-Field measurement with ER probe/E Scan - GSM850 - Middle/Hearing Aid Compatibility Test (101x101x1):</b><br/>Interpolated grid: dx=0.5000 mm, dy=0.5000 mm<br/>Device Reference Point: 0, 0, -6.3 mm<br/>Reference Value = 119.8 V/m; Power Drift = -0.02 dB<br/>PMR calibrated. Calibrated PMF = 2.948 is applied.<br/>E-field emissions = 257.7 V/m<br/><b>Near-field category: M3 (AWF -5 dB)</b></p>           | <p><b>Device H-Field measurement with H3DV6 probe/H Scan - GSM850 - Middle/Hearing Aid Compatibility Test (101x101x1):</b><br/>Interpolated grid: dx=0.5000 mm, dy=0.5000 mm<br/>Device Reference Point: 0, 0, -6.3 mm<br/>Reference Value = 0.08100 A/m; Power Drift = 0.03 dB<br/>PMR calibrated. Calibrated PMF = 2.948 is applied.<br/>H-field emissions = 0.3488 A/m<br/><b>Near-field category: M4 (AWF -5 dB)</b></p>      |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <table><tr><td>Grid 1 M3<br/>230.3 V/m</td><td>Grid 2 M3<br/>250.2 V/m</td><td>Grid 3 M3<br/>239.2 V/m</td></tr><tr><td>Grid 4 M3<br/>239.2 V/m</td><td>Grid 5 M3<br/>257.7 V/m</td><td>Grid 6 M3<br/>244.0 V/m</td></tr><tr><td>Grid 7 M3<br/>233.9 V/m</td><td>Grid 8 M3<br/>250.8 V/m</td><td>Grid 9 M3<br/>238.0 V/m</td></tr></table>                                                                                        | Grid 1 M3<br>230.3 V/m                                                                                                                                                                                                                                                                                                                                                                                                            | Grid 2 M3<br>250.2 V/m | Grid 3 M3<br>239.2 V/m | Grid 4 M3<br>239.2 V/m | Grid 5 M3<br>257.7 V/m | Grid 6 M3<br>244.0 V/m | Grid 7 M3<br>233.9 V/m | Grid 8 M3<br>250.8 V/m | Grid 9 M3<br>238.0 V/m | <table><tr><td>Grid 1 M4<br/>0.506 A/m</td><td>Grid 2 M4<br/>0.349 A/m</td><td>Grid 3 M4<br/>0.205 A/m</td></tr><tr><td>Grid 4 M4<br/>0.438 A/m</td><td>Grid 5 M4<br/>0.305 A/m</td><td>Grid 6 M4<br/>0.184 A/m</td></tr><tr><td>Grid 7 M4<br/>0.480 A/m</td><td>Grid 8 M4<br/>0.327 A/m</td><td>Grid 9 M4<br/>0.193 A/m</td></tr></table> | Grid 1 M4<br>0.506 A/m | Grid 2 M4<br>0.349 A/m | Grid 3 M4<br>0.205 A/m | Grid 4 M4<br>0.438 A/m | Grid 5 M4<br>0.305 A/m | Grid 6 M4<br>0.184 A/m | Grid 7 M4<br>0.480 A/m | Grid 8 M4<br>0.327 A/m | Grid 9 M4<br>0.193 A/m |
| Grid 1 M3<br>230.3 V/m                                                                                                                                                                                                                                                                                                                                                                                                            | Grid 2 M3<br>250.2 V/m                                                                                                                                                                                                                                                                                                                                                                                                            | Grid 3 M3<br>239.2 V/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 4 M3<br>239.2 V/m                                                                                                                                                                                                                                                                                                                                                                                                            | Grid 5 M3<br>257.7 V/m                                                                                                                                                                                                                                                                                                                                                                                                            | Grid 6 M3<br>244.0 V/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 7 M3<br>233.9 V/m                                                                                                                                                                                                                                                                                                                                                                                                            | Grid 8 M3<br>250.8 V/m                                                                                                                                                                                                                                                                                                                                                                                                            | Grid 9 M3<br>238.0 V/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 1 M4<br>0.506 A/m                                                                                                                                                                                                                                                                                                                                                                                                            | Grid 2 M4<br>0.349 A/m                                                                                                                                                                                                                                                                                                                                                                                                            | Grid 3 M4<br>0.205 A/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 4 M4<br>0.438 A/m                                                                                                                                                                                                                                                                                                                                                                                                            | Grid 5 M4<br>0.305 A/m                                                                                                                                                                                                                                                                                                                                                                                                            | Grid 6 M4<br>0.184 A/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 7 M4<br>0.480 A/m                                                                                                                                                                                                                                                                                                                                                                                                            | Grid 8 M4<br>0.327 A/m                                                                                                                                                                                                                                                                                                                                                                                                            | Grid 9 M4<br>0.193 A/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <div><div><div>dB</div><div>0</div><div>-1.14</div><div>-2.28</div><div>-3.41</div><div>-4.55</div><div>-5.69</div></div><div></div></div>                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                   |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |

## MEASUREMENT DATA GSM850, CHANNEL HIGH (848.8 MHz)

Date/Time: 2013-02-01 08:01:40  
Test Laboratory: TCC Nokia  
**Type: RM-917; Serial: 355913/05/000075/6**  
Communication System: GSM-FDD (TDMA, GMSK)  
Frequency: 848.8 MHz; Duty Cycle: 1:8.31764  
Medium: Air; Medium Notes: Not Specified  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>  
Phantom section: RF Section

DASY Configuration:  
- Probe: ER3DV6 - SN2333  
- ConvF(1, 1, 1); Calibrated: 2012-04-19;  
- Sensor-Surface: (Fix Surface)  
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15  
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;  
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)

**Device E-Field measurement with ER probe/E Scan - GSM850 - High/Hearing Aid Compatibility Test (101x101x1):**  
Interpolated grid: dx=0.5000 mm, dy=0.5000 mm  
Device Reference Point: 0, 0, -6.3 mm  
Reference Value = 104.3 V/m; Power Drift = -0.05 dB  
PMR calibrated. Calibrated PMF = 2.948 is applied.  
E-field emissions = 228.2 V/m  
**Near-field category: M3 (AWF -5 dB)**

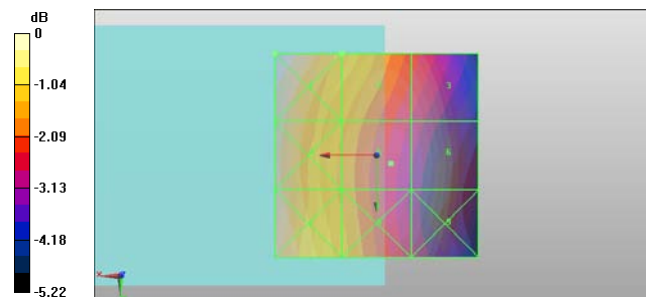
Date/Time: 2013-02-01 11:42:00  
Test Laboratory: TCC Nokia  
**Type: RM-917; Serial: 355913/05/000075/6**  
Communication System: GSM-FDD (TDMA, GMSK)  
Frequency: 848.8 MHz; Duty Cycle: 1:8.31764  
Medium: Air; Medium Notes: Not Specified  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>  
Phantom section: RF Section

DASY Configuration:  
- Probe: H3DV6 - SN6053  
- ; Calibrated: 2012-04-18  
- Sensor-Surface: (Fix Surface)  
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15  
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;  
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)

**Device H-Field measurement with H3DV6 probe/H Scan - GSM850 - High/Hearing Aid Compatibility Test (101x101x1):**  
Interpolated grid: dx=0.5000 mm, dy=0.5000 mm  
Device Reference Point: 0, 0, -6.3 mm  
Reference Value = 0.07800 A/m; Power Drift = -0.04 dB  
PMR calibrated. Calibrated PMF = 2.948 is applied.  
H-field emissions = 0.3500 A/m  
**Near-field category: M4 (AWF -5 dB)**

|                        |                        |                        |
|------------------------|------------------------|------------------------|
| Grid 1 M3<br>196.1 V/m | Grid 2 M3<br>218.0 V/m | Grid 3 M3<br>212.1 V/m |
| Grid 4 M3<br>205.8 V/m | Grid 5 M3<br>228.2 V/m | Grid 6 M3<br>220.4 V/m |
| Grid 7 M3<br>204.2 V/m | Grid 8 M3<br>225.2 V/m | Grid 9 M3<br>217.5 V/m |

|                        |                        |                        |
|------------------------|------------------------|------------------------|
| Grid 1 M4<br>0.480 A/m | Grid 2 M4<br>0.350 A/m | Grid 3 M4<br>0.226 A/m |
| Grid 4 M4<br>0.410 A/m | Grid 5 M4<br>0.294 A/m | Grid 6 M4<br>0.191 A/m |
| Grid 7 M4<br>0.444 A/m | Grid 8 M4<br>0.303 A/m | Grid 9 M4<br>0.179 A/m |



# MEASUREMENT DATA WCDMA850, CHANNEL LOW (826.4 MHz)

Date/Time: 2013-02-01 08:59:06  
Test Laboratory: TCC Nokia  
**Type: RM-917; Serial: 355913/05/000075/6**  
Communication System: UMTS-FDD (WCDMA)  
Frequency: 826.4 MHz; Duty Cycle: 1:2.18776  
Medium: Air; Medium Notes: Not Specified  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>  
Phantom section: RF Section

Date/Time: 2013-02-01 11:53:27  
Test Laboratory: TCC Nokia  
**Type: RM-917; Serial: 355913/05/000075/6**  
Communication System: UMTS-FDD (WCDMA)  
Frequency: 826.4 MHz; Duty Cycle: 1:2.18776  
Medium: Air; Medium Notes: Not Specified  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>  
Phantom section: RF Section

DASY Configuration:  
- Probe: ER3DV6 - SN2333  
- ConvF(1, 1, 1); Calibrated: 2012-04-19;  
- Sensor-Surface: (Fix Surface)  
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15  
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;  
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)

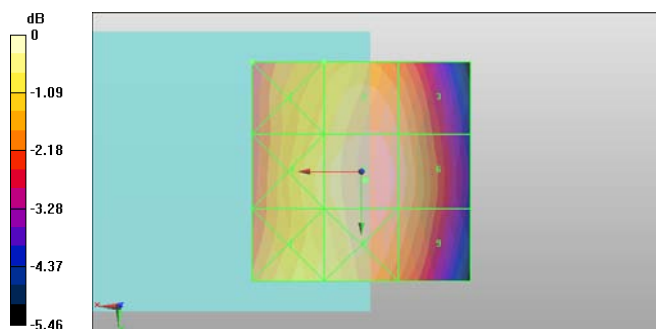
DASY Configuration:  
- Probe: H3DV6 - SN6053  
- ; Calibrated: 2012-04-18  
- Sensor-Surface: (Fix Surface)  
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15  
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;  
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)

**Device E-Field measurement with ER probe/E Scan - WCDMA5 - Low/Hearing Aid Compatibility Test (101x101x1):**  
Interpolated grid: dx=0.5000 mm, dy=0.5000 mm  
Device Reference Point: 0, 0, -6.3 mm  
Reference Value = 91.21 V/m; Power Drift = 0.08 dB  
PMR calibrated. Calibrated PMF = 1.020 is applied.  
E-field emissions = 67.47 V/m  
**Near-field category: M4 (AWF 0 dB)**

**Device H-Field measurement with H3DV6 probe/H Scan - WCDMA5 - Low/Hearing Aid Compatibility Test (101x101x1):**  
Interpolated grid: dx=0.5000 mm, dy=0.5000 mm  
Device Reference Point: 0, 0, -6.3 mm  
Reference Value = 0.05600 A/m; Power Drift = -0.03 dB  
PMR calibrated. Calibrated PMF = 1.020 is applied.  
H-field emissions = 0.08817 A/m  
**Near-field category: M4 (AWF 0 dB)**

|                        |                        |                        |
|------------------------|------------------------|------------------------|
| Grid 1 M4<br>61.14 V/m | Grid 2 M4<br>64.98 V/m | Grid 3 M4<br>62.11 V/m |
| Grid 4 M4<br>63.74 V/m | Grid 5 M4<br>67.47 V/m | Grid 6 M4<br>63.99 V/m |
| Grid 7 M4<br>62.90 V/m | Grid 8 M4<br>66.13 V/m | Grid 9 M4<br>62.57 V/m |

|                        |                        |                        |
|------------------------|------------------------|------------------------|
| Grid 1 M4<br>0.128 A/m | Grid 2 M4<br>0.088 A/m | Grid 3 M4<br>0.050 A/m |
| Grid 4 M4<br>0.108 A/m | Grid 5 M4<br>0.074 A/m | Grid 6 M4<br>0.043 A/m |
| Grid 7 M4<br>0.121 A/m | Grid 8 M4<br>0.082 A/m | Grid 9 M4<br>0.048 A/m |



**MEASUREMENT DATA WCDMA850, CHANNEL MIDDLE (835 MHz)**

Date/Time: 2013-02-01 08:54:04  
Test Laboratory: TCC Nokia  
**Type: RM-917; Serial: 355913/05/000075/6**  
Communication System: UMTS-FDD (WCDMA)  
Frequency: 835 MHz; Duty Cycle: 1:2.18776  
Medium: Air; Medium Notes: Not Specified  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>  
Phantom section: RF Section

Date/Time: 2013-02-01 11:48:20  
Test Laboratory: TCC Nokia  
**Type: RM-917; Serial: 355913/05/000075/6**  
Communication System: UMTS-FDD (WCDMA)  
Frequency: 835 MHz; Duty Cycle: 1:2.18776  
Medium: Air; Medium Notes: Not Specified  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>  
Phantom section: RF Section

DASY Configuration:  
- Probe: ER3DV6 - SN2333  
- ConvF(1, 1, 1); Calibrated: 2012-04-19;  
- Sensor-Surface: (Fix Surface)  
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15  
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;  
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)

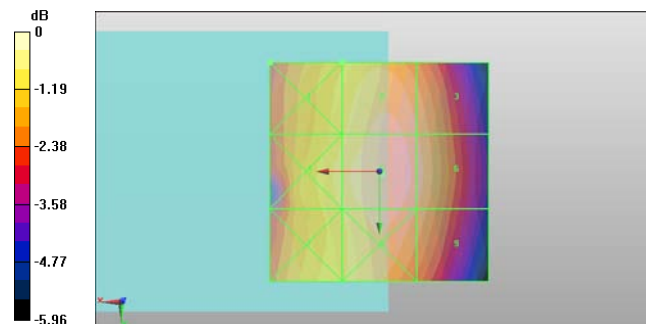
DASY Configuration:  
- Probe: H3DV6 - SN6053  
- ; Calibrated: 2012-04-18  
- Sensor-Surface: (Fix Surface)  
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15  
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;  
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)

**Device E-Field measurement with ER probe/E Scan - WCDMA5 - Middle/Hearing Aid Compatibility Test (101x101x1):**  
Interpolated grid: dx=0.5000 mm, dy=0.5000 mm  
Device Reference Point: 0, 0, -6.3 mm  
Reference Value = 119.5 V/m; Power Drift = -0.12 dB  
PMR calibrated. Calibrated PMF = 1.020 is applied.  
E-field emissions = 88.35 V/m  
**Near-field category: M4 (AWF 0 dB)**

**Device H-Field measurement with H3DV6 probe/H Scan - WCDMA5 - Middle/Hearing Aid Compatibility Test (101x101x1):**  
Interpolated grid: dx=0.5000 mm, dy=0.5000 mm  
Device Reference Point: 0, 0, -6.3 mm  
Reference Value = 0.07900 A/m; Power Drift = -0.10 dB  
PMR calibrated. Calibrated PMF = 1.020 is applied.  
H-field emissions = 0.1186 A/m  
**Near-field category: M4 (AWF 0 dB)**

|                        |                        |                        |
|------------------------|------------------------|------------------------|
| Grid 1 M4<br>80.09 V/m | Grid 2 M4<br>85.73 V/m | Grid 3 M4<br>81.20 V/m |
| Grid 4 M4<br>82.71 V/m | Grid 5 M4<br>88.35 V/m | Grid 6 M4<br>82.93 V/m |
| Grid 7 M4<br>80.80 V/m | Grid 8 M4<br>86.17 V/m | Grid 9 M4<br>80.57 V/m |

|                        |                        |                        |
|------------------------|------------------------|------------------------|
| Grid 1 M4<br>0.171 A/m | Grid 2 M4<br>0.119 A/m | Grid 3 M4<br>0.068 A/m |
| Grid 4 M4<br>0.147 A/m | Grid 5 M4<br>0.103 A/m | Grid 6 M4<br>0.061 A/m |
| Grid 7 M4<br>0.161 A/m | Grid 8 M4<br>0.111 A/m | Grid 9 M4<br>0.065 A/m |



## MEASUREMENT DATA WCDMA850, CHANNEL HIGH (846.6 MHz)

Date/Time: 2013-02-01 09:12:42  
Test Laboratory: TCC Nokia  
**Type: RM-917; Serial: 355913/05/000075/6**  
Communication System: UMTS-FDD (WCDMA)  
Frequency: 846.6 MHz; Duty Cycle: 1:2.18776  
Medium: Air; Medium Notes: Not Specified  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>  
Phantom section: RF Section

Date/Time: 2013-02-01 12:02:43  
Test Laboratory: TCC Nokia  
**Type: RM-917; Serial: 355913/05/000075/6**  
Communication System: UMTS-FDD (WCDMA)  
Frequency: 846.6 MHz; Duty Cycle: 1:2.18776  
Medium: Air; Medium Notes: Not Specified  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>  
Phantom section: RF Section

DASY Configuration:  
- Probe: ER3DV6 - SN2333  
- ConvF(1, 1, 1); Calibrated: 2012-04-19;  
- Sensor-Surface: (Fix Surface)  
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15  
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;  
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)

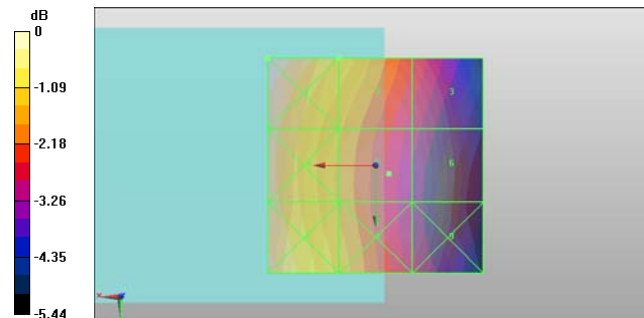
DASY Configuration:  
- Probe: H3DV6 - SN6053  
- ; Calibrated: 2012-04-18  
- Sensor-Surface: (Fix Surface)  
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15  
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;  
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)

**Device E-Field measurement with ER probe/E Scan - WCDMA5 - High/Hearing Aid Compatibility Test (101x101x1):**  
Interpolated grid: dx=0.5000 mm, dy=0.5000 mm  
Device Reference Point: 0, 0, -6.3 mm  
Reference Value = 107.6 V/m; Power Drift = -0.33 dB  
PMR calibrated. Calibrated PMF = 1.020 is applied.  
E-field emissions = 79.17 V/m  
**Near-field category: M4 (AWF 0 dB)**

**Device H-Field measurement with H3DV6 probe/H Scan - WCDMA5 - High/Hearing Aid Compatibility Test (101x101x1):**  
Interpolated grid: dx=0.5000 mm, dy=0.5000 mm  
Device Reference Point: 0, 0, -6.3 mm  
Reference Value = 0.07400 A/m; Power Drift = -0.08 dB  
PMR calibrated. Calibrated PMF = 1.020 is applied.  
H-field emissions = 0.1118 A/m  
**Near-field category: M4 (AWF 0 dB)**

|                        |                        |                        |
|------------------------|------------------------|------------------------|
| Grid 1 M4<br>70.05 V/m | Grid 2 M4<br>76.12 V/m | Grid 3 M4<br>73.23 V/m |
| Grid 4 M4<br>73.51 V/m | Grid 5 M4<br>79.17 V/m | Grid 6 M4<br>75.96 V/m |
| Grid 7 M4<br>72.79 V/m | Grid 8 M4<br>78.04 V/m | Grid 9 M4<br>74.92 V/m |

|                        |                        |                        |
|------------------------|------------------------|------------------------|
| Grid 1 M4<br>0.154 A/m | Grid 2 M4<br>0.112 A/m | Grid 3 M4<br>0.071 A/m |
| Grid 4 M4<br>0.133 A/m | Grid 5 M4<br>0.096 A/m | Grid 6 M4<br>0.060 A/m |
| Grid 7 M4<br>0.145 A/m | Grid 8 M4<br>0.100 A/m | Grid 9 M4<br>0.060 A/m |



**MEASUREMENT DATA WCDMA1700/2100, CHANNEL LOW (1712.4MHz)**

|                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
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| <p>Date/Time: 2013-02-01 09:38:58<br/>Test Laboratory: TCC Nokia<br/><b>Type: RM-917; Serial: 355913/05/000075/6</b><br/>Communication System: UMTS-FDD (WCDMA)<br/>Frequency: 1712.4 MHz; Duty Cycle: 1:2.18776<br/>Medium: Air; Medium Notes: Not Specified<br/>Medium parameters used: <math>\sigma = 0</math> S/m, <math>\epsilon_r = 1</math>; <math>\rho = 0</math> kg/m<sup>3</sup><br/>Phantom section: RF Section</p> | <p>Date/Time: 2013-02-01 12:49:16<br/>Test Laboratory: TCC Nokia<br/><b>Type: RM-917; Serial: 355913/05/000075/6</b><br/>Communication System: UMTS-FDD (WCDMA)<br/>Frequency: 1712.4 MHz; Duty Cycle: 1:2.18776<br/>Medium: Air; Medium Notes: Not Specified<br/>Medium parameters used: <math>\sigma = 0</math> S/m, <math>\epsilon_r = 1</math>; <math>\rho = 0</math> kg/m<sup>3</sup><br/>Phantom section: RF Section</p> |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <p>DASY Configuration:<br/>- Probe: ER3DV6 - SN2333<br/>- ConvF(1, 1, 1); Calibrated: 2012-04-19;<br/>- Sensor-Surface: (Fix Surface)<br/>- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15<br/>- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;<br/>- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)</p>                                                                                   | <p>DASY Configuration:<br/>- Probe: H3DV6 - SN6053<br/>- ; Calibrated: 2012-04-18<br/>- Sensor-Surface: (Fix Surface)<br/>- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15<br/>- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;<br/>- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)</p>                                                                                                   |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <p><b>Device E-Field measurement with ER probe/E Scan - WCDMA4 - Low/Hearing Aid Compatibility Test (101x101x1):</b><br/>Interpolated grid: dx=0.5000 mm, dy=0.5000 mm<br/>Device Reference Point: 0, 0, -6.3 mm<br/>Reference Value = 80.92 V/m; Power Drift = 0.21 dB<br/>PMR calibrated. Calibrated PMF = 1.020 is applied.<br/>E-field emissions = 65.61 V/m<br/><b>Near-field category: M3 (AWF 0 dB)</b></p>             | <p><b>Device H-Field measurement with H3DV6 probe/H Scan - WCDMA4 - Low/Hearing Aid Compatibility Test (101x101x1):</b><br/>Interpolated grid: dx=0.5000 mm, dy=0.5000 mm<br/>Device Reference Point: 0, 0, -6.3 mm<br/>Reference Value = 0.1170 A/m; Power Drift = 0.03 dB<br/>PMR calibrated. Calibrated PMF = 1.020 is applied.<br/>H-field emissions = 0.1542 A/m<br/><b>Near-field category: M4 (AWF 0 dB)</b></p>        |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <table><tr><td>Grid 1 M4<br/>49.08 V/m</td><td>Grid 2 M3<br/>65.21 V/m</td><td>Grid 3 M3<br/>64.76 V/m</td></tr><tr><td>Grid 4 M4<br/>47.54 V/m</td><td>Grid 5 M3<br/>65.61 V/m</td><td>Grid 6 M3<br/>65.12 V/m</td></tr><tr><td>Grid 7 M4<br/>44.44 V/m</td><td>Grid 8 M4<br/>60.49 V/m</td><td>Grid 9 M4<br/>59.92 V/m</td></tr></table>                                                                                     | Grid 1 M4<br>49.08 V/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 2 M3<br>65.21 V/m | Grid 3 M3<br>64.76 V/m | Grid 4 M4<br>47.54 V/m | Grid 5 M3<br>65.61 V/m | Grid 6 M3<br>65.12 V/m | Grid 7 M4<br>44.44 V/m | Grid 8 M4<br>60.49 V/m | Grid 9 M4<br>59.92 V/m | <table><tr><td>Grid 1 M3<br/>0.211 A/m</td><td>Grid 2 M4<br/>0.167 A/m</td><td>Grid 3 M4<br/>0.106 A/m</td></tr><tr><td>Grid 4 M4<br/>0.177 A/m</td><td>Grid 5 M4<br/>0.149 A/m</td><td>Grid 6 M4<br/>0.094 A/m</td></tr><tr><td>Grid 7 M4<br/>0.154 A/m</td><td>Grid 8 M4<br/>0.133 A/m</td><td>Grid 9 M4<br/>0.088 A/m</td></tr></table> | Grid 1 M3<br>0.211 A/m | Grid 2 M4<br>0.167 A/m | Grid 3 M4<br>0.106 A/m | Grid 4 M4<br>0.177 A/m | Grid 5 M4<br>0.149 A/m | Grid 6 M4<br>0.094 A/m | Grid 7 M4<br>0.154 A/m | Grid 8 M4<br>0.133 A/m | Grid 9 M4<br>0.088 A/m |
| Grid 1 M4<br>49.08 V/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 2 M3<br>65.21 V/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 3 M3<br>64.76 V/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 4 M4<br>47.54 V/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 5 M3<br>65.61 V/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 6 M3<br>65.12 V/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 7 M4<br>44.44 V/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 8 M4<br>60.49 V/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 9 M4<br>59.92 V/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 1 M3<br>0.211 A/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 2 M4<br>0.167 A/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 3 M4<br>0.106 A/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 4 M4<br>0.177 A/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 5 M4<br>0.149 A/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 6 M4<br>0.094 A/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 7 M4<br>0.154 A/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 8 M4<br>0.133 A/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 9 M4<br>0.088 A/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <div><div><div>dB</div><div>0</div><div>-1.69</div><div>-3.39</div><div>-5.08</div><div>-6.78</div><div>-8.47</div></div><div></div></div>                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |

## MEASUREMENT DATA WCDMA1700/2100, CHANNEL MIDDLE (1732.4MHz)

Date/Time: 2013-02-01 09:33:42  
Test Laboratory: TCC Nokia  
**Type: RM-917; Serial: 355913/05/000075/6**  
Communication System: UMTS-FDD (WCDMA)  
Frequency: 1732.4 MHz; Duty Cycle: 1:2.18776  
Medium: Air; Medium Notes: Not Specified  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>  
Phantom section: RF Section

Date/Time: 2013-02-01 12:43:54  
Test Laboratory: TCC Nokia  
**Type: RM-917; Serial: 355913/05/000075/6**  
Communication System: UMTS-FDD (WCDMA)  
Frequency: 1732.4 MHz; Duty Cycle: 1:2.18776  
Medium: Air; Medium Notes: Not Specified  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>  
Phantom section: RF Section

DASY Configuration:  
- Probe: ER3DV6 - SN2333  
- ConvF(1, 1, 1); Calibrated: 2012-04-19;  
- Sensor-Surface: (Fix Surface)  
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15  
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;  
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)

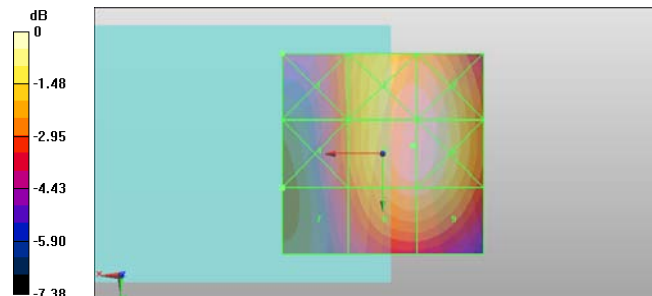
DASY Configuration:  
- Probe: H3DV6 - SN6053  
- ; Calibrated: 2012-04-18  
- Sensor-Surface: (Fix Surface)  
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15  
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;  
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)

**Device E-Field measurement with ER probe/E Scan - WCDMA4 - Middle/Hearing Aid Compatibility Test (101x101x1):**  
Interpolated grid: dx=0.5000 mm, dy=0.5000 mm  
Device Reference Point: 0, 0, -6.3 mm  
Reference Value = 71.25 V/m; Power Drift = -0.23 dB  
PMR calibrated. Calibrated PMF = 1.020 is applied.  
E-field emissions = 57.03 V/m  
**Near-field category: M4 (AWF 0 dB)**

**Device H-Field measurement with H3DV6 probe/H Scan - WCDMA4 - Middle/Hearing Aid Compatibility Test (101x101x1):**  
Interpolated grid: dx=0.5000 mm, dy=0.5000 mm  
Device Reference Point: 0, 0, -6.3 mm  
Reference Value = 0.1040 A/m; Power Drift = 0.11 dB  
PMR calibrated. Calibrated PMF = 1.020 is applied.  
H-field emissions = 0.1384 A/m  
**Near-field category: M4 (AWF 0 dB)**

|                        |                        |                        |
|------------------------|------------------------|------------------------|
| Grid 1 M4<br>41.85 V/m | Grid 2 M4<br>56.40 V/m | Grid 3 M4<br>56.36 V/m |
| Grid 4 M4<br>41.28 V/m | Grid 5 M4<br>57.03 V/m | Grid 6 M4<br>56.96 V/m |
| Grid 7 M4<br>38.47 V/m | Grid 8 M4<br>52.66 V/m | Grid 9 M4<br>52.55 V/m |

|                        |                        |                        |
|------------------------|------------------------|------------------------|
| Grid 1 M4<br>0.175 A/m | Grid 2 M4<br>0.147 A/m | Grid 3 M4<br>0.097 A/m |
| Grid 4 M4<br>0.150 A/m | Grid 5 M4<br>0.131 A/m | Grid 6 M4<br>0.086 A/m |
| Grid 7 M4<br>0.138 A/m | Grid 8 M4<br>0.121 A/m | Grid 9 M4<br>0.083 A/m |



**MEASUREMENT DATA WCDMA1700/2100, CHANNEL HIGH (1752.6MHz)**

|                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| <p>Date/Time: 2013-02-01 09:44:15<br/>Test Laboratory: TCC Nokia<br/><b>Type: RM-917; Serial: 355913/05/000075/6</b><br/>Communication System: UMTS-FDD (WCDMA)<br/>Frequency: 1752.6 MHz; Duty Cycle: 1:2.18776<br/>Medium: Air; Medium Notes: Not Specified<br/>Medium parameters used: <math>\sigma = 0</math> S/m, <math>\epsilon_r = 1</math>; <math>\rho = 0</math> kg/m<sup>3</sup><br/>Phantom section: RF Section</p> | <p>Date/Time: 2013-02-01 12:54:28<br/>Test Laboratory: TCC Nokia<br/><b>Type: RM-917; Serial: 355913/05/000075/6</b><br/>Communication System: UMTS-FDD (WCDMA)<br/>Frequency: 1752.6 MHz; Duty Cycle: 1:2.18776<br/>Medium: Air; Medium Notes: Not Specified<br/>Medium parameters used: <math>\sigma = 0</math> S/m, <math>\epsilon_r = 1</math>; <math>\rho = 0</math> kg/m<sup>3</sup><br/>Phantom section: RF Section</p> |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <p>DASY Configuration:<br/>- Probe: ER3DV6 - SN2333<br/>- ConvF(1, 1, 1); Calibrated: 2012-04-19;<br/>- Sensor-Surface: (Fix Surface)<br/>- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15<br/>- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;<br/>- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)</p>                                                                                   | <p>DASY Configuration:<br/>- Probe: H3DV6 - SN6053<br/>- ; Calibrated: 2012-04-18<br/>- Sensor-Surface: (Fix Surface)<br/>- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15<br/>- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;<br/>- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)</p>                                                                                                   |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <p><b>Device E-Field measurement with ER probe/E Scan - WCDMA4 - High/Hearing Aid Compatibility Test (101x101x1):</b><br/>Interpolated grid: dx=0.5000 mm, dy=0.5000 mm<br/>Device Reference Point: 0, 0, -6.3 mm<br/>Reference Value = 75.82 V/m; Power Drift = 0.02 dB<br/>PMR calibrated. Calibrated PMF = 1.020 is applied.<br/>E-field emissions = 61.96 V/m<br/><b>Near-field category: M4 (AWF 0 dB)</b></p>            | <p><b>Device H-Field measurement with H3DV6 probe/H Scan - WCDMA4 - High/Hearing Aid Compatibility Test (101x101x1):</b><br/>Interpolated grid: dx=0.5000 mm, dy=0.5000 mm<br/>Device Reference Point: 0, 0, -6.3 mm<br/>Reference Value = 0.1140 A/m; Power Drift = -0.02 dB<br/>PMR calibrated. Calibrated PMF = 1.020 is applied.<br/>H-field emissions = 0.1488 A/m<br/><b>Near-field category: M4 (AWF 0 dB)</b></p>      |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <table><tr><td>Grid 1 M4<br/>42.84 V/m</td><td>Grid 2 M4<br/>60.72 V/m</td><td>Grid 3 M4<br/>60.55 V/m</td></tr><tr><td>Grid 4 M4<br/>43.07 V/m</td><td>Grid 5 M4<br/>61.96 V/m</td><td>Grid 6 M4<br/>61.74 V/m</td></tr><tr><td>Grid 7 M4<br/>40.58 V/m</td><td>Grid 8 M4<br/>57.69 V/m</td><td>Grid 9 M4<br/>57.37 V/m</td></tr></table>                                                                                     | Grid 1 M4<br>42.84 V/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 2 M4<br>60.72 V/m | Grid 3 M4<br>60.55 V/m | Grid 4 M4<br>43.07 V/m | Grid 5 M4<br>61.96 V/m | Grid 6 M4<br>61.74 V/m | Grid 7 M4<br>40.58 V/m | Grid 8 M4<br>57.69 V/m | Grid 9 M4<br>57.37 V/m | <table><tr><td>Grid 1 M4<br/>0.187 A/m</td><td>Grid 2 M4<br/>0.153 A/m</td><td>Grid 3 M4<br/>0.101 A/m</td></tr><tr><td>Grid 4 M4<br/>0.161 A/m</td><td>Grid 5 M4<br/>0.139 A/m</td><td>Grid 6 M4<br/>0.089 A/m</td></tr><tr><td>Grid 7 M4<br/>0.149 A/m</td><td>Grid 8 M4<br/>0.131 A/m</td><td>Grid 9 M4<br/>0.090 A/m</td></tr></table> | Grid 1 M4<br>0.187 A/m | Grid 2 M4<br>0.153 A/m | Grid 3 M4<br>0.101 A/m | Grid 4 M4<br>0.161 A/m | Grid 5 M4<br>0.139 A/m | Grid 6 M4<br>0.089 A/m | Grid 7 M4<br>0.149 A/m | Grid 8 M4<br>0.131 A/m | Grid 9 M4<br>0.090 A/m |
| Grid 1 M4<br>42.84 V/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 2 M4<br>60.72 V/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 3 M4<br>60.55 V/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 4 M4<br>43.07 V/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 5 M4<br>61.96 V/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 6 M4<br>61.74 V/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 7 M4<br>40.58 V/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 8 M4<br>57.69 V/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 9 M4<br>57.37 V/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 1 M4<br>0.187 A/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 2 M4<br>0.153 A/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 3 M4<br>0.101 A/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 4 M4<br>0.161 A/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 5 M4<br>0.139 A/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 6 M4<br>0.089 A/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 7 M4<br>0.149 A/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 8 M4<br>0.131 A/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 9 M4<br>0.090 A/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <div><div><div>dB</div><div>0</div><div>-1.68</div><div>-3.37</div><div>-5.05</div><div>-6.74</div><div>-8.42</div></div><div></div></div>                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |

## MEASUREMENT DATA GSM1900, CHANNEL LOW (1850.2 MHz)

|                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                    |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
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| <p>Date/Time: 2013-02-01 07:39:22<br/>Test Laboratory: TCC Nokia<br/><b>Type: RM-917; Serial: 355913/05/000075/6</b><br/>Communication System: GSM-FDD (TDMA, GMSK)<br/>Frequency: 1850.2 MHz; Duty Cycle: 1:8.31764<br/>Medium: Air; Medium Notes: Not Specified<br/>Medium parameters used: <math>\sigma = 0</math> S/m, <math>\epsilon_r = 1</math>; <math>\rho = 0</math> kg/m<sup>3</sup><br/>Phantom section: RF Section</p> | <p>Date/Time: 2013-02-01 10:18:35<br/>Test Laboratory: TCC Nokia<br/><b>Type: RM-917; Serial: 355913/05/000075/6</b><br/>Communication System: GSM-FDD (TDMA, GMSK)<br/>Frequency: 1850.2 MHz; Duty Cycle: 1:8.31764<br/>Medium: Air; Medium Notes: Not Specified<br/>Medium parameters used: <math>\sigma = 0</math> S/m, <math>\epsilon_r = 1</math>; <math>\rho = 0</math> kg/m<sup>3</sup><br/>Phantom section: RF Section</p> |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <p>DASY Configuration:<br/>- Probe: ER3DV6 - SN2333<br/>- ConvF(1, 1, 1); Calibrated: 2012-04-19;<br/>- Sensor-Surface: (Fix Surface)<br/>- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15<br/>- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;<br/>- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)</p>                                                                                       | <p>DASY Configuration:<br/>- Probe: H3DV6 - SN6053<br/>- ; Calibrated: 2012-04-18<br/>- Sensor-Surface: (Fix Surface)<br/>- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15<br/>- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;<br/>- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)</p>                                                                                                       |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <p><b>Device E-Field measurement with ER probe/E Scan - GSM1900 - Low/Hearing Aid Compatibility Test (101x101x1):</b><br/>Interpolated grid: dx=0.5000 mm, dy=0.5000 mm<br/>Device Reference Point: 0, 0, -6.3 mm<br/>Reference Value = 30.86 V/m; Power Drift = 0.04 dB<br/>PMR calibrated. Calibrated PMF = 2.948 is applied.<br/>E-field emissions = 77.05 V/m<br/><b>Near-field category: M3 (AWF -5 dB)</b></p>               | <p><b>Device H-Field measurement with H3DV6 probe/H Scan - GSM1900 - Low/Hearing Aid Compatibility Test (101x101x1):</b><br/>Interpolated grid: dx=0.5000 mm, dy=0.5000 mm<br/>Device Reference Point: 0, 0, -6.3 mm<br/>Reference Value = 0.05800 A/m; Power Drift = -0.10 dB<br/>PMR calibrated. Calibrated PMF = 2.948 is applied.<br/>H-field emissions = 0.1951 A/m<br/><b>Near-field category: M3 (AWF -5 dB)</b></p>        |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <table><tr><td>Grid 1 M3<br/>54.35 V/m</td><td>Grid 2 M3<br/>74.53 V/m</td><td>Grid 3 M3<br/>74.57 V/m</td></tr><tr><td>Grid 4 M3<br/>47.45 V/m</td><td>Grid 5 M3<br/>77.05 V/m</td><td>Grid 6 M3<br/>77.13 V/m</td></tr><tr><td>Grid 7 M4<br/>43.97 V/m</td><td>Grid 8 M3<br/>72.26 V/m</td><td>Grid 9 M3<br/>72.26 V/m</td></tr></table>                                                                                         | Grid 1 M3<br>54.35 V/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 2 M3<br>74.53 V/m | Grid 3 M3<br>74.57 V/m | Grid 4 M3<br>47.45 V/m | Grid 5 M3<br>77.05 V/m | Grid 6 M3<br>77.13 V/m | Grid 7 M4<br>43.97 V/m | Grid 8 M3<br>72.26 V/m | Grid 9 M3<br>72.26 V/m | <table><tr><td>Grid 1 M3<br/>0.236 A/m</td><td>Grid 2 M3<br/>0.214 A/m</td><td>Grid 3 M3<br/>0.158 A/m</td></tr><tr><td>Grid 4 M3<br/>0.206 A/m</td><td>Grid 5 M3<br/>0.195 A/m</td><td>Grid 6 M3<br/>0.142 A/m</td></tr><tr><td>Grid 7 M3<br/>0.195 A/m</td><td>Grid 8 M3<br/>0.177 A/m</td><td>Grid 9 M4<br/>0.122 A/m</td></tr></table> | Grid 1 M3<br>0.236 A/m | Grid 2 M3<br>0.214 A/m | Grid 3 M3<br>0.158 A/m | Grid 4 M3<br>0.206 A/m | Grid 5 M3<br>0.195 A/m | Grid 6 M3<br>0.142 A/m | Grid 7 M3<br>0.195 A/m | Grid 8 M3<br>0.177 A/m | Grid 9 M4<br>0.122 A/m |
| Grid 1 M3<br>54.35 V/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 2 M3<br>74.53 V/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 3 M3<br>74.57 V/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 4 M3<br>47.45 V/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 5 M3<br>77.05 V/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 6 M3<br>77.13 V/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 7 M4<br>43.97 V/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 8 M3<br>72.26 V/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 9 M3<br>72.26 V/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 1 M3<br>0.236 A/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 2 M3<br>0.214 A/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 3 M3<br>0.158 A/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 4 M3<br>0.206 A/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 5 M3<br>0.195 A/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 6 M3<br>0.142 A/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 7 M3<br>0.195 A/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 8 M3<br>0.177 A/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 9 M4<br>0.122 A/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <div><div><div>dB</div><div>0</div><div>-1.66</div><div>-3.32</div><div>-4.97</div><div>-6.63</div><div>-8.29</div></div><div></div></div>                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                    |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |

# MEASUREMENT DATA GSM1900, CHANNEL MIDDLE (1880 MHz)

Date/Time: 2013-02-01 07:34:33  
Test Laboratory: TCC Nokia  
**Type: RM-917; Serial: 355913/05/000075/6**  
Communication System: GSM-FDD (TDMA, GMSK)  
Frequency: 1880 MHz; Duty Cycle: 1:8.31764  
Medium: Air; Medium Notes: Not Specified  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>  
Phantom section: RF Section

Date/Time: 2013-02-01 10:13:27  
Test Laboratory: TCC Nokia  
**Type: RM-917; Serial: 355913/05/000075/6**  
Communication System: GSM-FDD (TDMA, GMSK)  
Frequency: 1880 MHz; Duty Cycle: 1:8.31764  
Medium: Air; Medium Notes: Not Specified  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>  
Phantom section: RF Section

DASY Configuration:  
- Probe: ER3DV6 - SN2333  
- ConvF(1, 1, 1); Calibrated: 2012-04-19;  
- Sensor-Surface: (Fix Surface)  
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15  
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;  
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)

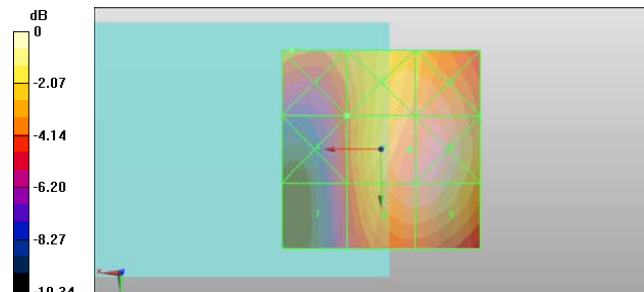
DASY Configuration:  
- Probe: H3DV6 - SN6053  
- ; Calibrated: 2012-04-18  
- Sensor-Surface: (Fix Surface)  
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15  
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;  
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)

**Device E-Field measurement with ER probe/E Scan - GSM1900 - Middle/Hearing Aid Compatibility Test (101x101x1):**  
Interpolated grid: dx=0.5000 mm, dy=0.5000 mm  
Device Reference Point: 0, 0, -6.3 mm  
Reference Value = 26.82 V/m; Power Drift = 0.03 dB  
PMR calibrated. Calibrated PMF = 2.948 is applied.  
E-field emissions = 66.52 V/m  
**Near-field category: M3 (AWF -5 dB)**

**Device H-Field measurement with H3DV6 probe/H Scan - GSM1900 - Middle/Hearing Aid Compatibility Test (101x101x1):**  
Interpolated grid: dx=0.5000 mm, dy=0.5000 mm  
Device Reference Point: 0, 0, -6.3 mm  
Reference Value = 0.04900 A/m; Power Drift = 0.01 dB  
PMR calibrated. Calibrated PMF = 2.948 is applied.  
H-field emissions = 0.1710 A/m  
**Near-field category: M3 (AWF -5 dB)**

|                        |                        |                        |
|------------------------|------------------------|------------------------|
| Grid 1 M4<br>45.75 V/m | Grid 2 M3<br>63.11 V/m | Grid 3 M3<br>63.10 V/m |
| Grid 4 M4<br>39.92 V/m | Grid 5 M3<br>66.52 V/m | Grid 6 M3<br>66.36 V/m |
| Grid 7 M4<br>37.83 V/m | Grid 8 M3<br>62.34 V/m | Grid 9 M3<br>62.33 V/m |

|                        |                        |                        |
|------------------------|------------------------|------------------------|
| Grid 1 M3<br>0.216 A/m | Grid 2 M3<br>0.189 A/m | Grid 3 M4<br>0.130 A/m |
| Grid 4 M3<br>0.184 A/m | Grid 5 M3<br>0.171 A/m | Grid 6 M4<br>0.118 A/m |
| Grid 7 M3<br>0.162 A/m | Grid 8 M3<br>0.149 A/m | Grid 9 M4<br>0.098 A/m |



## MEASUREMENT DATA GSM1900, CHANNEL HIGH (1909.8 MHz)

|                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                    |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
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| <p>Date/Time: 2013-02-01 07:44:28<br/>Test Laboratory: TCC Nokia<br/><b>Type: RM-917; Serial: 355913/05/000075/6</b><br/>Communication System: GSM-FDD (TDMA, GMSK)<br/>Frequency: 1909.8 MHz; Duty Cycle: 1:8.31764<br/>Medium: Air; Medium Notes: Not Specified<br/>Medium parameters used: <math>\sigma = 0</math> S/m, <math>\epsilon_r = 1</math>; <math>\rho = 0</math> kg/m<sup>3</sup><br/>Phantom section: RF Section</p> | <p>Date/Time: 2013-02-01 10:23:46<br/>Test Laboratory: TCC Nokia<br/><b>Type: RM-917; Serial: 355913/05/000075/6</b><br/>Communication System: GSM-FDD (TDMA, GMSK)<br/>Frequency: 1909.8 MHz; Duty Cycle: 1:8.31764<br/>Medium: Air; Medium Notes: Not Specified<br/>Medium parameters used: <math>\sigma = 0</math> S/m, <math>\epsilon_r = 1</math>; <math>\rho = 0</math> kg/m<sup>3</sup><br/>Phantom section: RF Section</p> |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <p>DASY Configuration:<br/>- Probe: ER3DV6 - SN2333<br/>- ConvF(1, 1, 1); Calibrated: 2012-04-19;<br/>- Sensor-Surface: (Fix Surface)<br/>- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15<br/>- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;<br/>- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)</p>                                                                                       | <p>DASY Configuration:<br/>- Probe: H3DV6 - SN6053<br/>- ; Calibrated: 2012-04-18<br/>- Sensor-Surface: (Fix Surface)<br/>- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15<br/>- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;<br/>- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)</p>                                                                                                       |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <p><b>Device E-Field measurement with ER probe/E Scan - GSM1900 - High/Hearing Aid Compatibility Test (101x101x1):</b><br/>Interpolated grid: dx=0.5000 mm, dy=0.5000 mm<br/>Device Reference Point: 0, 0, -6.3 mm<br/>Reference Value = 23.02 V/m; Power Drift = -0.03 dB<br/>PMR calibrated. Calibrated PMF = 2.948 is applied.<br/>E-field emissions = 66.38 V/m<br/><b>Near-field category: M3 (AWF -5 dB)</b></p>             | <p><b>Device H-Field measurement with H3DV6 probe/H Scan - GSM1900 - High/Hearing Aid Compatibility Test (101x101x1):</b><br/>Interpolated grid: dx=0.5000 mm, dy=0.5000 mm<br/>Device Reference Point: 0, 0, -6.3 mm<br/>Reference Value = 0.04900 A/m; Power Drift = 0.01 dB<br/>PMR calibrated. Calibrated PMF = 2.948 is applied.<br/>H-field emissions = 0.1652 A/m<br/><b>Near-field category: M3 (AWF -5 dB)</b></p>        |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <table><tr><td>Grid 1 M3<br/>63.01 V/m</td><td>Grid 2 M3<br/>72.55 V/m</td><td>Grid 3 M3<br/>70.50 V/m</td></tr><tr><td>Grid 4 M3<br/>47.48 V/m</td><td>Grid 5 M3<br/>66.38 V/m</td><td>Grid 6 M3<br/>66.35 V/m</td></tr><tr><td>Grid 7 M4<br/>30.19 V/m</td><td>Grid 8 M3<br/>50.23 V/m</td><td>Grid 9 M3<br/>51.08 V/m</td></tr></table>                                                                                         | Grid 1 M3<br>63.01 V/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 2 M3<br>72.55 V/m | Grid 3 M3<br>70.50 V/m | Grid 4 M3<br>47.48 V/m | Grid 5 M3<br>66.38 V/m | Grid 6 M3<br>66.35 V/m | Grid 7 M4<br>30.19 V/m | Grid 8 M3<br>50.23 V/m | Grid 9 M3<br>51.08 V/m | <table><tr><td>Grid 1 M3<br/>0.225 A/m</td><td>Grid 2 M3<br/>0.187 A/m</td><td>Grid 3 M4<br/>0.125 A/m</td></tr><tr><td>Grid 4 M3<br/>0.177 A/m</td><td>Grid 5 M3<br/>0.165 A/m</td><td>Grid 6 M4<br/>0.114 A/m</td></tr><tr><td>Grid 7 M3<br/>0.140 A/m</td><td>Grid 8 M4<br/>0.138 A/m</td><td>Grid 9 M4<br/>0.104 A/m</td></tr></table> | Grid 1 M3<br>0.225 A/m | Grid 2 M3<br>0.187 A/m | Grid 3 M4<br>0.125 A/m | Grid 4 M3<br>0.177 A/m | Grid 5 M3<br>0.165 A/m | Grid 6 M4<br>0.114 A/m | Grid 7 M3<br>0.140 A/m | Grid 8 M4<br>0.138 A/m | Grid 9 M4<br>0.104 A/m |
| Grid 1 M3<br>63.01 V/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 2 M3<br>72.55 V/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 3 M3<br>70.50 V/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 4 M3<br>47.48 V/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 5 M3<br>66.38 V/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 6 M3<br>66.35 V/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 7 M4<br>30.19 V/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 8 M3<br>50.23 V/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 9 M3<br>51.08 V/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 1 M3<br>0.225 A/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 2 M3<br>0.187 A/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 3 M4<br>0.125 A/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 4 M3<br>0.177 A/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 5 M3<br>0.165 A/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 6 M4<br>0.114 A/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 7 M3<br>0.140 A/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 8 M4<br>0.138 A/m                                                                                                                                                                                                                                                                                                                                                                                                             | Grid 9 M4<br>0.104 A/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <div><div><div>dB</div><div>0</div><div>-2.35</div><div>-4.70</div><div>-7.06</div><div>-9.41</div><div>-11.76</div></div><div></div></div>                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                    |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |

## MEASUREMENT DATA WCDMA1900, CHANNEL LOW (1852.4MHz)

|                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
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| <p>Date/Time: 2013-02-01 08:31:04<br/>Test Laboratory: TCC Nokia<br/><b>Type: RM-917; Serial: 355913/05/000075/6</b><br/>Communication System: UMTS-FDD (WCDMA)<br/>Frequency: 1852.4 MHz; Duty Cycle: 1:2.18776<br/>Medium: Air; Medium Notes: Not Specified<br/>Medium parameters used: <math>\sigma = 0</math> S/m, <math>\epsilon_r = 1</math>; <math>\rho = 0</math> kg/m<sup>3</sup><br/>Phantom section: RF Section</p> | <p>Date/Time: 2013-02-01 12:19:41<br/>Test Laboratory: TCC Nokia<br/><b>Type: RM-917; Serial: 355913/05/000075/6</b><br/>Communication System: UMTS-FDD (WCDMA)<br/>Frequency: 1852.4 MHz; Duty Cycle: 1:2.18776<br/>Medium: Air; Medium Notes: Not Specified<br/>Medium parameters used: <math>\sigma = 0</math> S/m, <math>\epsilon_r = 1</math>; <math>\rho = 0</math> kg/m<sup>3</sup><br/>Phantom section: RF Section</p> |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <p>DASY Configuration:<br/>- Probe: ER3DV6 - SN2333<br/>- ConvF(1, 1, 1); Calibrated: 2012-04-19;<br/>- Sensor-Surface: (Fix Surface)<br/>- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15<br/>- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;<br/>- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)</p>                                                                                   | <p>DASY Configuration:<br/>- Probe: H3DV6 - SN6053<br/>- ; Calibrated: 2012-04-18<br/>- Sensor-Surface: (Fix Surface)<br/>- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15<br/>- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;<br/>- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)</p>                                                                                                   |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <p><b>Device E-Field measurement with ER probe/E Scan - WCDMA2 - Low/Hearing Aid Compatibility Test (101x101x1):</b><br/>Interpolated grid: dx=0.5000 mm, dy=0.5000 mm<br/>Device Reference Point: 0, 0, -6.3 mm<br/>Reference Value = 49.88 V/m; Power Drift = 0.14 dB<br/>PMR calibrated. Calibrated PMF = 1.020 is applied.<br/>E-field emissions = 43.72 V/m<br/><b>Near-field category: M4 (AWF 0 dB)</b></p>             | <p><b>Device H-Field measurement with H3DV6 probe/H Scan - WCDMA2 - Low/Hearing Aid Compatibility Test (101x101x1):</b><br/>Interpolated grid: dx=0.5000 mm, dy=0.5000 mm<br/>Device Reference Point: 0, 0, -6.3 mm<br/>Reference Value = 0.09600 A/m; Power Drift = -0.06 dB<br/>PMR calibrated. Calibrated PMF = 1.020 is applied.<br/>H-field emissions = 0.1140 A/m<br/><b>Near-field category: M4 (AWF 0 dB)</b></p>      |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <table><tr><td>Grid 1 M4<br/>32.50 V/m</td><td>Grid 2 M4<br/>42.14 V/m</td><td>Grid 3 M4<br/>42.15 V/m</td></tr><tr><td>Grid 4 M4<br/>27.76 V/m</td><td>Grid 5 M4<br/>43.72 V/m</td><td>Grid 6 M4<br/>43.74 V/m</td></tr><tr><td>Grid 7 M4<br/>25.43 V/m</td><td>Grid 8 M4<br/>41.32 V/m</td><td>Grid 9 M4<br/>41.32 V/m</td></tr></table>                                                                                     | Grid 1 M4<br>32.50 V/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 2 M4<br>42.14 V/m | Grid 3 M4<br>42.15 V/m | Grid 4 M4<br>27.76 V/m | Grid 5 M4<br>43.72 V/m | Grid 6 M4<br>43.74 V/m | Grid 7 M4<br>25.43 V/m | Grid 8 M4<br>41.32 V/m | Grid 9 M4<br>41.32 V/m | <table><tr><td>Grid 1 M4<br/>0.140 A/m</td><td>Grid 2 M4<br/>0.125 A/m</td><td>Grid 3 M4<br/>0.093 A/m</td></tr><tr><td>Grid 4 M4<br/>0.121 A/m</td><td>Grid 5 M4<br/>0.114 A/m</td><td>Grid 6 M4<br/>0.082 A/m</td></tr><tr><td>Grid 7 M4<br/>0.114 A/m</td><td>Grid 8 M4<br/>0.103 A/m</td><td>Grid 9 M4<br/>0.070 A/m</td></tr></table> | Grid 1 M4<br>0.140 A/m | Grid 2 M4<br>0.125 A/m | Grid 3 M4<br>0.093 A/m | Grid 4 M4<br>0.121 A/m | Grid 5 M4<br>0.114 A/m | Grid 6 M4<br>0.082 A/m | Grid 7 M4<br>0.114 A/m | Grid 8 M4<br>0.103 A/m | Grid 9 M4<br>0.070 A/m |
| Grid 1 M4<br>32.50 V/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 2 M4<br>42.14 V/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 3 M4<br>42.15 V/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 4 M4<br>27.76 V/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 5 M4<br>43.72 V/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 6 M4<br>43.74 V/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 7 M4<br>25.43 V/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 8 M4<br>41.32 V/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 9 M4<br>41.32 V/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 1 M4<br>0.140 A/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 2 M4<br>0.125 A/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 3 M4<br>0.093 A/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 4 M4<br>0.121 A/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 5 M4<br>0.114 A/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 6 M4<br>0.082 A/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 7 M4<br>0.114 A/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 8 M4<br>0.103 A/m                                                                                                                                                                                                                                                                                                                                                                                                         | Grid 9 M4<br>0.070 A/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <div><div><div>dB</div><div>0</div><div>-1.53</div><div>-3.06</div><div>-4.59</div><div>-6.12</div><div>-7.65</div></div><div></div></div>                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |

## MEASUREMENT DATA WCDMA1900, CHANNEL MIDDLE (1880MHz)

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| <div>Date/Time: 2013-02-01 08:09:18<br/>Test Laboratory: TCC Nokia<br/><b>Type: RM-917; Serial: 355913/05/000075/6</b><br/>Communication System: UMTS-FDD (WCDMA)<br/>Frequency: 1880 MHz; Duty Cycle: 1:2.18776<br/>Medium: Air; Medium Notes: Not Specified<br/>Medium parameters used: <math>\sigma = 0</math> S/m, <math>\epsilon_r = 1</math>; <math>\rho = 0</math> kg/m<sup>3</sup><br/>Phantom section: RF Section</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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| <div>DASY Configuration:<br/>- Probe: ER3DV6 - SN2333<br/>- ConvF(1, 1, 1); Calibrated: 2012-04-19;<br/>- Sensor-Surface: (Fix Surface)<br/>- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15<br/>- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;<br/>- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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| <div><b>Device E-Field measurement with ER probe/E Scan - WCDMA2 - Middle/Hearing Aid Compatibility Test (101x101x1):</b><br/>Interpolated grid: dx=0.5000 mm, dy=0.5000 mm<br/>Device Reference Point: 0, 0, -6.3 mm<br/>Reference Value = 47.22 V/m; Power Drift = -0.12 dB<br/>PMR calibrated. Calibrated PMF = 1.020 is applied.<br/>E-field emissions = 39.49 V/m<br/><b>Near-field category: M4 (AWF 0 dB)</b></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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probe/H Scan - WCDMA2 - Middle/Hearing Aid Compatibility Test (101x101x1):</b><br/>Interpolated grid: dx=0.5000 mm, dy=0.5000 mm<br/>Device Reference Point: 0, 0, -6.3 mm<br/>Reference Value = 0.08100 A/m; Power Drift = -0.04 dB<br/>PMR calibrated. Calibrated PMF = 1.020 is applied.<br/>H-field emissions = 0.1000 A/m<br/><b>Near-field category: M4 (AWF 0 dB)</b></div> |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| <table><tr><td>Grid 1 M4<br/>27.87 V/m</td><td>Grid 2 M4<br/>37.91 V/m</td><td>Grid 3 M4<br/>37.90 V/m</td></tr><tr><td>Grid 4 M4<br/>24.34 V/m</td><td>Grid 5 M4<br/>39.49 V/m</td><td>Grid 6 M4<br/>39.50 V/m</td></tr><tr><td>Grid 7 M4<br/>22.63 V/m</td><td>Grid 8 M4<br/>37.04 V/m</td><td>Grid 9 M4<br/>37.04 V/m</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             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A/m</td><td>Grid 5 M4<br/>0.100 A/m</td><td>Grid 6 M4<br/>0.069 A/m</td></tr><tr><td>Grid 7 M4<br/>0.093 A/m</td><td>Grid 8 M4<br/>0.086 A/m</td><td>Grid 9 M4<br/>0.057 A/m</td></tr></table> | Grid 1 M4<br>0.129 A/m | Grid 2 M4<br>0.111 A/m | Grid 3 M4<br>0.076 A/m | Grid 4 M4<br>0.107 A/m | Grid 5 M4<br>0.100 A/m | Grid 6 M4<br>0.069 A/m | Grid 7 M4<br>0.093 A/m | Grid 8 M4<br>0.086 A/m | Grid 9 M4<br>0.057 A/m |
| Grid 1 M4<br>27.87 V/m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| Grid 4 M4<br>24.34 V/m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| Grid 7 M4<br>22.63 V/m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| Grid 1 M4<br>0.129 A/m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| Grid 4 M4<br>0.107 A/m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Grid 5 M4<br>0.100 A/m                                                                                                                                                                                                                                                                                                                                                                                                           | Grid 6 M4<br>0.069 A/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                        |                        |                        |                        |                        |                        |                        |                        |
| Grid 7 M4<br>0.093 A/m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Grid 8 M4<br>0.086 A/m                                                                                                                                                                                                                                                                                                                                                                                                           | Grid 9 M4<br>0.057 A/m |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                              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|                                                                                                                                                                                                                                                                                                                                                                                                                                  |                        |                        |                        |                        |                        |                        |                        |                        |                                                                                                                                                                                                                                                                                                                                            |                        |                       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# MEASUREMENT DATA WCDMA1900, CHANNEL HIGH (1907.6MHz)

Date/Time: 2013-02-01 08:25:45  
Test Laboratory: TCC Nokia  
**Type: RM-917; Serial: 355913/05/000075/6**  
Communication System: UMTS-FDD (WCDMA)  
Frequency: 1907.6 MHz; Duty Cycle: 1:2.18776  
Medium: Air; Medium Notes: Not Specified  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>  
Phantom section: RF Section

Date/Time: 2013-02-01 12:26:54  
Test Laboratory: TCC Nokia  
**Type: RM-917; Serial: 355913/05/000075/6**  
Communication System: UMTS-FDD (WCDMA)  
Frequency: 1907.6 MHz; Duty Cycle: 1:2.18776  
Medium: Air; Medium Notes: Not Specified  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>  
Phantom section: RF Section

DASY Configuration:  
- Probe: ER3DV6 - SN2333  
- ConvF(1, 1, 1); Calibrated: 2012-04-19;  
- Sensor-Surface: (Fix Surface)  
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15  
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;  
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)

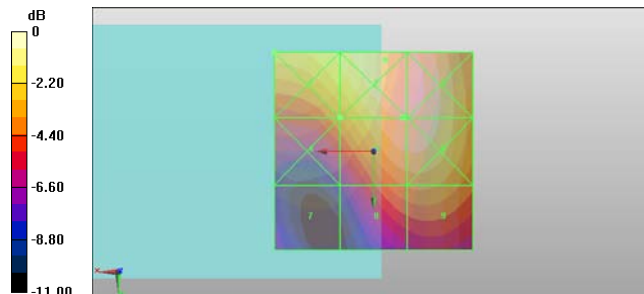
DASY Configuration:  
- Probe: H3DV6 - SN6053  
- ; Calibrated: 2012-04-18  
- Sensor-Surface: (Fix Surface)  
- Electronics: DAE4 Sn1316; Calibrated: 2012-02-15  
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;  
- Measurement SW: DASY52, Version 52.8 (0); SEMCAD X Version 14.6.8 (7028)

**Device E-Field measurement with ER probe/E Scan - WCDMA2 - High/Hearing Aid Compatibility Test (101x101x1):**  
Interpolated grid: dx=0.5000 mm, dy=0.5000 mm  
Device Reference Point: 0, 0, -6.3 mm  
Reference Value = 38.71 V/m; Power Drift = -0.06 dB  
PMR calibrated. Calibrated PMF = 1.020 is applied.  
E-field emissions = 37.77 V/m  
**Near-field category: M4 (AWF 0 dB)**

**Device H-Field measurement with H3DV6 probe/H Scan - WCDMA2 - High/Hearing Aid Compatibility Test (101x101x1):**  
Interpolated grid: dx=0.5000 mm, dy=0.5000 mm  
Device Reference Point: 0, 0, -6.3 mm  
Reference Value = 0.08000 A/m; Power Drift = 0.03 dB  
PMR calibrated. Calibrated PMF = 1.020 is applied.  
H-field emissions = 0.09431 A/m  
**Near-field category: M4 (AWF 0 dB)**

|                        |                        |                        |
|------------------------|------------------------|------------------------|
| Grid 1 M4<br>35.69 V/m | Grid 2 M4<br>40.77 V/m | Grid 3 M4<br>39.60 V/m |
| Grid 4 M4<br>26.92 V/m | Grid 5 M4<br>37.77 V/m | Grid 6 M4<br>37.72 V/m |
| Grid 7 M4<br>18.01 V/m | Grid 8 M4<br>29.48 V/m | Grid 9 M4<br>29.92 V/m |

|                        |                        |                        |
|------------------------|------------------------|------------------------|
| Grid 1 M4<br>0.129 A/m | Grid 2 M4<br>0.108 A/m | Grid 3 M4<br>0.073 A/m |
| Grid 4 M4<br>0.102 A/m | Grid 5 M4<br>0.094 A/m | Grid 6 M4<br>0.067 A/m |
| Grid 7 M4<br>0.081 A/m | Grid 8 M4<br>0.079 A/m | Grid 9 M4<br>0.060 A/  |



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



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: **ER3-2333\_Apr12**

## CALIBRATION CERTIFICATE

Object **ER3DV6 - SN:2333**

Calibration procedure(s) **QA CAL-02.v6, QA CAL-25.v4**  
**Calibration procedure for E-field probes optimized for close near field**  
**evaluations in air**

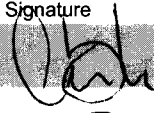
Calibration date: **April 19, 2012**

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

All calibrations have been conducted in the closed laboratory facility: environment temperature  $(22 \pm 3)^{\circ}\text{C}$  and humidity  $< 70\%$ .

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards          | ID              | Cal Date (Certificate No.)        | Scheduled Calibration  |
|----------------------------|-----------------|-----------------------------------|------------------------|
| Power meter E4419B         | GB41293874      | 29-Mar-12 (No. 217-01508)         | Apr-13                 |
| Power sensor E4412A        | MY41498087      | 29-Mar-12 (No. 217-01508)         | Apr-13                 |
| Reference 3 dB Attenuator  | SN: S5054 (3c)  | 27-Mar-12 (No. 217-01531)         | Apr-13                 |
| Reference 20 dB Attenuator | SN: S5086 (20b) | 27-Mar-12 (No. 217-01529)         | Apr-13                 |
| Reference 30 dB Attenuator | SN: S5129 (30b) | 27-Mar-12 (No. 217-01532)         | Apr-13                 |
| Reference Probe ER3DV6     | SN: 2328        | 11-Oct-11 (No. ER3-2328_Oct11)    | Oct-12                 |
| DAE4                       | SN: 789         | 30-Jan-12 (No. DAE4-789_Jan12)    | Jan-13                 |
| Secondary Standards        | ID              | Check Date (in house)             | Scheduled Check        |
| RF generator HP 8648C      | US3642U01700    | 4-Aug-99 (in house check Apr-11)  | In house check: Apr-13 |
| Network Analyzer HP 8753E  | US37390585      | 18-Oct-01 (in house check Oct-11) | In house check: Oct-12 |

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

Issued: April 25, 2012

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

## DASY/EASY - Parameters of Probe: ER3DV6 - SN:2333

### Basic Calibration Parameters

|                                              | Sensor X | Sensor Y | Sensor Z | Unc (k=2)     |
|----------------------------------------------|----------|----------|----------|---------------|
| Norm ( $\mu\text{V}/(\text{V}/\text{m})^2$ ) | 1.44     | 1.50     | 1.44     | $\pm 10.1 \%$ |
| DCP (mV) <sup>B</sup>                        | 101.8    | 100.5    | 104.2    |               |

### Modulation Calibration Parameters

| UID   | Communication System Name | PAR  |   | A<br>dB | B<br>dB | C<br>dB | VR<br>mV | Unc <sup>E</sup><br>(k=2) |
|-------|---------------------------|------|---|---------|---------|---------|----------|---------------------------|
| 0     | CW                        | 0.00 | X | 0.00    | 0.00    | 1.00    | 247.4    | $\pm 3.5 \%$              |
|       |                           |      | Y | 0.00    | 0.00    | 1.00    | 188.2    |                           |
|       |                           |      | Z | 0.00    | 0.00    | 1.00    | 232.0    |                           |
| 10011 | UMTS-FDD (WCDMA)          | 3.40 | X | 3.63    | 67.1    | 19.2    | 143.3    | $\pm 0.7 \%$              |
|       |                           |      | Y | 3.28    | 64.8    | 18.0    | 111.6    |                           |
|       |                           |      | Z | 3.56    | 66.7    | 18.6    | 135.6    |                           |
| 10021 | GSM-FDD (TDMA, GMSK)      | 9.40 | X | 5.28    | 81.6    | 22.0    | 124.8    | $\pm 2.2 \%$              |
|       |                           |      | Y | 7.35    | 87.8    | 24.7    | 136.4    |                           |
|       |                           |      | Z | 8.28    | 84.9    | 22.8    | 130.2    |                           |
| 10039 | CDMA2000 (1xRTT, RC1)     | 4.57 | X | 4.58    | 66.5    | 19.2    | 137.2    | $\pm 0.7 \%$              |
|       |                           |      | Y | 4.42    | 65.7    | 18.8    | 109.9    |                           |
|       |                           |      | Z | 4.45    | 66.5    | 18.9    | 127.1    |                           |
| 10081 | CDMA2000 (1xRTT, RC3)     | 3.96 | X | 3.79    | 66.0    | 18.8    | 136.7    | $\pm 0.5 \%$              |
|       |                           |      | Y | 3.65    | 65.0    | 18.4    | 109.8    |                           |
|       |                           |      | Z | 3.80    | 66.4    | 18.7    | 127.6    |                           |

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>B</sup> Numerical linearization parameter; uncertainty not required.

<sup>E</sup> Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.



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 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **Nokia Salo TCC**

Certificate No: **H3-6053\_Apr12**

## CALIBRATION CERTIFICATE

Object **H3DV6 - SN:6053**

Calibration procedure(s) **QA CAL-03.v6, QA CAL-25.v4**  
**Calibration procedure for H-field probes optimized for close near field evaluations in air**

Calibration date: **April 18, 2012**

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      | 29-Mar-12 (No. 217-01508)         | Apr-13                 |
| Power sensor E4412A        | MY41498087      | 29-Mar-12 (No. 217-01508)         | Apr-13                 |
| Reference 3 dB Attenuator  | SN: S5054 (3c)  | 27-Mar-12 (No. 217-01531)         | Apr-13                 |
| Reference 20 dB Attenuator | SN: S5086 (20b) | 27-Mar-12 (No. 217-01529)         | Apr-13                 |
| Reference 30 dB Attenuator | SN: S5129 (30b) | 27-Mar-12 (No. 217-01532)         | Apr-13                 |
| Reference Probe H3DV6      | SN: 6182        | 11-Oct-11 (No. H3-6182_Oct11)     | Oct-12                 |
| DAE4                       | SN: 789         | 30-Jan-12 (No. DAE4-789_Jan12)    | Jan-13                 |
|                            |                 |                                   |                        |
| Secondary Standards        | ID              | Check Date (in house)             | Scheduled Check        |
| RF generator HP 8648C      | US3642U01700    | 4-Aug-99 (in house check Apr-11)  | In house check: Apr-13 |
| Network Analyzer HP 8753E  | US37390585      | 18-Oct-01 (in house check Oct-11) | In house check: Oct-12 |

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

Issued: April 26, 2012

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

## DASY/EASY - Parameters of Probe: H3DV6 - SN:6053

### Basic Calibration Parameters

|                                  |    | Sensor X   | Sensor Y   | Sensor Z   | Unc (k=2)    |
|----------------------------------|----|------------|------------|------------|--------------|
| Norm (A/m / $\sqrt{\text{mV}}$ ) | a0 | 2.79E-003  | 2.62E-003  | 2.97E-003  | $\pm 5.1 \%$ |
| Norm (A/m / $\sqrt{\text{mV}}$ ) | a1 | -1.52E-004 | -2.23E-004 | -4.24E-004 | $\pm 5.1 \%$ |
| Norm (A/m / $\sqrt{\text{mV}}$ ) | a2 | -7.97E-006 | 8.36E-005  | 8.20E-005  | $\pm 5.1 \%$ |
| DCP (mV) <sup>B</sup>            |    | 91.2       | 91.6       | 91.7       |              |

### Modulation Calibration Parameters

| UID   | Communication System Name | PAR  |   | A<br>dB | B<br>dB | C<br>dB | VR<br>mV | Unc <sup>E</sup><br>(k=2) |
|-------|---------------------------|------|---|---------|---------|---------|----------|---------------------------|
| 0     | CW                        | 0.00 | X | 0.00    | 0.00    | 1.00    | 235.7    | $\pm 3.0 \%$              |
|       |                           |      | Y | 0.00    | 0.00    | 1.00    | 264.2    |                           |
|       |                           |      | Z | 0.00    | 0.00    | 1.00    | 206.9    |                           |
| 10011 | UMTS-FDD (WCDMA)          | 3.40 | X | 3.03    | 61.9    | 16.2    | 74.2     | $\pm 0.5 \%$              |
|       |                           |      | Y | 3.23    | 63.1    | 16.9    | 86.4     |                           |
|       |                           |      | Z | 3.30    | 63.6    | 17.2    | 90.7     |                           |
| 10021 | GSM-FDD (TDMA, GMSK)      | 9.40 | X | 9.99    | 71.6    | 23.2    | 80.1     | $\pm 1.9 \%$              |
|       |                           |      | Y | 10.13   | 70.6    | 22.8    | 69.2     |                           |
|       |                           |      | Z | 9.76    | 70.6    | 22.8    | 69.8     |                           |
| 10039 | CDMA2000 (1xRTT, RC1)     | 4.57 | X | 4.74    | 63.6    | 17.3    | 80.4     | $\pm 1.2 \%$              |
|       |                           |      | Y | 4.98    | 64.6    | 17.9    | 90.6     |                           |
|       |                           |      | Z | 5.07    | 65.0    | 18.0    | 96.9     |                           |
| 10081 | CDMA2000 (1xRTT, RC3)     | 3.96 | X | 3.76    | 62.8    | 16.8    | 77.4     | $\pm 0.7 \%$              |
|       |                           |      | Y | 3.93    | 63.8    | 17.4    | 86.3     |                           |
|       |                           |      | Z | 3.91    | 63.6    | 17.2    | 92.0     |                           |

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>B</sup> Numerical linearization parameter: uncertainty not required.

<sup>E</sup> Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

---

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



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: **CD835V3-1005\_Aug12**

## CALIBRATION CERTIFICATE

Object **CD835V3 - SN: 1005**

Calibration procedure(s) **QA CAL-20.v6**  
**Calibration procedure for dipoles in air**

Calibration date: **August 23, 2012**

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

All calibrations have been conducted in the closed laboratory facility: environment temperature  $(22 \pm 3)^{\circ}\text{C}$  and humidity  $< 70\%$ .

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards     | ID #       | Cal Date (Certificate No.)     | Scheduled Calibration |
|-----------------------|------------|--------------------------------|-----------------------|
| Power meter EPM-442A  | GB37480704 | 05-Oct-11 (No. 217-01451)      | Oct-12                |
| Power sensor HP 8481A | US37292783 | 05-Oct-11 (No. 217-01451)      | Oct-12                |
| Probe ER3DV6          | SN: 2336   | 29-Dec-11 (No. ER3-2336_Dec11) | Dec-12                |
| Probe H3DV6           | SN: 6065   | 29-Dec-11 (No. H3-6065_Dec11)  | Dec-12                |
| DAE4                  | SN: 781    | 29-May-12 (No. DAE4-781_May12) | May-13                |

| Secondary Standards       | ID #           | Check Date (in house)             | Scheduled Check        |
|---------------------------|----------------|-----------------------------------|------------------------|
| Power meter Agilent 4419B | SN: GB42420191 | 09-Oct-09 (in house check Oct-11) | In house check: Oct-12 |
| Power sensor HP 8482H     | SN: 3318A09450 | 09-Oct-09 (in house check Oct-11) | In house check: Oct-12 |
| Power sensor HP 8482A     | SN: US37295597 | 09-Oct-09 (in house check Oct-11) | In house check: Oct-12 |
| Network Analyzer HP 8753E | US37390585     | 18-Oct-01 (in house check Oct-11) | In house check: Oct-12 |
| RF generator E4433B       | MY 41000675    | 03-Nov-04 (in house check Oct-11) | In house check: Oct-13 |

|                |             |                       |           |
|----------------|-------------|-----------------------|-----------|
|                | Name        | Function              | Signature |
| Calibrated by: | Dimce Iliev | Laboratory Technician |           |

|              |             |              |
|--------------|-------------|--------------|
| Approved by: | Fin Bomholt | R&D Director |
|--------------|-------------|--------------|

Issued: August 24, 2012

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

## Measurement Conditions

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

|                                    |                        |         |
|------------------------------------|------------------------|---------|
| DASY Version                       | DASY5                  | V52.8.2 |
| Extrapolation                      | Advanced Extrapolation |         |
| Phantom                            | HAC Test Arch          |         |
| Distance Dipole Top - Probe Center | 10mm                   |         |
| Scan resolution                    | dx, dy = 5 mm          |         |
| Frequency                          | 835 MHz $\pm$ 1 MHz    |         |
| Input power drift                  | < 0.05 dB              |         |

## Maximum Field values at 835 MHz

| H-field 10 mm above dipole surface | condition          | interpolated maximum          |
|------------------------------------|--------------------|-------------------------------|
| Maximum measured                   | 100 mW input power | 0.448 A / m $\pm$ 8.2 % (k=2) |

| E-field 10 mm above dipole surface | condition          | Interpolated maximum           |
|------------------------------------|--------------------|--------------------------------|
| Maximum measured above high end    | 100 mW input power | 160.5 V / m                    |
| Maximum measured above low end     | 100 mW input power | 157.1 V / m                    |
| Averaged maximum above arm         | 100 mW input power | 158.8 V / m $\pm$ 12.8 % (k=2) |

## Appendix

### Antenna Parameters

| Frequency | Return Loss | Impedance                       |
|-----------|-------------|---------------------------------|
| 800 MHz   | 17.9 dB     | 44.1 $\Omega$ - 10.5 j $\Omega$ |
| 835 MHz   | 23.1 dB     | 50.7 $\Omega$ + 7.0 j $\Omega$  |
| 900 MHz   | 16.4 dB     | 57.8 $\Omega$ - 14.6 j $\Omega$ |
| 950 MHz   | 20.1 dB     | 48.7 $\Omega$ + 9.7 j $\Omega$  |
| 960 MHz   | 15.6 dB     | 58.9 $\Omega$ + 16.0 j $\Omega$ |

### 3.2 Antenna Design and Handling

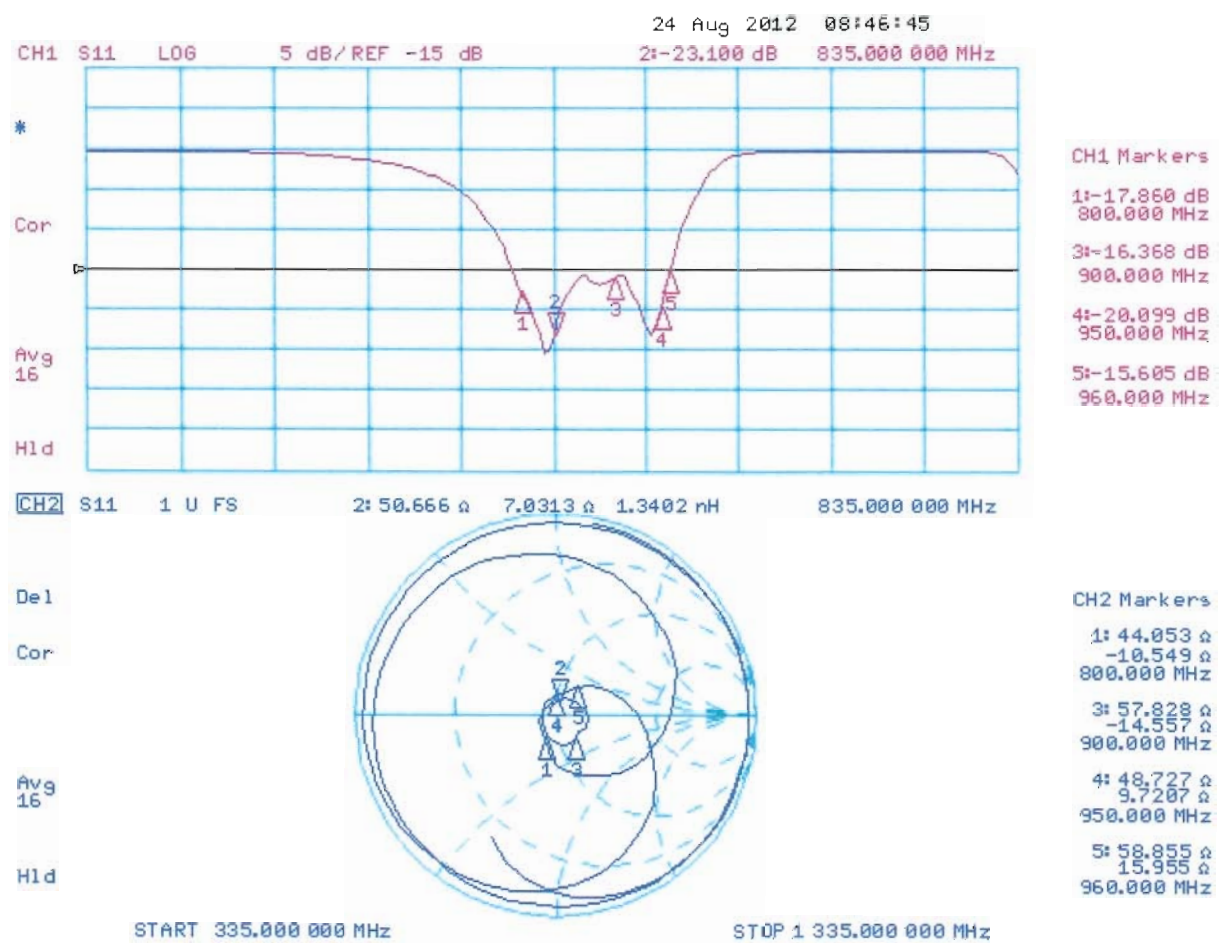
The calibration dipole has a symmetric geometry with a built-in two stub matching network, which leads to the enhanced bandwidth.

The dipole is built of standard semirigid coaxial cable. The internal matching line is open ended. The antenna is therefore open for DC signals.

Do not apply force to dipole arms, as they are liable to bend. The soldered connections near the feedpoint may be damaged. After excessive mechanical stress or overheating, check the impedance characteristics to ensure that the internal matching network is not affected.

After long term use with 40W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

Impedance Measurement Plot



## DASY5 H-field Result

Date: 23.08.2012

Test Laboratory: SPEAG Lab2

**DUT: HAC-Dipole 835 MHz; Type: CD835V3; Serial: CD835V3 - SN: 1005**

Communication System: CW; Frequency: 835 MHz

Medium parameters used:  $\sigma = 0$  mho/m,  $\epsilon_r = 1$ ;  $\rho = 1$  kg/m<sup>3</sup>

Phantom section: RF Section

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

DASY52 Configuration:

- Probe: H3DV6 - SN6065; ; Calibrated: 29.12.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn781; Calibrated: 29.05.2012
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA; Serial: 1070
- DASY52 52.8.2(969); SEMCAD X 14.6.6(6824)

**Dipole H-Field measurement @ 835MHz/H-Scan - 835MHz d=10mm/Hearing Aid Compatibility Test (41x361x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 0.4760 A/m; Power Drift = -0.02 dB

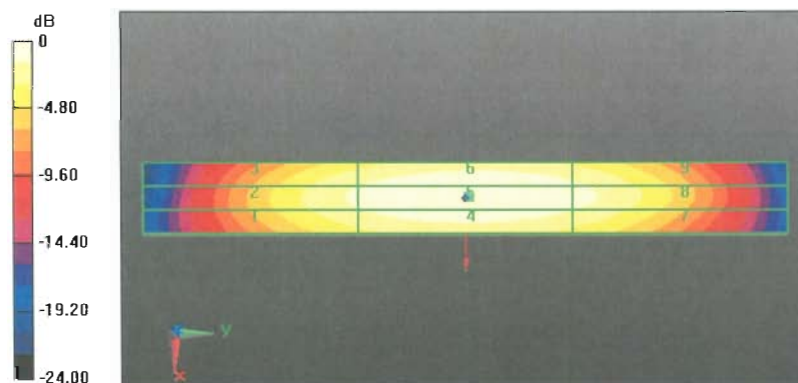
PMR not calibrated. PMF = 1.000 is applied.

H-field emissions = 0.4481 A/m

**Near-field category: M4 (AWF 0 dB)**

PMF scaled H-field

|                        |                        |                        |
|------------------------|------------------------|------------------------|
| Grid 1 M4<br>0.366 A/m | Grid 2 M4<br>0.387 A/m | Grid 3 M4<br>0.370 A/m |
| Grid 4 M4<br>0.418 A/m | Grid 5 M4<br>0.448 A/m | Grid 6 M4<br>0.431 A/m |
| Grid 7 M4<br>0.372 A/m | Grid 8 M4<br>0.400 A/m | Grid 9 M4<br>0.384 A/m |



0 dB = 0.4481 A/m = -6.97 dB A/m

## DASY5 E-field Result

Date: 23.08.2012

Test Laboratory: SPEAG Lab2

**DUT: HAC-Dipole 835 MHz; Type: CD835V3; Serial: CD835V3 - SN: 1005**

Communication System: CW; Frequency: 835 MHz

Medium parameters used:  $\sigma = 0$  mho/m,  $\epsilon_r = 1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: RF Section

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

DASY52 Configuration:

- Probe: ER3DV6 - SN2336; ConvF(1, 1, 1); Calibrated: 29.12.2011;
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn781; Calibrated: 29.05.2012
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA; Serial: 1070
- DASY52 52.8.2(969); SEMCAD X 14.6.6(6824)

**Dipole E-Field measurement @ 835MHz/E-Scan - 835MHz d=10mm/Hearing Aid Compatibility Test (41x361x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 102.6 V/m; Power Drift = -0.02 dB

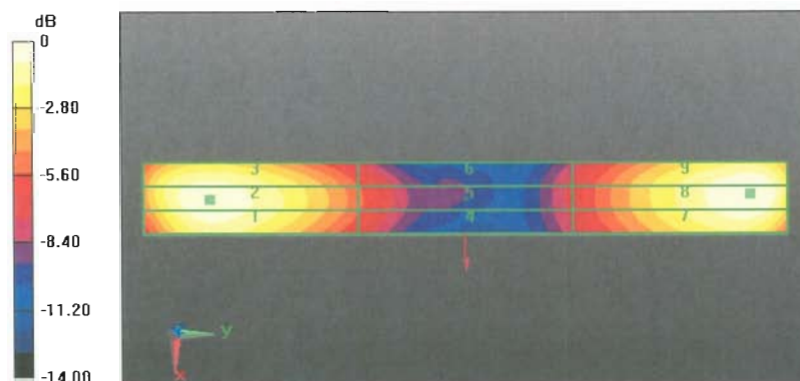
PMR not calibrated. PMF = 1.000 is applied.

E-field emissions = 160.5 V/m

**Near-field category: M4 (AWF 0 dB)**

PMF scaled E-field

|           |           |           |
|-----------|-----------|-----------|
| Grid 1 M4 | Grid 2 M4 | Grid 3 M4 |
| 153.8 V/m | 157.1 V/m | 150.3 V/m |
| Grid 4 M4 | Grid 5 M4 | Grid 6 M4 |
| 85.80 V/m | 87.71 V/m | 84.79 V/m |
| Grid 7 M4 | Grid 8 M4 | Grid 9 M4 |
| 152.6 V/m | 160.5 V/m | 158.4 V/m |



$$0 \text{ dB} = 160.5 \text{ V/m} = 44.11 \text{ dB V/m}$$



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: **CD1880V3-1004\_Aug12**

## CALIBRATION CERTIFICATE

Object **CD1880V3 - SN: 1004**

Calibration procedure(s) **QA CAL-20.v6**  
**Calibration procedure for dipoles in air**

Calibration date: **August 23, 2012**

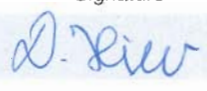
This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).  
 The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

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 | 05-Oct-11 (No. 217-01451)      | Oct-12                |
| Power sensor HP 8481A | US37292783 | 05-Oct-11 (No. 217-01451)      | Oct-12                |
| Probe ER3DV6          | SN: 2336   | 29-Dec-11 (No. ER3-2336_Dec11) | Dec-12                |
| Probe H3DV6           | SN: 6065   | 29-Dec-11 (No. H3-6065_Dec11)  | Dec-12                |
| DAE4                  | SN: 781    | 29-May-12 (No. DAE4-781_May12) | May-13                |

| Secondary Standards       | ID #           | Check Date (in house)             | Scheduled Check        |
|---------------------------|----------------|-----------------------------------|------------------------|
| Power meter Agilent 4419B | SN: GB42420191 | 09-Oct-09 (in house check Oct-11) | In house check: Oct-12 |
| Power sensor HP 8482H     | SN: 3318A09450 | 09-Oct-09 (in house check Oct-11) | In house check: Oct-12 |
| Power sensor HP 8482A     | SN: US37295597 | 09-Oct-09 (in house check Oct-11) | In house check: Oct-12 |
| Network Analyzer HP 8753E | US37390585     | 18-Oct-01 (in house check Oct-11) | In house check: Oct-12 |
| RF generator E4433B       | MY 41000675    | 03-Nov-04 (in house check Oct-11) | In house check: Oct-13 |

|                |                            |                                          |                                                                                                    |
|----------------|----------------------------|------------------------------------------|----------------------------------------------------------------------------------------------------|
| Calibrated by: | Name<br><b>Dimce Iliev</b> | Function<br><b>Laboratory Technician</b> | Signature<br> |
| Approved by:   | Name<br><b>Fin Bomholt</b> | R&D Director                             |               |

Issued: August 24, 2012

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## Measurement Conditions

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

|                                    |                        |         |
|------------------------------------|------------------------|---------|
| DASY Version                       | DASY5                  | V52.8.2 |
| Extrapolation                      | Advanced Extrapolation |         |
| Phantom                            | HAC Test Arch          |         |
| Distance Dipole Top - Probe Center | 10mm                   |         |
| Scan resolution                    | dx, dy = 5 mm          |         |
| Frequency                          | 1880 MHz $\pm$ 1 MHz   |         |
| Input power drift                  | < 0.05 dB              |         |

## Maximum Field values at 1880 MHz

| H-field 10 mm above dipole surface | condition          | interpolated maximum          |
|------------------------------------|--------------------|-------------------------------|
| Maximum measured                   | 100 mW input power | 0.454 A / m $\pm$ 8.2 % (k=2) |

| E-field 10 mm above dipole surface | condition          | Interpolated maximum           |
|------------------------------------|--------------------|--------------------------------|
| Maximum measured above high end    | 100 mW input power | 137.0 V / m                    |
| Maximum measured above low end     | 100 mW input power | 133.7 V / m                    |
| Averaged maximum above arm         | 100 mW input power | 135.4 V / m $\pm$ 12.8 % (k=2) |

## Appendix

### Antenna Parameters

| Frequency | Return Loss | Impedance                       |
|-----------|-------------|---------------------------------|
| 1730 MHz  | 29.3 dB     | 51.6 $\Omega$ + 3.1 j $\Omega$  |
| 1880 MHz  | 19.9 dB     | 52.9 $\Omega$ + 10.0 j $\Omega$ |
| 1900 MHz  | 19.7 dB     | 56.0 $\Omega$ + 9.3 j $\Omega$  |
| 1950 MHz  | 26.5 dB     | 54.7 $\Omega$ + 1.5 j $\Omega$  |
| 2000 MHz  | 22.8 dB     | 46.0 $\Omega$ + 5.7 j $\Omega$  |

### 3.2 Antenna Design and Handling

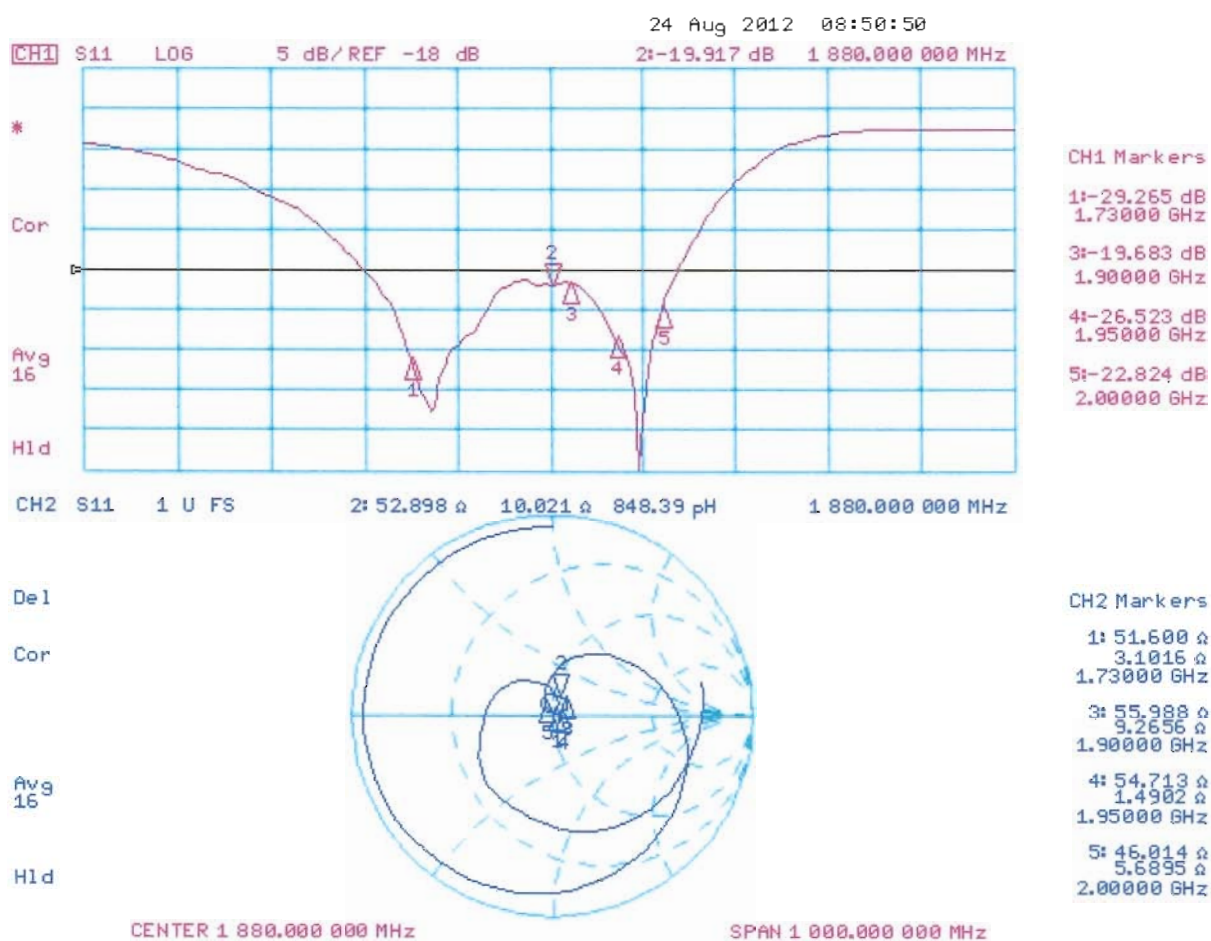
The calibration dipole has a symmetric geometry with a built-in two stub matching network, which leads to the enhanced bandwidth.

The dipole is built of standard semirigid coaxial cable. The internal matching line is open ended. The antenna is therefore open for DC signals.

Do not apply force to dipole arms, as they are liable to bend. The soldered connections near the feedpoint may be damaged. After excessive mechanical stress or overheating, check the impedance characteristics to ensure that the internal matching network is not affected.

After long term use with 40W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

# Impedance Measurement Plot



## DASY5 H-field Result

Date: 23.08.2012

Test Laboratory: SPEAG Lab2

**DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: CD1880V3 - SN: 1004**

Communication System: CW; Frequency: 1880 MHz

Medium parameters used:  $\sigma = 0$  mho/m,  $\epsilon_r = 1$ ;  $\rho = 1$  kg/m<sup>3</sup>

Phantom section: RF Section

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

DASY52 Configuration:

- Probe: H3DV6 - SN6065; ; Calibrated: 29.12.2011
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn781; Calibrated: 29.05.2012
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA; Serial: 1070
- DASY52 52.8.2(969); SEMCAD X 14.6.6(6824)

### Dipole H-Field measurement @ 1880MHz/H-Scan - 1880MHz d=10mm/Hearing Aid Compatibility Test

(41x181x1): Interpolated grid: dx=0.5000 mm, dy=0.5000 mm

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 0.4800 A/m; Power Drift = -0.02 dB

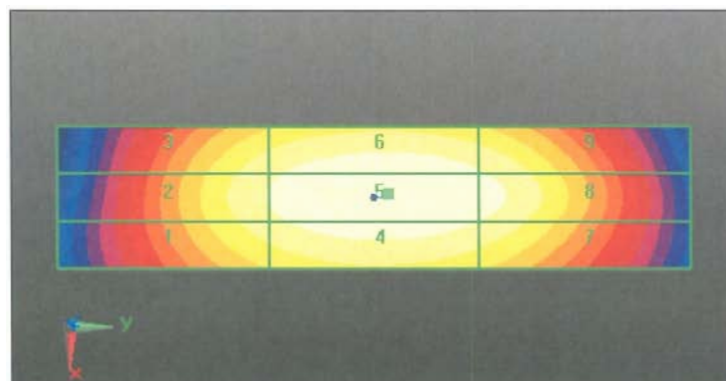
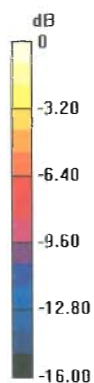
PMR not calibrated. PMF = 1.000 is applied.

H-field emissions = 0.4543 A/m

Near-field category: M2 (AWF 0 dB)

PMF scaled H-field

|                        |                        |                        |
|------------------------|------------------------|------------------------|
| Grid 1 M2<br>0.386 A/m | Grid 2 M2<br>0.405 A/m | Grid 3 M2<br>0.389 A/m |
| Grid 4 M2<br>0.430 A/m | Grid 5 M2<br>0.454 A/m | Grid 6 M2<br>0.437 A/m |
| Grid 7 M2<br>0.399 A/m | Grid 8 M2<br>0.425 A/m | Grid 9 M2<br>0.407 A/m |



$$0 \text{ dB} = 0.4543 \text{ A/m} = -6.85 \text{ dB A/m}$$

## DASY5 E-field Result

Date: 23.08.2012

Test Laboratory: SPEAG Lab2

**DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: CD1880V3 - SN: 1004**

Communication System: CW; Frequency: 1880 MHz

Medium parameters used:  $\sigma = 0$  mho/m,  $\epsilon_r = 1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: RF Section

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

DASY52 Configuration:

- Probe: ER3DV6 - SN2336; ConvF{1, 1, 1}; Calibrated: 29.12.2011;
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn781; Calibrated: 29.05.2012
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA; Serial: 1070
- DASY52 52.8.2(969); SEMCAD X 14.6.6(6824)

**Dipole E-Field measurement @ 1880MHz/E-Scan - 1880MHz d=10mm/Hearing Aid Compatibility Test (41x181x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 155.0 V/m; Power Drift = -0.00 dB

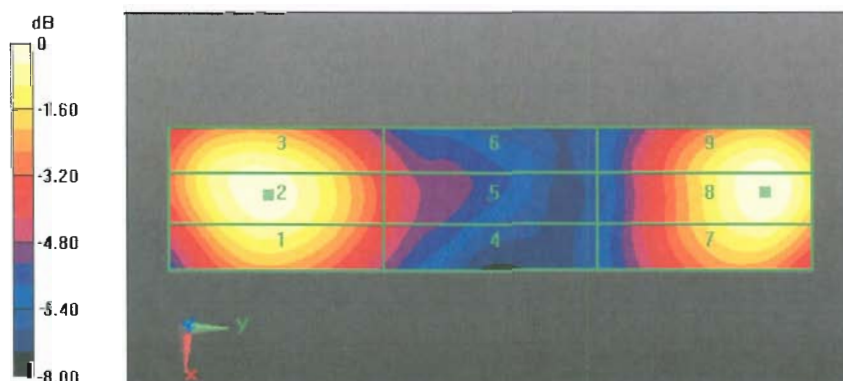
PMR not calibrated. PMF = 1.000 is applied.

E-field emissions = 137.0 V/m

**Near-field category: M2 (AWF 0 dB)**

PMF scaled E-field

|                        |                        |                        |
|------------------------|------------------------|------------------------|
| Grid 1 M2<br>128.0 V/m | Grid 2 M2<br>133.7 V/m | Grid 3 M2<br>131.5 V/m |
| Grid 4 M3<br>89.30 V/m | Grid 5 M3<br>92.22 V/m | Grid 6 M3<br>89.30 V/m |
| Grid 7 M2<br>128.4 V/m | Grid 8 M2<br>137.0 V/m | Grid 9 M2<br>135.1 V/m |



0 dB = 137.0 V/m = 42.73 dB V/m