

## FCC Part 15B Compliance Test Report

|                                                         |                                                                                                                                                                                                                                                                                                                                                                                  |                                   |                                                                                                                                            |
|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Report no.:</b>                                 | FCC15B_RM-588_21.doc                                                                                                                                                                                                                                                                                                                                                             | <b>Date of Report:</b>            | 13-Jan-2010                                                                                                                                |
| <b>Number of pages:</b>                                 | 9                                                                                                                                                                                                                                                                                                                                                                                | <b>Customer's Contact person:</b> | Jyrki Juvani                                                                                                                               |
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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-588 / Battery BL-5J / AC-charger AC-8E / Headset HS-125 / Data cable CA-101D / Laptop IBM-T40</b>                                                                                                                                                                                                                                                                    |                                   |                                                                                                                                            |
| <b>FCC ID:</b>                                          | LJPRM-588X                                                                                                                                                                                                                                                                                                                                                                       | <b>IC:</b>                        | 661E-RM588                                                                                                                                 |
| <b>Supplement reports:</b>                              | -                                                                                                                                                                                                                                                                                                                                                                                |                                   |                                                                                                                                            |
| <b>Testing has been carried out in accordance with:</b> | CFR 47, FCC rules Part 15 Subpart B, ANSI C63.4 (2003), ICES-003, CISPR 22 and IC standards RSS-132 (Issue 2, September 2005), RSS-133 (Issue 5, February 2009), RSS-139 (Issue 1, February 2008) and RSS-210 (Issue 7, June 2007). 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>             |                                                                                                                                                                                                                                                                                                                                                                                  |                                   |                                                                                                                                            |

**Sami Lehtonen, System Specialist, EMC**

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

|                               |                                                        |
|-------------------------------|--------------------------------------------------------|
| Date of receipt               | 10-Jul-2009                                            |
| Testing completed             | 22-Jul-2009                                            |
| The customer's contact person | Jyrki Juvani                                           |
| Test Plan referred to         | T:\Projects\RM-588\TestPlan_RS\RS_Test_plan_RM-588.xls |
| Notes                         | -                                                      |
| Document name                 | FCC15B_RM-588_21.doc                                   |

### 1.1. EUT and Accessory Information

The EUT is a 6-band (GSM850/900/1800/1900 and WCDMA Band I/VIII) mobile phone with GPRS, EGPRS and Bluetooth. GSM bands are tested in idle mode. Bluetooth is tested with maximum rated TX power.

| Product    | Type    | SN                          | HW   | MV | SW       | DUT   |
|------------|---------|-----------------------------|------|----|----------|-------|
| Phone      | RM-588  | 004401106532365             | 0301 | -  | 20.0.048 | 51348 |
| Battery    | BL-5J   | 4620409176J20111120;0670573 | -    | -  | -        | 51352 |
| AC-charger | AC-8E   | 3997917527070304595;0675387 | -    | -  | -        | 51353 |
| Headset    | HS-125  | 06943238463I3104890         | -    | -  | -        | 51355 |
| Data cable | CA-101D | 07303688522X1214608         | -    | -  | -        | 51357 |
| Laptop     | IBM-T40 | 99FMPGT                     | -    | -  | -        | 51044 |

### 1.2. Summary of Test Results

#### GSM 850:

| Section in CFR 47 | Section in ICES-003 (RSS-132) | Name of the test                 | Result |
|-------------------|-------------------------------|----------------------------------|--------|
| 15.107, a         | 5.3                           | AC powerline conducted emissions | PASSED |
| 15.109, a         | 5.5 (4.6)                     | Radiated emissions               | -      |

#### Bluetooth:

| Section in CFR 47 | Section in ICES-003 | Name of the test                 | Result |
|-------------------|---------------------|----------------------------------|--------|
| 15.107, a         | 5.3                 | AC powerline conducted emissions | NP     |
| 15.109, a         | 5.5                 | Radiated emissions               | PASSED |

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 Beijing Laboratory.

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## 2. AC powerline conducted emissions (FCC §15.107, ICES-003 section 5.3)

|                                                 |                                                                                          |
|-------------------------------------------------|------------------------------------------------------------------------------------------|
| EUT with DUT number                             | RM-588, DUT51348                                                                         |
| Accessories with DUT numbers                    | BL-5J, DUT51352; AC-8E, DUT51353; HS-125, DUT51355; CA-101D, DUT51357; IBM-T40, DUT51044 |
| Operation Voltage [V] / [Hz]                    | 115 / 60                                                                                 |
| Result                                          | PASSED                                                                                   |
| Remarks                                         | Continuous data transferring between phone and PC was active during GSM850 measurement.  |
| Temp [°C] / Humidity [%RH] / Air Pressure [kPa] | 24 / 59 / 99.6                                                                           |
| Date of measurements                            | 22-Jul-2009                                                                              |
| Measured by                                     | Zou Ming                                                                                 |

### 2.1. Test setup



### 2.2. Test method and limit

The measurement is made according to ANSI C63.4-2003 as follows:

The EUT is placed on a wooden table 80 cm above the reference groundplane.

The EUT is connected via LISN to a test power supply.

The measurement results are obtained as described below:

$$U [dB\mu V] = U_{RX} + A_{TOT}$$

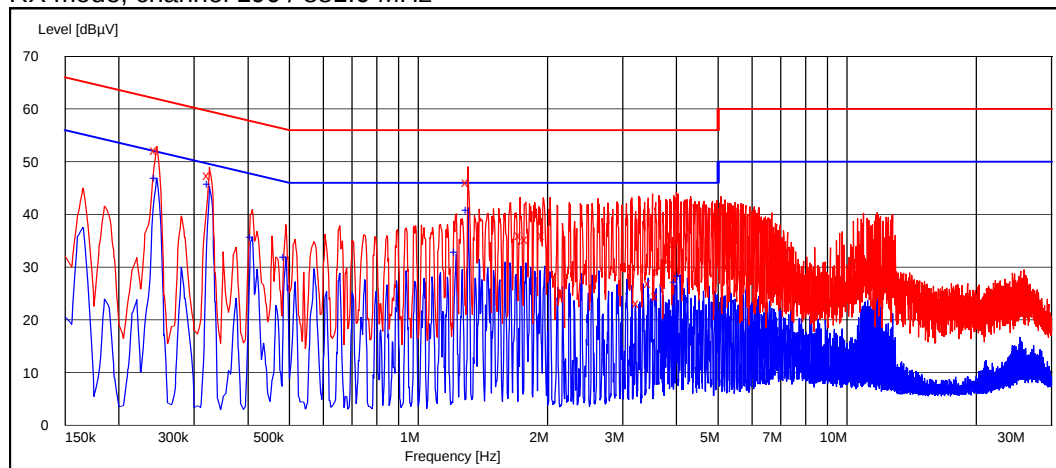
Where  $U_{RX}$  is receiver reading and  $A_{TOT}$  is total correction factor including cable and pulse limiter attenuations.

CISPR 22 Class B limits

| Frequency range [MHz] | Quasi peak limit [dBμV] | Average limit [dBμV] |
|-----------------------|-------------------------|----------------------|
| 0.15 - 0.5            | 66 - 56                 | 56 - 46              |
| 0.5 - 5               | 56                      | 46                   |
| 5 - 30                | 60                      | 50                   |

## 2.3. GSM 850 Test results

RX mode, channel 190 / 881.6 MHz



Quasi peak (RBW: 9 kHz)

| Frequency [MHz] | U [dBμV] | Line | Result |
|-----------------|----------|------|--------|
| 0.245000        | 52.30    | N    | PASSED |
| 0.325000        | 47.40    | N    | PASSED |
| 1.305000        | 46.20    | N    | PASSED |
| 1.735000        | 36.10    | N    | PASSED |
| 1.795000        | 35.30    | N    | PASSED |
| 1.960000        | 36.00    | L1   | PASSED |
| 3.265000        | 23.10    | L1   | PASSED |
| 3.475000        | 26.90    | L1   | PASSED |
| 3.615000        | 24.60    | N    | PASSED |
| 3.920000        | 30.80    | N    | PASSED |
| 4.000000        | 34.50    | N    | PASSED |

Average (RBW: 9 kHz)

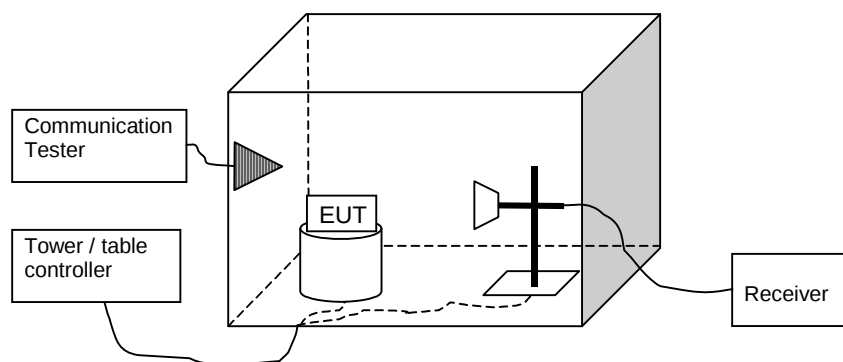
| Frequency [MHz] | U [dBμV] | Line | Result |
|-----------------|----------|------|--------|
| 0.245000        | 46.90    | N    | PASSED |
| 0.325000        | 45.70    | N    | PASSED |
| 0.410000        | 35.80    | N    | PASSED |
| 0.490000        | 31.90    | N    | PASSED |
| 1.225000        | 32.80    | N    | PASSED |
| 1.305000        | 40.90    | N    | PASSED |
| 4.000000        | 27.10    | L1   | PASSED |
| 4.080000        | 28.30    | L1   | PASSED |

### 3. Radiated emissions

(FCC §15.109, ICES-003 section 5.5, RSS-132 4.6, RSS-133 6.6, RSS-139 6.6)

|                                                        |                                                                                          |
|--------------------------------------------------------|------------------------------------------------------------------------------------------|
| <b>EUT with DUT number</b>                             | RM-588, DUT51348                                                                         |
| <b>Accessories with DUT numbers</b>                    | BL-5J, DUT51352; AC-8E, DUT51353; HS-125, DUT51355; CA-101D, DUT51357; IBM-T40, DUT51044 |
| <b>Operation Voltage [V] / [Hz]</b>                    | 115 / 60                                                                                 |
| <b>Result</b>                                          | PASSED                                                                                   |
| <b>Remarks</b>                                         | Continuous data transferring between phone and PC was active during BT measurement.      |
| <b>Temp [°C] / Humidity [%RH] / Air Pressure [kPa]</b> | 23 / 65 / 99.6                                                                           |
| <b>Date of measurements</b>                            | 22-Jul-2009                                                                              |
| <b>Measured by</b>                                     | Zou Ming                                                                                 |

#### 3.1. Test setup



#### 3.2. Test method and limit

The measurement is made according to ANSI C63.4-2003as follows:

The measurement is performed in the Semi-Anechoic Chamber with conducting metal floor.

The measurement distance is 3 m.

The EUT is placed on a nonconductive plate at 80 cm height.

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 measurement results are obtained as described below:

$$E [\mu\text{V/m}] = U_{RX} + A_{TOT}$$

Where  $U_{RX}$  is receiver reading and  $A_{TOT}$  is total correction factor including cable loss, antenna factor and preamplifier gain ( $A_{TOT} = L_{CABLES} + AF - G_{PREAMP}$ ).

CISPR 22 and FCC Part 15 Class B limits (3 m measurement distance)

| Frequency range [MHz] | Quasi peak limit [dBμV/m] | Average limit [dBμV/m] | Peak limit [dBμV/m] |
|-----------------------|---------------------------|------------------------|---------------------|
| 30 – 230              | 40                        | -                      | -                   |
| 230 – 1000            | 47                        | -                      | -                   |
| Above 1000            | -                         | 54                     | 74                  |

### 3.3. Bluetooth Test results

TX mode, channel 0 / 2402 MHz

Peak (RBW: 1 MHz)

| Frequency [MHz] | E [dBμV/m] | E [μV/m] | U <sub>RX</sub> [dBμV] | A <sub>TOT</sub> [dB] | Polarisation | Result |
|-----------------|------------|----------|------------------------|-----------------------|--------------|--------|
| 4804.000000     | 40.10      | 101.16   | 40.00                  | 0.1                   | VERTICAL     | PASSED |
| 7206.000000     | 43.60      | 151.36   | 39.40                  | 4.2                   | VERTICAL     | PASSED |

Average (RBW: 1 MHz)

| Frequency [MHz] | E [dBμV/m] | E [μV/m] | U <sub>RX</sub> [dBμV] | A <sub>TOT</sub> [dB] | Polarisation | Result |
|-----------------|------------|----------|------------------------|-----------------------|--------------|--------|
| 4804.000000     | 28.20      | 25.70    | 28.10                  | 0.1                   | HORIZONTAL   | PASSED |
| 7206.000000     | 31.30      | 36.73    | 27.10                  | 4.2                   | VERTICAL     | PASSED |

TX mode, channel 40 / 2442 MHz

Quasi peak (RBW: 120 kHz)

| Frequency [MHz] | E [dBμV/m] | E [μV/m] | U <sub>RX</sub> [dBμV] | A <sub>TOT</sub> [dB] | Polarisation | Result |
|-----------------|------------|----------|------------------------|-----------------------|--------------|--------|
| 37.695391       | 18.50      | 8.41     | 33.70                  | -15.2                 | VERTICAL     | PASSED |
| 120.039880      | 25.90      | 19.72    | 50.50                  | -24.6                 | HORIZONTAL   | PASSED |
| 165.531864      | 25.20      | 18.20    | 51.40                  | -26.2                 | HORIZONTAL   | PASSED |
| 256.914629      | 31.00      | 35.48    | 54.60                  | -23.6                 | HORIZONTAL   | PASSED |
| 400.500401      | 35.50      | 59.57    | 54.90                  | -19.4                 | HORIZONTAL   | PASSED |

Peak (RBW: 1 MHz, VBW: 1 MHz)

| Frequency [MHz] | E [dBμV/m] | E [μV/m] | U <sub>RX</sub> [dBμV] | A <sub>TOT</sub> [dB] | Polarisation | Result |
|-----------------|------------|----------|------------------------|-----------------------|--------------|--------|
| 2830.943888     | 53.30      | 462.38   | 42.70                  | 10.6                  | HORIZONTAL   | PASSED |
| 4871.739479     | 40.20      | 102.33   | 40.00                  | 0.2                   | HORIZONTAL   | PASSED |
| 7276.549098     | 43.40      | 147.91   | 39.10                  | 4.3                   | VERTICAL     | PASSED |
| 7384.769539     | 44.10      | 160.32   | 39.60                  | 4.5                   | VERTICAL     | PASSED |
| 17469.937876    | 52.60      | 426.58   | 35.90                  | 16.7                  | VERTICAL     | PASSED |
| 17958.409820    | 55.60      | 602.56   | 35.90                  | 19.7                  | VERTICAL     | PASSED |

Average (RBW: 1 MHz)

| Frequency [MHz] | E [dBμV/m] | E [μV/m] | U <sub>RX</sub> [dBμV] | A <sub>TOT</sub> [dB] | Polarisation | Result |
|-----------------|------------|----------|------------------------|-----------------------|--------------|--------|
| 2824.943888     | 40.60      | 107.15   | 29.80                  | 10.8                  | HORIZONTAL   | PASSED |
| 4865.739479     | 27.90      | 24.83    | 27.70                  | 0.2                   | HORIZONTAL   | PASSED |
| 7270.549098     | 31.20      | 36.31    | 26.90                  | 4.3                   | VERTICAL     | PASSED |
| 7387.269539     | 31.60      | 38.02    | 27.10                  | 4.5                   | VERTICAL     | PASSED |
| 17471.937876    | 40.60      | 107.15   | 23.80                  | 16.8                  | VERTICAL     | PASSED |
| 17950.909820    | 43.60      | 151.36   | 23.80                  | 19.8                  | VERTICAL     | PASSED |

TX mode, channel 78 / 2480 MHz

Peak (RBW: 1 MHz)

| Frequency [MHz] | E [dBμV/m] | E [μV/m] | U <sub>RX</sub> [dBμV] | A <sub>TOT</sub> [dB] | Polarisation | Result |
|-----------------|------------|----------|------------------------|-----------------------|--------------|--------|
| 4960.000000     | 41.90      | 124.45   | 41.20                  | 0.7                   | HORIZONTAL   | PASSED |
| 7440.000000     | 43.80      | 154.88   | 39.80                  | 4.0                   | HORIZONTAL   | PASSED |

Average (RBW: 1 MHz)

| Frequency [MHz] | E [dBμV/m] | E [μV/m] | U <sub>RX</sub> [dBμV] | A <sub>TOT</sub> [dB] | Polarisation | Result |
|-----------------|------------|----------|------------------------|-----------------------|--------------|--------|
| 4960.000000     | 29.00      | 28.18    | 28.30                  | 0.7                   | HORIZONTAL   | PASSED |
| 7440.000000     | 31.40      | 37.15    | 27.40                  | 4.0                   | VERTICAL     | PASSED |

## 4. Test Equipment

### 4.1. Conducted measurements

| Eq. No     | Equipment                  | Type      | Manufacturer            | Used in            |
|------------|----------------------------|-----------|-------------------------|--------------------|
| BJPCPT0073 | SIGNAL GENERATOR           | SMR 20    | Rohde&Schwarz           | 22/24/27, 15C, 15B |
| BJPCTC0055 | RADIO COMMUNICATION TESTER | CMU200    | Rohde&Schwarz           | 22/24/27, 15C, 15B |
| BJPCPT0039 | LISN                       | ESH3-Z5   | Rohde&Schwarz           | 15C, 15B           |
| BJPCPT0040 | TEST RECEIVER              | ESCS30    | Rohde&Schwarz           | 15C, 15B           |
| BJPCPT0069 | LISN                       | ESH3-Z5   | Rohde&Schwarz           | 15C, 15B           |
| BJPCPT0079 | LISN                       | ESH3-Z5   | Rohde&Schwarz           | 15C, 15B           |
| BJPCPT0191 | PULSE LIMITER              | ESH3-Z2   | Rohde&Schwarz           | 15C, 15B           |
| BJPCPT0131 | RADIO COMMUNICATION TESTER | CMU200    | ROHDE&SCHWARZ           | 15C, 15B           |
| BJPCTC0089 | Temperature Test chamber   | VT4002    | Vötsch Industrietechnik | 22/24/27, 15C      |
| BJPCTC0090 | FSP spectrum analyzer      | FSP30     | R&S                     | 22/24/27, 15C      |
| BJPCTC0067 | BLUETOOTH TESTER           | CBT       | R&S                     | 22/24/27, 15C      |
| BJPCHW0020 | Dc Power supply            | Hp6632B   | HP                      | 22/24/27, 15C      |
| BJPCTC0094 | GPB-RS232 convertor        | GPB-RS232 | National Instruments    | 22/24/27, 15C      |

### 4.2. Radiated measurements

| Eq. No     | Equipment                                  | Type                              | Manufacturer           | Used in            |
|------------|--------------------------------------------|-----------------------------------|------------------------|--------------------|
| BJPCPT0129 | Relay Unit                                 | TS-RSP                            | Rohde&Schwarz          | 22/24/27, 15C, 15B |
| BJPCPT0130 | Relay Unit                                 | TS-RSP                            | Rohde&Schwarz          | 22/24/27, 15C, 15B |
| BJPCPT0080 | Device Controller                          | EMCO2090                          | ETS-EMCO               | 22/24/27, 15C, 15B |
| BJPCTC0048 | RF Preamplifier 10MHz-3GHz (Metal chassis) | AFS4-00100300-10-10P-4            | MITEQ                  | 22/24/27, 15C, 15B |
| BJPCTC0007 | Ultra Broadband Antenna 30MHz-3000MHz      | HL562                             | Rohde&Schwarz          | 22/24/27, 15C, 15B |
| BJPCPT0162 | Horn Antenna 1GHz-18GHz                    | HF906                             | Rohde&Schwarz          | 22/24/27, 15C, 15B |
| BJPCTC0029 | Horn Antenna 1GHz-18GHz                    | HF906                             | Rohde&Schwarz          | 22/24/27, 15C, 15B |
| BJPCTC0049 | RF preamplifier 3GHz-18GHz                 | BLMA-0118-1A-BT                   | Rohde&Schwarz          | 22/24/27, 15C, 15B |
| BJPCTC0072 | 3m anechoic chamber                        | -                                 | ETS-Lindgren           | 22/24/27, 15C, 15B |
| BJPCTC0075 | Turntable                                  | Model 2088                        | ETS-EMCO               | 22/24/27, 15C, 15B |
| BJPCPT0072 | EMI Test Receiver 20Hz-26.5GHz             | ESIB26                            | Rohde&Schwarz          | 22/24/27, 15C, 15B |
| BJPCPT0150 | High Pass filter                           | WHKS 1200-10SS                    | Wainwright instruments | 22/24/27, 15C, 15B |
| BJPCTC0034 | Notch Filter                               | WRCT800/880-0.2/40-5SSK           | Wainwright instruments | 22, 15B            |
| BJPCPT0151 | Notch Filter                               | WRCD1800/2000-0.2/40-5SSK         | Wainwright instruments | 24, 15B            |
| BJPCTC0017 | Radio Communication Tester                 | CMU200                            | Rohde&Schwarz          | 22/24/27, 15C, 15B |
| BJPCPT0154 | Filter                                     | WRCT2402/2480-2400/2483.5-30-20SS | Wainwright instruments | 15C, 15B           |
| BJPCTC0058 | Bluetooth tester                           | CBT                               | Rohde&Schwarz          | 15C, 15B           |
| BJPCTC0064 | WCDMA II FILTER                            | WRCG1877/1883-1870/1890-40/6SS    | Wainwright instruments | 24, 15B            |
| BJPCTC0065 | WCDMA V FILTER                             | WRCG832/838-825/845-40/5SS        | Wainwright instruments | 22, 15B            |
| BJPCTC0066 | ANTENNA                                    | SBA9113                           | SWARZBECK              | 22/24/27           |
| BJPCTC0096 | RF Preamplifier 100MHz-3GHz                | AFS4-00100300-20-23P-6            | MITEQ                  | 22/24/27, 15C, 15B |