TCC Nokia

FINAS Finnish Accreditation Service T117 (EN ISO/IEC 17025)

# FCC Part 15B Compliance Test Report

| | | | |
|---|---|---|---|
| **Test Report no.:** | Tre_FCC_0801_03.doc | **Date of Report:** | 24.1.2008 |
| **Number of pages:** | 14 | **Customer's Contact person:** | Lasse Vaattovaara |
| **Testing laboratory:** | 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 | **Customer:** | Nokia Corporation<br>P.O. Box 86<br>Joensuunkatu 7<br>FIN-24101 SALO, FINLAND<br>Tel. +358 (0) 7180 08000<br>Fax. +358 (0) 7180 44277 |
| **FCC listing no.:**<br>**IC recognition no.:** | 94436<br>3608 | | |
| **Tested devices/ accessories:** | **GSM phone RM-346 / Battery BP-4L, AC charger AC-5E, Headset HS-47, Data cable CA-101, Laptop IBM Thinkpad T22, AC adapter 02K6543, Printer HP deskjet 1600CC3540A, Digital camera FUJI DS-7, Serial cable for camera, Parallel cable for printer** | | |
| **FCC ID:** | PYARM-346 | **IC:** | 661V-RM346 |
| **Supplement reports:** | - | | |
| **Testing has been carried out in accordance with:** | **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 3, June 2005) 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".** | | |
| **Documentation:** | 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. | | |
| **Test Results:** | **The EUT complies with the requirements in respect of all parameters subject to the test.** The test results relate only to devices specified in this document. | | |
| **Date and signature for the contents:** |  Digitally signed by Jari Jantunen Date: 2008.01.24 15:03:46 +02'00' | | |

**Jari Jantunen, System Manager**

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

| | |
|---|---|
| **Date of receipt** | 2.1.2007 |
| **Testing completed** | 21.1.2008 |
| **The customer's contact person** | Lasse Vaattovaara |
| **Test Plan referred to** | T:\Projects\ |
| **Notes** | - |
| **Document name** | T:\Projects\RM-346\EMC\Results\FCC\Tre_FCC_0801_03.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, Bluetooth and WLAN. GSM bands are tested in idle mode. Bluetooth and WLAN are tested with maximum rated TX power.

| Product | Type | SN | HW | MV | SW | DUT |
|---|---|---|---|---|---|---|
| GSM phone | RM-346 | 004401014291526 | 0508 | - | 007.45.3 | **41346** |
| Battery | BP-4L | - | - | - | - | **41348** |
| AC Charger | AC-5E | - | - | - | - | **41350** |
| Headset | HS-47 | - | - | - | - | **41352** |
| Data cable | CA-101 | - | - | - | - | **41370** |
| Laptop | IBM Thinkpad T22 | 555V2PT | - | - | - | **40201** |
| AC Adapter | 02K6543 | - | - | - | | **40202** |
| Printer | HP deskjet 1600CC3540A | USB8302546 | - | - | - | **40077** |
| Digital camera | FUJI DS-7 | 7102516 | - | - | - | **40076** |
| Serial cable for camera | - | - | - | - | - | **40088** |
| Parallel cable for printer | - | - | - | - | - | **40087** |

## 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 | NP |
| 15.109, a | 5.5 (6.6) | Radiated emissions | PASSED |

**GSM 1900:**

| Section in CFR 47 | Section in ICES-003 (RSS-133) | Name of the test | Result |
|---|---|---|---|
| 15.107, a | 5.3 | AC powerline conducted emissions | NP |
| 15.109, a | 5.5 (9) | Radiated emissions | PASSED |

**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 |



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**WLAN:**

| Section in CFR 47 | Section in ICES-003 | Name of the test | Result |
|---|---|---|---|
| 15.107, a | 5.3 | AC powerline conducted emissions | PASSED |
| 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 Tampere Laboratory. |



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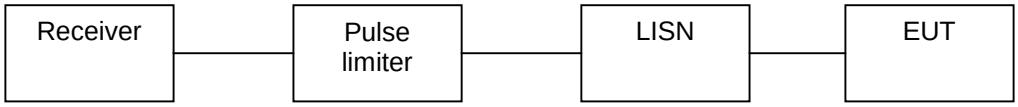
# 2. AC powerline conducted emissions

**(FCC §15.107, ICES-003 section 5.3)**

| | |
|---|---|
| **EUT with DUT number** | RM-346 DUT 41346 |
| **Accessories with DUT numbers** | BP-4L DUT 41348, AC-5E DUT 41350, HS-47 DUT 41352, CA-101 DUT 41370, IBM Thinkpad T22 DUT 40201, 02K6543 DUT 40202, HP deskjet 1600CC3540A DUT 40077, FUJI DS-7 DUT 40076, Serial cable for camera DUT 40088, Parallel cable for printer DUT 40087 |
| **Operation Voltage [V] / [Hz]** | 115 / 60 |
| **Result** | PASSED |
| **Remarks** | Continuous data transfer was active between the phone and the computer during the test. |
| **Temp [°C] / Humidity [%RH] / Air Pressure [kPa]** | 20 / 47 / 99.0 |
| **Date of measurements** | 21.1.2008 |
| **Measured by** | Jari Jantunen |

## 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 |



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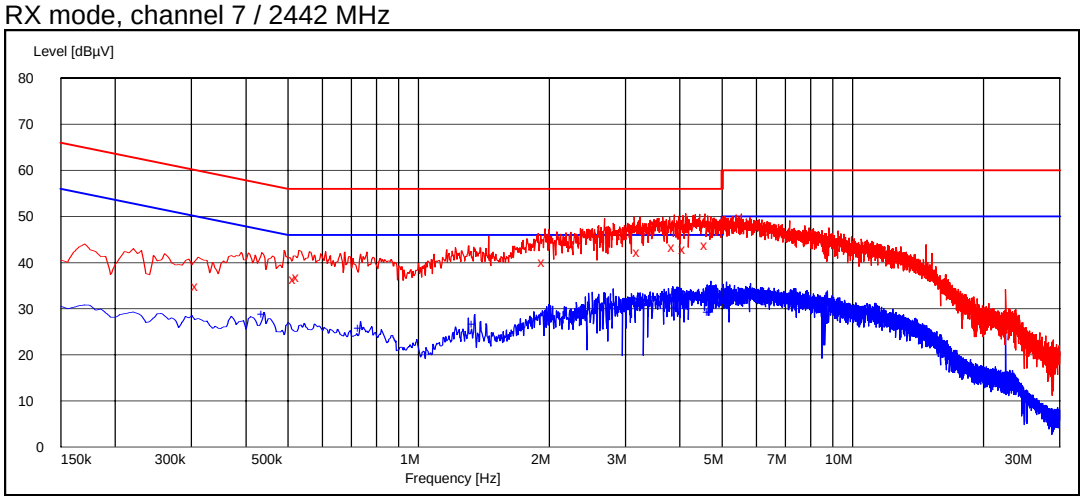
## 2.3. WLAN Test results

RX mode, channel 7 / 2442 MHz




Quasi peak (RBW: 9 kHz)

| Frequency [MHz] | U [dBµV] | Line | Result |
|---|---|---|---|
| 0.310000 | 34.90 | N | PASSED |
| 0.520000 | 36.50 | L1 | PASSED |
| 0.530000 | 36.90 | L1 | PASSED |
| 1.950000 | 40.20 | L1 | PASSED |
| 3.230000 | 42.40 | L1 | PASSED |
| 3.880000 | 43.30 | L1 | PASSED |
| 4.115000 | 42.90 | L1 | PASSED |
| 4.620000 | 43.80 | L1 | PASSED |

Average (RBW: 9 kHz)

| Frequency [MHz] | U [dBµV] | Line | Result |
|---|---|---|---|
| 0.440000 | 28.80 | L1 | PASSED |
| 0.735000 | 25.80 | L1 | PASSED |
| 1.345000 | 26.70 | L1 | PASSED |
| 1.995000 | 29.40 | L1 | PASSED |
| 3.895000 | 33.20 | L1 | PASSED |
| 3.935000 | 30.40 | L1 | PASSED |
| 4.675000 | 29.30 | N | PASSED |
| 4.755000 | 29.40 | L1 | PASSED |



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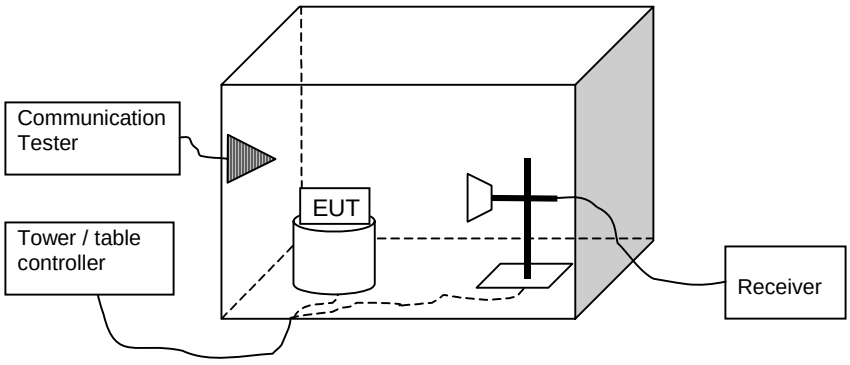
# 3. Radiated emissions

**(FCC §15.109, ICES-003 section 5.5, RSS-132 6.6, RSS-133 9)**

| | |
|---|---|
| **EUT with DUT number** | RM-346 DUT 41346 |
| **Accessories with DUT numbers** | BP-4L DUT 41348, AC-5E DUT 41350, HS-47 DUT 41352, CA-101 DUT 41370, IBM Thinkpad T22 DUT 40201, 02K6543 DUT 40202, HP deskjet 1600CC3540A DUT 40077, FUJI DS-7 DUT 40076, Serial cable for camera DUT 40088, Parallel cable for printer DUT 40087 |
| **Operation Voltage [V] / [Hz]** | 115 / 60 |
| **Result** | PASSED |
| **Remarks** | - |
| **Temp [°C] / Humidity [%RH] / Air Pressure [kPa]** | 21 / 48 / 99.0 |
| **Date of measurements** | 20.1.2008 |
| **Measured by** | Jari Jantunen |

## 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.



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The measurement results are obtained as described below:

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

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. GSM 850 Test results

RX mode, channel 128 / 869.2 MHz

Peak (RBW: 1 MHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 3476.800000 | 38.40 | 83.18 | 43.70 | -5.3 | VERTICAL | PASSED |
| 6953.600000 | 43.70 | 153.11 | 42.10 | 1.6 | HORIZONTAL | PASSED |

Average (RBW: 1 MHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 3476.800000 | 25.60 | 19.05 | 30.90 | -5.3 | VERTICAL | PASSED |
| 6953.600000 | 30.70 | 34.28 | 29.10 | 1.6 | VERTICAL | PASSED |

RX mode, channel 190 / 881.6 MHz

Quasi peak (RBW: 120 kHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 30.400000 | 31.90 | 39.36 | 57.70 | -25.8 | VERTICAL | PASSED |
| 61.081563 | 24.40 | 16.60 | 63.60 | -39.2 | VERTICAL | PASSED |
| 117.073146 | 16.20 | 6.46 | 50.30 | -34.1 | VERTICAL | PASSED |

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

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 3528.052104 | 38.80 | 87.10 | 43.90 | -5.1 | VERTICAL | PASSED |



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Average (RBW: 1 MHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 1495.989980 | 22.90 | 13.96 | 39.80 | -16.9 | VERTICAL | PASSED |
| 2994.989980 | 32.30 | 41.21 | 36.50 | -4.2 | VERTICAL | PASSED |
| 3526.552104 | 26.10 | 20.18 | 31.20 | -5.1 | VERTICAL | PASSED |

RX mode, channel 251 / 893.8 MHz

Peak (RBW: 1 MHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 3575.200000 | 38.40 | 83.18 | 43.30 | -4.9 | VERTICAL | PASSED |
| 7150.400000 | 41.40 | 117.49 | 39.00 | 2.4 | HORIZONTAL | PASSED |

Average (RBW: 1 MHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 3575.200000 | 25.80 | 19.50 | 30.70 | -4.9 | VERTICAL | PASSED |
| 7150.400000 | 29.00 | 28.18 | 26.60 | 2.4 | HORIZONTAL | PASSED |

## 3.4. GSM 1900 Test results

RX mode, channel 512 / 1930.2 MHz

Peak (RBW: 1 MHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 3860.000000 | 40.40 | 104.71 | 43.10 | -2.7 | HORIZONTAL | PASSED |
| 7720.000000 | 43.00 | 141.25 | 39.30 | 3.7 | VERTICAL | PASSED |

Average (RBW: 1 MHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 3860.000000 | 27.10 | 22.65 | 29.80 | -2.7 | VERTICAL | PASSED |
| 7720.000000 | 30.40 | 33.11 | 26.70 | 3.7 | HORIZONTAL | PASSED |

RX mode, channel 661 / 1960.0 MHz

Quasi peak (RBW: 120 kHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 30.000000 | 28.60 | 26.92 | 54.20 | -25.6 | VERTICAL | PASSED |
| 63.305411 | 22.50 | 13.34 | 61.80 | -39.3 | VERTICAL | PASSED |
| 84.910621 | 18.80 | 8.71 | 55.30 | -36.5 | VERTICAL | PASSED |
| 120.080361 | 12.70 | 4.32 | 46.50 | -33.8 | VERTICAL | PASSED |
| 155.011423 | 11.90 | 3.94 | 47.10 | -35.2 | VERTICAL | PASSED |



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

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 3529.552104 | 38.80 | 87.10 | 43.90 | -5.1 | VERTICAL | PASSED |

Average (RBW: 1 MHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 2978.957916 | 32.40 | 41.69 | 36.60 | -4.2 | VERTICAL | PASSED |
| 3530.052104 | 25.50 | 18.84 | 30.60 | -5.1 | VERTICAL | PASSED |

RX mode, channel 810 / 1989.8 MHz

Peak (RBW: 1 MHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 3980.000000 | 40.10 | 101.16 | 42.70 | -2.6 | VERTICAL | PASSED |
| 7960.000000 | 44.00 | 158.49 | 39.80 | 4.2 | HORIZONTAL | PASSED |

Average (RBW: 1 MHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 3980.000000 | 27.40 | 23.44 | 30.00 | -2.6 | VERTICAL | PASSED |
| 7960.000000 | 31.00 | 35.48 | 26.80 | 4.2 | HORIZONTAL | PASSED |

## 3.5. Bluetooth Test results

TX mode, channel 0 / 2402 MHz

Peak (RBW: 1 MHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 4804.000000 | 39.70 | 96.61 | 41.50 | -1.8 | VERTICAL | PASSED |
| 7206.000000 | 42.50 | 133.35 | 39.90 | 2.6 | HORIZONTAL | PASSED |

Average (RBW: 1 MHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 4804.000000 | 26.60 | 21.38 | 28.40 | -1.8 | VERTICAL | PASSED |
| 7206.000000 | 29.50 | 29.85 | 26.90 | 2.6 | VERTICAL | PASSED |

TX mode, channel 40 / 2442 MHz

Quasi peak (RBW: 120 kHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 30.200000 | 32.70 | 43.15 | 42.30 | -9.6 | VERTICAL | PASSED |
| 37.535872 | 28.40 | 26.30 | 42.90 | -14.5 | VERTICAL | PASSED |
| 74.869940 | 13.60 | 4.79 | 39.00 | -25.4 | VERTICAL | PASSED |
| 74.988978 | 16.90 | 7.00 | 42.30 | -25.4 | VERTICAL | PASSED |



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

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 4938.873747 | 40.40 | 104.71 | 42.00 | -1.6 | VERTICAL | PASSED |
| 7285.565130 | 43.30 | 146.22 | 40.30 | 3.0 | HORIZONTAL | PASSED |
| 7392.785571 | 43.80 | 154.88 | 40.20 | 3.6 | HORIZONTAL | PASSED |
| 7419.841683 | 43.60 | 151.36 | 39.90 | 3.7 | HORIZONTAL | PASSED |
| 17906.821643 | 53.10 | 451.86 | 33.50 | 19.6 | VERTICAL | PASSED |

Average (RBW: 1 MHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 4932.873747 | 27.40 | 23.44 | 29.00 | -1.6 | VERTICAL | PASSED |
| 7284.065130 | 30.60 | 33.88 | 27.60 | 3.0 | HORIZONTAL | PASSED |
| 7395.285571 | 30.80 | 34.67 | 27.20 | 3.6 | HORIZONTAL | PASSED |
| 7417.841683 | 31.10 | 35.89 | 27.40 | 3.7 | HORIZONTAL | PASSED |
| 17907.821643 | 40.60 | 107.15 | 21.00 | 19.6 | VERTICAL | PASSED |

TX mode, channel 78 / 2480 MHz

Peak (RBW: 1 MHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 4960.000000 | 40.40 | 104.71 | 41.70 | -1.3 | HORIZONTAL | PASSED |
| 7440.000000 | 43.60 | 151.36 | 40.00 | 3.6 | VERTICAL | PASSED |

Average (RBW: 1 MHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 4960.000000 | 27.50 | 23.71 | 28.80 | -1.3 | VERTICAL | PASSED |
| 7440.000000 | 30.70 | 34.28 | 27.10 | 3.6 | VERTICAL | PASSED |

## 3.6. WLAN Test results

TX mode, channel 1 / 2412 MHz

Peak (RBW: 1 MHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 4824.000000 | 40.40 | 104.71 | 42.10 | -1.7 | VERTICAL | PASSED |
| 7236.000000 | 42.70 | 136.46 | 40.10 | 2.6 | HORIZONTAL | PASSED |

Average (RBW: 1 MHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 4824.000000 | 27.50 | 23.71 | 29.20 | -1.7 | VERTICAL | PASSED |
| 7236.000000 | 29.70 | 30.55 | 27.10 | 2.6 | VERTICAL | PASSED |



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TX mode, channel 7 / 2442 MHz

Quasi peak (RBW: 120 kHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 4965.929860 | 40.40 | 104.71 | 41.60 | -1.2 | VERTICAL | PASSED |
| 7283.065130 | 43.30 | 146.22 | 40.30 | 3.0 | VERTICAL | PASSED |
| 7343.183367 | 43.30 | 146.22 | 40.10 | 3.2 | VERTICAL | PASSED |
| 7419.843687 | 44.60 | 169.82 | 40.90 | 3.7 | VERTICAL | PASSED |
| 17947.899800 | 52.80 | 436.52 | 33.20 | 19.6 | VERTICAL | PASSED |

Average (RBW: 1 MHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 4964.429860 | 27.70 | 24.27 | 29.00 | -1.3 | VERTICAL | PASSED |
| 7284.565130 | 30.60 | 33.88 | 27.60 | 3.0 | VERTICAL | PASSED |
| 7343.183367 | 30.50 | 33.50 | 27.30 | 3.2 | VERTICAL | PASSED |
| 7420.843687 | 30.90 | 35.08 | 27.20 | 3.7 | VERTICAL | PASSED |
| 17950.899800 | 40.50 | 105.93 | 20.90 | 19.6 | VERTICAL | PASSED |

TX mode, channel 11 / 2462 MHz

Peak (RBW: 1 MHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 4924.000000 | 39.30 | 92.26 | 41.10 | -1.8 | VERTICAL | PASSED |
| 7386.000000 | 43.50 | 149.62 | 40.00 | 3.5 | HORIZONTAL | PASSED |

Average (RBW: 1 MHz)

| Frequency [MHz] | E [dBµV/m] | E [µV/m] | $U_{RX}$ [dBµV] | $A_{TOT}$ [dB] | Polarisation | Result |
|---|---|---|---|---|---|---|
| 4924.000000 | 26.60 | 21.38 | 28.40 | -1.8 | VERTICAL | PASSED |
| 7386.000000 | 30.60 | 33.88 | 27.10 | 3.5 | HORIZONTAL | PASSED |



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# 4. Test Equipment

## 4.1. Conducted measurements

| Eq. No | Equipment | Type | Manufacturer | Used in |
|---|---|---|---|---|
| TM30597 | Power splitter | 11667A | Agilent | 22/24/27, 15C |
| TM37499 | Power splitter | 11667A | Agilent | 22/24/27, 15C |
| TM38111 | Multimeter | 34401A | Agilent | 22/24/27, 15C |
| TM38112 | DC power supply | 6632A | Agilent | 22/24/27, 15C |
| TM22901 | Attenuator | 8496A | Agilent | 22/24/27, 15C |
| TM30636 | Artificial mains net | L2-16 | PMM | 15C, 15B |
| TM37678 | Radio communication tester | CMU-200 | R&S | 22/24/27, 15C, 15B |
| TM37773 | Radio communication tester | CMU-200 | R&S | 22/24/27, 15C, 15B |
| TM30600 | Pulse Limiter | ESH3-Z2 | R&S | 15C, 15B |
| TM26490 | LISN 50 µH | ESH3-Z5 | R&S | 15C, 15B |
| TM37610 | Spectrum analyzer | FSU | R&S | 22/24/27, 15C |
| TM22835 | Multimeter | 87 | Fluke | 15C, 15B |
| TM37500 | Microwave switch system | 7116-MSW | Keithley | 22/24/27, 15C, 15B |
| TM22638 | Power supply | OL63743-901 | Transformatic | 22/24/27, 15C, 15B |
| | Temperature chamber | VT4002 | Vötsch | 22/24/27, 15C |
| 2058 | EMI Test receiver | ESPC | R&S | 15C, 15B |
| 2001 | Bluetooth tester | CBT | R&S | 22/24/27, 15C, 15B |
| 2002 | Radio communication tester | CMU-200 | R&S | 22/24/27, 15C, 15B |

## 4.2. Radiated measurements

| Eq. No | Equipment | Type | Manufacturer | Used in |
|---|---|---|---|---|
| TM30599 | 3m semi-anechoic chamber | | TDK | 22/24/27, 15C, 15B |
| TM38845 | EMI receiver | ESI 40 | R&S | 22/24/27, 15C, 15B |
| TM37498 | Preamplifier | AMF-5D-020180-26-10P | MITEQ | 22/24/27, 15C, 15B |
| TM37523 | Preamplifier | AMF-4D-10M-3G-25-20P | MITEQ | 22/24/27, 15C, 15B |
| TM37516 | Biconilog antenna | HL562 | R&S | 22/24/27, 15C, 15B |
| TM26496 | Double ridged waveguide antenna | 3115 | EMCO | 22/24/27, 15C, 15B |
| TM39158 | Horn antenna | 3116 | EMCO | 22/24/27, 15C, 15B |
| TM26492 | Reference dipole set | UHAP/VHAP | Schwarzbeck | 22/24/27, 15C, 15B |
| TM37501 | Dipole antenna | 3125-870 | EMCO | 22/24/27 |
| TM37502 | Dipole antenna | 3125-1880 | EMCO | 22/24/27 |
| TM37773 | Radio communication tester | CMU-200 | R&S | 22/24/27, 15C, 15B |
| TM38631 | Signal generator | 83640L | Agilent | 22/24/27, 15C, 15B |
| TM38066 | High pass filter | 4HC3000/18000-3-KK | Trilithic | 22/24/27, 15C, 15B |
| TM26511 | Tunable notch filter | WRCA870 | Wainwright | 22/24/27 |
| TM38215 | Tunable notch filter | WRCD1850/1910-0.2/40 | Wainwright | 22/24/27 |
| TM38214 | Band reject filter | WRCT 2402/2480-2400/2483.5-30 | Wainwright | 15C |
| TM30642 | Mast/Turntable controller | HD-100 | Deisel | 22/24/27, 15C, 15B |
| TM26500 | Turntable | DS412 | Deisel | 22/24/27, 15C, 15B |
| TM38842 | Antenna mast controller | 2090 | EMCO | 22/24/27, 15C, 15B |
| TM38843 | Antenna mast | 2075 | EMCO | 22/24/27, 15C, 15B |
| TM38114 | DC power supply | 6632A | Agilent | 22/24/27, 15C, 15B |
| TM38323 | Preamplifier | PA-02 18-26 GHz | EMC Automation | 22/24/27, 15C, 15B |
| TM37678 | Radio communication tester | CMU-200 | R&S | 22/24/27, 15C, 15B |
| TM22638 | Power supply | OL63743-901 | Transformatic | 22/24/27, 15C, 15B |



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| Eq. No | Equipment | Type | Manufacturer | Used in |
|---|---|---|---|---|
| TM23892 | Yaesu controller | G-1000SDX | Yaesu | 22/24/27, 15C, 15B |
| 2001 | Bluetooth tester | CBT | R&S | 22/24/27, 15C, 15B |
| 2002 | Radio communication tester | CMU-200 | R&S | 22/24/27, 15C, 15B |



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