

## FCC Part 15C Compliance Test Report

|                                                         |                                                                                                                                                                                                                                                      |                                   |                                                                                                                                              |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Report no.:</b>                                 | Cph_FCC_0633_03.doc                                                                                                                                                                                                                                  | <b>Date of Report:</b>            | 14-08-2006                                                                                                                                   |
| <b>Number of pages:</b>                                 | 8                                                                                                                                                                                                                                                    | <b>Customer's Contact person:</b> | Robert Binder                                                                                                                                |
| <b>Testing laboratory:</b>                              | TCC Nokia Copenhagen Laboratory<br>Frederikskaj<br>1790 COPENHAGEN V<br>DENMARK<br>Tel. +45 33 292929<br>Fax. +45 33 292934                                                                                                                          | <b>Customer:</b>                  | Nokia Corporation<br>Arco Tower<br>Shimomeguro 1-8-1<br>Meguro-ku<br>TOKYO 153-0064<br>JAPAN<br>Tel. +81 3 5759 7001<br>Fax. +81 3 5740 6858 |
| <b>FCC listing no.:</b>                                 | 99059                                                                                                                                                                                                                                                |                                   |                                                                                                                                              |
| <b>IC recognition no.:</b>                              | 4820 and 4820-1                                                                                                                                                                                                                                      |                                   |                                                                                                                                              |
| <b>Tested devices/ accessories:</b>                     | <b>Phone; RM-156 (HW 2401) &amp; Battery BL-5F</b>                                                                                                                                                                                                   |                                   |                                                                                                                                              |
| <b>FCC ID:</b>                                          | QVVRM-156                                                                                                                                                                                                                                            | <b>IC:</b>                        | 661AE-RM156                                                                                                                                  |
| <b>Supplement reports:</b>                              |                                                                                                                                                                                                                                                      |                                   |                                                                                                                                              |
| <b>Testing has been carried out in accordance with:</b> | <b>CFR 47, FCC rules Part 15 Subpart C, ANSI C63.4 (2003), IC standards RSS-GEN and RSS-210. 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>             |                                                                                                                                                                                                                                                      |                                   |                                                                                                                                              |

**Niels Christian Andersen, Engineer**

## 1. Summary for FCC Part 15C Compliance Test Report

|                               |                                                              |
|-------------------------------|--------------------------------------------------------------|
| Date of receipt               | 17-07-2006                                                   |
| Testing completed             | 08-08-2006                                                   |
| The customer's contact person | Robert Binder                                                |
| Test Plan referred to         | \\EMC\\TESTPLAN\\                                            |
| Notes                         | None                                                         |
| Document name                 | T:\\Projects\\RM-156\\EMC\\Results\\FCC\\Cph_FCC_0633_03.doc |

### 1.1. EUT and Accessory Information

The EUT is a quadri band (GSM900/1800/1900 and WCDMA2100) mobile phone with GPRS, EGPRS and WLAN. WLAN is tested with maximum rated TX power.

| Product | Type   | SN                         | HW   | MV | SW       | DUT   |
|---------|--------|----------------------------|------|----|----------|-------|
| Phone   | RM-156 | 004400/84/161809/1         | 2401 | -  | 02.0.113 | 28495 |
| Battery | BL-5F  | 0670498000000N151140000000 | -    | -  | -        | 28497 |

### 1.2. Summary of Test Results

#### WLAN:

| Section in CFR 47 | Section in RSS-210 | Name of the test                     | Result |
|-------------------|--------------------|--------------------------------------|--------|
| 15.247(b)(1)      | A8.4 (4)           | Peak output power                    | Passed |
| 15.247(c)         | A8.5               | Band edge compliance of RF emissions | NP     |
| 15.247(c)         | A8.5               | Spurious RF conducted emissions      | NP     |
| 15.247(c), 15.209 | A8.5               | Spurious radiated emissions          | NP     |
| 15.207            | 7.2.2              | AC powerline conducted emissions     | NP     |
| 15.247(a)(2)      | A8.2 (1)           | 6 dB bandwidth                       | NP     |
| 15.247(e)         | A8.2 (2)           | Power spectral density               | 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.

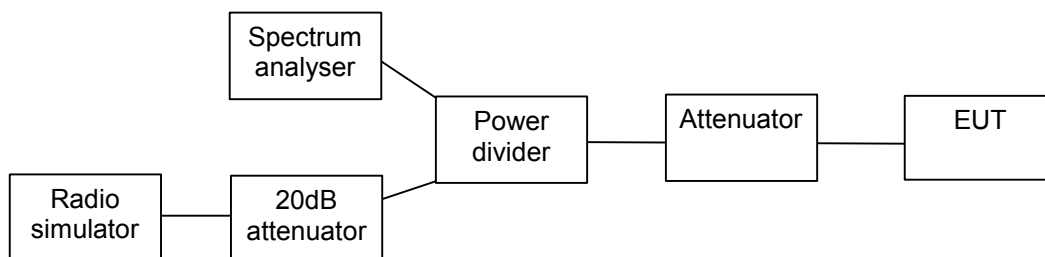
The test was not performed by the TCC Nokia Copenhagen Laboratory.

## CONTENTS

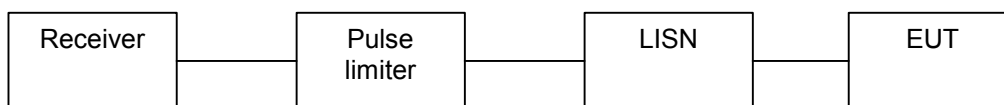
|                                                                        |          |
|------------------------------------------------------------------------|----------|
| <b>1. Summary for FCC Part 15C Compliance Test Report.....</b>         | <b>2</b> |
| 1.1. EUT and Accessory Information .....                               | 2        |
| 1.2. Summary of Test Results .....                                     | 2        |
| <b>2. Test setups.....</b>                                             | <b>4</b> |
| 2.1. Conducted RF test setup .....                                     | 4        |
| 2.2. AC powerline conducted emissions test setup.....                  | 4        |
| 2.3. Spurious radiated emissions test setup .....                      | 4        |
| <b>3. Peak output power (FCC §15.247(b)(1), RSS-210 A8.4 (4)).....</b> | <b>5</b> |
| 3.1. Test method and limit.....                                        | 5        |
| 3.2. WLAN Test results .....                                           | 5        |
| <b>4. Test Equipment.....</b>                                          | <b>7</b> |
| 4.1. Conducted measurements .....                                      | 7        |
| 4.2. Radiated measurements .....                                       | 7        |

## 2. Test setups

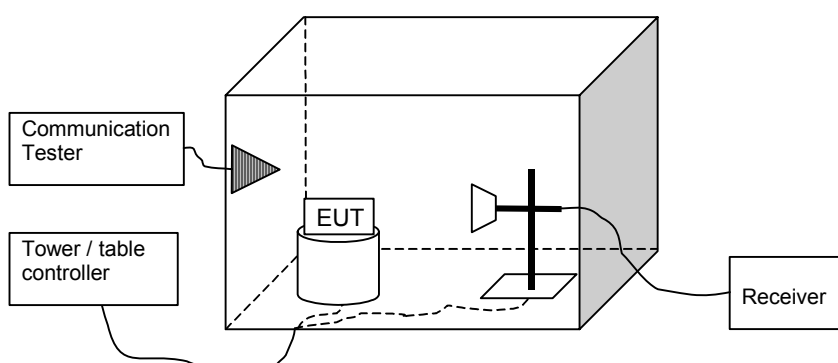
### 2.1. Conducted RF test setup



### 2.2. AC powerline conducted emissions test setup



### 2.3. Spurious radiated emissions test setup



### 3. Peak output power (FCC §15.247(b)(1), RSS-210 A8.4 (4))

|                                                 |                    |
|-------------------------------------------------|--------------------|
| EUT with DUT number                             | RM-156 Dut#28495   |
| Accessories with DUT numbers                    | BL-5F Dut#28497    |
| Operation Voltage [V] / [Hz]                    | -                  |
| Result                                          | Passed             |
| Remarks                                         | None               |
| Temp [°C] / Humidity [%RH] / Air Pressure [kPa] | 23 / 47 / 1020     |
| Date of measurements                            | 08-08-2006         |
| Measured by                                     | Christian Andersen |

#### 3.1. Test method and limit

The measurement is made according to FCC rules part 15.247 and IC standard RSS-210.

Limits for peak output power measurements

| Frequency range [MHz] | Limit [W] | Limit [dBm] |
|-----------------------|-----------|-------------|
| 2400 – 2483.5         | ≤ 1       | ≤ 30        |

#### 3.2. WLAN Test results

##### 3.2.1 DSSS mode, BPSK modulation, 1 Mbps data rate

##### 3.2.1.1 Phone flip open

| EUT Channel | P eut [dBm] | P subst TX [dBm] | P subst RX [dBm] | Cable Loss [dB] | Ant. Gain [dBi] | EIRP [dBm] | EIRP [W] | Azimuth [Deg] | Ant pos | Result |
|-------------|-------------|------------------|------------------|-----------------|-----------------|------------|----------|---------------|---------|--------|
| 1/2412      | -31.28      | 13               | -34.8            | 13              | 14              | 17.52      | 0.056    | 238           | Hor     | Passed |
| 7/2442      | -30.69      | 13               | -34.7            | 13              | 14              | 18.01      | 0.063    | 238           | Hor     | Passed |
| 11/2462     | -32.02      | 13               | -35              | 13              | 14              | 16.98      | 0.050    | 238           | Hor     | Passed |

### 3.2.1.2 Phone flip closed

| EUT Channel | P eut [dBm] | P subst TX [dBm] | P subst RX [dBm] | Cable Loss [dB] | Ant. Gain [dBi] | EIRP [dBm] | EIRP [W] | Azimuth [Deg] | Ant pos | Result |
|-------------|-------------|------------------|------------------|-----------------|-----------------|------------|----------|---------------|---------|--------|
| 1/2412      | -32.04      | 13               | -34.8            | 13              | 14              | 16.76      | 0.047    | 232           | Hor     | Passed |
| 7/2442      | -32.04      | 13               | -34.7            | 13              | 14              | 16.66      | 0.046    | 232           | Hor     | Passed |
| 11/2462     | -32.8       | 13               | -35              | 13              | 14              | 16.2       | 0.042    | 232           | Hor     | Passed |

### 3.2.2 OFDM mode, BPSK modulation, 6 Mbps data rate

#### 3.2.2.1 Phone flip open

| EUT Channel | P eut [dBm] | P subst TX [dBm] | P subst RX [dBm] | Cable Loss [dB] | Ant. Gain [dBi] | EIRP [dBm] | EIRP [W] | Azimuth [Deg] | Ant pos | Result |
|-------------|-------------|------------------|------------------|-----------------|-----------------|------------|----------|---------------|---------|--------|
| 1/2412      | -30.41      | 13               | -34.8            | 13              | 14              | 18.39      | 0.069    | 232           | Hor     | Passed |
| 7/2442      | -30.15      | 13               | -34.7            | 13              | 14              | 18.55      | 0.072    | 232           | Hor     | Passed |
| 11/2462     | -30.66      | 13               | -35              | 13              | 14              | 18.34      | 0.068    | 232           | Hor     | Passed |

#### 3.2.2.2 Phone flip closed

| EUT Channel | P eut [dBm] | P subst TX [dBm] | P subst RX [dBm] | Cable Loss [dB] | Ant. Gain [dBi] | EIRP [dBm] | EIRP [W] | Azimuth [Deg] | Ant pos | Result |
|-------------|-------------|------------------|------------------|-----------------|-----------------|------------|----------|---------------|---------|--------|
| 1/2412      | -31.17      | 13               | -34.8            | 13              | 14              | 17.63      | 0.058    | 232           | Hor     | Passed |
| 7/2442      | -32.42      | 13               | -34.7            | 13              | 14              | 16.28      | 0.042    | 232           | Hor     | Passed |
| 11/2462     | -31.29      | 13               | -35              | 13              | 14              | 17.71      | 0.059    | 232           | Hor     | Passed |

## 4. Test Equipment

### 4.1. Conducted measurements

| Eq. No | Equipment                                      | Type      | Manufacturer         | Used in |
|--------|------------------------------------------------|-----------|----------------------|---------|
| 13037  | Power Supply 0-15V 10A                         | EA3012    | LP Instruments       | 15B,15C |
| 13513  | Pulse Limiter 9KHz-30MHz                       | ESH3Z2    | Rohde&Schwarz        | 15B,15C |
| 13666  | EMI Test Reciever 9KHz-2,5GHz                  | ESPC      | Rohde&Schwarz        | 15B,15C |
| 13935  | Two Lines Artificial Mains Network             | ESH3-Z5   | Rohde&Schwarz        | 15B,15C |
| 16995  | Directional Coupler 20dB 0,5-2,0 GHz SMA Conn. | 1538RA-20 | Weinschel            | 15B,15C |
| 18772  | Shielded Chamber                               | RFD-100   | ETS-Lindgren         | 15B,15C |
| 19171  | Universal Radio Communication Tester           | CMU200    | Rohde&Schwarz        | 15B,15C |
| 11386  | System DC Power Supply                         | HP6632A   | Hewlett Packard      | 22.24   |
| 11487  | Network analyzer 300KHz-3,0GHz                 | HP8753A   | Hewlett Packard      | 22.24   |
| 11584  | Spectrum analyzer 50Hz-6,5GHz                  | HP8561B   | Hewlett Packard      | 22.24   |
| 13134  | Tracking generator                             | HP85645A  | Hewlett Packard      | 22.24   |
| 13302  | Spectrum Analyzer 9KHz-12.8GHz                 | HP8596E   | Hewlett Packard      | 22.24   |
| 13371  | Temperature Chamber                            | S-1,2C    | Thermotron           | 22.24   |
| 13524  | Digital Radiocomm. Tester                      | CMD55     | Rohde&Schwarz        | 22.24   |
| 14807  | S - Parameter Test Set 300KHz-6GHz             | HP85047A  | Hewlett Packard      | 22.24   |
| 15859  | Digital Radio Communication Test Set           | 4201S     | Wavetek              | 22.24   |
| 17277  | Multimeter Digital 6 1/2 Digit                 | AT34401A  | Agilent Technologies | 22.24   |
| 17796  | Radio Communication Test Set                   | 4400M     | Wavetek              | 22.24   |
| 19374  | Resonant Dipole Antenna 850MHz SMA m Conn.     | -         | NMP Cph              | 22.24   |
| 19375  | Resonant Dipole Antenna 1900MHz SMA m Conn.    | -         | NMP Cph              | 22.24   |
| 13037  | Power Supply 0-15V 10A                         | EA3012    | LP Instruments       | 15B,15C |

### 4.2. Radiated measurements

| Eq. No | Equipment                                   | Type           | Manufacturer  | Used in       |
|--------|---------------------------------------------|----------------|---------------|---------------|
| 14020  | Programmable Relay Switching System         | -              | Pickering     | 15B,15C,22,24 |
| 18792  | Multi Device Controller                     | 2090           | ETS-EMCO      | 15B,15C,22,24 |
| 13829  | Turntable Controller                        | 4630-100       | Comtest       | 15B,15C,22,24 |
| 14963  | RF Preamplifier 100MHz-4GHz (Metal Chassis) | AFS3-00100400  | Miteq/NMP Cph | 15B,15C,22,24 |
| 13668  | BiLog Antenna 30-2000MHz                    | BiLog-CBL6112A | Chase         | 15B,15C,22,24 |
| 18861  | EMI Test Receiver 20Hz-26,5GHz              | ESI            | Rohde&Schwarz | 15B,15C,22,24 |
| 12679  | Dual Log Periodic Antenna 1-18 GHz          | HL025          | Rohde&Schwarz | 15B,15C,22,24 |
| 18860  | Ultra Broadband Antenna                     | HL562          | Rohde&Schwarz | 15B,15C,22,24 |

| Eq. No | Equipment                                   | Type                           | Manufacturer           | Used in       |
|--------|---------------------------------------------|--------------------------------|------------------------|---------------|
|        | Ultralog 30-3000MHz                         |                                |                        |               |
| 18773  | Shielded Chamber                            | RFD-100                        | ETS-Lindgren           | 15B,15C,22,24 |
| 18774  | Shielded Chamber                            | RFSD-F/A-100                   | ETS-Lindgren           | 15B,15C,22,24 |
| 18324  | High Pass Filter 3GHz SMA f Conn            | WHJS3000-10SS                  | Wainwright             | 15B,15C,22,24 |
| 14114  | Highpass Filter 1000MHz-4500MHz             | WHK1000-12SS                   | Wainwright             | 15B,15C,22,24 |
| 13918  | Highpass Filter 2000-4000MHz 50OHM SMA Conn | WHKS2000-10SS                  | Wainwright Instruments | 15B,15C,22,24 |
| 13937  | Ultra Stable Notch Filter 902,4MHz          | WRCA902.4-0.2/40-6SS           | Wainwright Instruments | 15B,15C,22,24 |
| 13936  | Ultra Stable Notch Filter 1747,5MHz         | WRCD1747.5-0.2/40-10SS         | Wainwright Instruments | 15B,15C,22,24 |
| 13917  | Highpass Filter 1000-3000MHz 50OHM SMA Conn | WHKS1000-10SS                  | Wainwright Instruments | 15B,15C,22,24 |
| 14188  | Ultra Stable Notch Filter 902,4MHz          | WRCA902.4-0.2/40-6SS           | Wainwright             | 15B,15C,22,24 |
| 14187  | Ultra Stable Notch Filter 1747,5MHz         | WRCD1747.5-0.2/40-10SS         | Wainwright             | 15B,15C,22,24 |
| 16633  | Ultra Stable Notch Filter 1880,0MHz         | WRCD1880.0-0.2/40-10SS         | Wainwright             | 15B,15C,22,24 |
| 18323  | Band reject filter 1947-1953MHz 40dB        | WRCG1947/1953-1940/1960-40/6SS | Wainwright             | 15B,15C,22,24 |
| 15190  | Infra Red Remote Control Unit               | 4630                           | Emco                   | 22,24,15B,15C |
| 14993  | EMI Test Receiver 9KHz-2750MHz              | ESCS30                         | Rohde&Schwarz          | 22,24,15B,15C |
| 15191  | Turntable Contoller Unit                    | G-800SDX                       | YAESU                  | 22,24,15B,15C |
| 14900  | Antenna Controller                          | HD100                          | HD GmbH                | 22,24,15B,15C |