

## FCC Part 15B Compliance Test Report

|                                                         |                                                                                                                                                                                                                                                      |                                   |                                                                                                                                                         |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Report no.:</b>                                 | FCC15B_RM-691_18.docx                                                                                                                                                                                                                                | <b>Date of Report:</b>            | 10-Feb-2011                                                                                                                                             |
| <b>Number of pages:</b>                                 | 7                                                                                                                                                                                                                                                    | <b>Customer's Contact person:</b> | Allison Lenaghan                                                                                                                                        |
| <b>Testing laboratory:</b>                              | TCC Nokia Tampere Laboratory<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>Customer:</b>                  | Nokia Corporation<br>Nokia House<br>Summit Avenue, Southwood<br>FARNBOROUGH<br>HAMPSHIRE GU14 0NG<br>UK<br>Tel. +44 1252 866000<br>Fax. +44 1252 866001 |
| <b>FCC listing no.:</b>                                 | 94436                                                                                                                                                                                                                                                |                                   |                                                                                                                                                         |
| <b>IC recognition no.:</b>                              | 661AK-1                                                                                                                                                                                                                                              |                                   |                                                                                                                                                         |
| <b>Tested devices/ accessories:</b>                     | <b>Phone RM-691 / AC charger AC-15E / Battery BL-5K</b>                                                                                                                                                                                              |                                   |                                                                                                                                                         |
| <b>FCC ID:</b>                                          | QFXRM-691                                                                                                                                                                                                                                            | <b>IC:</b>                        | 661Z-RM691                                                                                                                                              |
| <b>Supplement reports:</b>                              | -                                                                                                                                                                                                                                                    |                                   |                                                                                                                                                         |
| <b>Testing has been carried out in accordance with:</b> | <b>CFR 47, FCC rules Part 15 Subpart B, ANSI C63.4 (2003), ICES-003, CISPR 22. 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>             |                                                                                                                                                                                                                                                      |                                   |                                                                                                                                                         |

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

|                               |                                                                    |
|-------------------------------|--------------------------------------------------------------------|
| Date of receipt               | 14-Jan-2011                                                        |
| Testing completed             | 9-Feb-2011                                                         |
| The customer's contact person | Allison Lenaghan                                                   |
| Test Plan referred to         | T:\Projects\RM-691\TestPlan\RS_testplan_RM-691.xls                 |
| Notes                         | -                                                                  |
| Document name                 | \\vatcc001\certification\Projects\RM-691\EMC\FCC15B_RM-691_18.docx |

### 1.1. EUT and Accessory Information

| Product    | Type   | SN                          | HW   | MV | SW      | DUT   |
|------------|--------|-----------------------------|------|----|---------|-------|
| Phone      | RM-691 | 004402134040447             | 5000 | -  | 020.022 | 42453 |
| AC charger | AC-15E | 4090499512230700758;0675463 | -    | -  | -       | 42457 |
| Battery    | BL-5K  | 4620400321K10100712;0670580 | -    | -  | -       | 42455 |

### 1.2. Summary of Test Results

|        |                                                                          |
|--------|--------------------------------------------------------------------------|
| 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.                  |

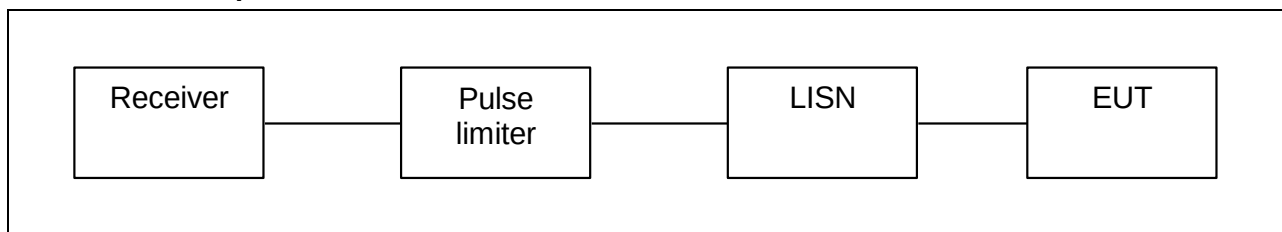
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## 2. AC powerline conducted emissions (FCC §15.107, ICES-003 section 5.3)

|                                                 |                                      |
|-------------------------------------------------|--------------------------------------|
| EUT with DUT number                             | RM-691, DUT 42453                    |
| Accessories with DUT numbers                    | AC-15E, DUT 42457 ; BL-5K, DUT 42455 |
| Operation Voltage [V] / [Hz]                    | 115 / 60                             |
| Results                                         | PASSED                               |
| Remarks                                         | -                                    |
| Temp [°C] / Humidity [%RH] / Air Pressure [kPa] | 21 / 41 / 101                        |
| Date of measurements                            | 09-Feb-2011                          |
| Measured by                                     | Jari Jantunen                        |

### 2.1.1 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:

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

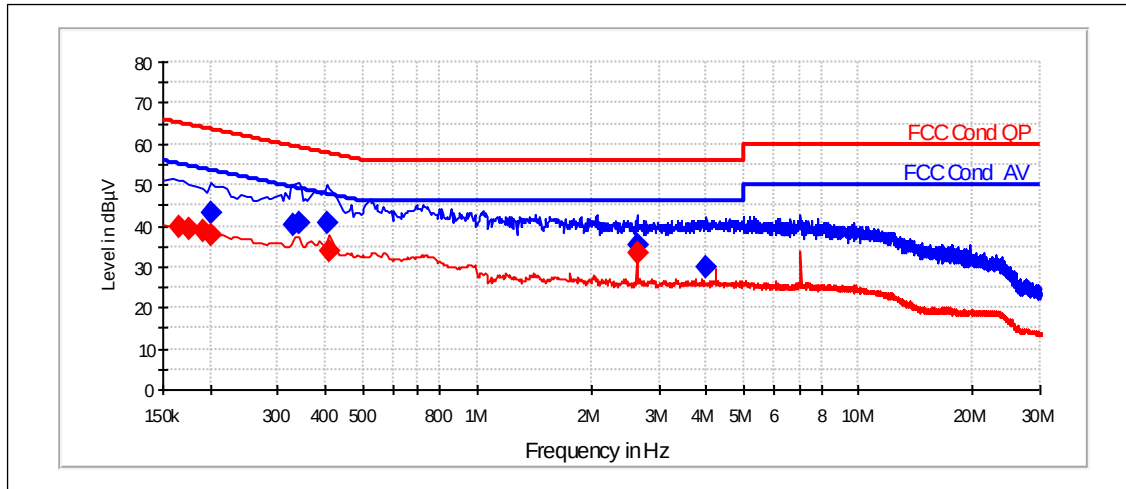
Where  $U_{RX}$  is receiver reading and  $A_{TOT}$  is total correction factor including cable and pulse limiter attenuations.

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                   |

## 2.2.1 FM-TX Test Results

TX on, 98 MHz, Music modulation.



Quasi peak

| Frequency [MHz] | U [dBμV] | IF-BW[kHz] | Line | Margin | Result |
|-----------------|----------|------------|------|--------|--------|
| 0.2             | 43.37    | 10         | N    | 20.21  | PASSED |
| 0.33            | 40.4     | 10         | L1   | 19.05  | PASSED |
| 0.34            | 40.66    | 10         | L1   | 18.5   | PASSED |
| 0.405           | 40.85    | 10         | L1   | 16.95  | PASSED |
| 2.625           | 35.25    | 10         | L1   | 20.8   | PASSED |
| 3.995           | 29.87    | 10         | L1   | 26.1   | PASSED |

Average

| Frequency [MHz] | U [dBμV] | IF-BW[kHz] | Line | Margin | Result |
|-----------------|----------|------------|------|--------|--------|
| 0.165           | 39.87    | 10         | L1   | 15.31  | PASSED |
| 0.175           | 39.34    | 10         | L1   | 15.42  | PASSED |
| 0.19            | 39.01    | 10         | N    | 15.04  | PASSED |
| 0.2             | 37.99    | 10         | N    | 15.61  | PASSED |
| 0.41            | 33.62    | 10         | L1   | 14.05  | PASSED |
| 2.625           | 33.16    | 10         | L1   | 12.8   | PASSED |

### 3. Test Equipment

#### 3.1. Conducted measurements

| Eq. No  | Equipment                           | Type      | Manufacturer | Used in            |
|---------|-------------------------------------|-----------|--------------|--------------------|
| TM38112 | Power supply                        | 6632A     | Agilent      | 22/24/27, 15C      |
| TM38631 | Signal Generator                    | 83640L    | Agilent      | 22/24/27, 15C, 15B |
| OM06312 | Signal Generator                    | E4422B    | Agilent      | 22/24              |
| TM37678 | Communication Tester                | CMU200    | R&S          | 22/24/27, 15C, 15B |
| TM37773 | Communication Tester                | CMU200    | R&S          | 22/24/27, 15C, 15B |
| TM30600 | Impulse limiter                     | ESH3-Z2   | R&S          | 15C, 15B           |
| TM26490 | LISN 50 µH                          | ESH3-Z5   | R&S          | 15C, 15B           |
| TM26491 | LISN 50 µH                          | ESH3-Z5   | R&S          | 15C, 15B           |
| TM37610 | Spectrum Analyzer                   | FSU26     | R&S          | 22/24/27, 15C      |
| TM22806 | Battery                             | BAT 20/E  | Fiskars      | 15C, 15B           |
| TM22805 | UPS                                 | PS 20/1.2 | Fiskars      | 15C, 15B           |
| -       | Temperature and humidity logger     | 175-H2    | Testo        | 15C, 15B           |
| -       | Temperature and humidity logger     | 175-H2    | Testo        | 22/24/27, 15C      |
| -       | Air pressure and temperature logger | 635-2     | Testo        | 22/24/27, 15C, 15B |
| -       | Air pressure sensor                 | 0638-1835 | Testo        | 22/24/27, 15C, 15B |
| -       | Temperature test chamber            | VT 4002   | Vötsch       | 22/24              |
| 2058    | Receiver                            | ESPC      | R&S          | 15C, 15B           |
| 2001    | Bluetooth tester                    | CBT       | R&S          | 22/24/27, 15C, 15B |
| 2002    | Communication Tester                | CMU200    | R&S          | 22/24/27           |
| 2009    | LISN 50 µH                          | ENV216    | R&S          | 15C, 15B           |
| 2010    | LISN 50 µH                          | ENV216    | R&S          | 15C, 15B           |
| 2012    | Power splitter                      | 11667B    | Agilent      | 22/24/27, 15C      |
| 2013    | Attenuator                          | 8493C     | Agilent      | 22/24/27, 15C      |
| 2014    | Attenuator                          | 8493C     | Agilent      | 22/24/27, 15C      |

#### 3.2. Radiated measurements

| Eq. No  | Equipment                           | Type            | Manufacturer   | Used in            |
|---------|-------------------------------------|-----------------|----------------|--------------------|
| TM38114 | Power supply                        | 6632A           | Agilent        | 22/24/27, 15C, 15B |
| TM38631 | Signal Generator                    | 83640L          | Agilent        | 22/24/27, 15C, 15B |
| TM38323 | Preamplifier                        | PA-02 18-26 GHz | EMC Automation | 22/24/27, 15C, 15B |
| -       | Antenna                             | BBHA 9120 D     | Schwarzbeck    | 22/24/27, 15C      |
| TM26497 | Antenna                             | 3115            | Emco           | 22/24/27, 15C, 15B |
| TM37678 | Communication Tester                | CMU200          | R&S            | 22/24/27, 15C, 15B |
| TM37773 | Communication Tester                | CMU200          | R&S            | 22/24/27, 15C, 15B |
| TM38845 | Receiver                            | ESIB 26         | R&S            | 22/24/27, 15C, 15B |
| -       | Antenna                             | HL562           | R&S            | 22/24/27, 15C, 15B |
| -       | Turntable                           | 2188            | EMCO           | 22/24/27, 15C, 15B |
| -       | Turntable controller                | 2090            | EMCO           | 22/24/27, 15C, 15B |
| -       | RF system panel                     | TS-RSP          | R&S            | 22/24/27, 15C, 15B |
| -       | RF system panel                     | TS-RSP          | R&S            | 22/24/27, 15C, 15B |
| -       | Mini mast                           | 2075-2          | ETS Lindgren   | 22/24/27, 15C, 15B |
| TM38843 | Mini mast                           | 2075            | Emco           | 22/24/27, 15C, 15B |
| TM38842 | Antenna mast controller             | 2090            | Emco           | 22/24/27, 15C, 15B |
| TM30643 | LISN 50 µH                          | LISN-5-20-2     | FCC            | 22/24/27, 15C, 15B |
| TM30644 | LISN 50 µH                          | LISN-5-20-2     | FCC            | 22/24/27, 15C, 15B |
| -       | Temperature and humidity logger     | 175-H2          | Testo          | 22/24/27, 15C, 15B |
| -       | Air pressure and temperature logger | 635-2           | Testo          | 22/24/27, 15C, 15B |
| -       | Air pressure sensor                 | 0638-1835       | Testo          | 22/24/27, 15C, 15B |

| Eq. No  | Equipment             | Type                                   | Manufacturer    | Used in            |
|---------|-----------------------|----------------------------------------|-----------------|--------------------|
| TM39180 | Laser distance meter  | Disto Pro                              | Leica           | 22/24/27, 15C, 15B |
| TM37523 | Preamplifier          | AMF-4D-10M-3G-25-20P                   | Miteq           | 22/24/27, 15C, 15B |
| TM37498 | Preamplifier          | AMF-5D-020180-26-10P                   | Miteq           | 22/24/27, 15C, 15B |
| TM30599 | Semi anechoic chambre | UNKNOWN                                | TDK             | 22/24/27, 15C, 15B |
| TM22638 | Power supply          | OL63743-901                            | -               | 22/24/27, 15C, 15B |
| TM38066 | High pass filter      | 4HC3000/18000-3-KK                     | Trilithic       | 22/24/27, 15C, 15B |
| -       | High pass filter      | F-90-1500-6-R                          | RLC Electronics | 22/24/27, 15C, 15B |
| TM37545 | Tunable notch filter  | 800.0/960.0-0.2/40-8SSK                | Wainwright      | 22                 |
| TM26512 | Tunable notch filter  | WRCD1850/1910-0.2/40-10SSK             | Wainwright      | 24                 |
| -       | Band reject filter    | WRCG1877/1883-1870/1890-40/6EE         | Wainwright      | 24                 |
| -       | Band reject filter    | WRCG1729.4/1735.4-1722.4/1742.4-40/6SS | Wainwright      | 27                 |
| -       | Band reject filter    | WRCG832/838-825/848-40/5SS             | Wainwright      | 22                 |
| TM23892 | Controller            | G-1000SDX                              | Yaesu           | 22/24/27           |
| 2001    | Bluetooth tester      | CBT                                    | R&S             | 22/24/27, 15C, 15B |
| 6023    | Antenna               | VUBA 9117                              | Schwarzbeck     | 22/24/27, 15C      |