

## FCC Part 22/24 Compliance Test Report

|   |  |                                   |   |
|---|--|-----------------------------------|---|
| <b>Test Report no.:</b>                                 | FCC22&24_RM-852_04.docx  | <b>Date of Report:</b>            | 13-Jun-2012   |
| <b>Number of pages:</b>                                 | 7  | <b>Customer's Contact person:</b> | Zhang Wei   |
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| <b>FCC listing no.:</b>                                 | 975940   | <b>IC recognition no.:</b>        | 661AH-1   |
| <b>Tested devices/ accessories:</b>                     | <b>Phone RM-852 / Battery BL-4U / AC Charger AC-11E / Headset WH-102</b>   |                                   |   |
| <b>FCC ID:</b>  | QTLRM-852  | <b>IC:</b>                        | 661AB-RM852   |
| <b>Supplement reports:</b>                              | -  |                                   |   |
| <b>Testing has been carried out in accordance with:</b> | CFR 47, FCC rules Parts 22/24 , TIA-603-C-2004 and IC standards, RSS-GEN (Issue 3, December 2010), RSS-132 (Issue 2, September 2005), RSS-133 (Issue 5, February 2009). Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit". |                                   |   |
| <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>             |  |                                   |   |

Zou Ming, Engineer, EMC

## 1. Summary for FCC Part 22/24 Compliance Test Report

|                                      |  |
|--------------------------------------|--|
| <b>Date of receipt</b>               | 23-May-2012  |
| <b>Testing completed</b>             | 04-Jun-2012  |
| <b>The customer's contact person</b> | Zhang Wei  |
| <b>Test Plan referred to</b>         | T:\Projects\RM-852\TestPlan\RS_testplan_RM-852.xls |
| <b>Notes</b>                         | -  |
| <b>Document name</b>                 | FCC22&24_RM-852_04.docx                            |

### 1.1. EUT and Accessory Information

The EUT is a mobile phone with following features:

GSM/Bluetooth

The EUT is tested with maximum rated TX power, modulated with pseudo random bit sequence (PRBS9).

Devices under tests

| Product    | Type   | SN   | HW   | MV | SW       | DUT   |
|------------|--------|--|------|----|----------|-------|
| Phone      | RM-852 | SIM1 004402139216125<br>SIM2 004402139216133 | 0202 | -  | tnd12w19 | 52737 |
| Battery    | BL-4U  | 4955402032021202713;0670560                  | -    | -  | -        | 52733 |
| AC Charger | AC-11E | 4090491466160502525;0675479                  | -    | -  | -        | 52735 |
| Headset    | WH-102 | 0694323152311D02963                          | -    | -  | -        | 52734 |

### 1.2. Summary of Test Results

**GSM850:**

| 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     |

**GSM1900:**

| Section in CFR 47   | Section in RSS-GEN or RSS-133 | Name of the test                           | Result |
|---------------------|-------------------------------|--|--------|
| §2.1046(a)          | 6.4                           | Conducted RF output power                  | NP     |
| §24.232(b)          | 6.4                           | Radiated RF output power                   | NP     |
| §2.1049(h)          | 4.6.1                         | 99 % occupied bandwidth                    | NP     |
| §24.238(a)          | 6.5                           | Band edge compliance                       | NP     |
| §24.238(a), §2.1051 | 6.5                           | Spurious emissions at antenna terminals    | NP     |
| §24.238(a), §2.1053 | 6.5                           | Spurious radiated emissions                | PASSED |
| §2.1055(a)          | 6.3                           | Frequency stability, temperature variation | NP     |
| §2.1055(d)          | 6.3                           | 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 Laboratory.

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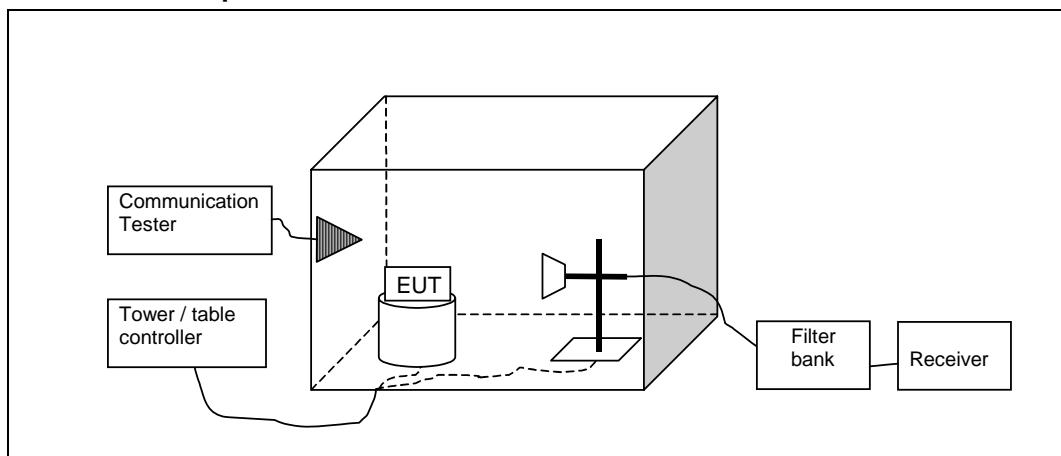
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## 2. Spurious radiated emissions

(FCC §22.917(a), §2.1053, §24.238(a), §2.1053, RSS-132 4.5, RSS-133 6.5)

|  |  |
|--|--|
| <b>EUT with DUT number</b>                             | RM-852, DUT 52737  |
| <b>Accessories with DUT numbers</b>                    | BL-4U, DUT 52733 ; AC-11E, DUT 52735 ; WH-102, DUT 52734                   |
| <b>Operation Voltage [V] / [Hz]</b>                    | Nominal  |
| <b>Results</b>   | PASSED   |
| <b>Remarks</b>   | Test was done in SIM1 call mode, both SIMs were installed during the test. |
| <b>Temp [°C] / Humidity [%RH] / Air Pressure [kPa]</b> | 25/53/99.6   |
| <b>Date of measurements</b>                            | 07-Jun-2012  |
| <b>Measured by</b>                                     | Zou Ming   |

### 2.1.1 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:

ASUBST = PSUBST TX - PSUBST RX - LSUBST CABLES + GSUBST TX ANT

Where ASUBST is the final substitution correction including receive antenna gain. PSUBST TX is

signal generator level, PSUBST RX is receiver level, LSUBST CABLES is cable losses including both TX and RX cables and GSUBST TX ANT is substitution antenna gain.

The measurement results are obtained as described below:

$$P[\text{dBm}] = \text{PMEAS} + \text{ATOT}$$

Where PMEAS is receiver reading in dBm and ATOT is total correction factor including cable loss and substitution correction (ATOT = LCABLES - GPREAMP + ASUBST).

Limits for spurious radiated emissions measurements

| Operation band                                 | Frequency range [MHz] | Limit [dBm] |
|--|-----------------------|-------------|
| GSM 850 / WCDMA 850                            | 30 - 8500             | -13         |
| GSM 1900 / WCDMA 1900<br>WCDMA 1700 / LTE 1700 | 30 - 18000            | -13         |

### 2.3. GSM850 TX Test results

GSM mode, Channel 190 / 836.6 MHz

| Frequency [MHz] | P [dBm] | P [ $\mu$ W] | P <sub>MEAS</sub> [dBm] | A <sub>TOT</sub> [dB] | Polarisation | Result |
|-----------------|---------|--------------|-------------------------|-----------------------|--------------|--------|
| 849.602         | -69.18  | 0.00012      | -67.23                  | -1.95                 | HORIZONTAL   | PASSED |
| 1673.146        | -46.53  | 0.02223      | -51.38                  | 4.85                  | VERTICAL     | PASSED |
| 1673.347        | -45.91  | 0.02564      | -50.76                  | 4.85                  | VERTICAL     | PASSED |
| 2552.425        | -52.28  | 0.00592      | -64.16                  | 11.88                 | VERTICAL     | PASSED |
| 3370.541        | -55.39  | 0.00289      | -63.67                  | 8.28                  | HORIZONTAL   | PASSED |

\*Substitution method could not be utilized as no emissions above noise floor were found during measurements.

### 2.4. GSM1900 TX Test results

GSM mode, Channel 661 / 1880.0 MHz

| Frequency [MHz] | P [dBm] | P [ $\mu$ W] | P <sub>MEAS</sub> [dBm] | A <sub>TOT</sub> [dB] | Polarisation | Result |
|-----------------|---------|--------------|-------------------------|-----------------------|--------------|--------|
| 2838.688        | -44.26  | 0.0375       | -63.16                  | 18.9                  | VERTICAL     | PASSED |
| 2898.647        | -44.91  | 0.03228      | -63.37                  | 18.46                 | VERTICAL     | PASSED |
| 2906.793        | -44.42  | 0.03614      | -63.46                  | 19.04                 | VERTICAL     | PASSED |
| 2934.751        | -44.79  | 0.03319      | -63.41                  | 18.62                 | HORIZONTAL   | PASSED |
| 6977.367        | -42.84  | 0.052        | -59                     | 16.16                 | VERTICAL     | PASSED |
| 9573.307        | -46.85  | 0.02065      | -66.98                  | 20.13                 | VERTICAL     | PASSED |

\*Substitution method could not be utilized as no emissions above noise floor were found during measurements.

### 3. Test Equipment

#### 3.1. Conducted measurements

| Eq. No     | Equipment               | Type                | Manufacturer               | Used in            |
|------------|-------------------------|---------------------|----------------------------|--------------------|
| -          | RF Emission Software    | EMC32 Test Software | R&S                        | 22/24/27, 15C, 15B |
| BJPCHW0020 | DC Power supply         | Hp6632B             | HP                         | 22/24/27, 15C      |
| BJPCPT0040 | Receiver                | ESCS30              | R&S                        | 15C,15B            |
| BJPCPT0069 | LISN 50 $\mu$ H         | ESH3-Z5             | R&S                        | 15C,15B            |
| BJPCPT0073 | Signal Generator        | SMR 20              | R&S                        | 22/24/27, 15C, 15B |
| BJPCPT0191 | Pulse Limiter           | ESH3-Z2             | R&S                        | 15C,15B            |
| BJPCTC0017 | Communication Tester    | CMU200              | R&S                        | 22/24/27, 15C, 15B |
| BJPCTC0067 | Bluetooth Tester        | CBT                 | R&S                        | 22/24/27, 15C      |
| BJPCTC0089 | Temperture Test chamber | VT4002              | Votsch<br>industrietechnik | 22/24/27, 15C      |
| BJPCTC0090 | FSP spectrum analyzer   | FSP30               | R&S                        | 22/24/27, 15C      |
| BJPCTC0094 | GPIB-RS232 convertor    | GPIB-RS232          | NI                         | 22/24/27, 15C      |
| BJPCTC0112 | Power Splitter          | 11667B              | Agilent                    | 22/24/27, 15C      |
| BJPCTC0114 | Signal Generator        | E8257C              | Agilent                    | 22/24/27, 15C      |
| BJPCTC0115 | Communication Tester    | CMU200              | R&S                        | 22/24/27, 15B, 15C |

#### 3.2. Radiated measurements

| Eq. No     | Equipment               | Type                              | Manufacturer       | Used in            |
|------------|-------------------------|-----------------------------------|--------------------|--------------------|
| -          | 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    | EMC32 Test Software               | R&S                | 22/24/27, 15C, 15B |
| BJPCPT0072 | Receiver                | ESI B26                           | R&S                | 22/24/27, 15C, 15B |
| BJPCPT0130 | Relay Switch Unit       | TS-RSP                            | R&S                | 22/24/27, 15C, 15B |
| BJPCPT0150 | High Pass Filter        | WHKS1200-10SS                     | Wainwright         | 22/24/27, 15C, 15B |
| BJPCPT0151 | Band Reject Filter      | WRCD1880/2000-0.2/40-5SSK         | Wainwright         | 24, 15B            |
| BJPCPT0154 | Band Reject Filter      | WRCT2402/2480-2400/2483.5-30-20SS | Wainwright         | 15C, 15B           |
| BJPCPT0162 | Antenna                 | HF906                             | R&S                | 22/24/27, 15C, 15B |
| BJPCTC0007 | Antenna                 | HL562                             | R&S                | 22/24/27, 15C, 15B |
| BJPCTC0029 | Antenna                 | HF906                             | R&S                | 22/24/27, 15C, 15B |
| BJPCTC0034 | Band Reject Filter      | WRCT 800/880-0.2/40-5SSK          | Wainwright         | 22, 15B            |
| BJPCTC0049 | Preamplifier            | Blma 0118-1A-Bt                   | Bonn               | 22/24/27, 15C, 15B |
| BJPCTC0055 | Communication Tester    | CMU200                            | R&S                | 22/24/27, 15C, 15B |
| BJPCTC0058 | Bluetooth Tester        | CBT                               | R&S                | 15C, 15B           |
| BJPCTC0064 | Band Reject Filter      | WRCG1877/1883-1870/1890-40/6SS    | Wainwright         | 24, 15B            |
| BJPCTC0065 | Band Reject Filter      | WRCG832/838-825/845-40/5SS        | Wainwright         | 27, 15B            |
| BJPCTC0071 | Multi-Device Controller | 2090                              | EMCO               | 22/24/27, 15C, 15B |
| BJPCTC0072 | Anechoic Chamber        | 3 m Semi / Full Anechoic Chamber  | ETS                | 22/24/27, 15C, 15B |
| BJPCTC0073 | MAST                    | Model-TR/POL                      | ETS                | 22/24/27, 15C, 15B |
| BJPCTC0074 | MAST                    | Model 2070-2                      | ETS                | 22/24/27, 15C, 15B |
| BJPCTC0075 | Turntable               | Model 2188                        | ETS-EMCO           | 22/24/27, 15C, 15B |
| BJPCTC0096 | Preamplifier            | AFS4-00100300-20-23P-6            | Miteq              | 22/24/27, 15C, 15B |
| BJPCTC0113 | Receiver                | ESI B26                           | R&S                | 22/24/27, 15B, 15C |
| BJPCTC0115 | Communication Tester    | CMU200                            | R&S                | 22/24/27, 15B, 15C |
| BJPCTC0124 | Attenuator              | SA18N200W-40                      | Fairview Microwave | -                  |