

## FCC Part 24 Compliance Test Report

|                                                         |                                                                                                                                                                                                                                                      |                                   |                                                                                                               |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------|
| <b>Test Report no.:</b>                                 | Cph_FCC_0814_08.doc                                                                                                                                                                                                                                  | <b>Date of Report:</b>            | 03-Apr.-2008                                                                                                  |
| <b>Number of pages:</b>                                 | 7                                                                                                                                                                                                                                                    | <b>Customer's Contact person:</b> | Ole Soerensen                                                                                                 |
| <b>Testing laboratory:</b>                              | TCC Nokia Salo Laboratory<br>P.O. Box 86<br>Joensuunkatu 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>Frederikskaj<br>1790 COPENHAGEN V<br>DENMARK<br>Tel. +45 33 292929<br>Fax. +45 33 292934 |
| <b>FCC listing no.:</b>                                 | 533467                                                                                                                                                                                                                                               |                                   |                                                                                                               |
| <b>IC recognition no.:</b>                              | 5385                                                                                                                                                                                                                                                 |                                   |                                                                                                               |
| <b>Tested devices/ accessories:</b>                     | <b>Phone RM-451 / Battery BL-4U and AC-Charger AC-6</b>                                                                                                                                                                                              |                                   |                                                                                                               |
| <b>FCC ID:</b>                                          | QTKRM-451                                                                                                                                                                                                                                            | <b>IC:</b>                        | 661AD-RM451                                                                                                   |
| <b>Supplement reports:</b>                              | The test results in this Test Report are copied from the RM-233 Test Report No.:<br>Salo_FCC_0732_05                                                                                                                                                 |                                   |                                                                                                               |
| <b>Testing has been carried out in accordance with:</b> | <b>CFR 47, FCC rules Part 24, TIA-603-C-2004 and IC standard RSS-133 (Issue 4, February 2008). 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>             |                                                                                                                                                                                                                                                      |                                   |                                                                                                               |

Allan F. Henriksen, Manager

## 1. Summary for FCC Part 24 Compliance Test Report

|                               |                                                        |
|-------------------------------|--------------------------------------------------------|
| Date of receipt               | 07.08.2007                                             |
| Testing completed             | 07.08.2007                                             |
| The customer's contact person | Ole Soerensen                                          |
| Test Plan referred to         | T:\Projects\RM-451\TestPlan_RS\RS_Testplan_RM-451.xls  |
| Notes                         | -                                                      |
| Document name                 | T:\Projects\RM-451\EMC\Results\FCC\Cph_FCC_0814_08.doc |

### 1.1. EUT and Accessory Information

The EUT is a 3-band (GSM900/1800/1900) mobile phone with GPRS, EGPRS 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-233 | 004401/01/058451/0          | 0310 | -  | Vp vg07w15_07w30 | 11849 |
| Battery    | BL-4U  | 4181577185111401240;0670560 | -    | -  | -                | 11850 |
| AC-Charger | AC-6E  | 4090497206960701167;0675590 | -    | -  | -                | 11851 |

### 1.2. Summary of Test Results

#### GSM 1900:

| Section in CFR 47   | Section in RSS-133 | Name of the test                           | Result |
|---------------------|--------------------|--------------------------------------------|--------|
| §2.1046(a)          | 6.2                | Conducted RF output power                  | NP     |
| §24.232(b)          | 6.2                | Radiated RF output power                   | NP     |
| §2.1049(h)          | 5.6                | 99 % occupied bandwidth                    | PASSED |
| §24.238(a)          | 6.3                | Band edge compliance                       | NP     |
| §24.238(a), §2.1051 | 6.3                | Spurious emissions at antenna terminals    | NP     |
| §24.238(a), §2.1053 | 6.3                | Spurious radiated emissions                | NP     |
| §2.1055(a)          | 7                  | Frequency stability, temperature variation | NP     |
| §2.1055(d)          | 7                  | Frequency stability, voltage variation     | NP     |

PASSED

The EUT complies with the essential requirements in the standard.

FAILED

The EUT does not comply with the essential requirements in the standard.

NP

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

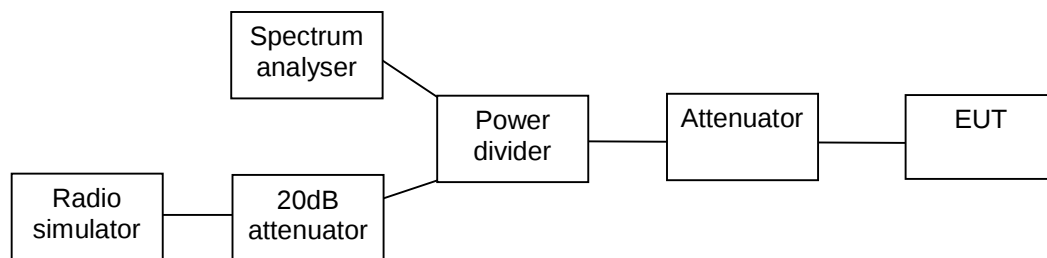
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## 2. 99 % occupied bandwidth (FCC §2.1049(h), RSS-133 5.6)

|                                                 |                                    |
|-------------------------------------------------|------------------------------------|
| EUT with DUT number                             | RM-233, DUT 11849                  |
| Accessories with DUT numbers                    | BL-4U, DUT 11850; AC-6E, DUT 11851 |
| Operation Voltage [V] / [Hz]                    | 115 / 60                           |
| Result                                          | PASSED                             |
| Remarks                                         | -                                  |
| Temp [°C] / Humidity [%RH] / Air Pressure [kPa] | 21 / 42 / 101                      |
| Date of measurements                            | 07.08.2007                         |
| Measured by                                     | Anni Manninen                      |

### 2.1. Test setup



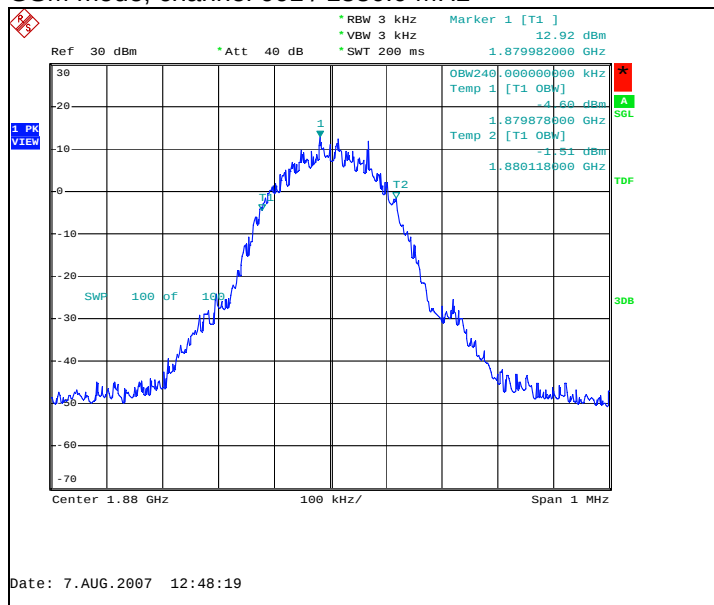
### 2.2. Test method and limit

The measurement is made according to FCC rules part 24 and IC standard RSS-133.

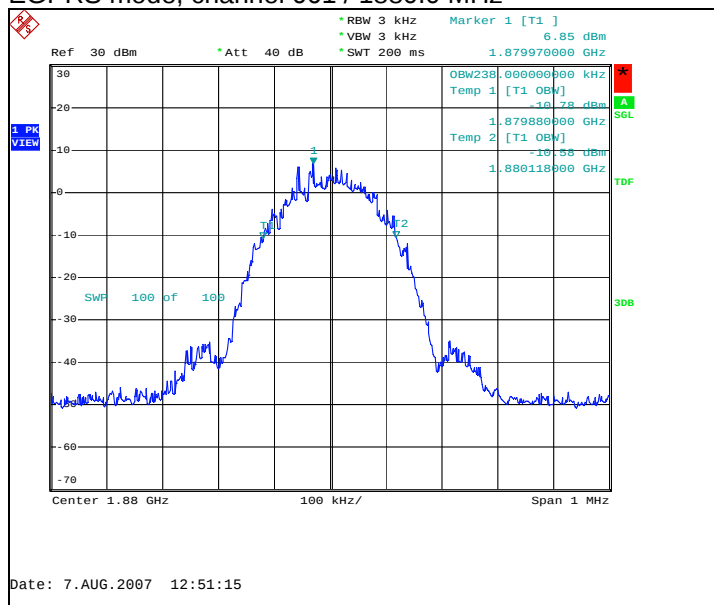
## 2.3. GSM 1900 Test results

| Operation mode (TX on) | 99% occupied bandwidth [kHz] |
|------------------------|------------------------------|
| GSM                    | 240.000                      |
| EGPRS                  | 238.000                      |

GSM mode, channel 661 / 1880.0 MHz



EGPRS mode, channel 661 / 1880.0 MHz



### 3. Test Equipment

#### 3.1. Conducted measurements

| Eq. No | Equipment                          | Type            | Manufacturer            | Used in         |
|--------|------------------------------------|-----------------|-------------------------|-----------------|
| 1742   | EMI Test Receiver                  | ESMI            | R&S                     | 15C, 15B        |
| 1759   | LISN 50 µH                         | ESH3-Z5         | R&S                     | 15C, 15B        |
| 1872   | Thermo- Hygrograph                 | 00.02520.150700 | Lambrecht               | 15C, 15B        |
| 1916   | Radio Communication tester         | CMTA84          | R&S                     | 15C, 15B        |
| 2039   | Power Supply                       | PL330QMD        | THURLBY                 | 15C, 15B        |
| 2060   | LISN 50 µH                         | ESH3-Z5         | R&S                     | 15C, 15B        |
| 2068   | CDN-Antenna line                   | S1              | NMP                     | 15C, 15B        |
| 2097   | Pulse Limiter                      | ESH3-Z2         | R&S                     | 15C, 15B        |
| 2111   | Multimeter                         | TX3             | Tektronix               | 15C, 15B        |
| 2156   | Digital Radio Communication Tester | CMU200          | R&S                     | 15C, 15B        |
| 2206   | Signal generator                   | SMX             | R&S                     | 15C, 15B        |
| 2335   | GPIB Switch 2 to 1                 | -               | National Instruments    | 15C, 15B        |
| 2347   | Digital Radio Communication Tester | CMU200          | R&S                     | 22/24, 15C, 15B |
| 2352   | Spectrum Analyzer                  | FSP             | R&S                     | 22/24, 15C      |
| 2359   | Temperature Test system            | VT4002          | Vötsch Industrietechnik | 22/24           |
| 2360   | Serial Bus Converter               | Serial 488A     | IO Tech                 | 22/24           |
| 2362   | Power Supply                       | NGPX 70/5       | R&S                     | 22/24           |
| 2388   | Bluetooth Tester                   | CBT             | R&S                     | 15C, 15B        |
| -      | RF Emission Software               | ES-K1 v.1.71    | R&S                     | 22/24, 15C, 15B |

#### 3.2. Radiated measurements

| Eq. No | Equipment                           | Type                   | Manufacturer | Used in         |
|--------|-------------------------------------|------------------------|--------------|-----------------|
| 1748   | Log. per. Antenna                   | HL025                  | R&S          | 22/24, 15C      |
| 1749   | Log. per. Antenna                   | HL025                  | R&S          | 22/24, 15C      |
| 1875   | Thermo- Hygrograph                  | 00.02520.150700        | Lambrecht    | 22/24, 15C, 15B |
| 1917   | Radio Communication tester          | CMTA84                 | R&S          | 22/24, 15C, 15B |
| 1933   | Precision half-wave dipole antennas | HZ-13                  | R&S          | 22/24, 15C      |
| 1938   | Precision half-wave dipole antennas | HZ-12                  | R&S          | 22/24, 15C      |
| 2006   | Radiation Reference Source          | VSQ                    | MEB          | 22/24, 15C, 15B |
| 2009   | Signal generator                    | SMP 22                 | R&S          | 22/24, 15C, 15B |
| 2019   | Multimeter                          | 34401A                 | HP           | 22/24, 15C, 15B |
| 2027   | Coupling and Decoupling Network     | M2 (modified) DC1      | MEB          | 22/24, 15C, 15B |
| 2028   | Coupling and Decoupling Network     | M3 (modified) DC2      | MEB          | 22/24, 15C, 15B |
| 2029   | Power Supply                        | PL330                  | THURLBY      | 22/24, 15C, 15B |
| 2043   | Band Reject Filter                  | WRCA824/849-0,2-6SS    | Wainwright   | 22/24, 15C, 15B |
| 2047   | Band Reject Filter                  | WRCC1800/2000-0,2-10SS | Wainwright   | 22/24, 15C, 15B |
| 2051   | High Pass Filter                    | 4HC1700-1-KK           | R&S          | 22/24, 15C      |
| 2057   | Log. per. Antenna                   | HL025                  | R&S          | 22/24, 15C      |

| Eq. No | Equipment                          | Type                               | Manufacturer         | Used in         |
|--------|------------------------------------|------------------------------------|----------------------|-----------------|
| 2109   | Power Supply                       | PL330QMD                           | THURLBY              | 22/24, 15C, 15B |
| 2110   | Multimeter                         | 34401A                             | HP                   | 22/24, 15C, 15B |
| 2112   | Multimeter                         | TX3                                | Tektronix            | 22/24, 15C, 15B |
| 2116   | Controller                         | EMCO MODEL 2090                    | ETS                  | 22/24, 15C, 15B |
| 2133   | Power Meter                        | NRVS                               | R&S                  | 22/24, 15C      |
| 2134   | Power Sensor                       | NRV-Z32                            | R&S                  | 22/24, 15C      |
| 2135   | Coupling and Decoupling Network    | CDN 801-M3                         | LÜTHI                | 22/24, 15C, 15B |
| 2138   | Ultra Broadband Antenna            | HL562                              | R&S                  | 22/24, 15C, 15B |
| 2140   | Biconical Antenna                  | EMCO93110B                         | EMCO                 | 22/24, 15C      |
| 2142   | Log.-per.-dipol Antenna            | 3146                               | EMCO                 | 22/24, 15C      |
| 2144   | Attenuator                         | 6803.17B                           | Huber-Suhner         | 22/24, 15C, 15B |
| 2150   | High Pass Filter                   | F-15041                            | RLC ELECTRONICS      | 22/24, 15C      |
| 2176   | Coupling and Decoupling Network    | CDN 801-M3                         | LÜTHI                | 22/24, 15C, 15B |
| 2180   | Digital Radio Communication Tester | CMU200                             | R&S                  | 22/24, 15C, 15B |
| 2188   | Preamplifier                       | AFS4-00100300-20-23P-6             | MITEQ                | 22/24, 15C, 15B |
| 2330   | EMI Test receiver                  | ESIB26                             | R&S                  | 22/24, 15C, 15B |
| 2334   | GPIO Switch 2 to 1                 | -                                  | National Instruments | 22/24, 15C, 15B |
| 2348   | Yaesu controller                   | G-1000DXC                          | YAESU                | 22/24, 15C, 15B |
| 2349   | Computer controller (Yaesu)        | GS-232B                            | YAESU                | 22/24, 15C, 15B |
| 2350   | Preamplifier                       | AMF-6D-020180-29-20P               | MITEQ                | 22/24, 15C      |
| 2361   | Anechoic chamber                   | 3 meter semi/full anechoic chamber | Euroshield           | 22/24, 15C, 15B |
| 2398   | Horn antenna                       | HF906                              | R&S                  | 22/24, 15C      |
| 2363   | Band Reject Filter                 | WRCG 832/838-825/845/5SS           | Wainwright           | 22/24           |
| 2364   | Band Reject Filter                 | WRCG1877/1883 - 1870/1890-40/6SS   | Wainwright           | 22/24           |
| 2365   | Relay Switch Unit                  | TS-RSP                             | R&S                  | 22/24, 15C, 15B |
| 2366   | Relay Switch Unit                  | TS-RSP                             | R&S                  | 22/24, 15C, 15B |
| 2384   | Band Reject Filter                 | WRCG832/838-825/845-40/5SS         | Wainwright           | 22/24           |
| 2388   | Bluetooth Tester                   | CBT                                | R&S                  | 15C, 15B        |
| -      | RF Emission Software               | ES-K1 v.1.71                       | R&S                  | 22/24, 15C, 15B |