

## FCC Part 15C Compliance Test Report

|                                                         |                                                                                                                                                                                                                                                      |                                   |                                                                                                               |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------|
| <b>Test Report no.:</b>                                 | Salo_FCC_0622_01.doc                                                                                                                                                                                                                                 | <b>Date of Report:</b>            | 19.06.2006                                                                                                    |
| <b>Number of pages:</b>                                 | 39                                                                                                                                                                                                                                                   | <b>Customer's Contact person:</b> | Ole Sørensen                                                                                                  |
| <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>Client:</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-165 / Battery BP-6X, Headset HS-15 and AC- Charger AC-3</b>                                                                                                                                                                              |                                   |                                                                                                               |
| <b>FCC ID:</b>                                          | QTKRM-165                                                                                                                                                                                                                                            | <b>IC:</b>                        | 661AD-RM165                                                                                                   |
| <b>Supplement reports:</b>                              | -                                                                                                                                                                                                                                                    |                                   |                                                                                                               |
| <b>Testing has been carried out in accordance with:</b> | <b>CFR 47, FCC rules Part 15 Subpart C, ANSI C63.4 (2003), IC standards RSS-GEN and RSS-210. 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>             |                                                                                                                                                                                                                                                      |                                   |                                                                                                               |

**Tomi Lipponen, System Manager**

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

|                               |                                                         |
|-------------------------------|---------------------------------------------------------|
| Date of receipt               | 29.05.2006                                              |
| Testing completed             | 12.06.2006                                              |
| The customer's contact person | Ole Sørensen                                            |
| Test Plan referred to         | T:\Projects\RM-165\TestPlan_RS\RS_Test_plan_RM-165.xls  |
| Notes                         | -                                                       |
| Document name                 | T:\Projects\RM-165\EMC\Results\FCC\Salo_FCC_0622_01.doc |

### 1.1. EUT and Accessory Information

The EUT is a triple band (GSM900/1800/1900) mobile phone with GPRS, EGPRS and Bluetooth. Bluetooth is tested with maximum rated TX power.

| Product     | Type   | SN                          | HW   | MV  | SW    | DUT   |
|-------------|--------|-----------------------------|------|-----|-------|-------|
| Phone       | RM-165 | 004400/92/160543/0          | 0303 | -   | 03.20 | 11295 |
| Phone       | RM-165 | 004400/92/160541/4          | 0303 | -   | 03.20 | 11320 |
| Battery     | BP-6X  | 4181576146110100155;0670534 | -    | -   | -     | 11291 |
| Battery     | BP-6X  | 4181576146110100116;0670534 | -    | -   | -     | 11321 |
| Headset     | HS-15  | 0208                        | 0.2  | 0.4 | -     | 11299 |
| AC- Charger | AC-3E  | 067537039350L392110000414   | -    | -   | -     | 11129 |

### 1.2. Summary of Test Results

#### Bluetooth:

| Section in CFR 47 | Section in RSS-GEN or RSS-210 | Name of the test                     | Result |
|-------------------|-------------------------------|--------------------------------------|--------|
| 15.247(b)(1)      | A8.4 (2)                      | Peak output power                    | PASSED |
| 15.247(c)         | A8.5                          | Band edge compliance of RF emissions | PASSED |
| 15.247(c)         | A8.5                          | Spurious RF conducted emissions      | PASSED |
| 15.247(c), 15.209 | A8.5                          | Spurious radiated emissions          | PASSED |
| 15.207            | 7.2.2                         | AC powerline conducted emissions     | PASSED |
| 15.247(a)(1)      | A8.1 (1)                      | 20 dB bandwidth                      | PASSED |
| 15.247(a)(1)      | A8.1 (2)                      | Carrier frequency separation         | PASSED |
| 15.247(a)(1)(iii) | A8.1 (4)                      | Number of hopping frequencies        | PASSED |
| 15.247(a)(1)(iii) | A8.1 (4)                      | Time of occupancy                    | PASSED |

PASSED

FAILED

NP

The EUT complies with the essential requirements in the standard.

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

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

## CONTENTS

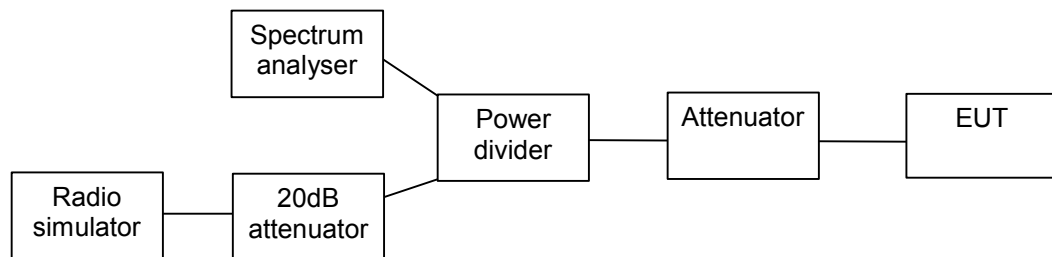
|                                                                                          |           |
|------------------------------------------------------------------------------------------|-----------|
| <b>1. Summary for FCC Part 15C Compliance Test Report.....</b>                           | <b>2</b>  |
| 1.1. EUT and Accessory Information .....                                                 | 2         |
| 1.2. Summary of Test Results .....                                                       | 2         |
| <b>2. Test setups.....</b>                                                               | <b>5</b>  |
| 2.1. Conducted RF test setup .....                                                       | 5         |
| 2.2. AC powerline conducted emissions test setup.....                                    | 5         |
| 2.3. Spurious radiated emissions test setup .....                                        | 5         |
| <b>3. Peak output power (FCC §15.247(b)(1), RSS-210 A8.4 (2)).....</b>                   | <b>6</b>  |
| 3.1. Test method and limit.....                                                          | 6         |
| 3.2. Bluetooth Test results .....                                                        | 7         |
| <b>4. Band edge compliance of RF emissions (FCC §15.247(c), RSS-210 A8.5) .....</b>      | <b>9</b>  |
| 4.1. Test method and limit.....                                                          | 9         |
| 4.2. Bluetooth Test results .....                                                        | 10        |
| <b>5. Spurious RF conducted emissions (FCC §15.247(c), RSS-A8.5).....</b>                | <b>15</b> |
| 5.1. Test method and limit.....                                                          | 15        |
| 5.2. Bluetooth Test results .....                                                        | 16        |
| <b>6. Spurious radiated emissions (FCC §15.247(c), §15.209, RSS-210 A8.5).....</b>       | <b>18</b> |
| 6.1. Test method and limit.....                                                          | 18        |
| 6.2. Bluetooth Test results .....                                                        | 19        |
| <b>7. AC powerline conducted emissions (FCC §15.207, RSS-GEN 7.2.2) .....</b>            | <b>20</b> |
| 7.1. Test method and limit.....                                                          | 20        |
| 7.2. Bluetooth Test results .....                                                        | 21        |
| <b>8. 20 dB bandwidth (FCC §15.247(a)(1), RSS-210 A8.1 (1)) .....</b>                    | <b>22</b> |
| 8.1. Test method and limit.....                                                          | 22        |
| 8.2. Bluetooth Test results .....                                                        | 23        |
| <b>9. Carrier frequency separation (FCC §15.247(a)(1), RSS-210 A8.1 (2)) .....</b>       | <b>27</b> |
| 9.1. Test method and limit.....                                                          | 27        |
| 9.2. Bluetooth Test results .....                                                        | 28        |
| <b>10. Number of hopping frequencies (FCC §15.247(a)(1)(iii), RSS-210 A8.1 (4)).....</b> | <b>30</b> |
| 10.1. Test method and limit.....                                                         | 30        |
| 10.2. Bluetooth Test results .....                                                       | 31        |
| <b>11. Time of occupancy (FCC §15.247(a)(1)(iii), RSS-210 A8.1 (4)) .....</b>            | <b>32</b> |

---

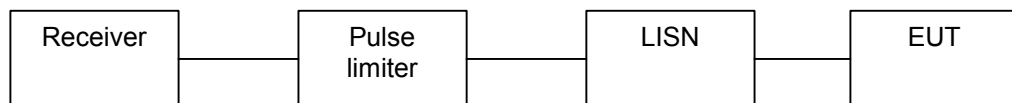
|            |                              |           |
|------------|------------------------------|-----------|
| 11.1.      | Test method and limit .....  | 32        |
| 11.2.      | Bluetooth test results ..... | 33        |
| <b>12.</b> | <b>Test Equipment .....</b>  | <b>38</b> |
| 12.1.      | Conducted measurements ..... | 38        |
| 12.2.      | Radiated measurements .....  | 38        |

## 2. Test setups

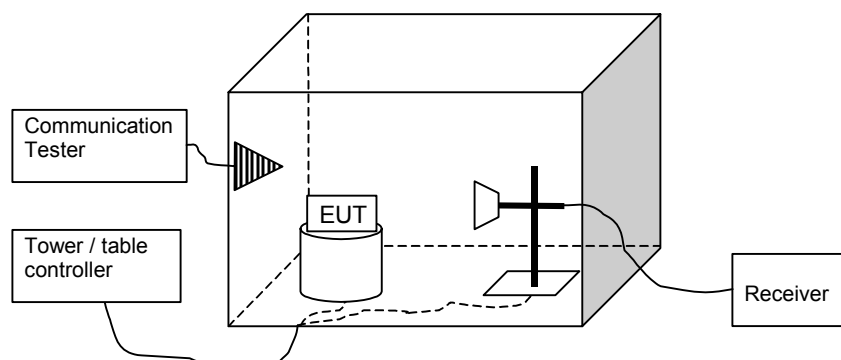
### 2.1. Conducted RF test setup



### 2.2. AC powerline conducted emissions test setup



### 2.3. Spurious radiated emissions test setup



### 3. Peak output power (FCC §15.247(b)(1), RSS-210 A8.4 (2))

|                                                 |                   |
|-------------------------------------------------|-------------------|
| EUT with DUT number                             | RM-165, DUT 11320 |
| Accessories with DUT numbers                    | BP-6X, DUT 11321  |
| Operation Voltage [V] / [Hz]                    | 115 / 60          |
| Result                                          | PASSED            |
| Remarks                                         | -                 |
| Temp [°C] / Humidity [%RH] / Air Pressure [kPa] | 20 / 40 / 101.2   |
| Date of measurements                            | 12.06.2006        |
| Measured by                                     | Janne Niemi       |

#### 3.1. Test method and limit

The measurement is made according to FCC rules part 15.247 and IC standard RSS-210.

Limits for peak output power measurements

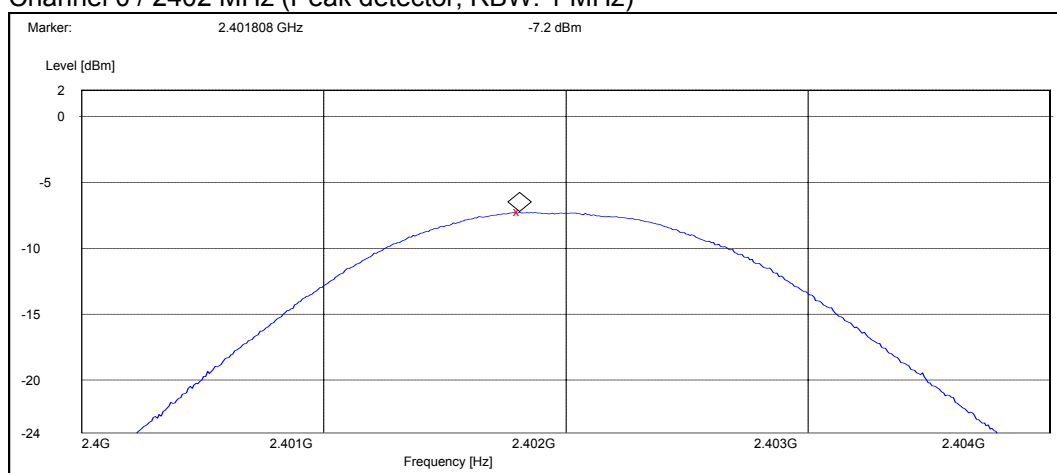
| Frequency range [MHz] | Limit [W] | Limit [dBm] |
|-----------------------|-----------|-------------|
| 2400 – 2483.5         | $\leq 1$  | $\leq 30$   |

## 3.2. Bluetooth Test results

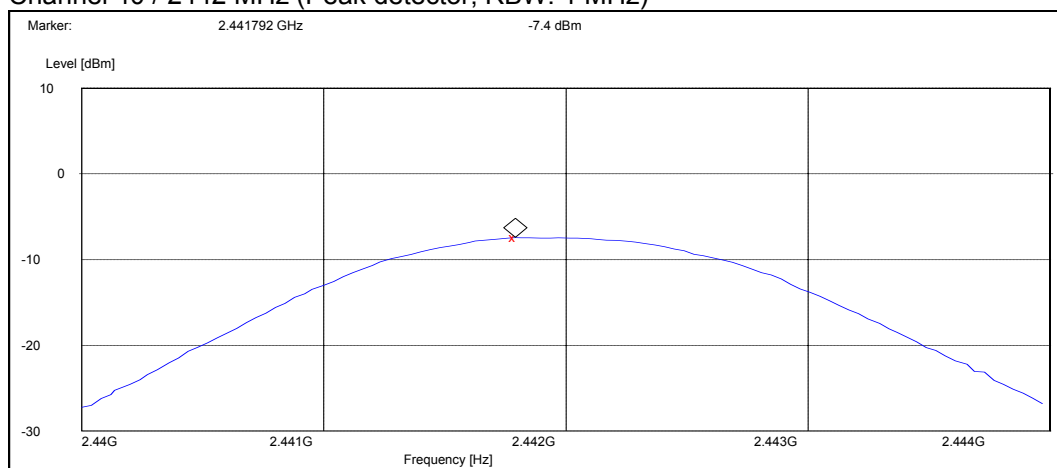
### 3.2.1 8DPSK modulation, PRBS packet type

| Channel / $f_c$ [MHz] | P [dBm] | P [mW] | Result |
|-----------------------|---------|--------|--------|
| 0 / 2402              | -7.20   | 0.191  | PASSED |
| 40 / 2442             | -7.40   | 0.182  | PASSED |
| 78 / 2480             | -7.30   | 0.186  | PASSED |

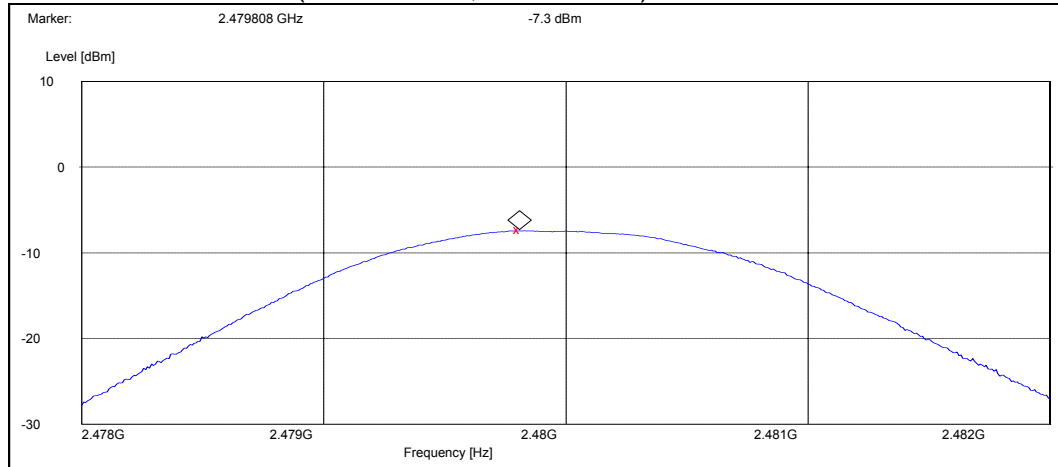
Channel 0 / 2402 MHz (Peak detector, RBW: 1 MHz)



Channel 40 / 2442 MHz (Peak detector, RBW: 1 MHz)



Channel 78 / 2480 MHz (Peak detector, RBW: 1 MHz)



#### 4. Band edge compliance of RF emissions (FCC §15.247(c), RSS-210 A8.5)

|                                                        |                   |
|--------------------------------------------------------|-------------------|
| <b>EUT with DUT number</b>                             | RM-165, DUT 11320 |
| <b>Accessories with DUT numbers</b>                    | BP-6X, DUT 11321  |
| <b>Operation Voltage [V] / [Hz]</b>                    | 115 / 60          |
| <b>Result</b>                                          | PASSED            |
| <b>Remarks</b>                                         | -                 |
| <b>Temp [°C] / Humidity [%RH] / Air Pressure [kPa]</b> | 20 / 40 / 101.2   |
| <b>Date of measurements</b>                            | 12.06.2006        |
| <b>Measured by</b>                                     | Janne Niemi       |

##### 4.1. Test method and limit

The measurement is made according to FCC rules part 15.247 and IC standard RSS-210.

Limits for band edge compliance of RF emissions measurements (3 m measurement distance)

| <b>Frequency range [MHz]</b> | <b>Limit Average [dBμV/m]</b> | <b>Limit Peak [dBμV/m]</b> |
|------------------------------|-------------------------------|----------------------------|
| Below 2390 and above 2483.5  | ≤ 54                          | ≤ 74                       |

## 4.2. Bluetooth Test results

### 4.2.1 $\pi/4$ -DQPSK modulation, PRBS packet type

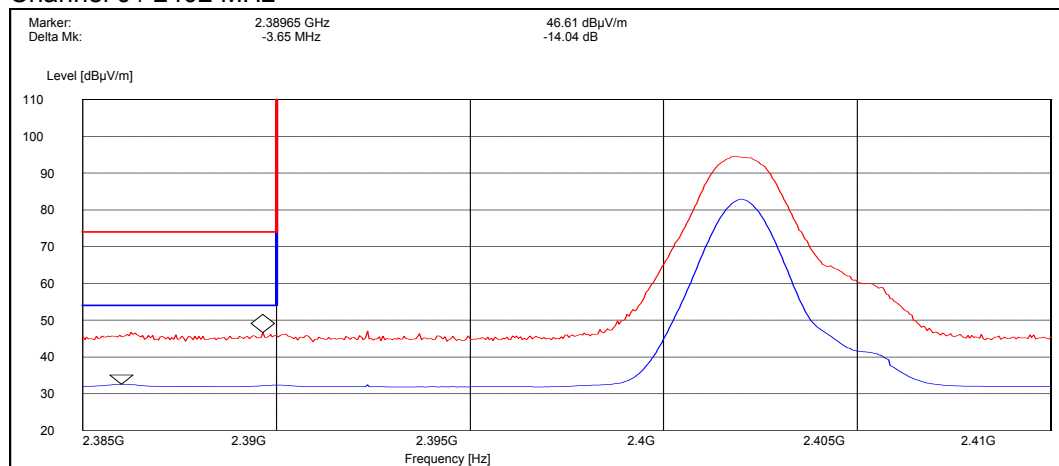
Average (RBW: 1 MHz)

| Channel / $f_c$ [MHz] | E [dB $\mu$ V/m] | Result |
|-----------------------|------------------|--------|
| 0 / 2402              | 32.57            | PASSED |
| 78 / 2480             | 42.57            | PASSED |
| Hopping on, low end   | 31.74            | PASSED |
| Hopping on, high end  | 35.11            | PASSED |

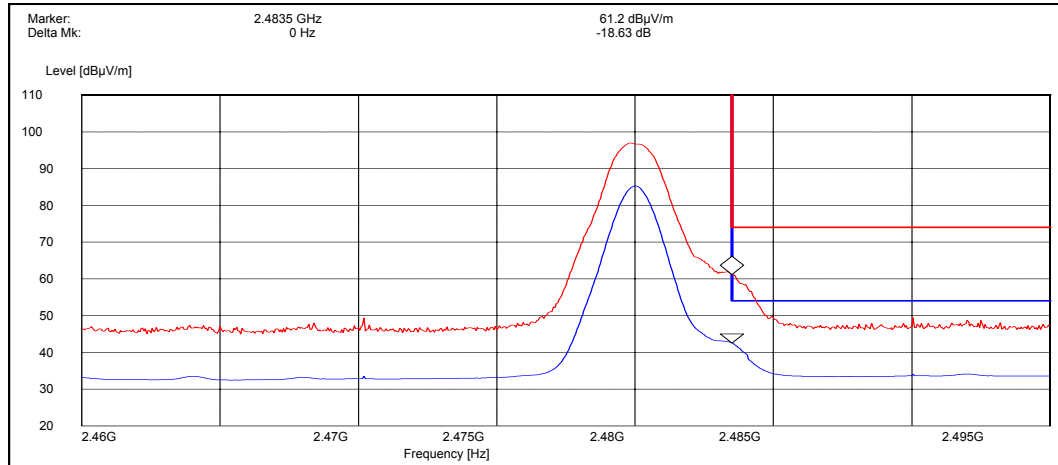
Peak (RBW: 1 MHz)

| Channel / $f_c$ [MHz] | E [dB $\mu$ V/m] | Result |
|-----------------------|------------------|--------|
| 0 / 2402              | 46.61            | PASSED |
| 78 / 2480             | 61.20            | PASSED |
| Hopping on, low end   | 46.34            | PASSED |
| Hopping on, high end  | 60.32            | PASSED |

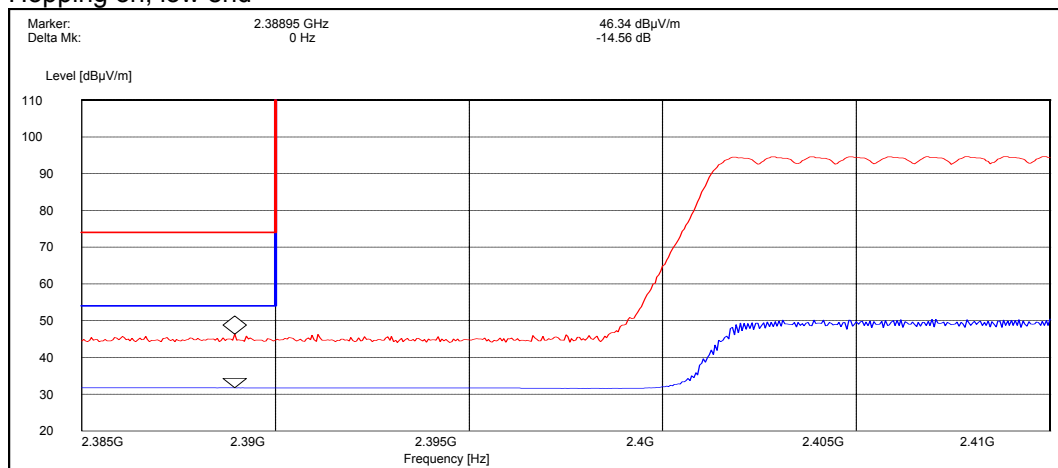
Channel 0 / 2402 MHz



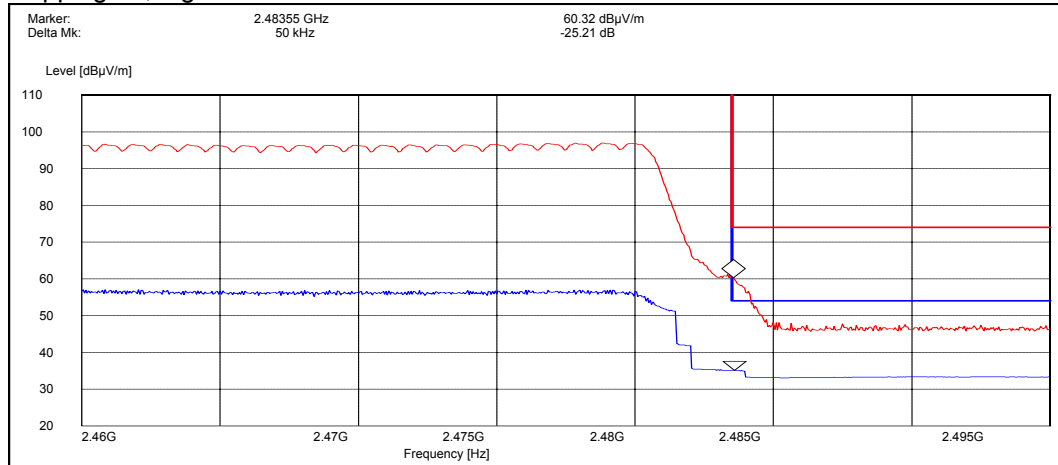
### Channel 78 / 2480 MHz



### Hopping on, low end



### Hopping on, high end



### 4.2.2 8DPSK modulation, PRBS packet type

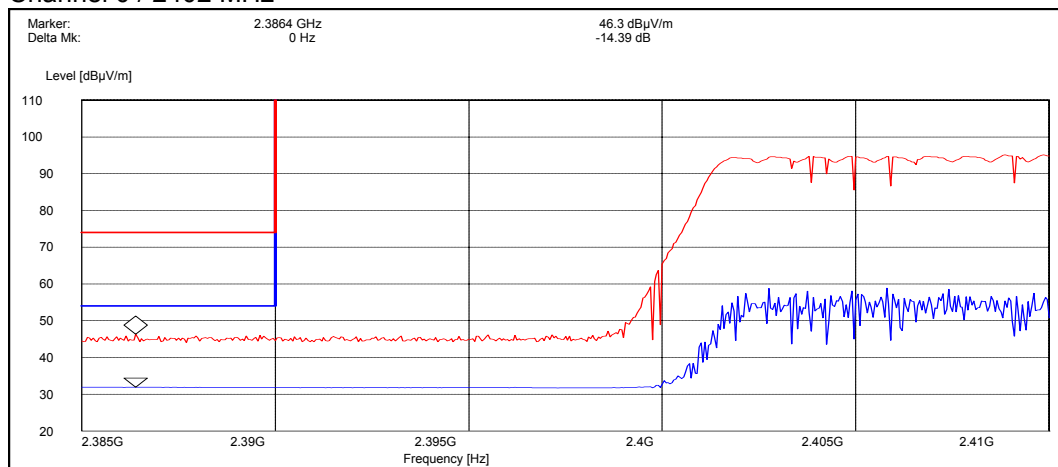
Average (RBW: 1 MHz)

| Channel / $f_c$ [MHz] | E [dBμV/m] | Result |
|-----------------------|------------|--------|
| 0 / 2402              | 31.91      | PASSED |
| 78 / 2480             | 41.49      | PASSED |
| Hopping on, low end   | 31.93      | PASSED |
| Hopping on, high end  | 35.11      | PASSED |

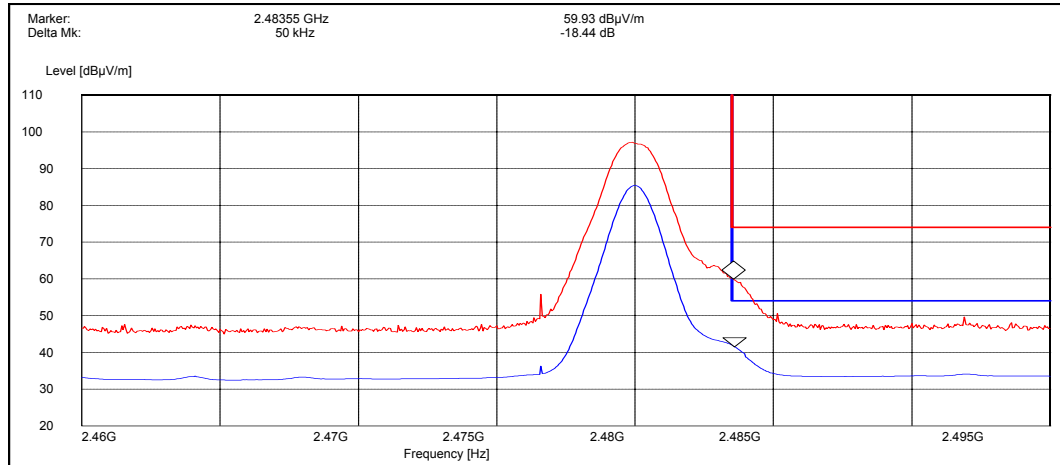
Peak (RBW: 1 MHz)

| Channel / $f_c$ [MHz] | E [dBμV/m] | Result |
|-----------------------|------------|--------|
| 0 / 2402              | 46.30      | PASSED |
| 78 / 2480             | 59.93      | PASSED |
| Hopping on, low end   | 46.45      | PASSED |
| Hopping on, high end  | 59.04      | PASSED |

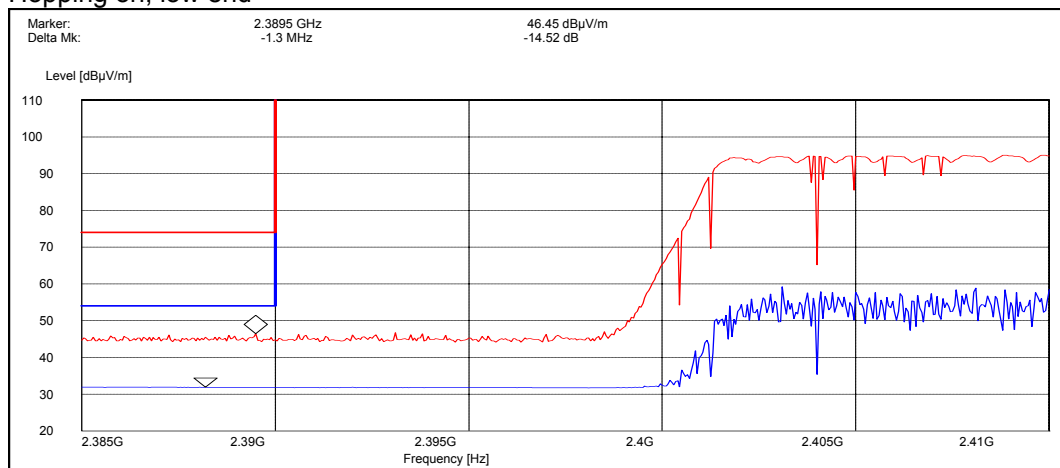
### Channel 0 / 2402 MHz



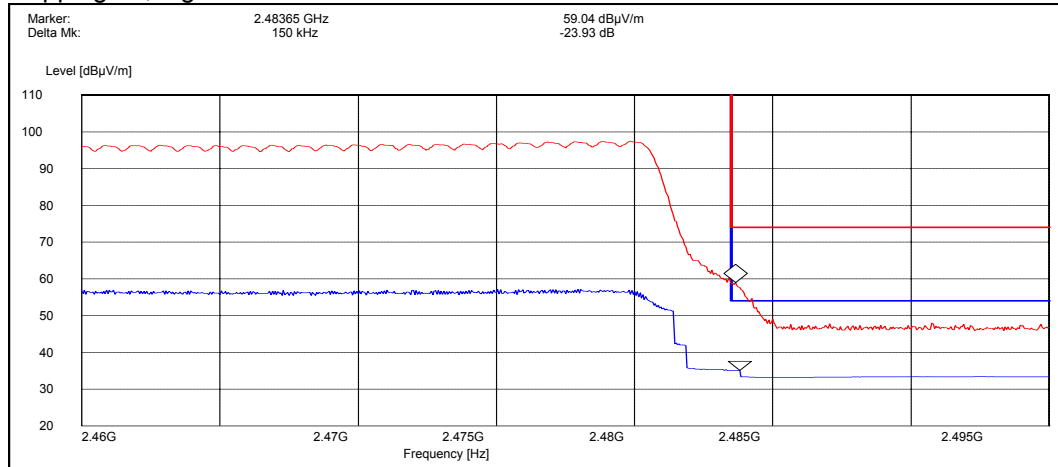
### Channel 78 / 2480 MHz



### Hopping on, low end



### Hopping on, high end



## 5. Spurious RF conducted emissions (FCC §15.247(c), RSS-A8.5)

|                                                        |                   |
|--------------------------------------------------------|-------------------|
| <b>EUT with DUT number</b>                             | RM-165, DUT 11320 |
| <b>Accessories with DUT numbers</b>                    | BP-6X, DUT 11321  |
| <b>Operation Voltage [V] / [Hz]</b>                    | 115 / 60          |
| <b>Result</b>                                          | PASSED            |
| <b>Remarks</b>                                         | -                 |
| <b>Temp [°C] / Humidity [%RH] / Air Pressure [kPa]</b> | 20 / 40 / 101.2   |
| <b>Date of measurements</b>                            | 12.06.2006        |
| <b>Measured by</b>                                     | Janne Niemi       |

### 5.1. Test method and limit

The measurement is made according to FCC rules part 15.247 and IC standard RSS-210.

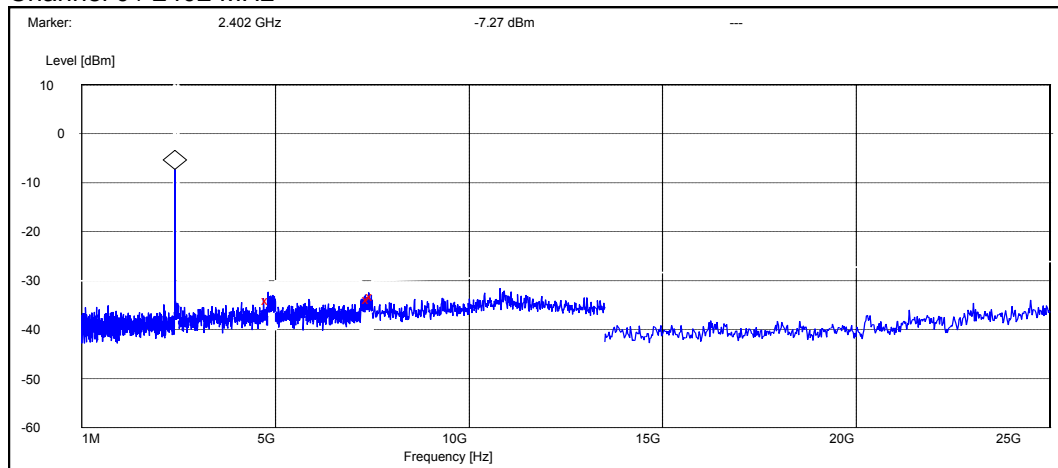
Limits for spurious RF conducted emissions measurements

| <b>Frequency range [MHz]</b> | <b>Limit [dBc]</b> |
|------------------------------|--------------------|
| 1 – 25000                    | ≤ -20              |

## 5.2. Bluetooth Test results

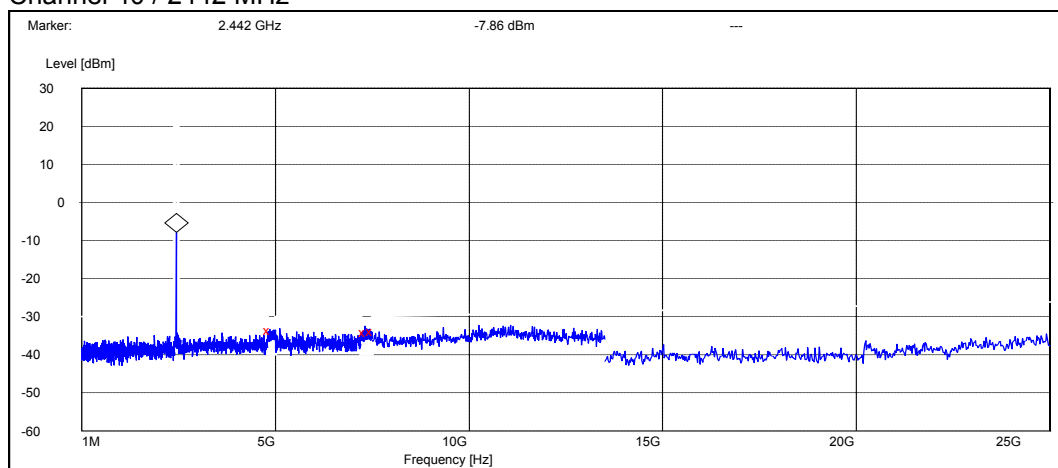
### 5.2.1 8DPSK modulation, PRBS packet type

Channel 0 / 2402 MHz



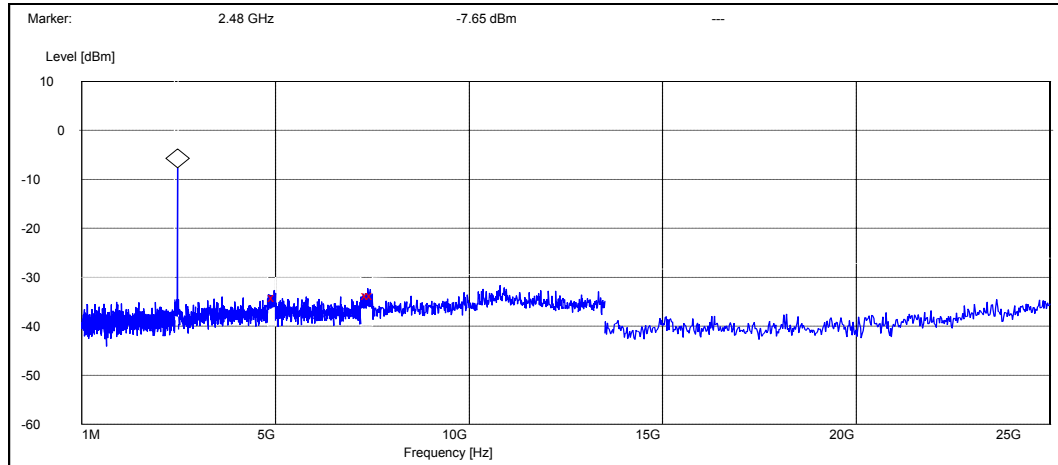
| Frequency [MHz] | P [dBc]    | Result |
|-----------------|------------|--------|
| 4812.800000     | -26.731696 | PASSED |
| 7405.200000     | -26.531696 | PASSED |
| 7500.000000     | -25.931696 | PASSED |

Channel 40 / 2442 MHz



| Frequency [MHz] | P [dBc]    | Result |
|-----------------|------------|--------|
| 4847.200000     | -25.644797 | PASSED |
| 7318.800000     | -26.244797 | PASSED |
| 7500.000000     | -25.944797 | PASSED |

### Channel 78 / 2480 MHz



| Frequency [MHz] | P [dBc]    | Result |
|-----------------|------------|--------|
| 4976.400000     | -26.554643 | PASSED |
| 7385.400000     | -25.954643 | PASSED |
| 7500.000000     | -26.154643 | PASSED |

## 6. Spurious radiated emissions (FCC §15.247(c), §15.209, RSS-210 A8.5)

|                                                            |                                                        |
|------------------------------------------------------------|--------------------------------------------------------|
| <b>EUT with DUT number</b>                                 | RM-165, DUT 11295                                      |
| <b>Accessories with DUT numbers</b>                        | BP-6X, DUT 11291; HS-15, DUT 11299;<br>AC-3, DUT 11129 |
| <b>Operation Voltage [V] / [Hz]</b>                        | 115 / 60                                               |
| <b>Result</b>                                              | PASSED                                                 |
| <b>Remarks</b>                                             |                                                        |
| <b>Temp [°C] / Humidity [%RH] /<br/>Air Pressure [kPa]</b> | 22 / 55 / 102.1                                        |
| <b>Date of measurements</b>                                | 31.05.2006                                             |
| <b>Measured by</b>                                         | Tomi Lipponen / Sami Lehtonen                          |

### 6.1. Test method and limit

The measurement is made according to FCC rules part 15.247 and IC standard RSS-210 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 the 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 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 ( $A_{TOT} = L_{CABLES} + AF - G_{PREAMP}$ ).

Limits for spurious radiated emissions measurements (3 m measurement distance)

| Frequency range [MHz] | Limit [ $\mu\text{V/m}$ ] | Limit [dB $\mu\text{V/m}$ ] | Detector   |
|-----------------------|---------------------------|-----------------------------|------------|
| 30 – 88               | 100                       | 40                          | Quasi peak |
| 88 – 216              | 150                       | 43.5                        | Quasi peak |
| 216 – 960             | 200                       | 46                          | Quasi peak |
| 960 – 1000            | 500                       | 54                          | Quasi peak |
| Above 1000            | 500                       | 54                          | Average    |
| Above 1000            | 5000                      | 74                          | Peak       |

## 6.2. Bluetooth Test results

### 6.2.1 8DPSK modulation, PRBS packet type

Channel 40 / 2442 MHz

Quasi peak (RBW: 120 kHz)

| Frequency [MHz] | E [dB $\mu\text{V/m}$ ] | E [ $\mu\text{V/m}$ ] | U <sub>RX</sub> [dB $\mu\text{V}$ ] | A <sub>TOT</sub> [dB] | Polarisation | Result |
|-----------------|-------------------------|-----------------------|-------------------------------------|-----------------------|--------------|--------|
| 38.095391       | 16.80                   | 6.92                  | 35.70                               | -18.90                | VERTICAL     | PASSED |

Peak (RBW: 1 MHz)

| Frequency [MHz] | E [dB $\mu\text{V/m}$ ] | E [ $\mu\text{V/m}$ ] | U <sub>RX</sub> [dB $\mu\text{V}$ ] | A <sub>TOT</sub> [dB] | Polarisation | Result |
|-----------------|-------------------------|-----------------------|-------------------------------------|-----------------------|--------------|--------|
| 4850.701403     | 44.70                   | 171.79                | 42.70                               | 2.00                  | VERTICAL     | PASSED |
| 12442.893788    | 52.50                   | 421.70                | 40.50                               | 12.00                 | VERTICAL     | PASSED |
| 12504.000000    | 52.20                   | 407.38                | 40.20                               | 12.00                 | VERTICAL     | PASSED |
| 15499.495992    | 54.00                   | 501.19                | 34.20                               | 19.80                 | VERTICAL     | PASSED |
| 15899.303607    | 54.70                   | 543.25                | 34.10                               | 20.60                 | VERTICAL     | PASSED |
| 16155.318637    | 54.90                   | 555.90                | 33.90                               | 21.00                 | VERTICAL     | PASSED |
| 17717.928858    | 57.00                   | 707.95                | 34.60                               | 22.40                 | VERTICAL     | PASSED |

Average (RBW: 1 MHz)

| Frequency [MHz] | E [dB $\mu\text{V/m}$ ] | E [ $\mu\text{V/m}$ ] | U <sub>RX</sub> [dB $\mu\text{V}$ ] | A <sub>TOT</sub> [dB] | Polarisation | Result |
|-----------------|-------------------------|-----------------------|-------------------------------------|-----------------------|--------------|--------|
| 4854.201403     | 31.90                   | 39.36                 | 29.90                               | 2.00                  | VERTICAL     | PASSED |
| 12445.893788    | 38.80                   | 87.10                 | 26.80                               | 12.00                 | VERTICAL     | PASSED |
| 12505.000000    | 39.20                   | 91.20                 | 27.20                               | 12.00                 | VERTICAL     | PASSED |
| 15496.995992    | 41.20                   | 114.82                | 21.40                               | 19.80                 | VERTICAL     | PASSED |
| 15900.803607    | 41.90                   | 124.45                | 21.30                               | 20.60                 | VERTICAL     | PASSED |
| 16156.818637    | 42.20                   | 128.82                | 21.20                               | 21.00                 | VERTICAL     | PASSED |
| 17712.928858    | 43.80                   | 154.88                | 21.40                               | 22.40                 | VERTICAL     | PASSED |

## 7. AC powerline conducted emissions (FCC §15.207, RSS-GEN 7.2.2)

|                                                            |                                                        |
|------------------------------------------------------------|--------------------------------------------------------|
| <b>EUT with DUT number</b>                                 | RM-165, DUT 11295                                      |
| <b>Accessories with DUT numbers</b>                        | BP-6X, DUT 11291; HS-15, DUT 11299;<br>AC-3, DUT 11129 |
| <b>Operation Voltage [V] / [Hz]</b>                        | 115 / 60                                               |
| <b>Result</b>                                              | PASSED                                                 |
| <b>Remarks</b>                                             | -                                                      |
| <b>Temp [°C] / Humidity [%RH] /<br/>Air Pressure [kPa]</b> | 22 / 42 / 102                                          |
| <b>Date of measurements</b>                                | 07.06.2006                                             |
| <b>Measured by</b>                                         | Sami Lehtonen                                          |

### 7.1. Test method and limit

The measurement is made according to FCC rules part 15.247 and IC standard RSS-GEN 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.

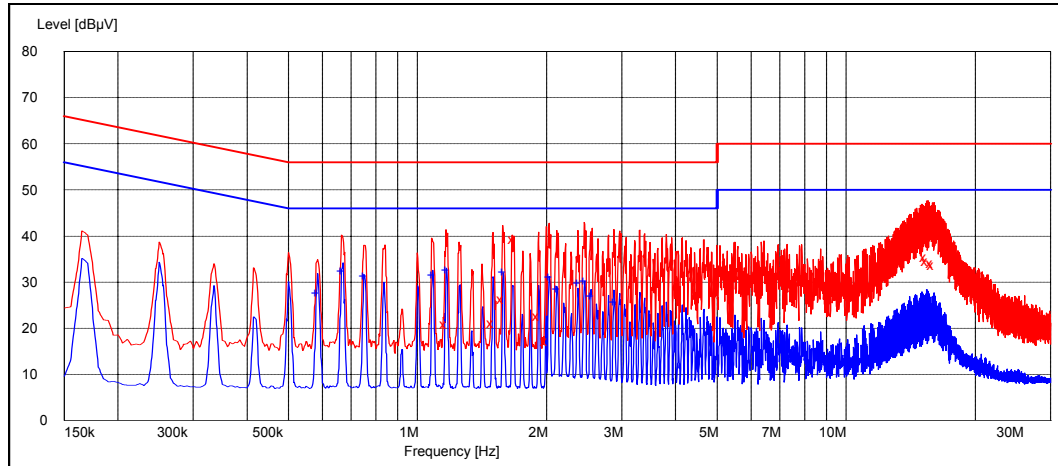
CISPR 22 Class B limits

| 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                   |

## 7.2. Bluetooth Test results

### 7.2.1 8DPSK modulation, PRBS packet type

Channel 40 / 2442 MHz



Quasi peak (RBW: 9 kHz)

| Frequency [MHz] | U [dBμV] | Line | Result |
|-----------------|----------|------|--------|
| 1.165000        | 20.90    | N    | PASSED |
| 1.500000        | 21.10    | N    | PASSED |
| 1.585000        | 26.20    | N    | PASSED |
| 1.680000        | 39.20    | L1   | PASSED |
| 1.920000        | 22.60    | N    | PASSED |
| 2.000000        | 17.30    | N    | PASSED |
| 15.375000       | 35.40    | L1   | PASSED |
| 15.465000       | 34.60    | L1   | PASSED |
| 15.480000       | 43.30    | L1   | PASSED |
| 15.580000       | 43.00    | L1   | PASSED |
| 15.890000       | 34.10    | N    | PASSED |
| 15.985000       | 33.60    | N    | PASSED |

Average (RBW: 9 kHz)

| Frequency [MHz] | U [dBμV] | Line | Result |
|-----------------|----------|------|--------|
| 0.585000        | 27.70    | L1   | PASSED |
| 0.670000        | 32.40    | L1   | PASSED |
| 0.755000        | 31.30    | L1   | PASSED |
| 1.090000        | 31.50    | L1   | PASSED |
| 1.175000        | 32.50    | L1   | PASSED |
| 1.595000        | 32.10    | L1   | PASSED |
| 2.045000        | 31.10    | L1   | PASSED |
| 2.130000        | 28.50    | L1   | PASSED |
| 2.385000        | 29.70    | L1   | PASSED |
| 2.470000        | 30.10    | L1   | PASSED |
| 2.555000        | 27.00    | L1   | PASSED |
| 2.895000        | 25.60    | L1   | PASSED |

## 8. 20 dB bandwidth (FCC §15.247(a)(1), RSS-210 A8.1 (1))

|                                                        |                   |
|--------------------------------------------------------|-------------------|
| <b>EUT with DUT number</b>                             | RM-165, DUT 11320 |
| <b>Accessories with DUT numbers</b>                    | BP-6X, DUT 11321  |
| <b>Operation Voltage [V] / [Hz]</b>                    | 115 / 60          |
| <b>Result</b>                                          | PASSED            |
| <b>Remarks</b>                                         | -                 |
| <b>Temp [°C] / Humidity [%RH] / Air Pressure [kPa]</b> | 20 / 40 / 101.2   |
| <b>Date of measurements</b>                            | 12.06.2006        |
| <b>Measured by</b>                                     | Janne Niemi       |

### 8.1. Test method and limit

The measurement is made according to FCC rules part 15.247 and IC standard RSS-210.

Limits for 20 dB bandwidth measurements

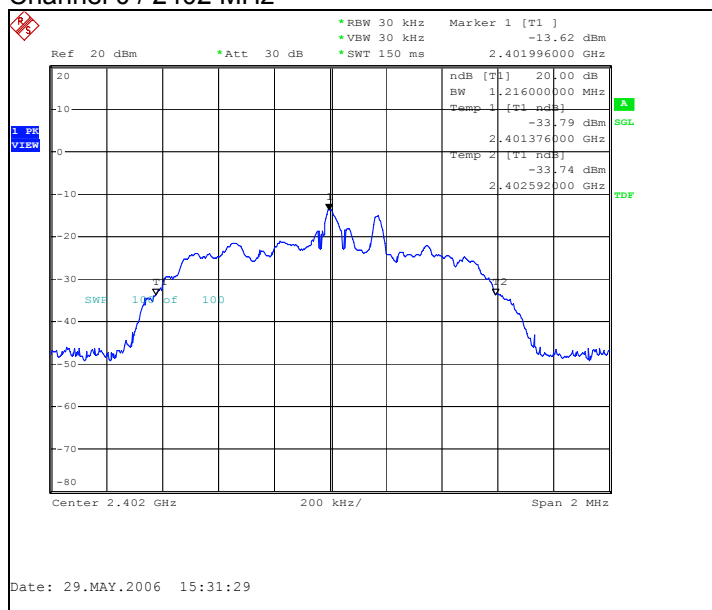
| Limit [MHz] |
|-------------|
| N/A         |

## 8.2. Bluetooth Test results

### 8.2.1 $\pi/4$ -DQPSK modulation, PRBS packet type (2-DH5)

| Channel / $f_c$ [MHz] | 20 dB bandwidth [kHz] | Result |
|-----------------------|-----------------------|--------|
| 0 / 2402              | 1216.000              | PASSED |
| 40 / 2442             | 1244.000              | PASSED |
| 78 / 2480             | 1216.000              | PASSED |

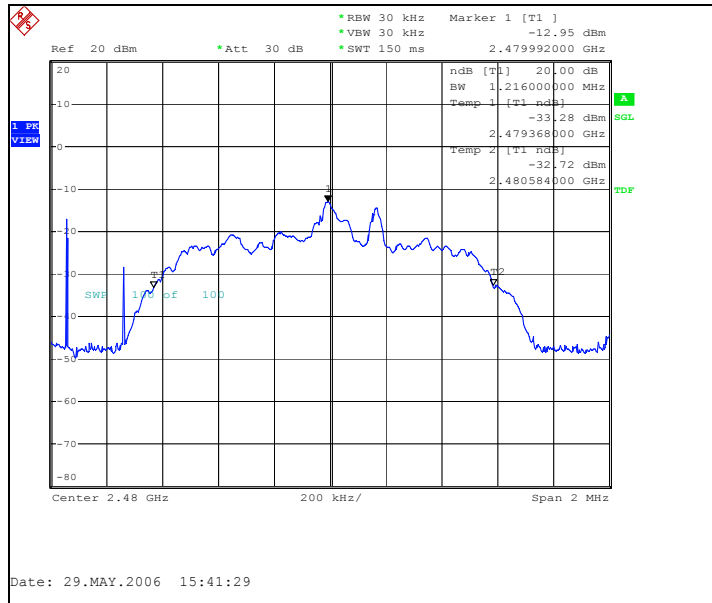
Channel 0 / 2402 MHz



### Channel 40 / 2442 MHz



### Channel 78 / 2480 MHz



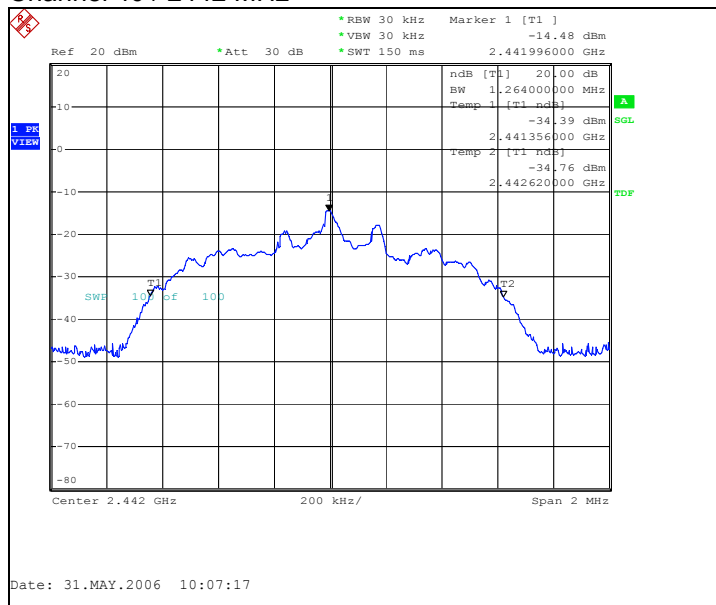
## 8.2.2 8DPSK modulation, PRBS packet type (3-DH5)

| Channel / f <sub>c</sub> [MHz] | 20 dB bandwidth [kHz] | Result |
|--------------------------------|-----------------------|--------|
| 0 / 2402                       | 1260.000              | PASSED |
| 40 / 2442                      | 1264.000              | PASSED |
| 78 / 2480                      | 1264.000              | PASSED |

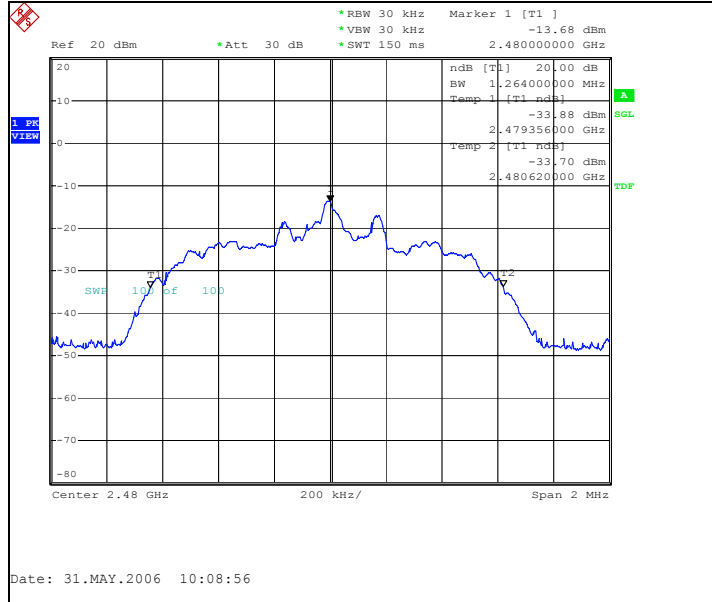
Channel 0 / 2402 MHz



Channel 40 / 2442 MHz



Channel 78 / 2480 MHz



## 9. Carrier frequency separation (FCC §15.247(a)(1), RSS-210 A8.1 (2))

|                                                        |                   |
|--------------------------------------------------------|-------------------|
| <b>EUT with DUT number</b>                             | RM-165, DUT 11320 |
| <b>Accessories with DUT numbers</b>                    | BP-6X, DUT 11321  |
| <b>Operation Voltage [V] / [Hz]</b>                    | 115 / 60          |
| <b>Result</b>                                          | PASSED            |
| <b>Remarks</b>                                         | -                 |
| <b>Temp [°C] / Humidity [%RH] / Air Pressure [kPa]</b> | 20 / 40 / 101.2   |
| <b>Date of measurements</b>                            | 12.06.2006        |
| <b>Measured by</b>                                     | Janne Niemi       |

### 9.1. Test method and limit

The measurement is made according to FCC rules part 15.247 and IC standard RSS-210.

Limits for carrier frequency separation measurements

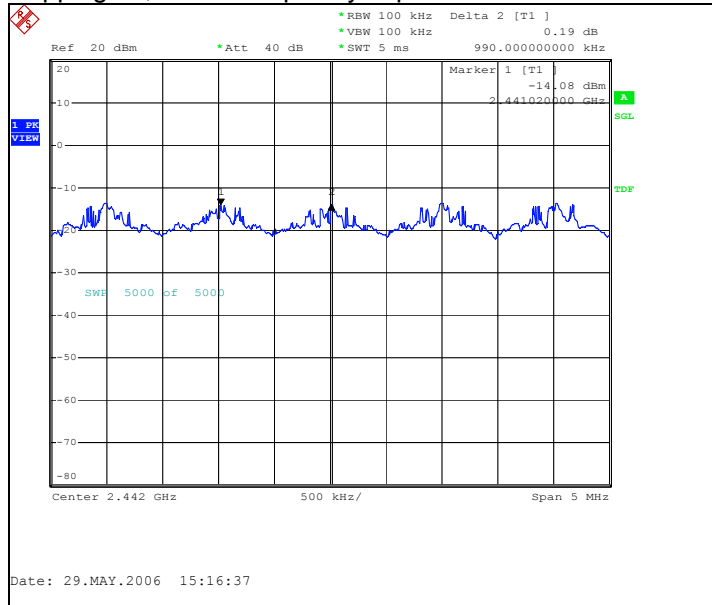
| <b>Limit [MHz]</b>                           |
|----------------------------------------------|
| $\geq 0.025$ or $2/3$ of the 20 dB bandwidth |

## 9.2. Bluetooth Test results

### 9.2.1 $\pi/4$ -DQPSK modulation, PRBS packet type

| Carrier frequency separation [kHz] | Result |
|------------------------------------|--------|
| 990                                | PASSED |

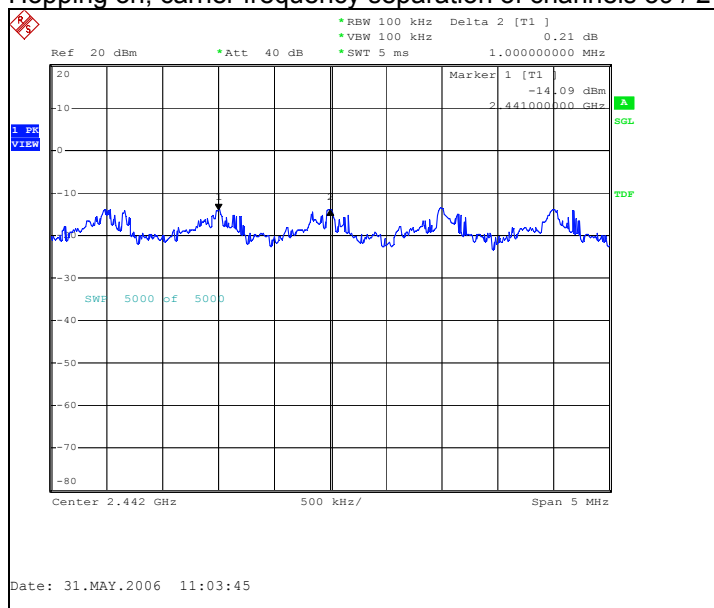
Hopping on, carrier frequency separation of channels 39 / 2441 MHz and 40 / 2442 MHz



## 9.2.2 8DPSK modulation, PRBS packet type

| Carrier frequency separation [kHz] | Result |
|------------------------------------|--------|
| 1000                               | PASSED |

Hopping on, carrier frequency separation of channels 39 / 2441 MHz and 40 / 2442 MHz



## 10. Number of hopping frequencies (FCC §15.247(a)(1)(iii), RSS-210 A8.1 (4))

|                                                        |                   |
|--------------------------------------------------------|-------------------|
| <b>EUT with DUT number</b>                             | RM-165, DUT 11320 |
| <b>Accessories with DUT numbers</b>                    | BP-6X, DUT 11321  |
| <b>Operation Voltage [V] / [Hz]</b>                    | 115 / 60          |
| <b>Result</b>                                          | PASSED            |
| <b>Remarks</b>                                         | -                 |
| <b>Temp [°C] / Humidity [%RH] / Air Pressure [kPa]</b> | 20 / 40 / 101.2   |
| <b>Date of measurements</b>                            | 12.06.2006        |
| <b>Measured by</b>                                     | Janne Niemi       |

### 10.1. Test method and limit

The measurement is made according to FCC rules part 15.247 and IC standard RSS-210.

Limits for number of hopping frequencies measurements

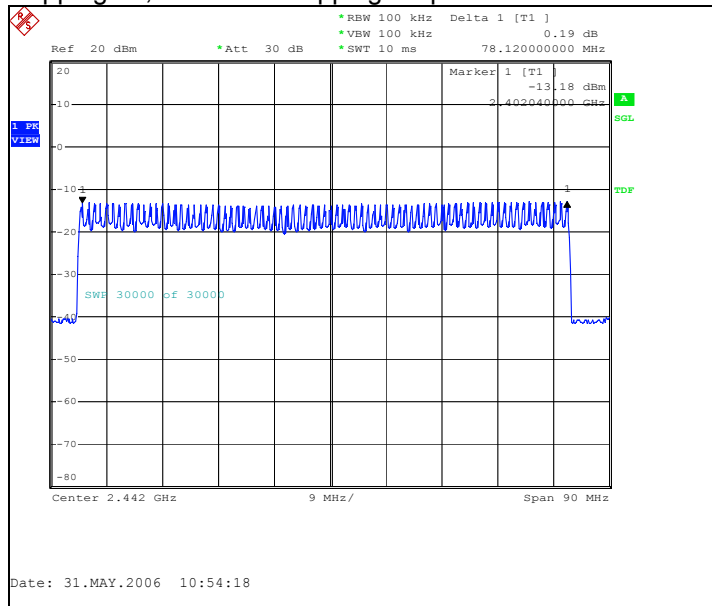
| <b>Limit [number]</b> |
|-----------------------|
| ≥ 15                  |

## 10.2. Bluetooth Test results

### 10.2.1 8DPSK modulation, PRBS packet type

| Measured number of hopping frequencies | Result |
|----------------------------------------|--------|
| 79                                     |        |

Hopping on, number of hopping frequencies



## 11. Time of occupancy (FCC §15.247(a)(1)(iii), RSS-210 A8.1 (4))

|                                                        |                   |
|--------------------------------------------------------|-------------------|
| <b>EUT with DUT number</b>                             | RM-165, DUT 11320 |
| <b>Accessories with DUT numbers</b>                    | BP-6X, DUT 11321  |
| <b>Operation Voltage [V] / [Hz]</b>                    | 115 / 60          |
| <b>Result</b>                                          | PASSED            |
| <b>Remarks</b>                                         | -                 |
| <b>Temp [°C] / Humidity [%RH] / Air Pressure [kPa]</b> | 20 / 40 / 101.2   |
| <b>Date of measurements</b>                            | 12.06.2006        |
| <b>Measured by</b>                                     | Janne Niemi       |

### 11.1. Test method and limit

The measurement is made according to FCC rules part 15.247 and IC standard RSS-210 as follows:

The total time of occupancy is get by multiplying the measured number of transmissions occurred during 31.6 second period with the duration of one transmission.

Limits for time of occupancy measurements

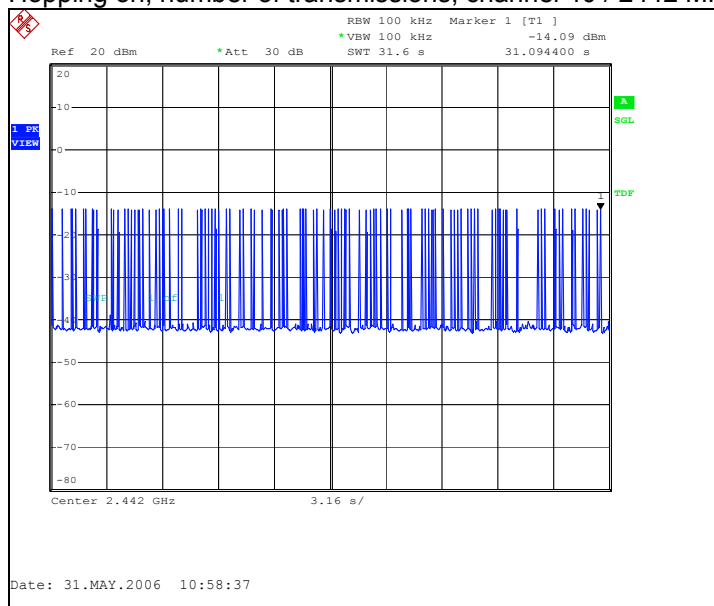
| Limit [s] |
|-----------|
| ≤ 0.4     |

## 11.2. Bluetooth test results

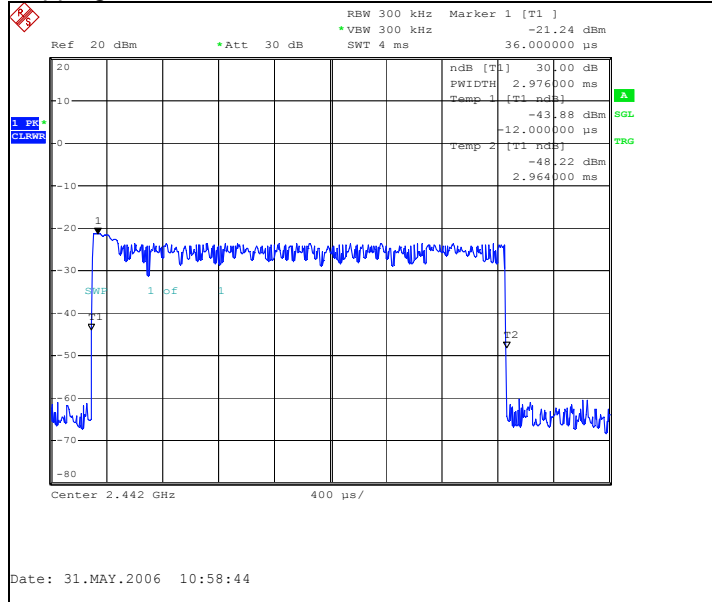
### 11.2.1 $\pi/4$ -DQPSK modulation, PRBS packet type

| Measured number of transmissions | Duration of one transmission [ $\mu$ s] | Time of occupancy [s] | Result |
|----------------------------------|-----------------------------------------|-----------------------|--------|
| 98                               | 2976.000                                | 0.291648              | PASSED |

Hopping on, number of transmissions, channel 40 / 2442 MHz



# Hopping on, duration of one transmission, channel 40 / 2442 MHz

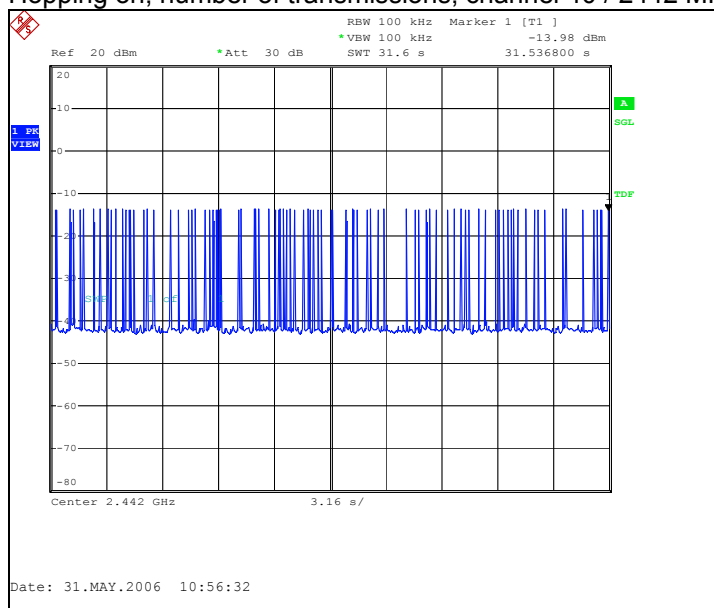


## 11.2.2 8DPSK modulation, PRBS packet type

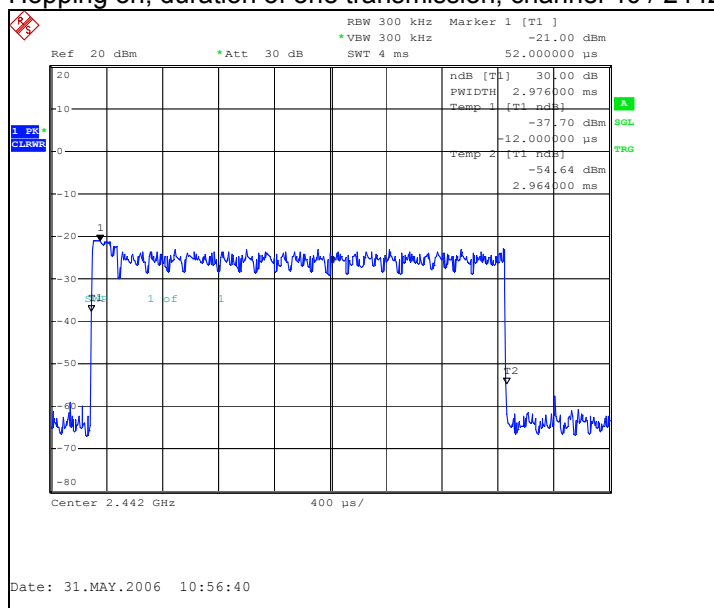
### Packet 3-DH5

| Measured number of transmissions | Duration of one transmission [ $\mu$ s] | Time of occupancy [s] | Result |
|----------------------------------|-----------------------------------------|-----------------------|--------|
| 84                               | 2976.000                                | 0.249984              | PASSED |

Hopping on, number of transmissions, channel 40 / 2442 MHz



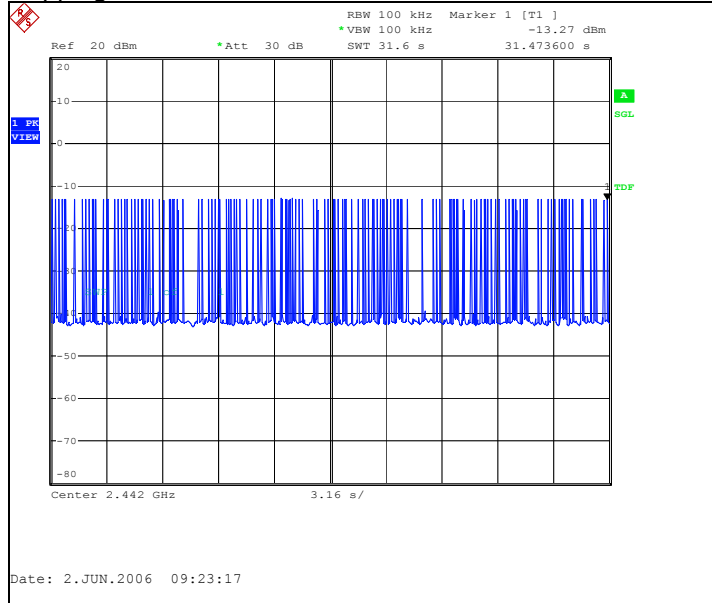
Hopping on, duration of one transmission, channel 40 / 2442 MHz



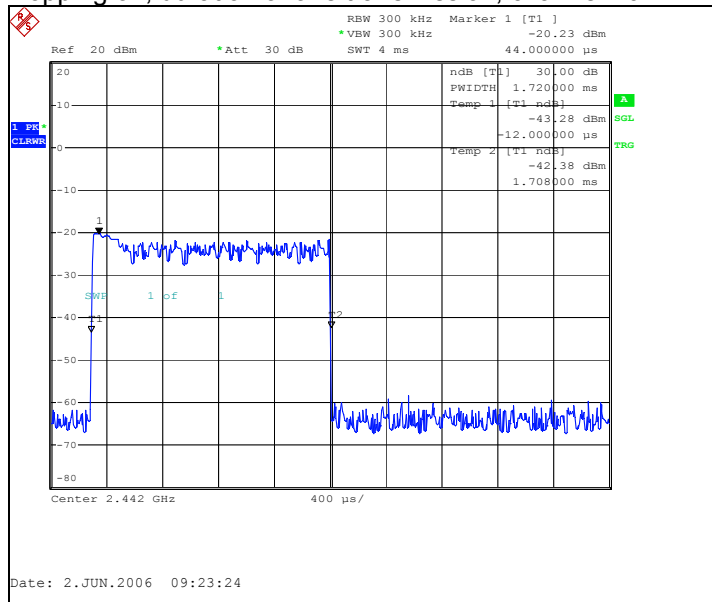
### Packet 3-DH3

| Measured number of transmissions | Duration of one transmission [ $\mu$ s] | Time of occupancy [s] | Result |
|----------------------------------|-----------------------------------------|-----------------------|--------|
| 121                              | 1720.000                                | 0.208120              | PASSED |

#### Hopping on, number of transmissions, channel 40 / 2442 MHz



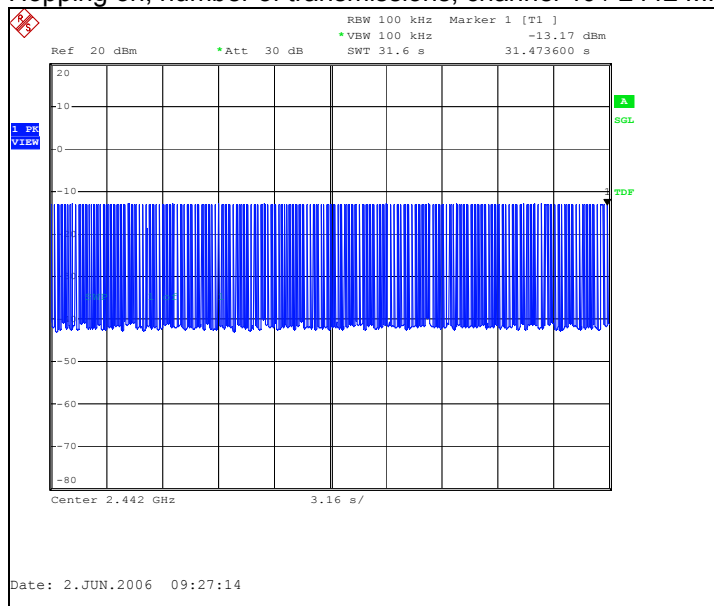
#### Hopping on, duration of one transmission, channel 40 / 2442 MHz



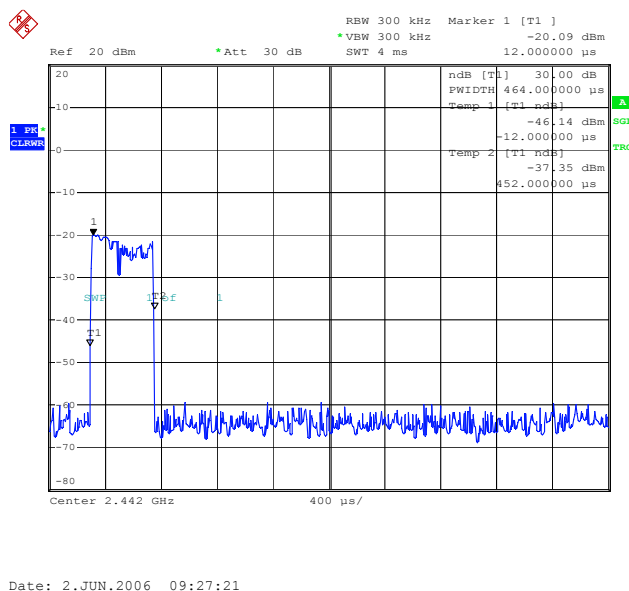
## Packet 3-DH1

| Measured number of transmissions | Duration of one transmission [ $\mu$ s] | Time of occupancy [s] | Result |
|----------------------------------|-----------------------------------------|-----------------------|--------|
| 161                              | 464.000                                 | 0.074704              | PASSED |

### Hopping on, number of transmissions, channel 40 / 2442 MHz



### Hopping on, duration of one transmission, channel 40 / 2442 MHz



## Test Equipment

### 11.3. 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           |
| -      | RF Emission Software               | ES-K1 v.1.60    | R&S                     | 15C, 15B        |

### 11.4. 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      |
| 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      |
| 2109   | Power Supply                        | PL330QMD               | THURLBY      | 22/24, 15C, 15B |
| 2110   | Multimeter                          | 34401A                 | HP           | 22/24, 15C, 15B |

| Eq. No | Equipment                          | Type                               | Manufacturer         | Used in         |
|--------|------------------------------------|------------------------------------|----------------------|-----------------|
| 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   | GPIB 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 |
| -      | RF Emission Software               | ES-K1 v.1.71                       | R&S                  | 22/24, 15C, 15B |