

## FCC Part 22 Compliance Test Report

|                                                         |                                                                                                                                                                                                                                                      |                                   |                                                                                                                                        |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Report no.:</b>                                 | FCC22_RM-553_02.docx                                                                                                                                                                                                                                 | <b>Date of Report:</b>            | 02-Sep-2010                                                                                                                            |
| <b>Number of pages:</b>                                 | 8                                                                                                                                                                                                                                                    | <b>Customer's Contact person:</b> | Janne Sarna                                                                                                                            |
| <b>Testing laboratory:</b>                              | TCC Nokia Salo Laboratory<br>P.O.Box(86)<br>Joensuukatu 7H / Kiila 1B<br>FIN-24101 SALO, FINLAND<br>Tel. +358 (0) 7180 08000<br>Fax. +358 (0) 7180 45220                                                                                             | <b>Customer:</b>                  | Nokia Corporation<br>P.O. Box 68<br>Sinitaival 5<br>FIN-33720 TAMPERE, FINLAND<br>Tel. +358 (0) 7180 46800<br>Fax. +358 (0) 7180 46880 |
| <b>FCC listing no.:</b>                                 | 533467                                                                                                                                                                                                                                               |                                   |                                                                                                                                        |
| <b>IC recognition no.:</b>                              | 661V-1                                                                                                                                                                                                                                               |                                   |                                                                                                                                        |
| <b>Tested devices/ accessories:</b>                     | <b>Phone RM-553 / Battery BL-4D / Headset WH-701 / AC-Charger AC-10E</b>                                                                                                                                                                             |                                   |                                                                                                                                        |
| <b>FCC ID:</b>                                          | PDNRM-553                                                                                                                                                                                                                                            | <b>IC:</b>                        | 661R-RM553                                                                                                                             |
| <b>Supplement reports:</b>                              | -                                                                                                                                                                                                                                                    |                                   |                                                                                                                                        |
| <b>Testing has been carried out in accordance with:</b> | <b>CFR 47, FCC rules Parts 22 , TIA-603-C-2004 and IC standards, RSS-132 (Issue 2, September 2005). Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit".</b> |                                   |                                                                                                                                        |
| <b>Documentation:</b>                                   | The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory. The documentation of the testing performed on the tested devices is archived for 15 years at TCC Nokia. |                                   |                                                                                                                                        |
| <b>Test Results:</b>                                    | <b>The EUT complies with the requirements in respect of all parameters subject to the test.</b><br>The test results relate only to devices specified in this document                                                                                |                                   |                                                                                                                                        |
| <b>Date and signature for the contents:</b>             |                                                                                                                                                                                                                                                      |                                   |                                                                                                                                        |

**Sami Lehtonen, System Specialist, EMC**

## 1. Summary for FCC Part 22 Compliance Test Report

|                               |                                                                 |
|-------------------------------|-----------------------------------------------------------------|
| Date of receipt               | 23-Aug-2010                                                     |
| Testing completed             | 02-Sep-2010                                                     |
| The customer's contact person | Janne Sarna                                                     |
| Test Plan referred to         | T:\Projects\RM-553\TestPlan_RS\RS_testplan_RM-553_CR_HW6670.xls |
| Notes                         | -                                                               |
| Document name                 | T:\Projects\RM-553\EMC\FCC22_RM-553_02.docx                     |

### 1.1. EUT and Accessory Information

The EUT is a 7-band (GSM850/900/1800/1900) and WCDMA Band (I/II(1900)/V(850)) mobile phone with GPRS, EGPRS, HSDPA and WLAN and Bluetooth. The EUT is tested with maximum rated TX power, modulated with pseudo random bit sequence (PRBS9).

| Product    | Type   | SN                          | HW   | MV | SW       | DUT   |
|------------|--------|-----------------------------|------|----|----------|-------|
| Phone      | RM-553 | 004402131660098             | 6670 |    | 11.2.102 | 14955 |
| Battery    | BL-4D  | 4620409373R2011562200670603 |      |    |          | 14953 |
| Headset    | WH-701 | 06944280090N2R00954         |      |    |          | 14957 |
| AC-Charger | AC-10E | 399791830505050618200675408 | -    | -  | -        | 13961 |

### 1.2. Summary of Test Results

#### WCDMA 850 (Band V):

| Section in CFR 47     | Section in RSS-GEN or RSS-132 | Name of the test                           | Result |
|-----------------------|-------------------------------|--------------------------------------------|--------|
| §2.1046(a), 22.913(a) | 4.4                           | Conducted RF output power                  | NP     |
| §22.913(a)            | 4.4                           | Radiated RF output power                   | NP     |
| §2.1049(h)            | 4.6.1                         | 99 % occupied bandwidth                    | NP     |
| §22.917(a)            | 4.5                           | Band edge compliance                       | NP     |
| §22.917(a), §2.1051   | 4.5                           | Spurious emissions at antenna terminals    | NP     |
| §22.917(a), §2.1053   | 4.5                           | Spurious radiated emissions                | PASSED |
| §2.1055(a)            | 4.3                           | Frequency stability, temperature variation | NP     |
| §2.1055(d)            | 4.3                           | Frequency stability, voltage variation     | NP     |

PASSED  
FAILED  
NP

The EUT complies with the essential requirements in the standard.  
The EUT does not comply with the essential requirements in the standard.  
The test was not performed by the TCC Nokia Laboratory.

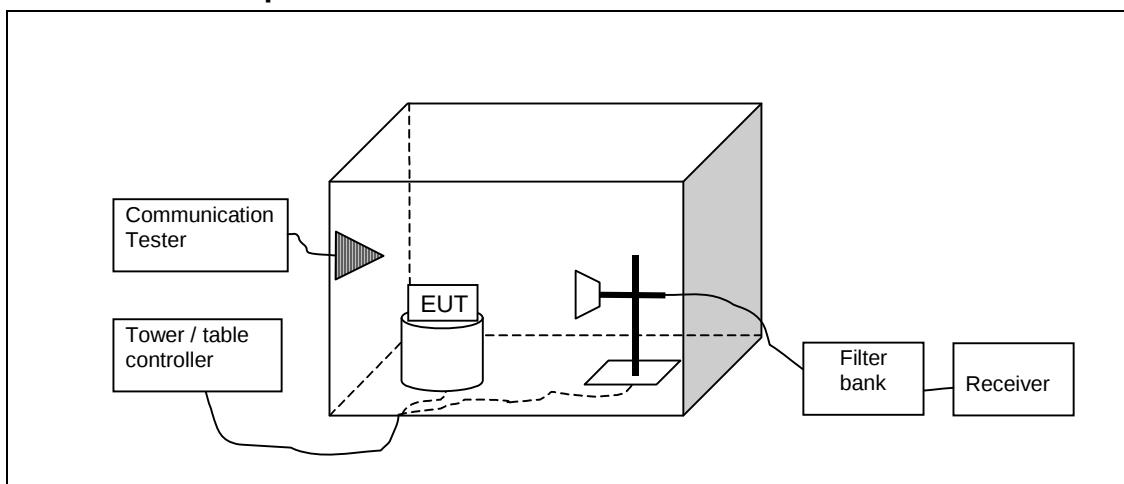
## CONTENTS

|                                                               |          |
|---------------------------------------------------------------|----------|
| <b>1. Summary for FCC Part 22 Compliance Test Report.....</b> | <b>2</b> |
| 1.1. EUT and Accessory Information .....                      | 2        |
| 1.2. Summary of Test Results .....                            | 2        |
| <b>2. Spurious radiated emissions</b>                         |          |
| <b>(FCC §22.917(a), §2.1053, RSS-132 4.5) .....</b>           | <b>4</b> |
| 2.1. Test Setup.....                                          | 4        |
| 2.2. Test method and limit.....                               | 4        |
| 2.3. WCDMA5 TX Test results .....                             | 6        |
| <b>3. Test Equipment .....</b>                                | <b>7</b> |
| 3.1. Conducted measurements .....                             | 7        |
| 3.2. Radiated measurements .....                              | 7        |

## 2. Spurious radiated emissions (FCC §22.917(a), §2.1053, RSS-132 4.5)

|                                                 |                                                          |
|-------------------------------------------------|----------------------------------------------------------|
| EUT with DUT number                             | RM-553, DUT 14955                                        |
| Accessories with DUT numbers                    | BL-4D, DUT 14953 ; WH-701, DUT 14957 ; AC-10E, DUT 13961 |
| Operation Voltage [V] / [Hz]                    | 115 / 60                                                 |
| Results                                         | PASSED                                                   |
| Remarks                                         | -                                                        |
| Temp [°C] / Humidity [%RH] / Air Pressure [kPa] | 20 / 45 / 100.9                                          |
| Date of measurements                            | 02-Sep-2010                                              |
| Measured by                                     | Sami Lehtonen                                            |

### 2.1. Test Setup



### 2.2. Test method and limit

The measurement is made according to TIA-603-C-2004 as follows:

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with absorbers on floor and measuring antenna at fixed height using 2-axis EUT position system.

The Final Measurement is performed in the Semi-Anechoic Chamber with conducting metal floor, if the Preliminary Measurement results are closer than 20 dB to the permissible value.

The EUT is placed at nonconductive plate at the turntable center.

For each suspected frequency, the turntable is rotated 360 degrees and antenna is scanned from 1 to 4 m. This is repeated for both horizontal and vertical receive antenna polarizations.

The emissions less than 20 dB below the permissible value are reported.

The substitution method is used. Substitution values at each frequencies are measured beforehand and saved to the test software. The substitution corrections are obtained as described below:

$$A_{SUBST} = P_{SUBST\ TX} - P_{SUBST\ RX} - L_{SUBST\ CABLES} + 4 \quad (4) \quad G_{SUBST\ TX\ ANT}$$

Where  $A_{SUBST}$  is the final substitution correction including receive antenna gain.  $P_{SUBST TX}$  is signal generator level,  $P_{SUBST RX}$  is receiver level,  $L_{SUBST CABLES}$  is cable losses including both TX and RX cables and  $G_{SUBST TX ANT}$  is substitution antenna gain.

The measurement results are obtained as described below:

$$P[dBm] = P_{MEAS} + A_{TOT}$$

Where  $P_{MEAS}$  is receiver reading in dBm and  $A_{TOT}$  is total correction factor including cable loss and substitution correction ( $A_{TOT} = L_{CABLES} - G_{PREAMP} + A_{SUBST}$ ).

Limits for spurious radiated emissions measurements

| Operation band | Frequency range [MHz] | Limit [dBm] |
|----------------|-----------------------|-------------|
| WCDMA 850      | 30 - 8500             | -13         |

## 2.3. WCDMA5 TX Test results

Channel 4175 / 835.0 MHz

| Frequency [MHz] | P[dBm] | P [μW]  | P <sub>MEAS</sub> [dBm] | A <sub>TOT</sub> [dB] | Polarisation | Result |
|-----------------|--------|---------|-------------------------|-----------------------|--------------|--------|
| 1674.566        | -56.26 | 0.00237 | -58.85                  | 2.59                  | VERTICAL     | PASSED |
| 1706.899        | -55.88 | 0.00258 | -58.51                  | 2.63                  | VERTICAL     | PASSED |
| 2508.537        | -52.52 | 0.0056  | -57.77                  | 5.25                  | VERTICAL     | PASSED |
| 2513.106        | -52.67 | 0.00541 | -58.01                  | 5.34                  | VERTICAL     | PASSED |
| 3304.85         | -59.25 | 0.00119 | -61.17                  | 1.92                  | HORIZONTAL   | PASSED |
| 3321.764        | -58.42 | 0.00144 | -60.31                  | 1.89                  | HORIZONTAL   | PASSED |

### 3. Test Equipment

#### 3.1. Conducted measurements

| Eq. No | Equipment                | Type              | Manufacturer        | Used in            |
|--------|--------------------------|-------------------|---------------------|--------------------|
| 1759   | LISN 50 µH               | ESH3-Z5           | R&S                 | 15C, 15B           |
| 1916   | Communication Tester     | CMTA84            | R&S                 | 15B                |
| 1986   | GPS Antenna              | AMHP10-15R/390    | European Antenna    | 15C, 15B           |
| 1992   | Signal Generator         | 83630B            | Agilent             | 15C, 15B           |
| 2039   | Power Supply             | PL330QMD          | Thurlby             | 15C, 15B           |
| 2060   | LISN 50 µH               | ESH3-Z5           | R&S                 | 15C, 15B           |
| 2068   | CDN                      | S1                | NMP                 | 15C, 15B           |
| 2097   | Pulse Limiter            | ESH3-Z2           | R&S                 | 15C, 15B           |
| 2156   | Communication Tester     | CMU200            | R&S                 | 22/24/27, 15C, 15B |
| 2180   | Communication Tester     | CMU200            | R&S                 | 22/24/27, 15C, 15B |
| 2206   | Signal Generator         | SMX               | R&S                 | 15C, 15B           |
| 2347   | Communication Tester     | CMU200            | R&S                 | 22/24/27, 15C, 15B |
| 2352   | Spectrum Analyzer        | FSP-30            | R&S                 | 22/24/27, 15C      |
| 2359   | Temperature Test Chamber | VT4002            | Vötsch              | 22/24/27           |
| 2360   | Serial Bus Converter     | Serial 488A       | IO Tech             | 22/24/27           |
| 2362   | Power Supply             | NGPX 70/5         | R&S                 | 22/24/27           |
| 2388   | Bluetooth Tester         | CBT               | R&S                 | 15B                |
| 2389   | Signal Generator         | SMJ 100A          | R&S                 | 15B                |
| 2390   | Directional Coupler      | DC2600            | AR                  | -                  |
| 6009   | GPS Antenna              | SA-700            | Chronos             | 15C                |
| 6010   | GPS Network amplifier    | NLA20FPDC         | GPS Networking, Inc | 15C                |
| 6011   | GPS signal Splitter      | LDCBS1x4          | GPS Networking, Inc | 15C                |
| 6012   | CDN                      | CDN USB/c         | Teseq               | -                  |
| 6015   | Receiver                 | ESI               | R&S                 | 22/24, 15C, 15B    |
| 6016   | ESD gun                  | PESD 1610         | HAEFELY             | -                  |
| -      | BT / WLAN Antenna        | SPA 2400/75/9/0/V | Huber-Suhner        | 15C, 15B           |
| -      | BT / WLAN Antenna        | SPA 2400/75/9/0/V | Huber-Suhner        | 15C, 15B           |
| -      | RF Emission Software     | ES-K1 v.1.71      | R&S                 | 22/24/27, 15C, 15B |
| 6036   | Data Logger              | 175-H2            | Testo               | 22/24/27, 15C, 15B |
| 6038   | Data Logger              | Testo 580         | Testo               | 23/24/27, 15C, 15B |
| 6039   | USB Interface            | 5541765           | Testo               | 23/24/27, 15C, 15B |
| 2059   | V-network                | ESH3-Z6           | R&S                 | -                  |
| 6044   | V-network                | ESH3-Z6           | R&S                 | -                  |
| 6045   | Power splitter           | 11667B            | Agilent             | 23/24/27, 15C      |
| 6046   | Attenuator 10dB          | 8493C             | Agilent             | 23/24/27, 15C      |
| 6047   | Attenuator 20dB          | 8493C             | Agilent             | 23/24/27, 15C      |

#### 3.2. Radiated measurements

| Eq. No | Equipment            | Type                   | Manufacturer     | Used in            |
|--------|----------------------|------------------------|------------------|--------------------|
| 1917   | Communication Tester | CMTA84                 | R&S              | 15B                |
| 1984   | Antenna              | BBHA 9120 D            | Schwarzbeck      | 22/24/27, 15C, 15B |
| 1986   | GPS Antenna          | AMHP10-15R/390         | European Antenna | 15C, 15B           |
| 1988   | Antenna              | HL562                  | R&S              | 22/24/27, 15C, 15B |
| 1989   | Relay Switch Unit    | TS-RSP                 | R&S              | 22/24/27, 15C, 15B |
| 2009   | Signal Generator     | SMP 22                 | R&S              | 22/24/27, 15C, 15B |
| 2027   | CDN                  | M2 (modified) DC1      | MEB              | 22/24/27, 15C, 15B |
| 2028   | CDN                  | M3 (modified) DC2      | MEB              | 22/24/27, 15C, 15B |
| 2029   | Power Supply         | PL330                  | Thurlby          | 22/24/27, 15C      |
| 2043   | Band Reject Filter   | WRCA824/849-0,2-6SS    | Wainwright       | 22                 |
| 2047   | Band Reject Filter   | WRCC1800/2000-0,2-10SS | Wainwright       | 24                 |

| Eq. No | Equipment                       | Type                                   | Manufacturer        | Used in            |
|--------|---------------------------------|----------------------------------------|---------------------|--------------------|
| 2051   | High Pass Filter                | 4HC1700-1-KK                           | R&S                 | 22                 |
| 2109   | Power Supply                    | PL330QMD                               | Thurlby             | 22/24/27, 15C, 15B |
| 2116   | Controller                      | EMCO 2090                              | ETS                 | 22/24/27, 15C, 15B |
| 2135   | CDN                             | CDN 801-M3                             | Lüthi               | 22/24/27, 15C, 15B |
| 2140   | Antenna                         | EMCO93110B                             | EMCO                | 22/24/27, 15C      |
| 2142   | Antenna                         | 3146                                   | EMCO                | 22/24/27, 15C      |
| 2150   | High Pass Filter                | F-15041                                | RLC                 | 22/24/27, 15C      |
| 2156   | Communication Tester            | CMU200                                 | R&S                 | 22/24/27, 15C, 15B |
| 2176   | CDN                             | CDN 801-M3                             | Lüthi               | 22/24/27, 15C, 15B |
| 2180   | Communication Tester            | CMU200                                 | R&S                 | 22/24/27, 15C, 15B |
| 2188   | Preamplifier                    | AFS4-00100300-20-23P-6                 | Miteq               | 22/24/27, 15C, 15B |
| 2347   | Communication Tester            | CMU200                                 | R&S                 | 22/24/27, 15C, 15B |
| 2348   | Controller                      | G-1000DXC                              | Yaesu               | 22/24/27, 15C, 15B |
| 2349   | Computer Controller             | GS-232B                                | Yaesu               | 22/24/27, 15C, 15B |
| 2350   | Preamplifier                    | AMF-6D-020180-29-20P                   | Miteq               | 22/24/27, 15C, 15B |
| 2353   | Receiver                        | ESIB26                                 | R&S                 | 22/24/27, 15C, 15B |
| 2357   | Band Reject Filter              | WRCG2400/2483-2390/2493-35/10SS        | Wainwright          | 15C                |
| 2361   | Anechoic Chamber                | 3 m Semi / Full Anechoic Chamber       | Euroshield          | 22/24/27, 15C, 15B |
| 2364   | Band Reject Filter              | WRCG1877/1883 - 1870/1890-40/6SS       | Wainwright          | 24                 |
| 2366   | Relay Switch Unit               | TS-RSP                                 | R&S                 | 22/24/27, 15C, 15B |
| 2384   | Band Reject Filter              | WRCG832/838-825/845-40/5SS             | Wainwright          | 22                 |
| 2388   | Bluetooth Tester                | CBT                                    | R&S                 | 15B                |
| 2389   | Signal Generator                | SMJ 100A                               | R&S                 | 15B                |
| 2391   | Band Reject Filter              | WRCG1729.4/1735.4-1722.4/1742.4-40/6SS | Wainwright          | 27                 |
| 6009   | GPS Antenna                     | SA-700                                 | Chronos             | 15C                |
| 6010   | GPS Network amplifier           | NLA20FPDC                              | GPS Networking, Inc | 15C                |
| 6011   | GPS signal Splitter             | LDCBS1x4                               | GPS Networking, Inc | 15C                |
| 6014   | Substitute Calibration Cable    | Sucoflex 104PB                         | Suhner              | -                  |
| 6017   | Antenna                         | SBA 9113                               | Schwarzbeck         | 22 / 24 / 27       |
| -      | BT / WLAN Antenna               | SPA 2400/75/9/0/V                      | Huber-Suhner        | 15C, 15B           |
| -      | BT / WLAN Antenna               | SPA 2400/75/9/0/V                      | Huber-Suhner        | 15C, 15B           |
| -      | RF Emission Software            | ES-K1 v.1.71                           | R&S                 | 22/24/27, 15C, 15B |
| -      | RF immunity / Emission Software | EMC32                                  | R&S                 | 22/24/27, 15C, 15B |
| 6037   | Data Logger                     | 175-H2                                 | Testo               | 23/24/27, 15C, 15B |
| 6038   | Data Logger                     | Testo 580                              | Testo               | 23/24/27, 15C, 15B |
| 6039   | USB Interface                   | 5541765                                | Testo               | 23/24/27, 15C, 15B |