FCC Part 15C Compliance Test Report

Test Report no.:	Tre_FCC_0621_01.doc	**Date of Report:**	29.5.2006
Number of pages:	59	**Customer's Contact person:**	Niko Balabanis
Testing laboratory:	TCC Nokia Tampere Laboratory P.O. Box 68 Sinitaival 5 FIN-33720 TAMPERE, FINLAND Tel. +358 (0) 7180 46800 Fax. +358 (0) 7180 46880	**Client:**	Nokia Corporation P.O. Box 50 Elektroniikkatie 10 FIN-90571 OULU, FINLAND Tel. +358 (0) 7180 08000 Fax. +358 (0) 7180 47222
FCC listing no.: **IC recognition no.:**	94436 3608		
Tested devices/ accessories:	**GSM phone RM-100 / Battery BP-5L, Headset HS-20, Adapter AD-41, AC charger AC-4**		
FCC ID:	LJPRM-100	**IC:**	661E-RM100
Supplement reports:	-		
Testing has been carried out in accordance with:	**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".**		
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 Jan-Erik Lilja DN: cn=Jan-Erik Lilja, c=FI Date: 2006.05.29 10:38:11 +03'00'		

Jan-Erik Lilja, System Manager

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	18.5.2006
Testing completed	25.5.2006
The customer's contact person	Niko Balabanis
Test Plan referred to	\EMC\TESTPLAN\
Notes	-
Document name	T:\Projects\RM-100\EMC\Results\FCC\Tre_FCC_0621_01.doc

1.1. EUT and Accessory Information

The EUT is a quadri band (GSM900/1800/1900 and WCDMA2100) mobile phone with GPRS, EGPRS, Bluetooth and WLAN. Bluetooth and WLAN are tested with maximum rated TX power.

Product	Type	SN	HW	MV	SW	DUT
GSM phone	RM-100	004400501757502	1160	-	1.0615.0.0.6	40669
GSM phone	RM-100	004400501756421	1160	-	1.0615.0.0.6	40670
Battery	BP-5L	-	-	-	-	40672
Battery	BP-5L	-	-	-	-	40673
Headset	HS-20	-	-	-	-	40674
Adapter	AD-41	-	-	-	-	40675
AC-Charger	AC-4	-	-	-	-	40676

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

WLAN:

Section in CFR 47	Section in RSS-210	Name of the test	Result
15.247(b)(1)	A8.4 (4)	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)(2)	A8.2 (1)	6 dB bandwidth	PASSED
15.247(e)	A8.2 (2)	Power spectral density	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.

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

CONTENTS

1. Summary for FCC Part 15C Compliance Test Report 2

1.1. EUT and Accessory Information 2
1.2. Summary of Test Results 2

2. Test setups 5

2.1. Conducted RF test setup 5
2.2. AC powerline conducted emissions test setup 5
2.3. Spurious radiated emissions test setup 5

3. Peak output power (FCC §15.247(b)(1), RSS-210 A8.4 (2)) 6

3.1. Test method and limit 6
3.2. Bluetooth Test results 6

4. Band edge compliance of RF emissions (FCC §15.247(c), RSS-210 A8.5) 9

4.1. Test method and limit 9
4.2. Bluetooth Test results 9

5. Spurious RF conducted emissions (FCC §15.247(c), RSS-A8.5) 13

5.1. Test method and limit 13
5.2. Bluetooth Test results 13

6. Spurious radiated emissions (FCC §15.247(c), §15.209, RSS-210 A8.5) 17

6.1. Test method and limit 17
6.2. Bluetooth Test results 18

7. AC powerline conducted emissions (FCC §15.207, RSS-GEN 7.2.2) 20

7.1. Test method and limit 20
7.2. Bluetooth Test results 21

8. 20 dB bandwidth (FCC §15.247(a)(1), RSS-210 A8.1 (1)) 23

8.1. Test method and limit 23
8.2. Bluetooth Test results 23

9. Carrier frequency separation (FCC §15.247(a)(1), RSS-210 A8.1 (2)) 27

9.1. Test method and limit 27
9.2. Bluetooth Test results 27

10. Number of hopping frequencies (FCC §15.247(a)(1)(iii), RSS-210 A8.1 (4)) 29

10.1. Test method and limit 29
10.2. Bluetooth Test results 29

11. Time of occupancy (FCC §15.247(a)(1)(iii), RSS-210 A8.1 (4)) 31

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

11.1. Test method and limit 31
11.2. Bluetooth test results 31

12. Peak output power (FCC §15.247(b)(1), RSS-210 A8.4 (4)) 34

12.1. Test method and limit 34
12.2. WLAN Test results 34

13. Band edge compliance of RF emissions (FCC §15.247(c), RSS-210 A8.5) 38

13.1. Test method and limit 38
13.2. WLAN Test results 38

14. Spurious RF conducted emissions (FCC §15.247(c), RSS-210 A8.5) 41

14.1. Test method and limit 41
14.2. WLAN Test results 41

15. Spurious radiated emissions (FCC §15.247(c), §15.209, RSS-210 A8.5) 45

15.1. Test method and limit 45
15.2. WLAN Test results 46

16. AC powerline conducted emissions (FCC §15.207, RSS-GEN 7.2.2) 48

16.1. Test method and limit 48
16.2. WLAN Test results 49

17. 6 dB bandwidth (FCC §15.247(a)(2), RSS-210 A8.2 (1)) 51

17.1. Test method and limit 51
17.2. WLAN test results 51

18. Power spectral density (FCC §15.247(e), RSS-210 A8.2 (2)) 55

18.1. Test method and limit 55
18.2. WLAN test results 55

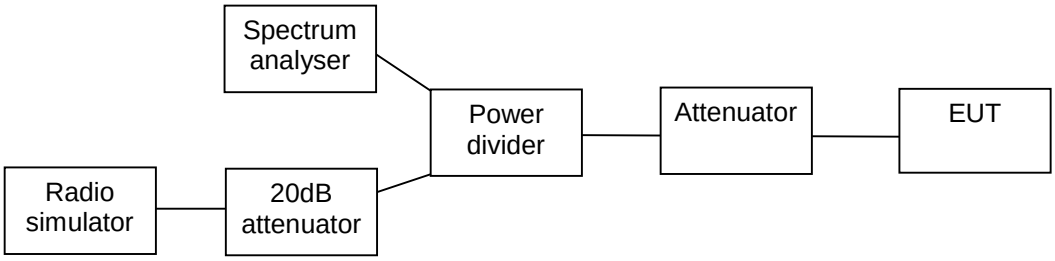
19. Test Equipment 59

19.1. Conducted measurements 59
19.2. Radiated measurements 59

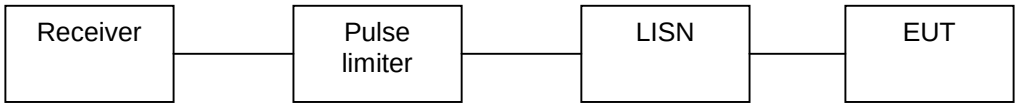
TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

2. Test setups

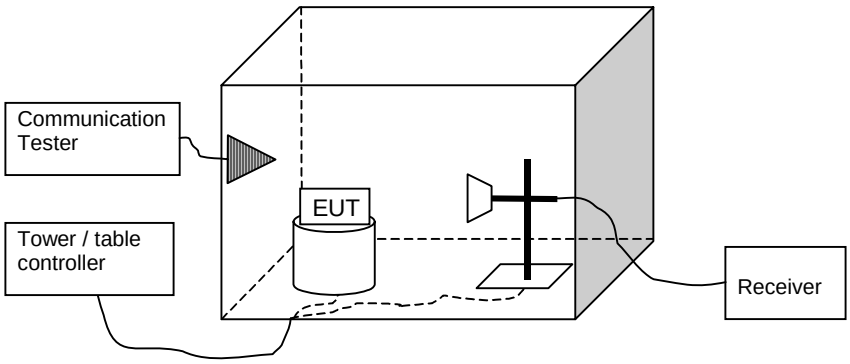
2.1. Conducted RF test setup



2.2. AC powerline conducted emissions test setup



2.3. Spurious radiated emissions test setup



TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

3. Peak output power

(FCC §15.247(b)(1), RSS-210 A8.4 (2))

EUT with DUT number	RM-100:DUT 40670
Accessories with DUT numbers	BP-5L: DUT 40672
Operation Voltage [V] / [Hz]	-
Result	Passed
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21/42/100.2
Date of measurements	22.5.2006
Measured by	Jan-Erik Lilja

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

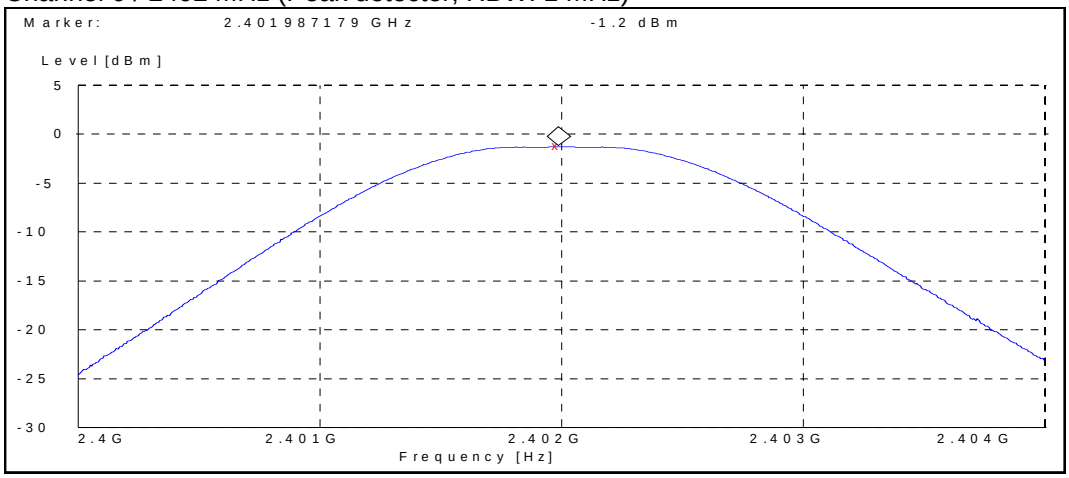
Frequency range [MHz]	Limit [W]	Limit [dBm]
2400 – 2483.5	≤ 1	≤ 30

3.2. Bluetooth Test results

3.2.1 GSFK modulation, PRBS packet type

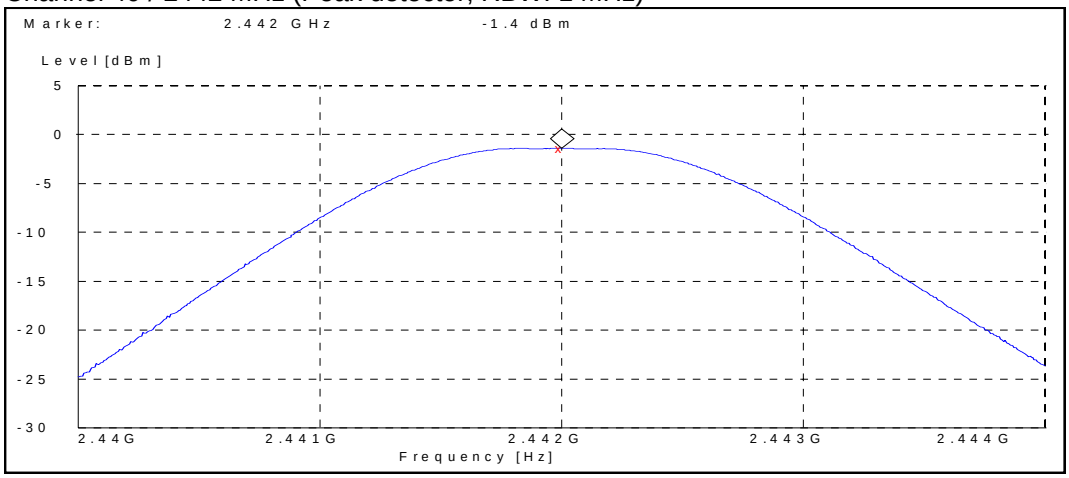
Channel / f_C [MHz]	P [dBm]	P [mW]	Result
0 / 2402	-1.20	0.759	Passed
40 / 2442	-1.40	0.724	Passed
78 / 2480	-1.40	0.724	Passed

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

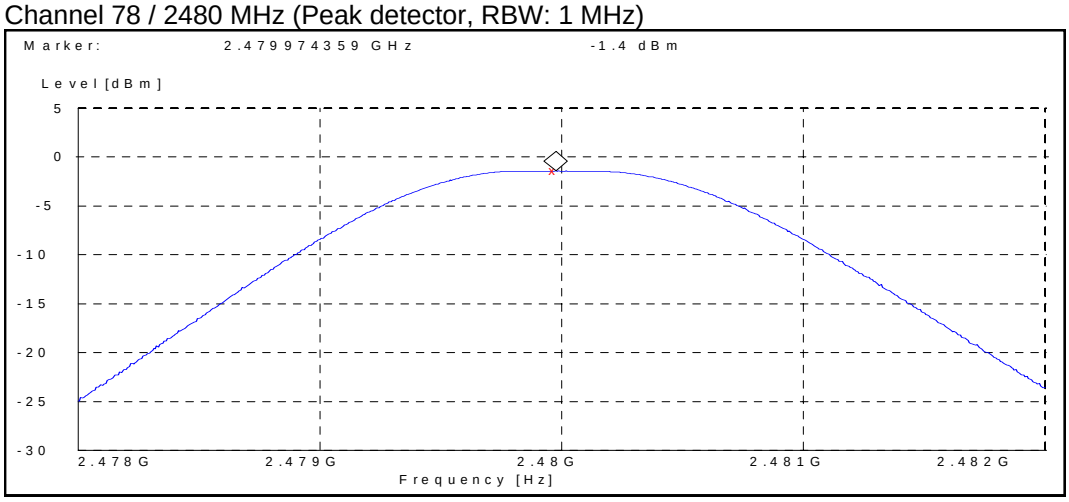


TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

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



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

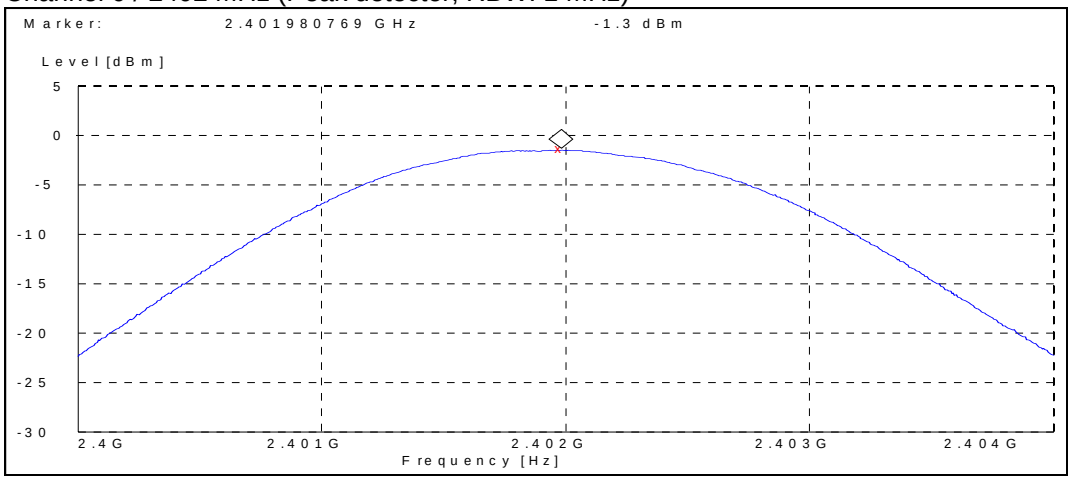


3.2.2 8DPSK modulation, PRBS packet type

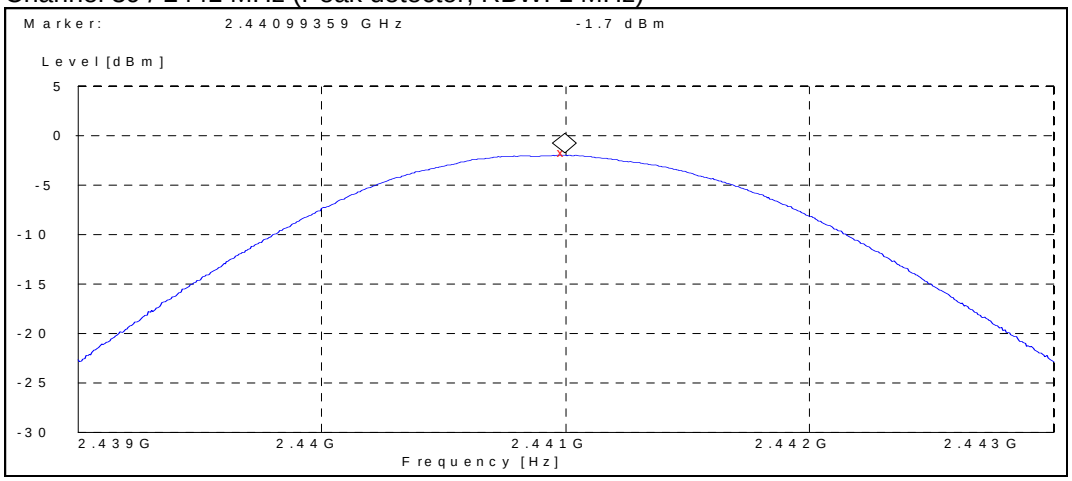
Channel / f_C [MHz]	P [dBm]	P [mW]	Result
0 / 2402	-1.30	0.741	Passed
39 / 2441	-1.70	0.676	Passed
78 / 2480	-2.10	0.617	Passed

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

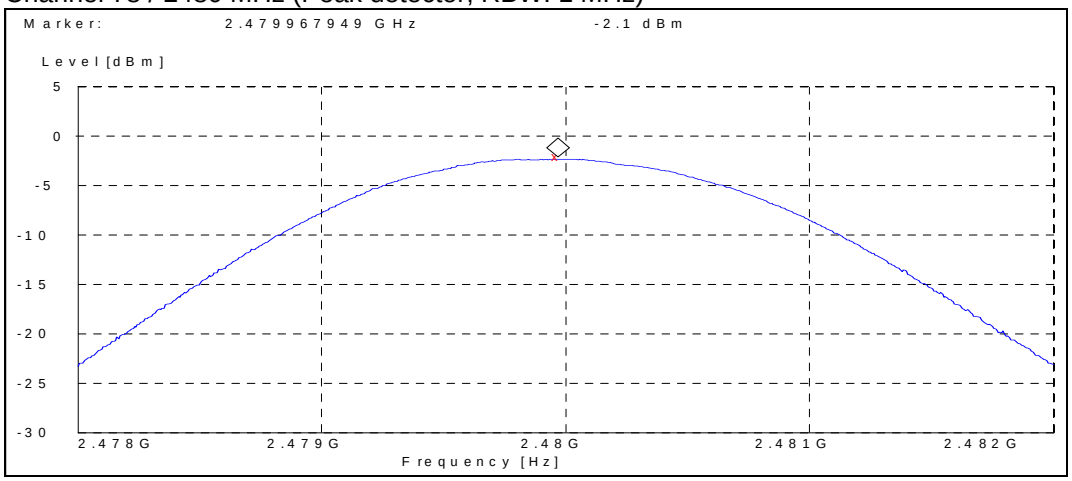
Channel 0 / 2402 MHz (Peak detector, RBW: 1 MHz)



Channel 39 / 2441 MHz (Peak detector, RBW: 1 MHz)



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



TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

4. Band edge compliance of RF emissions

(FCC §15.247(c), RSS-210 A8.5)

EUT with DUT number	RM-100 DUT 40669
Accessories with DUT numbers	BP-5L-DUT 40673, HS-20 DUT 40674, AD-41 DUT 40675, AC-4 DUT 40676
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	Flip open
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 45 / 101.6
Date of measurements	18.5.2006
Measured by	Jari Jantunen

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)

Frequency range [MHz]	Limit Average [dBµV/m]	Limit Peak [dBµV/m]
Below 2390 and above 2483.5	≤ 54	≤ 74

4.2. Bluetooth Test results

4.2.1 GFSK modulation, PRBS packet type

Average (RBW: 1 MHz)

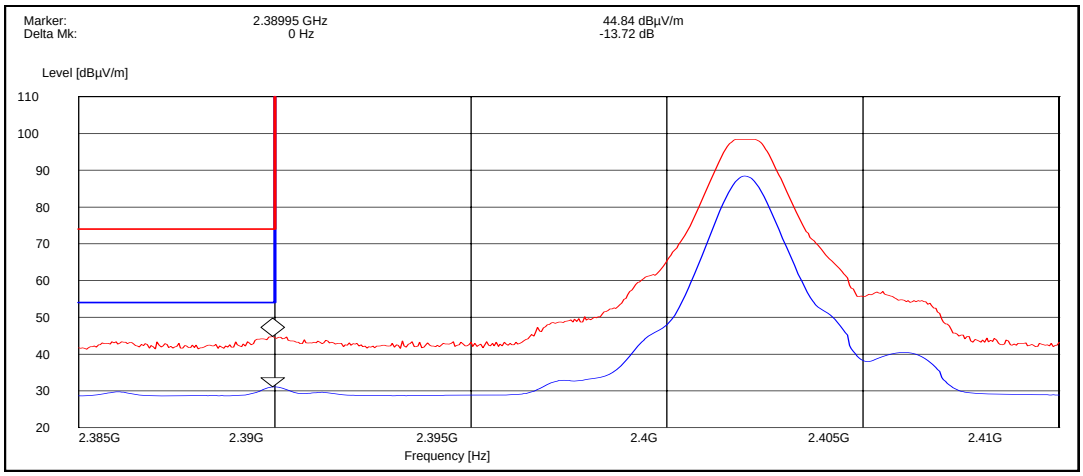
Channel / f_C [MHz]	E [dBµV/m]	Result
0 / 2402	31.12	PASSED
78 / 2480	39.24	PASSED
Hopping on, low end	28.46	PASSED
Hopping on, high end	31.17	PASSED

Peak (RBW: 1 MHz)

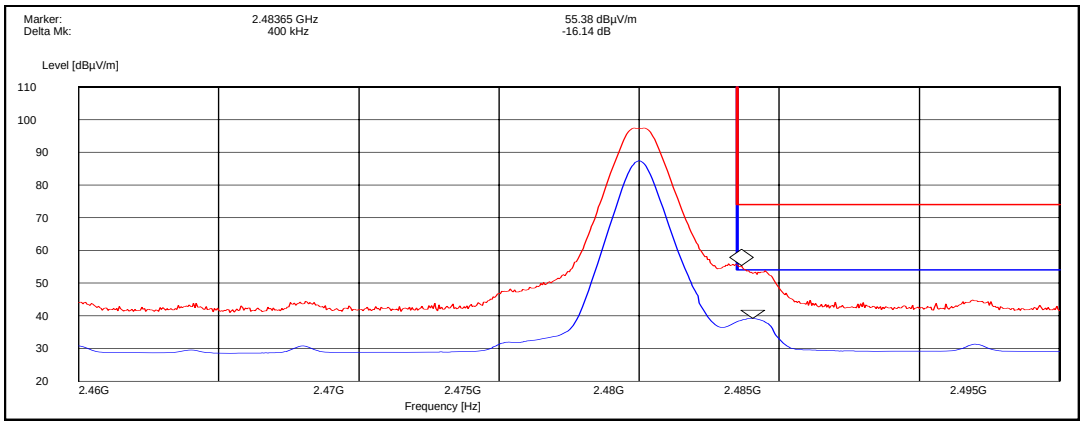
Channel / f_C [MHz]	E [dBµV/m]	Result
0 / 2402	44.84	PASSED
78 / 2480	55.38	PASSED
Hopping on, low end	43.36	PASSED
Hopping on, high end	54.46	PASSED

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

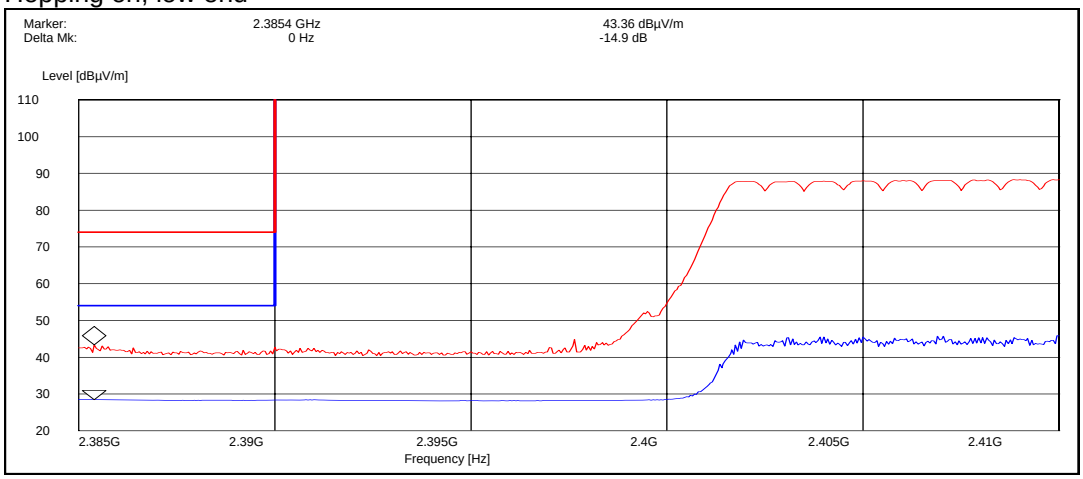
Channel 0 / 2402 MHz



Channel 78 / 2480 MHz

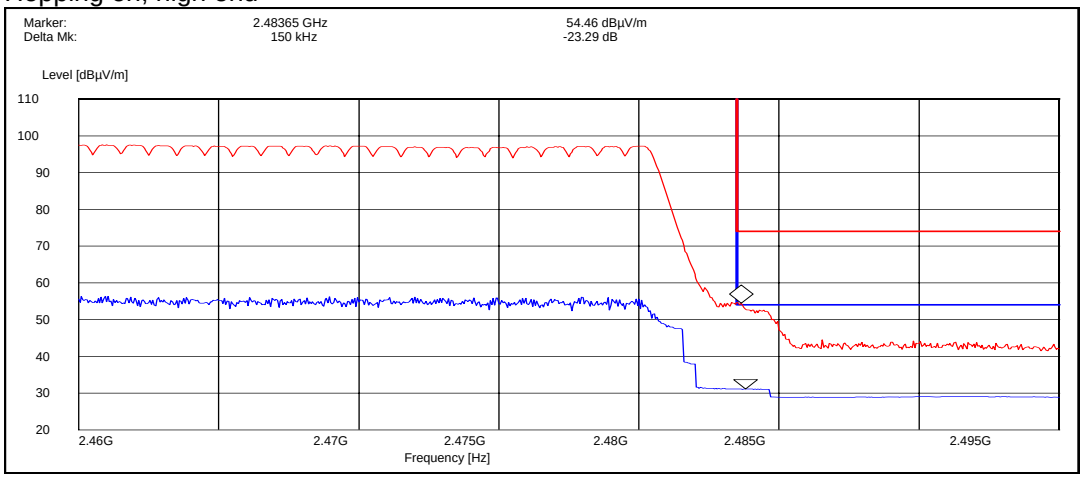


Hopping on, low end



TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

Hopping on, high end



4.2.2 8DPSK modulation, PRBS packet type

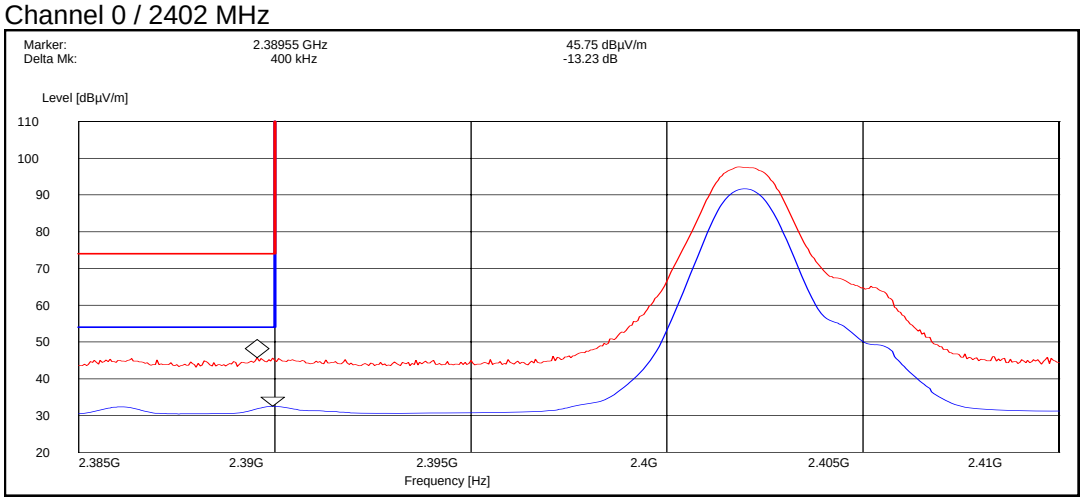
Average (RBW: 1 MHz)

Channel / f_C [MHz]	E [dBµV/m]	Result
0 / 2402	32.52	PASSED
78 / 2480	46.09	PASSED
Hopping on, low end	29.12	PASSED
Hopping on, high end	31.89	PASSED

Peak (RBW: 1 MHz)

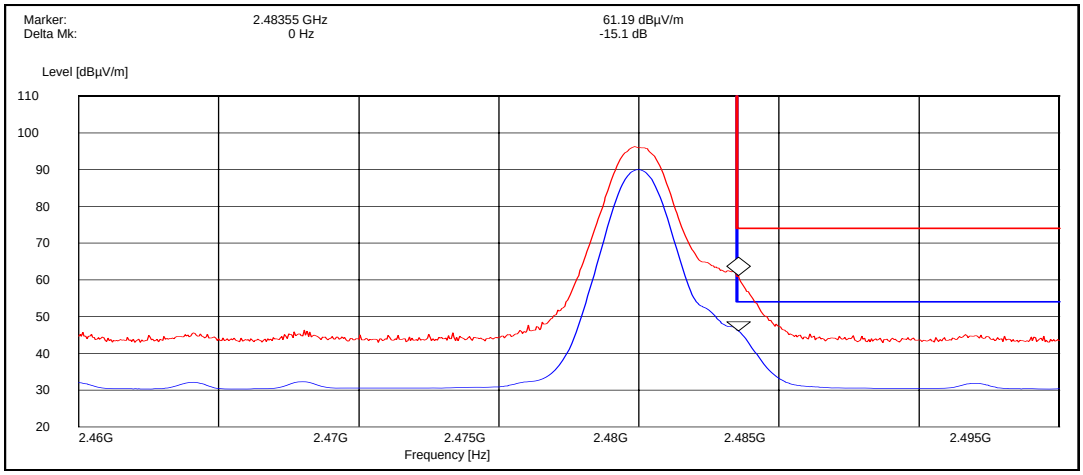
Channel / f_C [MHz]	E [dBµV/m]	Result
0 / 2402	45.75	PASSED
78 / 2480	61.19	PASSED
Hopping on, low end	46.32	PASSED
Hopping on, high end	58.68	PASSED

Channel 0 / 2402 MHz

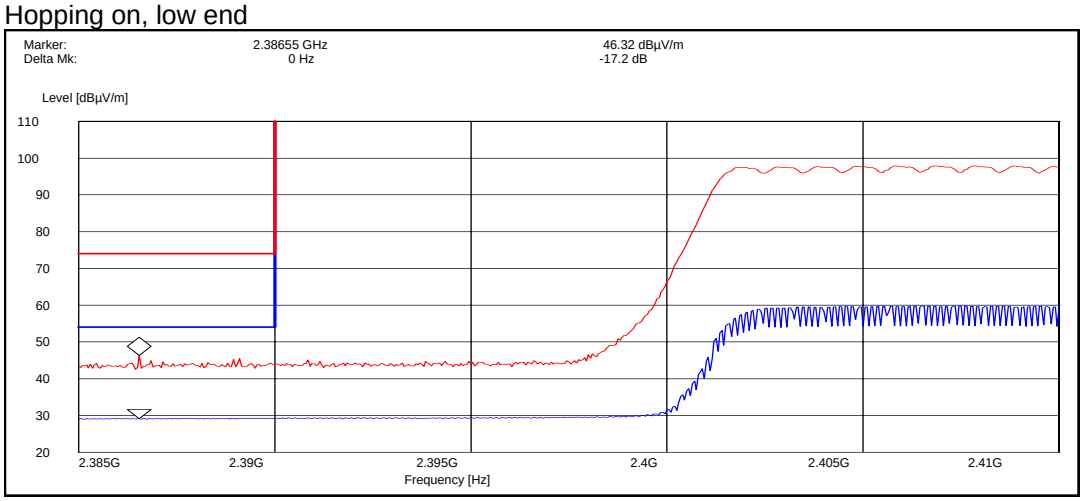


TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

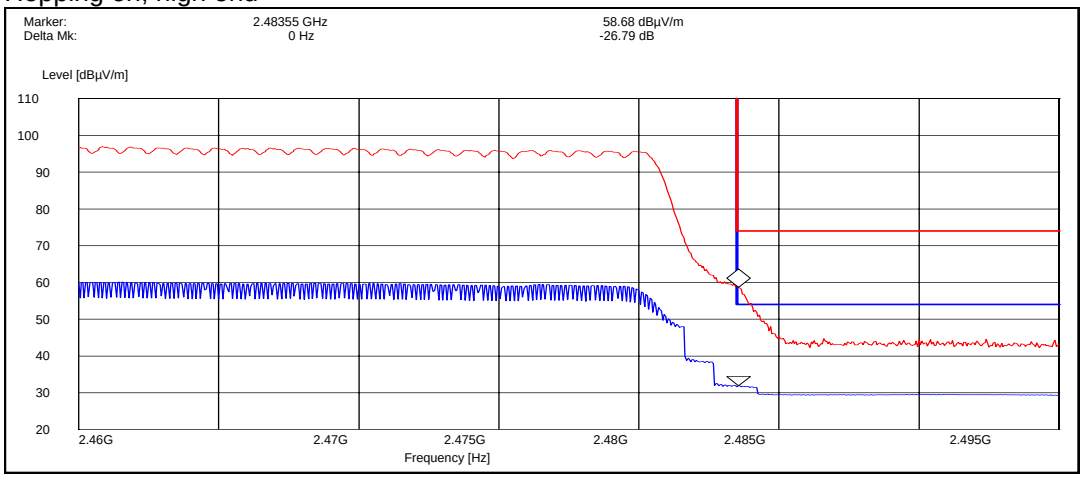
Channel 78 / 2480 MHz



Hopping on, low end



Hopping on, high end



TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

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

EUT with DUT number	RM-100:DUT 40670
Accessories with DUT numbers	BP-5L: DUT 40672
Operation Voltage [V] / [Hz]	-
Result	Passed
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21/42/100.2
Date of measurements	22.5.2006
Measured by	Jan-Erik Lilja

5.1. Test method and limit

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

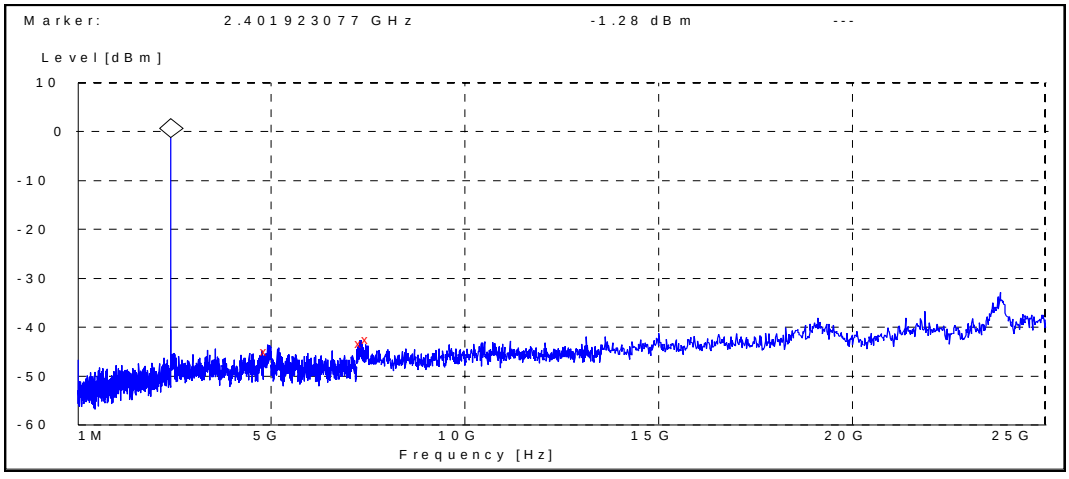
Limits for spurious RF conducted emissions measurements

Frequency range [MHz]	Limit [dBc]
1 – 25000	≤ -20

5.2. Bluetooth Test results

5.2.1 GFSK modulation, PRBS packet type

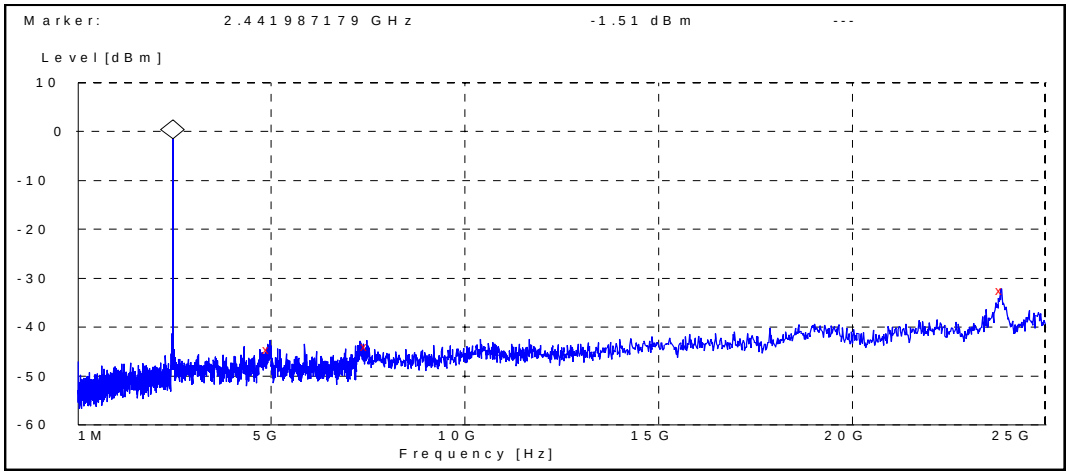
Channel 0 / 2402 MHz



Frequency [MHz]	P [dBc]	Result
4899.358974	-43.616441	Passed
7309.615385	-42.116441	Passed
7500.000000	-41.316441	Passed

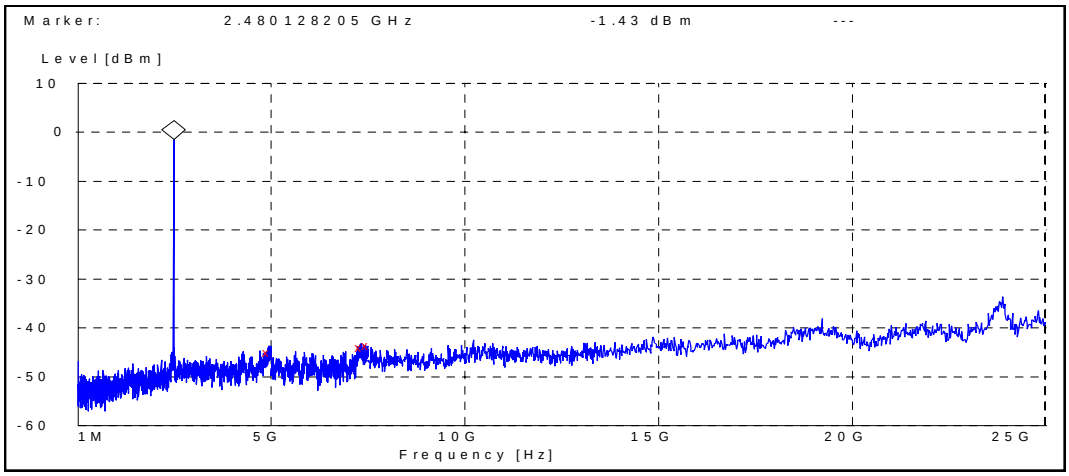
TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

Channel 40 / 2442 MHz



Frequency [MHz]	P [dBc]	Result
4953.205128	-42.985260	Passed
7471.634615	-42.585260	Passed
23875.801282	-30.985260	Passed

Channel 78 / 2480 MHz

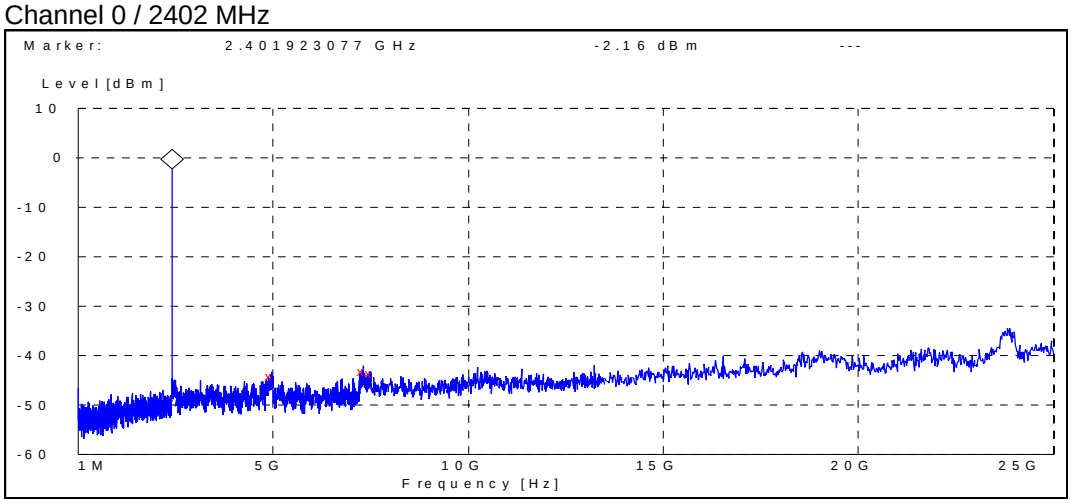


Frequency [MHz]	P [dBc]	Result
4930.128205	-43.471016	Passed
7312.019231	-42.671016	Passed
7500.000000	-42.071016	Passed

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

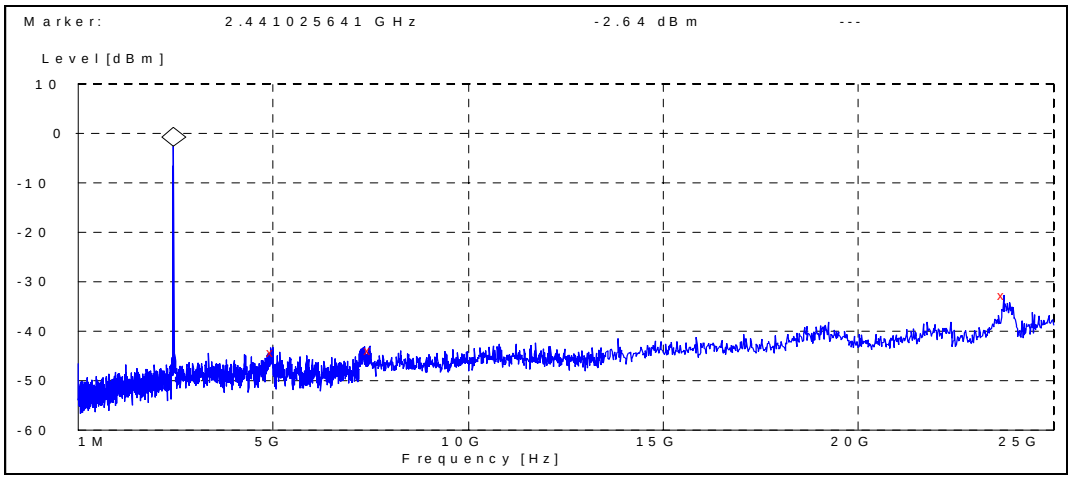
5.2.2 8DPSK modulation, PRBS packet type

Channel 0 / 2402 MHz



Frequency [MHz]	P [dBc]	Result
4958.012821	-42.036383	Passed
7313.461538	-41.036383	Passed
7500.000000	-41.536383	Passed

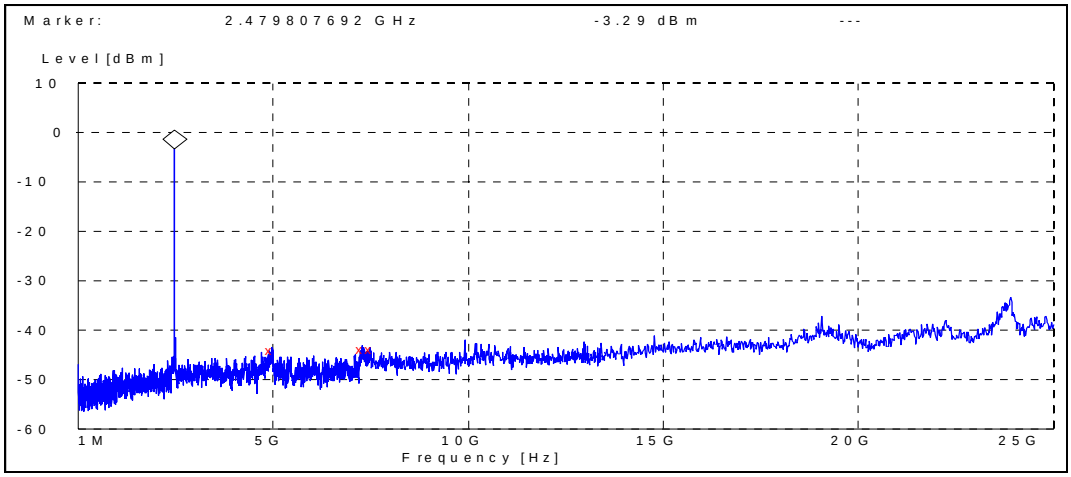
Channel 40 / 2442 MHz



Frequency [MHz]	P [dBc]	Result
4995.192308	-41.559640	Passed
7478.846154	-41.359640	Passed
23728.365385	-30.159640	Passed

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

Channel 78 / 2480 MHz



Frequency [MHz]	P [dBc]	Result
4977.884615	-40.806948	Passed
7272.596154	-40.706948	Passed
7500.000000	-40.506948	Passed

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

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

EUT with DUT number	RM-100 DUT 40669
Accessories with DUT numbers	BP-5L-DUT 40673, HS-20 DUT 40674, AD-41 DUT 40675, AC-4 DUT 40676
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	Flip open
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 45 / 101.6
Date of measurements	18.5.2006
Measured by	Jari Jantunen

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 [µV/m]	Limit [dBµV/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

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

6.2. Bluetooth Test results

6.2.1 GFSK modulation, PRBS packet type

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	47.10	226.46	48.40	-1.30	VERTICAL	PASSED
7206.000000	42.30	130.32	40.30	2.00	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4804.000000	36.70	68.39	38.00	-1.30	VERTICAL	PASSED
7206.000000	29.40	29.51	27.40	2.00	HORIZONTAL	PASSED

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
37.976353	23.00	14.13	35.60	-12.60	VERTICAL	PASSED
114.689780	14.20	5.13	37.70	-23.50	VERTICAL	PASSED
130.542485	16.20	6.46	41.20	-25.00	HORIZONTAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4884.269539	49.10	285.10	50.70	-1.60	VERTICAL	PASSED
7418.337675	44.00	158.49	40.70	3.30	HORIZONTAL	PASSED
17991.989980	55.50	595.66	34.00	21.50	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4883.767535	38.30	82.22	39.90	-1.60	VERTICAL	PASSED
7418.337675	30.80	34.67	27.50	3.30	HORIZONTAL	PASSED
17992.989980	42.90	139.64	21.40	21.50	VERTICAL	PASSED

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	48.50	266.07	49.50	-1.00	VERTICAL	PASSED
7440.000000	44.00	158.49	40.80	3.20	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4960.000000	38.00	79.43	39.00	-1.00	VERTICAL	PASSED
7440.000000	30.70	34.28	27.50	3.20	HORIZONTAL	PASSED

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

6.2.2 8DPSK modulation, PRBS packet type

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	42.80	138.04	44.10	-1.30	VERTICAL	PASSED
7206.000000	42.30	130.32	40.30	2.00	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4804.000000	29.70	30.55	31.00	-1.30	VERTICAL	PASSED
7206.000000	29.40	29.51	27.40	2.00	HORIZONTAL	PASSED

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
37.876353	14.70	5.43	27.30	-12.60	VERTICAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4881.765531	43.70	153.11	45.30	-1.60	HORIZONTAL	PASSED
7402.811623	43.70	153.11	40.40	3.30	VERTICAL	PASSED
17967.931864	55.50	595.66	34.00	21.50	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4882.263527	28.90	27.86	30.50	-1.60	HORIZONTAL	PASSED
7416.335671	30.80	34.67	27.50	3.30	HORIZONTAL	PASSED
17969.431864	42.80	138.04	21.30	21.50	HORIZONTAL	PASSED

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	43.50	149.62	44.50	-1.00	VERTICAL	PASSED
7440.000000	43.30	146.22	40.10	3.20	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4960.000000	31.50	37.58	32.50	-1.00	VERTICAL	PASSED
7440.000000	30.60	33.88	27.40	3.20	HORIZONTAL	PASSED

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

7. AC powerline conducted emissions

(FCC §15.207, RSS-GEN 7.2.2)

EUT with DUT number	RM-100 DUT 40669
Accessories with DUT numbers	BP-5L-DUT 40673, HS-20 DUT 40674, AD-41 DUT 40675, AC-4 DUT 40676
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	20 / 48 / 100.3
Date of measurements	25.5.2006
Measured by	Jari Jantunen

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

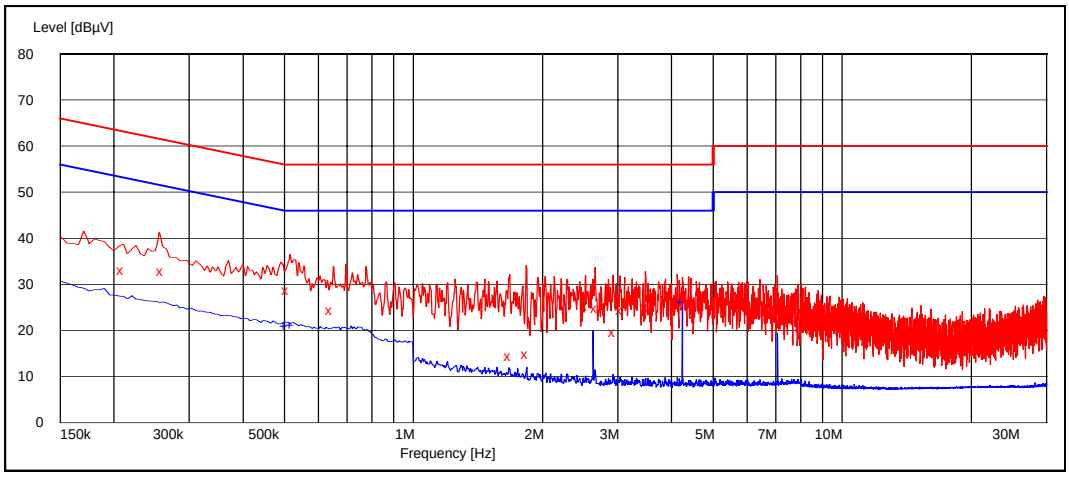
Frequency range [MHz]	Quasi peak limit [dBµV]	Average limit [dBµV]
0.15 - 0.5	66 - 56	56 - 46
0.5 - 5	56	46
5 - 30	60	50

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

7.2. Bluetooth Test results

7.2.1 GFSK modulation, PRBS packet type

Channel 40 / 2442 MHz



Quasi peak (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.210000	33.00	L1	PASSED
0.260000	32.80	L1	PASSED
0.510000	28.70	L1	PASSED
0.645000	24.50	L1	PASSED
1.680000	14.50	N	PASSED
1.840000	14.80	L1	PASSED
2.540000	25.30	L1	PASSED
2.675000	24.80	L1	PASSED
2.950000	19.70	N	PASSED
3.065000	24.50	L1	PASSED
3.510000	25.00	L1	PASSED
4.160000	25.40	L1	PASSED

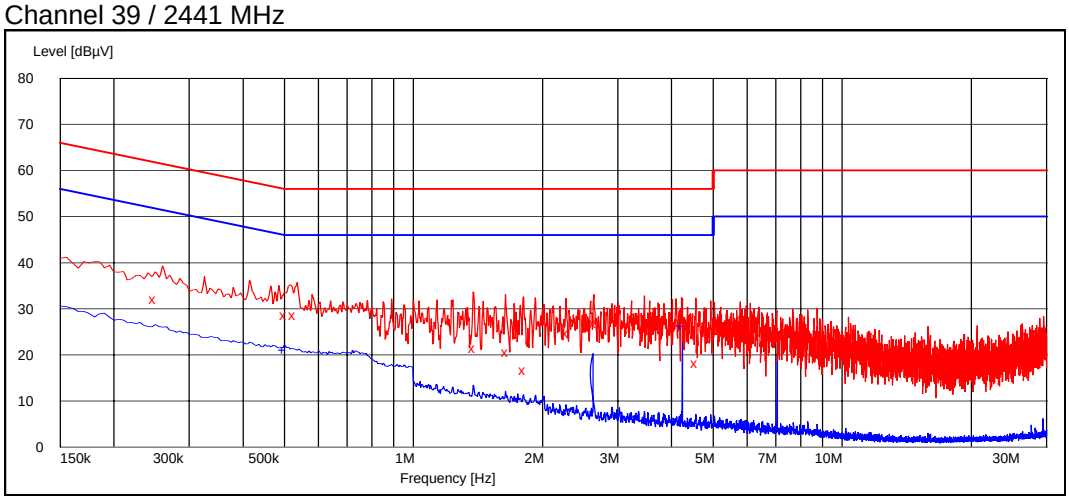
Average (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.505000	21.00	L1	PASSED
0.520000	21.20	L1	PASSED
4.240000	26.10	L1	PASSED

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

7.2.2 8DPSK modulation, PRBS packet type

Channel 39 / 2441 MHz



Quasi peak (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.250000	32.10	L1	PASSED
0.505000	28.70	L1	PASSED
0.530000	28.60	L1	PASSED
1.390000	21.50	L1	PASSED
1.660000	20.50	L1	PASSED
1.820000	16.70	L1	PASSED
2.295000	24.60	L1	PASSED
2.660000	26.80	L1	PASSED
3.490000	25.80	L1	PASSED
4.240000	27.00	L1	PASSED
4.580000	18.20	N	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.500000	20.90	L1	PASSED
4.240000	26.30	L1	PASSED

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

8. 20 dB bandwidth

(FCC §15.247(a)(1), RSS-210 A8.1 (1))

EUT with DUT number	RM-100:DUT 40670
Accessories with DUT numbers	BP-5L: DUT 40672
Operation Voltage [V] / [Hz]	-
Result	Passed
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21/42/100.2
Date of measurements	22.5.2006
Measured by	Jan-Erik Lilja

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

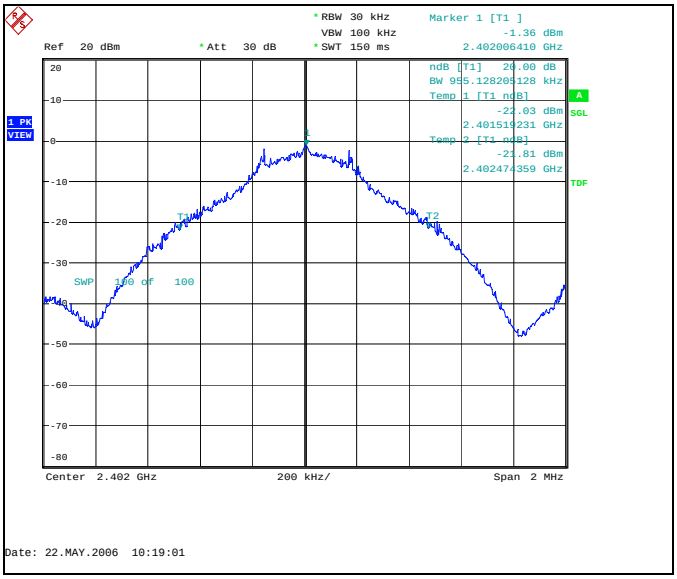
Limit [MHz]
N/A

8.2. Bluetooth Test results

8.2.1 GFSK modulation, PRBS packet type

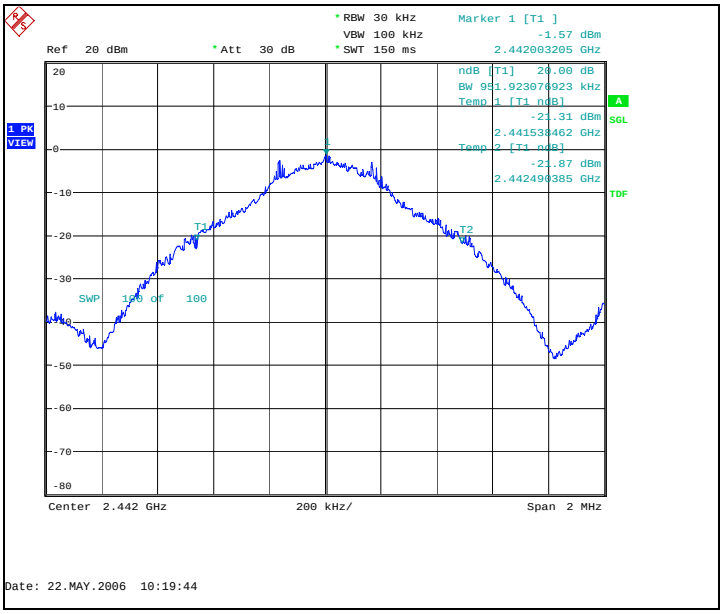
Channel / f_C [MHz]	20 dB bandwidth [kHz]	Result
0 / 2402	955.128	Passed
40 / 2442	951.923	Passed
78 / 2480	961.538	Passed

Channel 0 / 2402 MHz

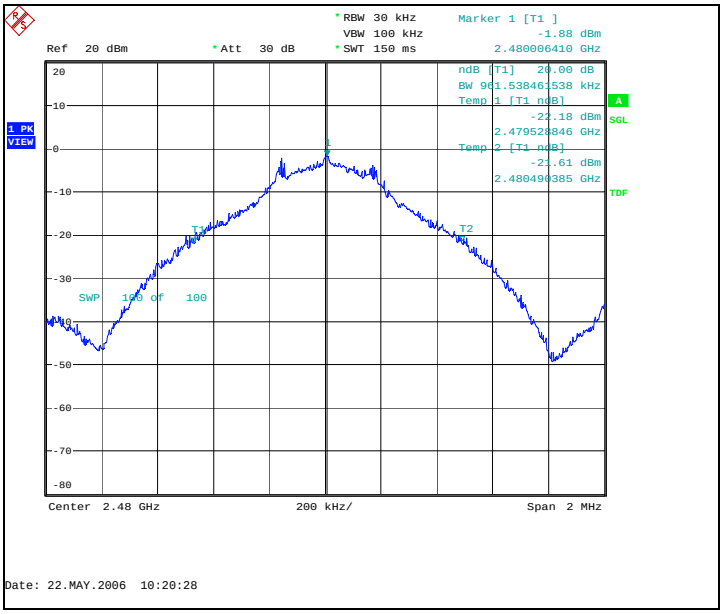


TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

Channel 40 / 2442 MHz



Channel 78 / 2480 MHz

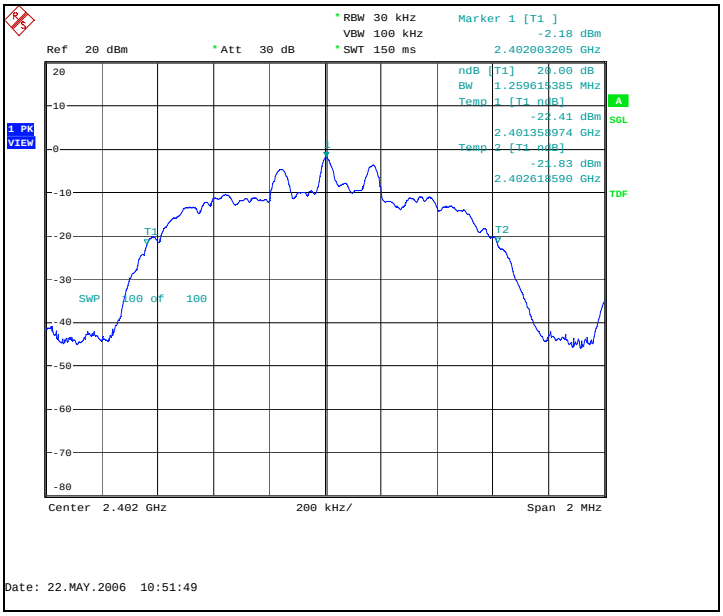


8.2.2 8DPSK modulation, PRBS packet type

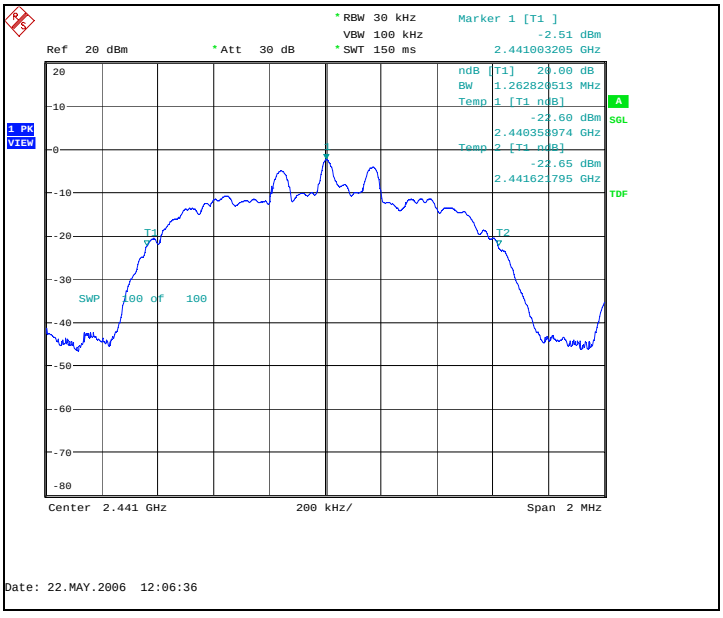
Channel / f_C [MHz]	20 dB bandwidth [kHz]	Result
0 / 2402	1259.615	Passed
39 / 2441	1262.821	Passed
78 / 2480	1262.821	Passed

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

Channel 0 / 2402 MHz

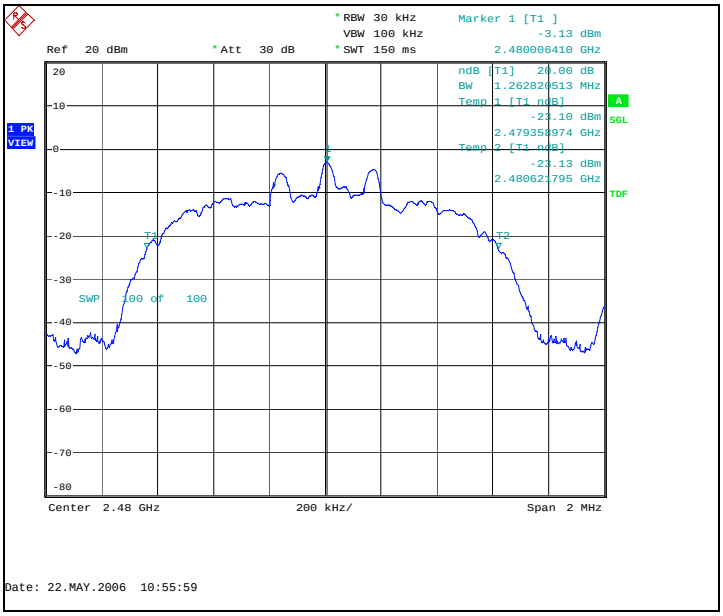


Channel 39 / 2441 MHz



TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

Channel 78 / 2480 MHz



TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

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

EUT with DUT number	RM-100:DUT 40670
Accessories with DUT numbers	BP-5L: DUT 40672
Operation Voltage [V] / [Hz]	-
Result	Passed
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21/42/100.2
Date of measurements	22.5.2006
Measured by	Jan-Erik Lilja

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

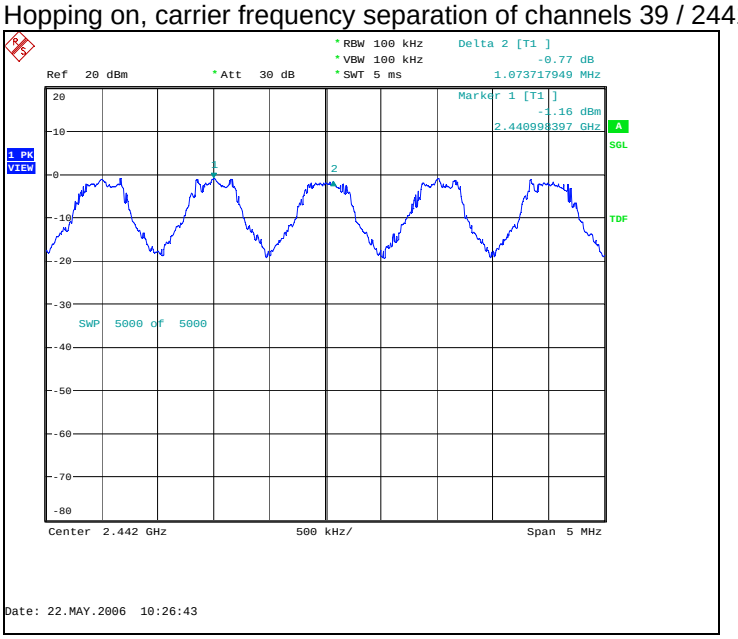
Limit [MHz]
≥ 0.025 or 2/3 of the 20 dB bandwidth

9.2. Bluetooth Test results

9.2.1 GFSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
1073.718	Passed

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

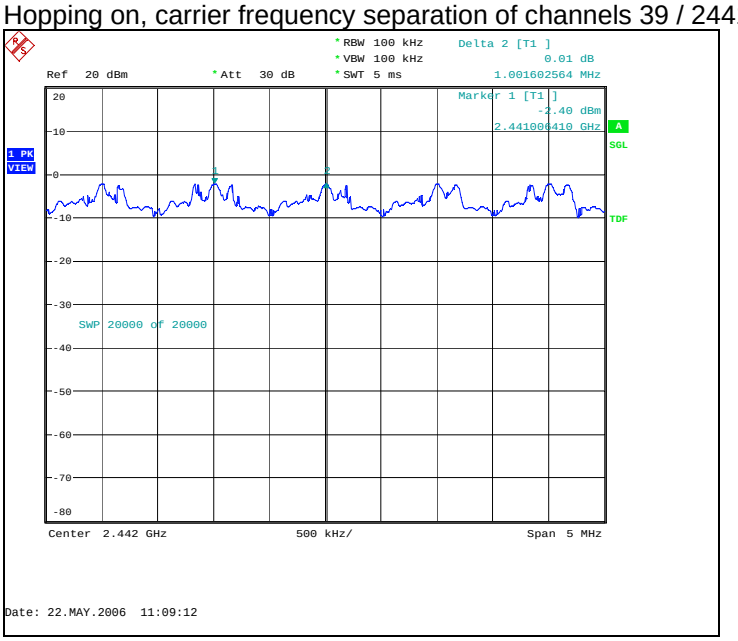


TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

9.2.2 8DPSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
1001.603	Passed

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



TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

10. Number of hopping frequencies

(FCC §15.247(a)(1)(iii), RSS-210 A8.1 (4))

EUT with DUT number	RM-100:DUT 40670
Accessories with DUT numbers	BP-5L: DUT 40672
Operation Voltage [V] / [Hz]	-
Result	Passed
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21/42/100.2
Date of measurements	22.5.2006
Measured by	Jan-Erik Lilja

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

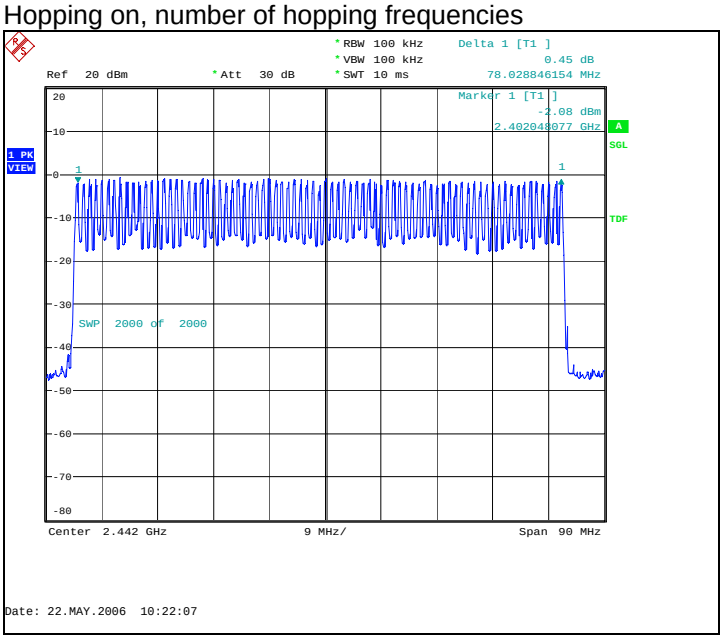
Limit [number]
≥ 15

10.2. Bluetooth Test results

10.2.1 GFSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
79.00	Passed

Hopping on, number of hopping frequencies

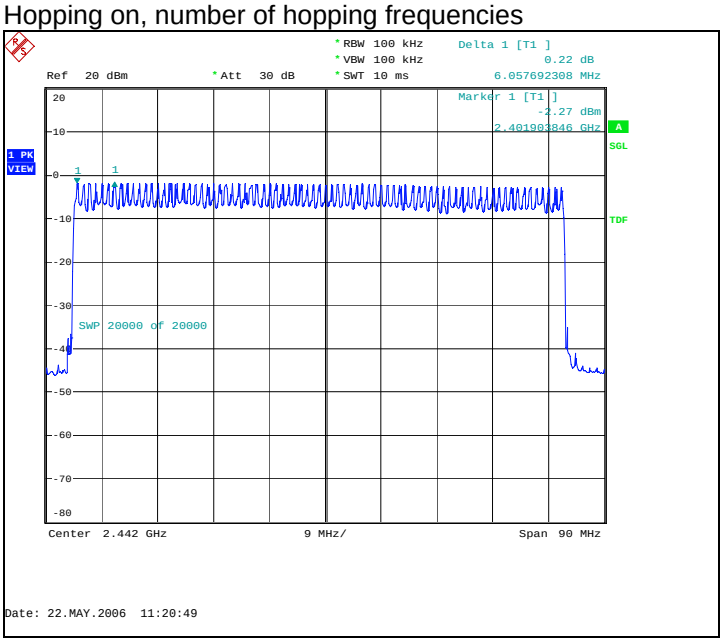


TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

10.2.2 8DPSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
79.00	Passed

Hopping on, number of hopping frequencies



TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

11. Time of occupancy

(FCC §15.247(a)(1)(iii), RSS-210 A8.1 (4))

EUT with DUT number	RM-100:DUT 40670
Accessories with DUT numbers	BP-5L: DUT 40672
Operation Voltage [V] / [Hz]	-
Result	Passed
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21/42/100.2
Date of measurements	22.5.2006
Measured by	Jan-Erik Lilja

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

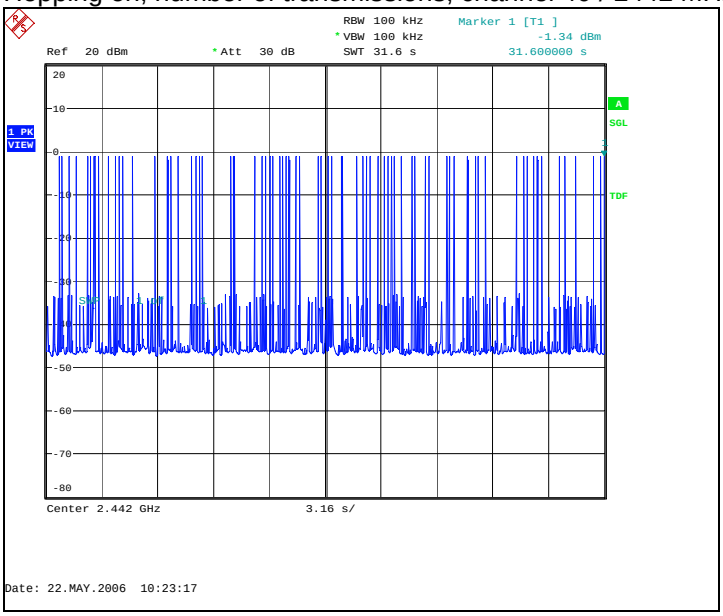
11.2. Bluetooth test results

11.2.1 GFSK modulation, PRBS packet type

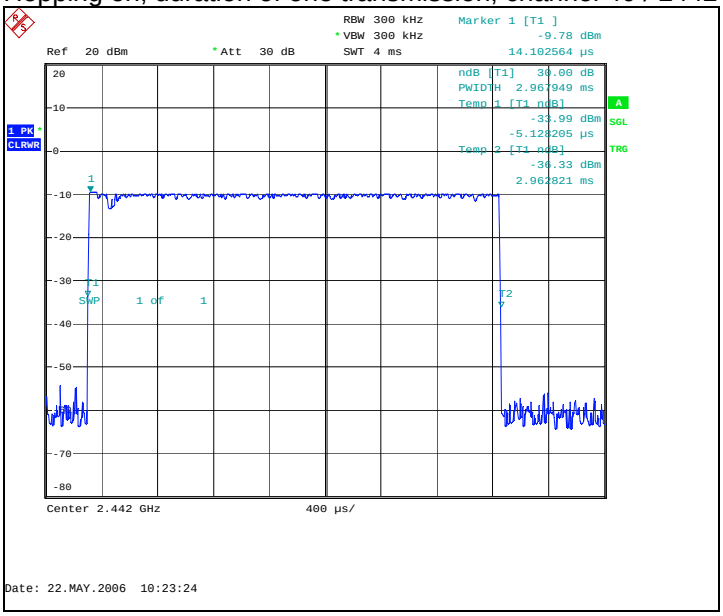
Measured number of transmissions	Duration of one transmission [µs]	Time of occupancy [s]	Result
73.00	2968	0.216660	Passed

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

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



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

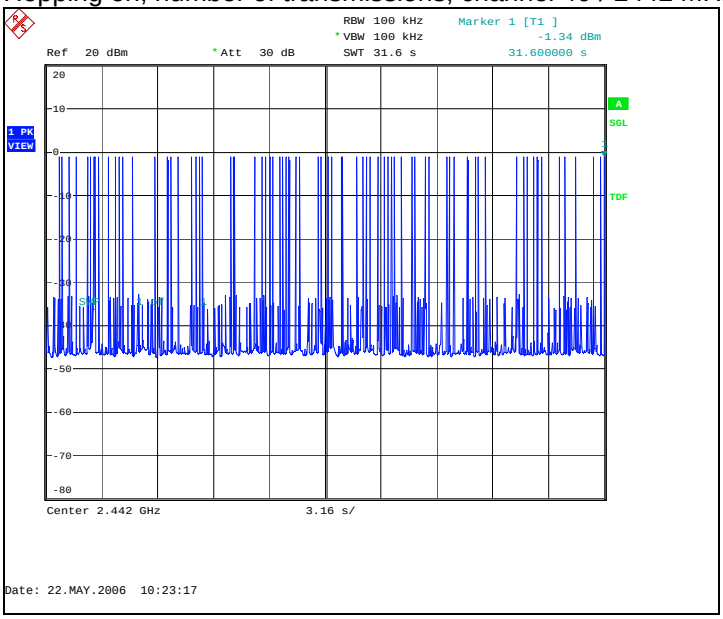


11.2.2 8DPSK modulation, PRBS packet type

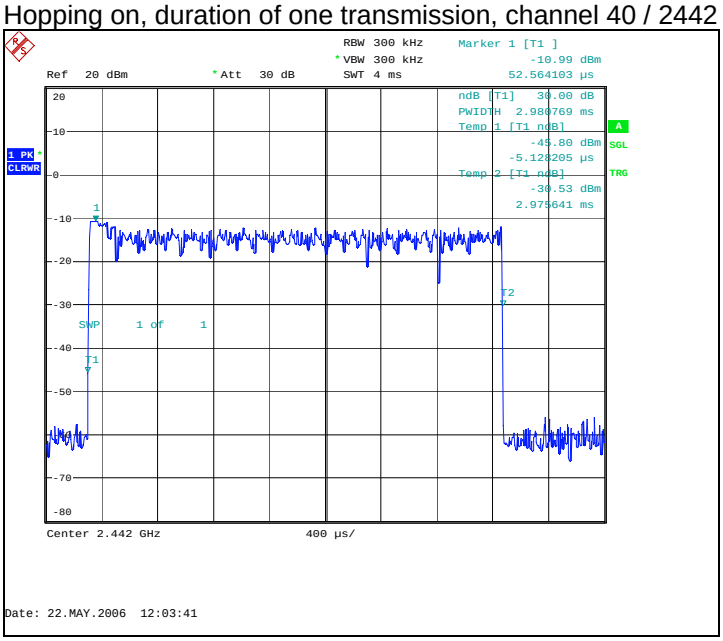
Measured number of transmissions	Duration of one transmission [µs]	Time of occupancy [s]	Result
107.0	2981	0.318942	Passed

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

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



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



TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

12. Peak output power

(FCC §15.247(b)(1), RSS-210 A8.4 (4))

EUT with DUT number	RM-100:DUT 40671
Accessories with DUT numbers	BP-5L: DUT 40672
Operation Voltage [V] / [Hz]	-
Result	Passed
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21/42/100.0
Date of measurements	23.5.2006
Measured by	Jan-Erik Lilja

12.1. 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	≤ 1	≤ 30

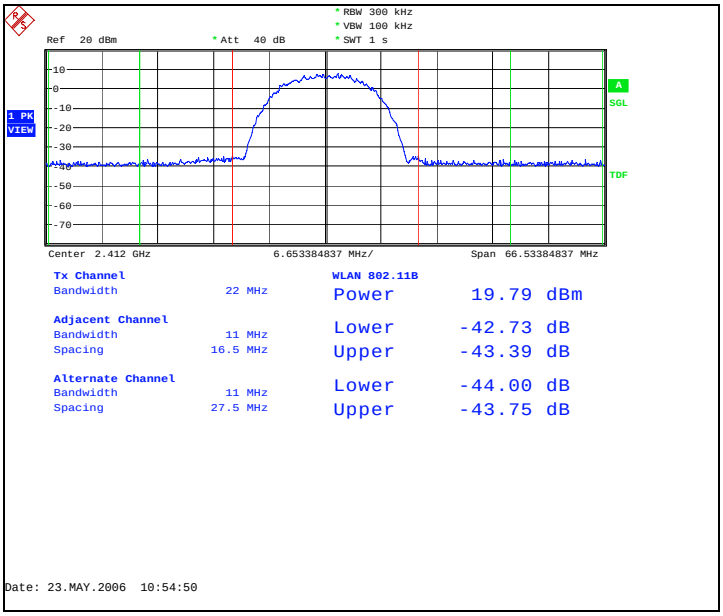
12.2. WLAN Test results

12.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

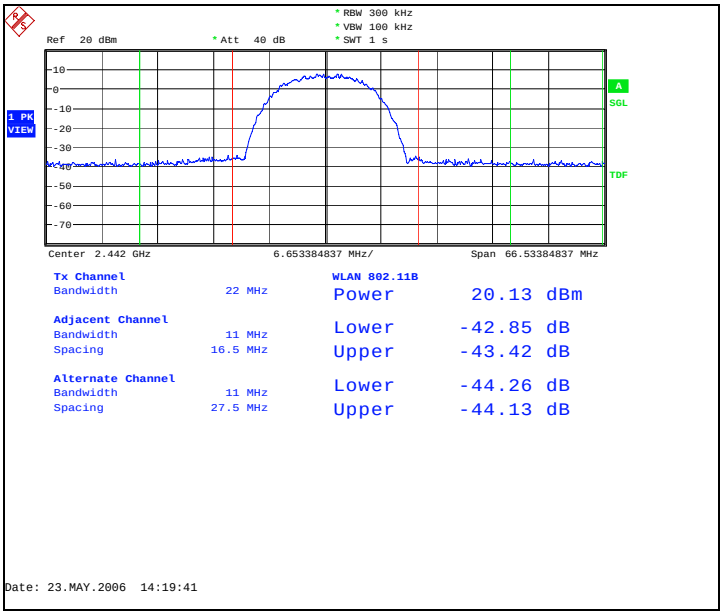
Channel / f_C [MHz]	P [dBm]	P [W]	Result
1 / 2412	19.79	0.095	Passed
7 / 2442	20.13	0.103	Passed
11 / 2462	19.56	0.090	Passed

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

Channel 1 / 2412 MHz

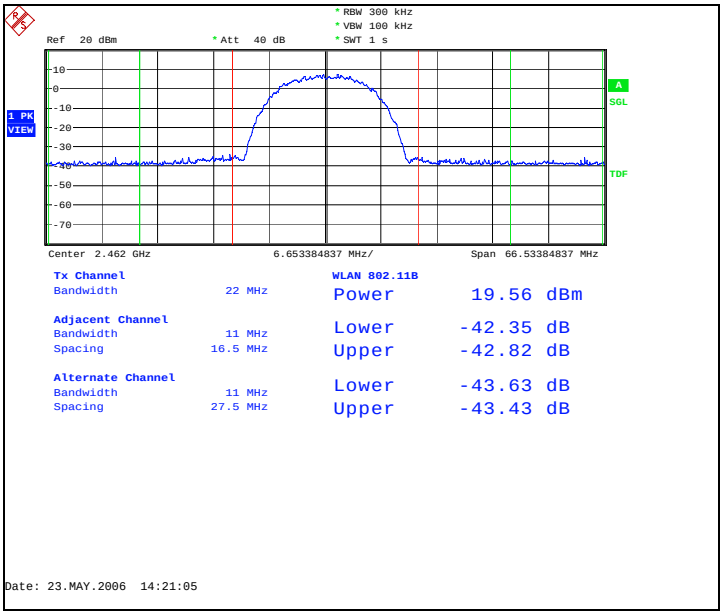


Channel 7 / 2442 MHz



TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

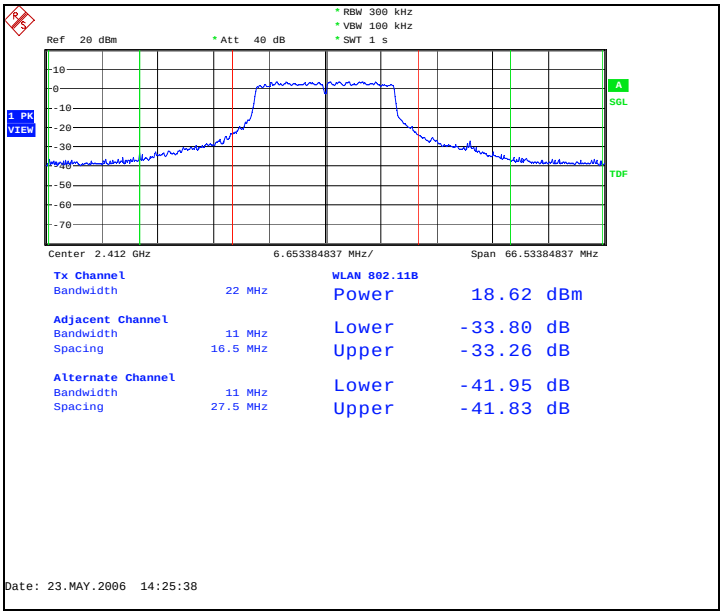
Channel 11 / 2462 MHz



12.2.2 OFDM mode, BPSK modulation, 24 Mbps data rate

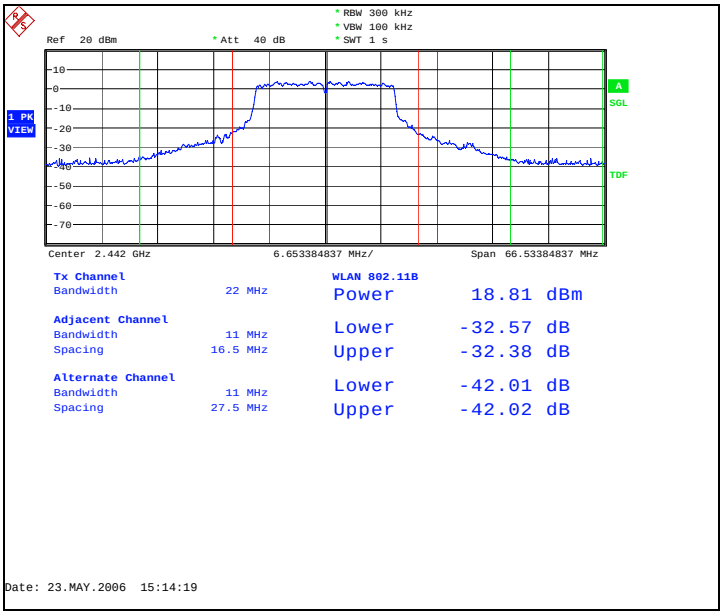
Channel / f_C [MHz]	P [dBm]	P [W]	Result
1 / 2412	18.62	0.073	Passed
7 / 2442	18.81	0.076	Passed
11 / 2462	17.95	0.062	Passed

Channel 1 / 2412 MHz

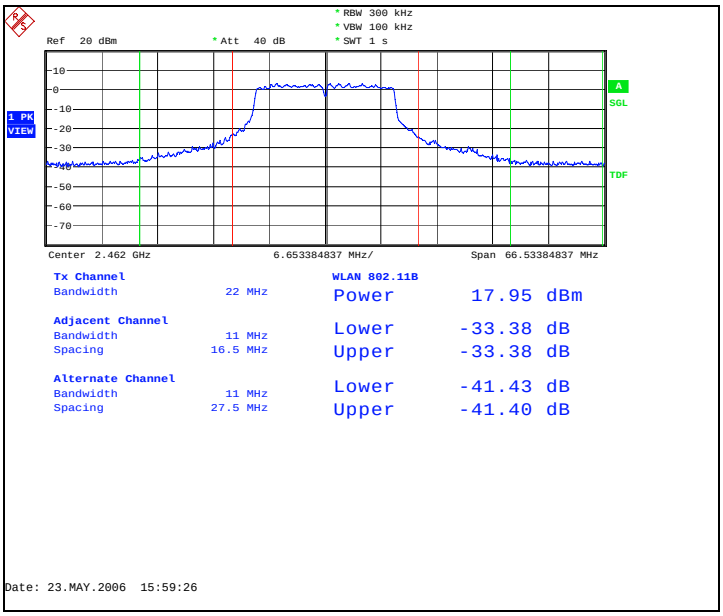


TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

Channel 7 / 2442 MHz



Channel 11 / 2462 MHz



TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

13. Band edge compliance of RF emissions

(FCC §15.247(c), RSS-210 A8.5)

EUT with DUT number	RM-100 DUT 40669
Accessories with DUT numbers	BP-5L-DUT 40673, HS-20 DUT 40674, AD-41 DUT 40675, AC-4 DUT 40676
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	Flip open
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 47 / 100.1
Date of measurements	23.5.2006
Measured by	Jari Jantunen

13.1. 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)

Frequency range [MHz]	Limit Average [dBµV/m]	Limit Peak [dBµV/m]
Below 2390 and above 2483.5	≤ 54	≤ 74

13.2. WLAN Test results

13.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

Average (RBW: 1 MHz)

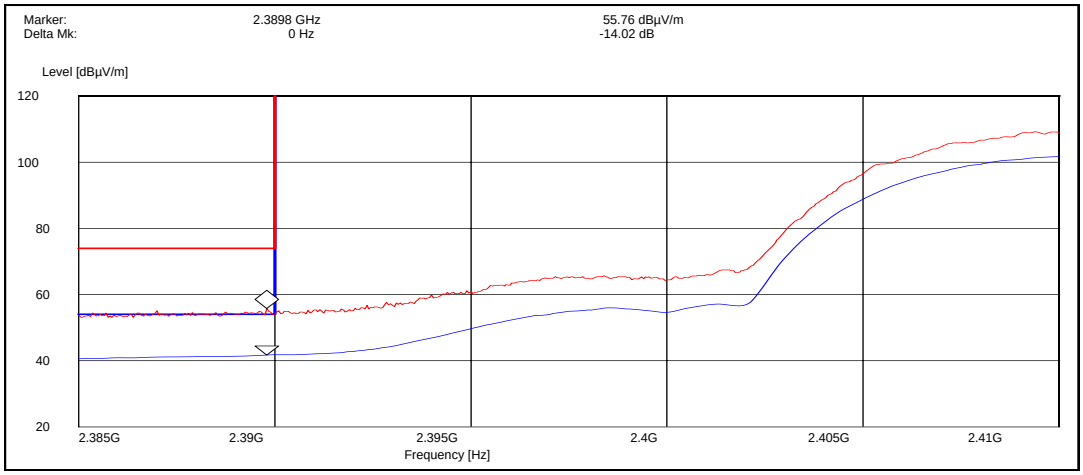
Channel / f_C [MHz]	E [dBµV/m]	Result
1 / 2412	41.74	PASSED
11 / 2462	41.10	PASSED

Peak (RBW: 1 MHz)

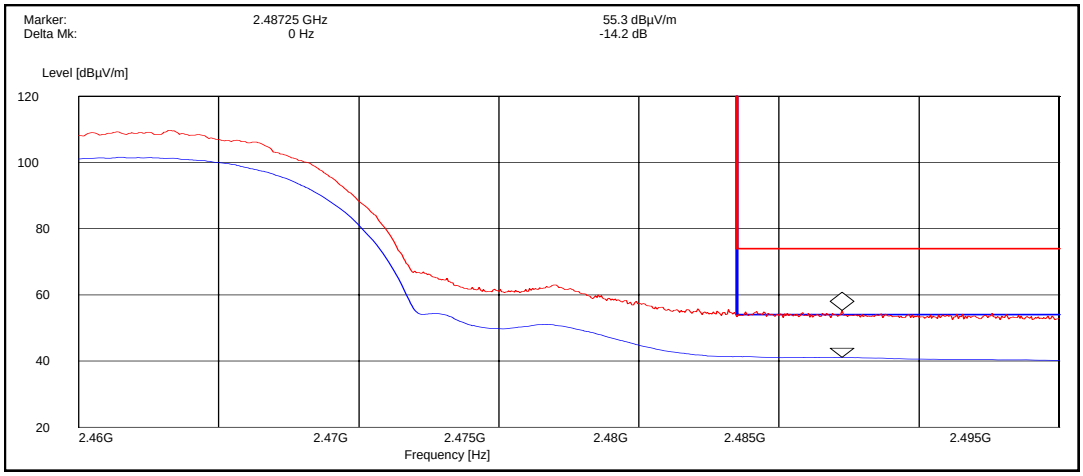
Channel / f_C [MHz]	E [dBµV/m]	Result
1 / 2412	55.76	PASSED
11 / 2462	55.30	PASSED

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

Channel 1 / 2412 MHz



Channel 11 / 2462 MHz



13.2.2 OFDM mode, BPSK modulation, 24 Mbps data rate

Average (RBW: 1 MHz)

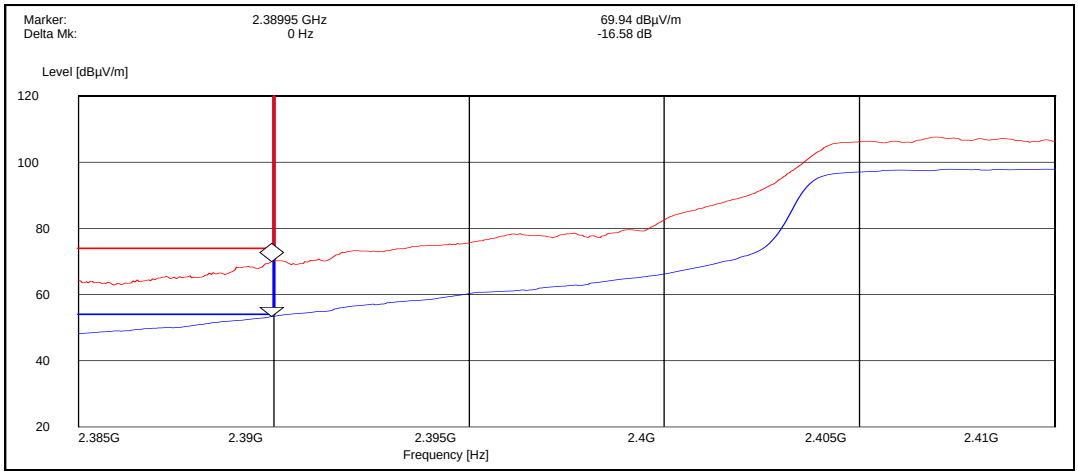
Channel / f_C [MHz]	E [dBµV/m]	Result
1 / 2412	53.36	PASSED
11 / 2462	52.47	PASSED

Peak (RBW: 1 MHz)

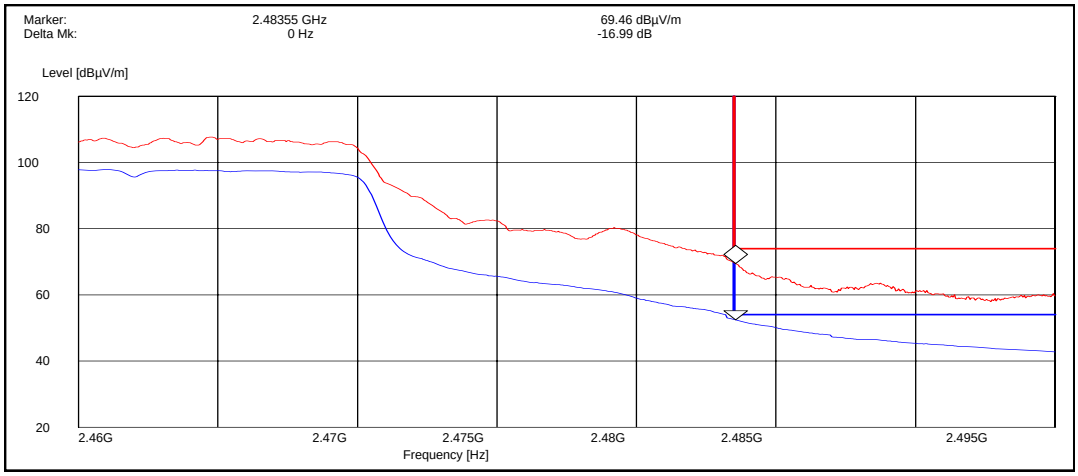
Channel / f_C [MHz]	E [dBµV/m]	Result
1 / 2412	69.94	PASSED
11 / 2462	69.46	PASSED

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

Channel 1 / 2412 MHz



Channel 11 / 2462 MHz



TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

14. Spurious RF conducted emissions
(FCC §15.247(c), RSS-210 A8.5)

EUT with DUT number	RM-100:DUT 40671
Accessories with DUT numbers	BP-5L: DUT 40672
Operation Voltage [V] / [Hz]	-
Result	Passed
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21/42/100.0
Date of measurements	23.5.2006
Measured by	Jan-Erik Lilja

14.1. Test method and limit

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

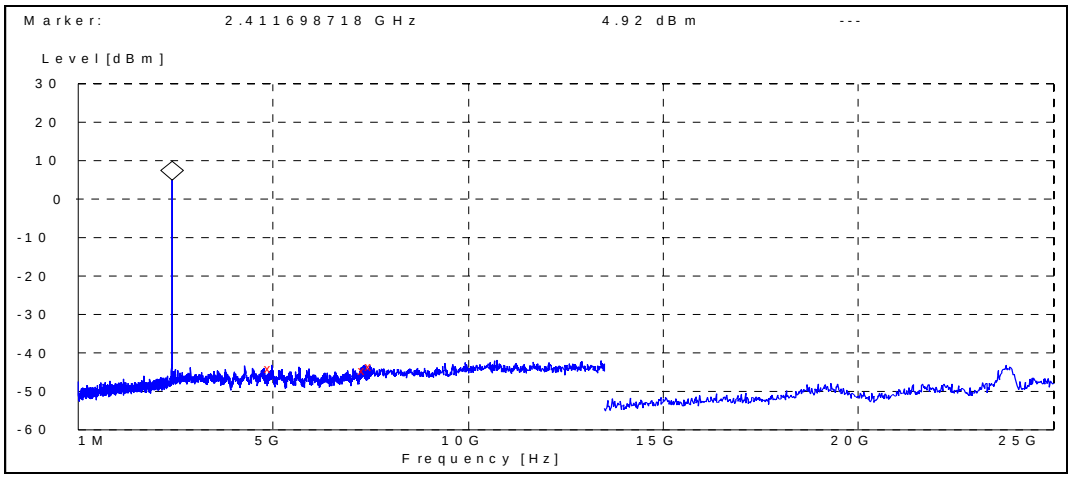
Limits for spurious RF conducted emissions measurements

Frequency range [MHz]	Limit [dBc]
1 – 25000	≤ -20

14.2. WLAN Test results

14.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

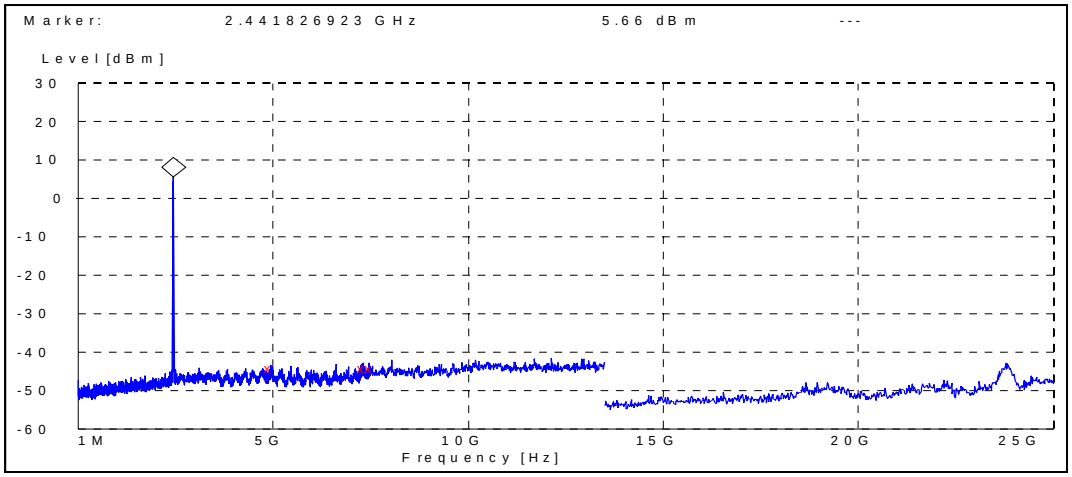
Channel 1 / 2412 MHz



Frequency [MHz]	P [dBc]	Result
4952.564103	-49.024975	Passed
7341.346154	-49.424975	Passed
7500.000000	-48.324975	Passed

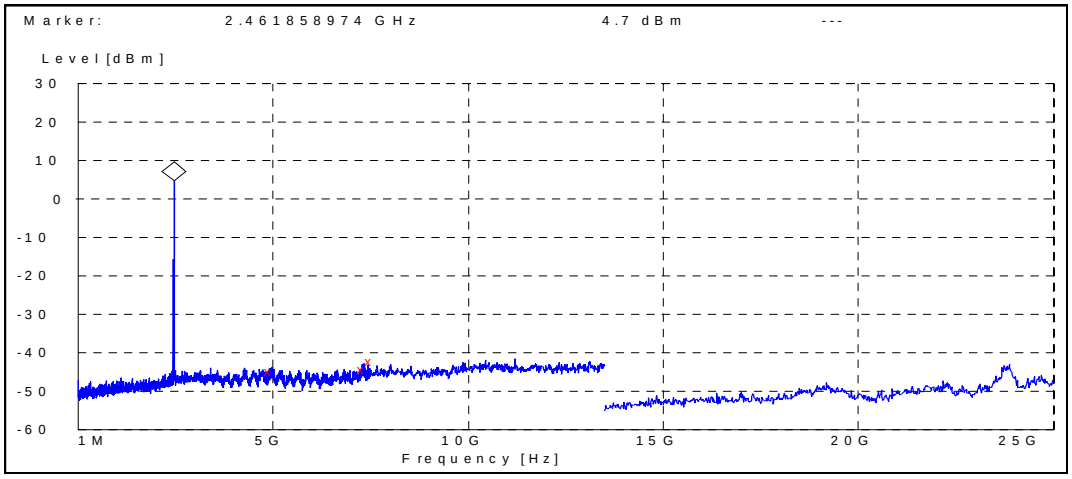
TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

Channel 7 / 2442 MHz



Frequency [MHz]	P [dBc]	Result
4940.705128	-49.863823	Passed
7312.500000	-49.763823	Passed
7500.000000	-49.963823	Passed

Channel 11 / 2462 MHz

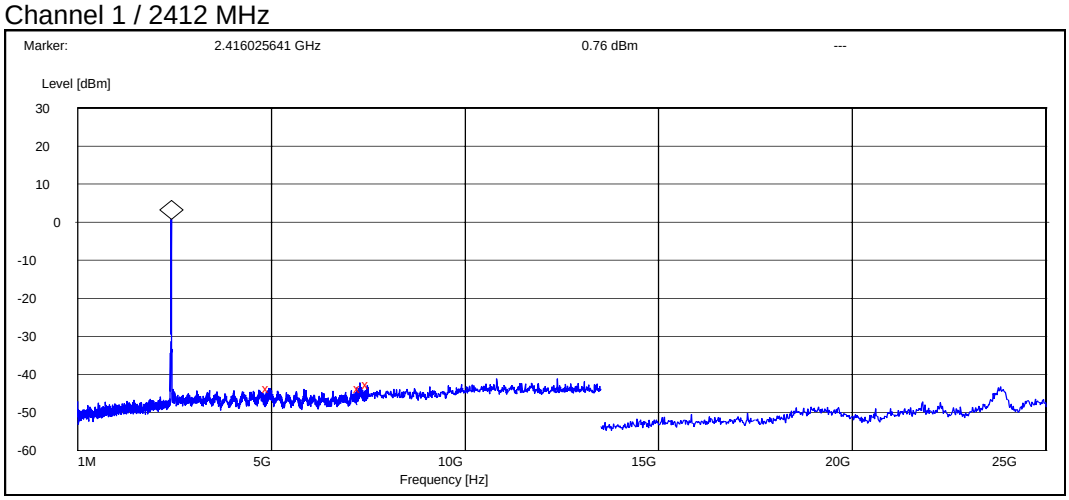


Frequency [MHz]	P [dBc]	Result
4947.115385	-49.401906	Passed
7332.692308	-48.901906	Passed
7500.000000	-47.001906	Passed

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

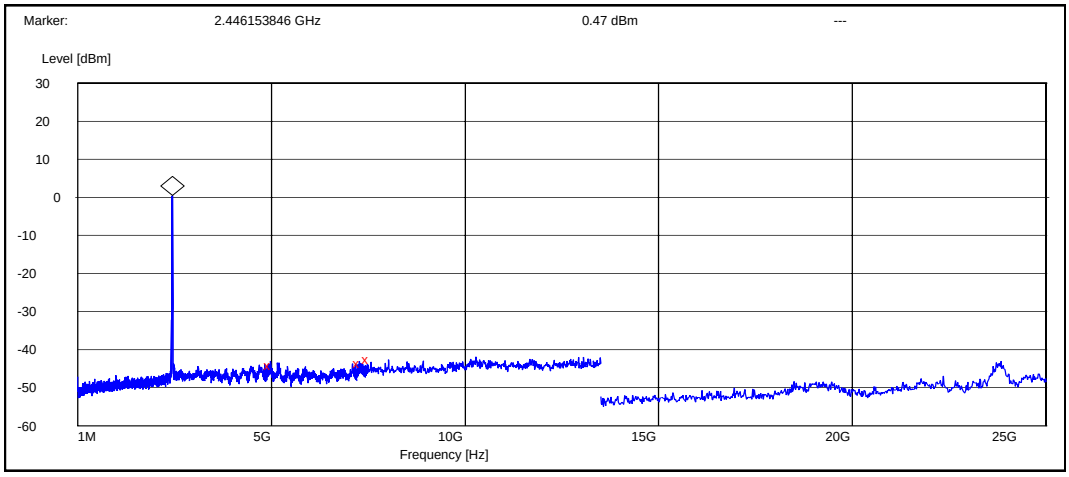
14.2.2 OFDM mode, BPSK modulation, 24 Mbps data rate

Channel 1 / 2412 MHz



Frequency [MHz]	P [dBc]	Result
4958.012821	-42.036383	Passed
7313.461538	-41.036383	Passed
7500.000000	-41.536383	Passed

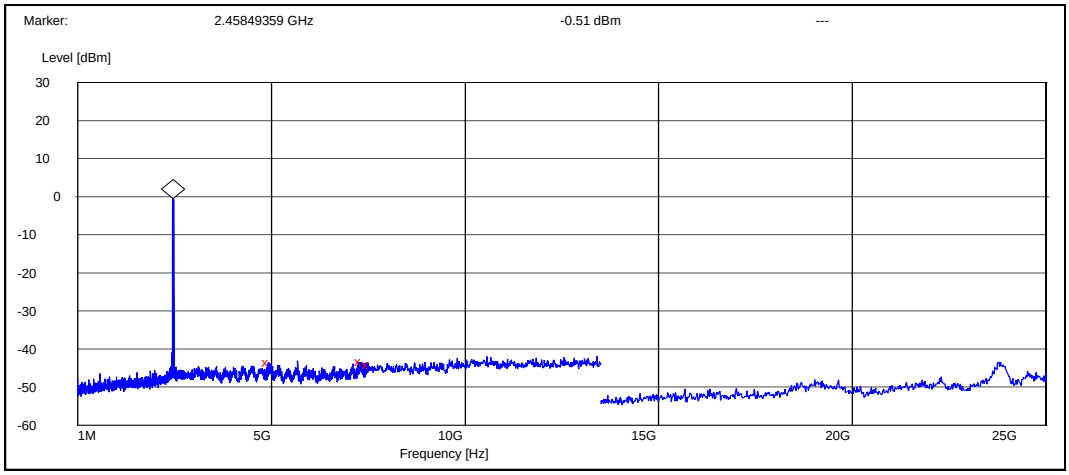
Channel 7 / 2442 MHz



Frequency [MHz]	P [dBc]	Result
4995.192308	-41.559640	Passed
7478.846154	-41.359640	Passed
23728.365385	-30.159640	Passed

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

Channel 11 / 2462 MHz



Frequency [MHz]	P [dBc]	Result
4977.884615	-40.806948	Passed
7272.596154	-40.706948	Passed
7500.000000	-40.506948	Passed

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

15. Spurious radiated emissions

(FCC §15.247(c), §15.209, RSS-210 A8.5)

EUT with DUT number	RM-100 DUT 40669
Accessories with DUT numbers	BP-5L-DUT 40673, HS-20 DUT 40674, AD-41 DUT 40675, AC-4 DUT 40676
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	Flip open
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 47 / 100.1
Date of measurements	23.5.2006
Measured by	Jari Jantunen

15.1. 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 [µV/m]	Limit [dBµV/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

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

15.2. WLAN Test results

15.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

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	41.10	113.50	42.50	-1.40	HORIZONTAL	PASSED
7236.000000	43.10	142.89	40.80	2.30	VERTICAL	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	28.90	-1.40	VERTICAL	PASSED
7236.000000	29.70	30.55	27.40	2.30	HORIZONTAL	PASSED

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
37.776353	22.90	13.96	35.40	-12.50	VERTICAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4883.767535	43.90	156.68	45.50	-1.60	VERTICAL	PASSED
7286.567134	43.80	154.88	41.10	2.70	HORIZONTAL	PASSED
17932.871743	54.90	555.90	33.60	21.30	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4884.267535	30.10	31.99	31.70	-1.60	VERTICAL	PASSED
7416.833667	30.80	34.67	27.50	3.30	HORIZONTAL	PASSED
17934.871743	42.40	131.83	21.10	21.30	HORIZONTAL	PASSED

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	44.10	160.32	45.60	-1.50	HORIZONTAL	PASSED
7386.000000	43.40	147.91	40.30	3.10	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4924.000000	30.70	34.28	32.20	-1.50	HORIZONTAL	PASSED
7386.000000	30.60	33.88	27.50	3.10	HORIZONTAL	PASSED

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

15.2.2 OFDM mode, BPSK modulation, 24 Mbps data rate

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	43.00	141.25	44.40	-1.40	HORIZONTAL	PASSED
7236.000000	42.80	138.04	40.50	2.30	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4824.000000	28.30	26.00	29.70	-1.40	HORIZONTAL	PASSED
7236.000000	29.80	30.90	27.50	2.30	HORIZONTAL	PASSED

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
37.976353	22.90	13.96	35.50	-12.60	VERTICAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4882.265531	42.50	133.35	44.10	-1.60	VERTICAL	PASSED
7404.805611	43.80	154.88	40.50	3.30	HORIZONTAL	PASSED
17979.957916	55.20	575.44	33.70	21.50	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4881.269539	29.10	28.51	30.70	-1.60	VERTICAL	PASSED
7400.805611	30.70	34.28	27.40	3.30	HORIZONTAL	PASSED
17979.957916	42.90	139.64	21.40	21.50	HORIZONTAL	PASSED

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	45.50	188.36	47.00	-1.50	HORIZONTAL	PASSED
7386.000000	43.30	146.22	40.20	3.10	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4924.000000	31.30	36.73	32.80	-1.50	HORIZONTAL	PASSED
7386.000000	30.60	33.88	27.50	3.10	HORIZONTAL	PASSED

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

16. AC powerline conducted emissions

(FCC §15.207, RSS-GEN 7.2.2)

EUT with DUT number	RM-100 DUT 40669
Accessories with DUT numbers	BP-5L-DUT 40673, HS-20 DUT 40674, AD-41 DUT 40675, AC-4 DUT 40676
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	20 / 48 / 100.3
Date of measurements	25.5.2006
Measured by	Jari Jantunen

16.1. 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

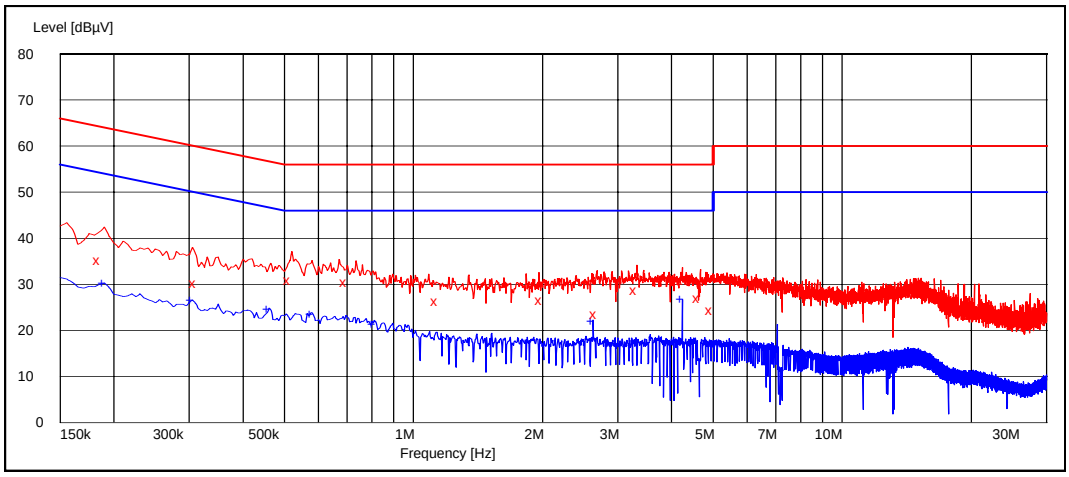
Frequency range [MHz]	Quasi peak limit [dBµV]	Average limit [dBµV]
0.15 - 0.5	66 - 56	56 - 46
0.5 - 5	56	46
5 - 30	60	50

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

16.2. WLAN Test results

16.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

Channel 7 / 2442 MHz



Quasi peak (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.185000	35.30	L1	PASSED
0.310000	30.30	N	PASSED
0.515000	30.90	L1	PASSED
0.695000	30.50	L1	PASSED
1.135000	26.40	L1	PASSED
1.990000	26.50	L1	PASSED
2.670000	23.60	N	PASSED
3.305000	28.70	N	PASSED
4.240000	30.90	L1	PASSED
4.630000	27.10	L1	PASSED
4.960000	24.40	N	PASSED

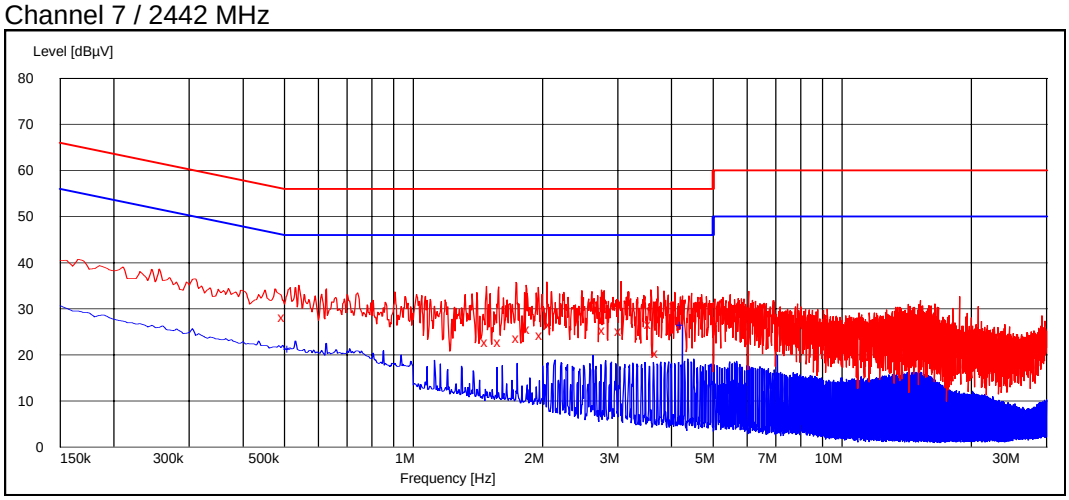
Average (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.190000	30.20	L1	PASSED
0.305000	26.60	L1	PASSED
0.460000	24.60	L1	PASSED
0.580000	23.50	L1	PASSED
0.810000	21.30	L1	PASSED
2.625000	21.90	L1	PASSED
4.240000	26.80	L1	PASSED

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

16.2.2 OFDM mode, BPSK modulation, 24 Mbps data rate

Channel 7 / 2442 MHz



Quasi peak (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.500000	28.20	L1	PASSED
1.490000	22.70	L1	PASSED
1.595000	22.70	L1	PASSED
1.760000	23.70	L1	PASSED
1.865000	25.50	L1	PASSED
1.995000	24.20	L1	PASSED
2.095000	26.60	L1	PASSED
2.790000	25.30	N	PASSED
3.050000	25.10	L1	PASSED
3.580000	26.60	L1	PASSED
3.710000	20.40	N	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.515000	21.20	L1	PASSED
4.240000	26.40	L1	PASSED

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

17. 6 dB bandwidth

(FCC §15.247(a)(2), RSS-210 A8.2 (1))

EUT with DUT number	RM-100:DUT 40671
Accessories with DUT numbers	BP-5L: DUT 40672
Operation Voltage [V] / [Hz]	-
Result	Passed
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21/42/100.0
Date of measurements	23.5.2006
Measured by	Jan-Erik Lilja

17.1. Test method and limit

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

Limits for 6 dB bandwidth measurements

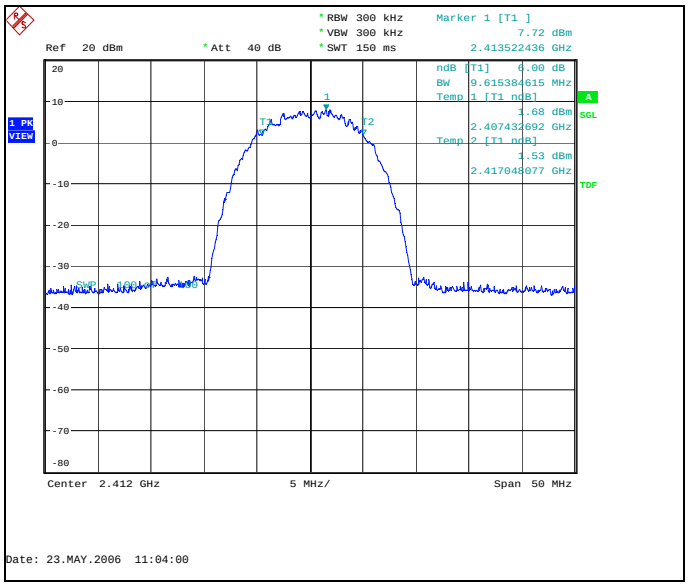
Limit [kHz]
≥ 500

17.2. WLAN test results

17.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

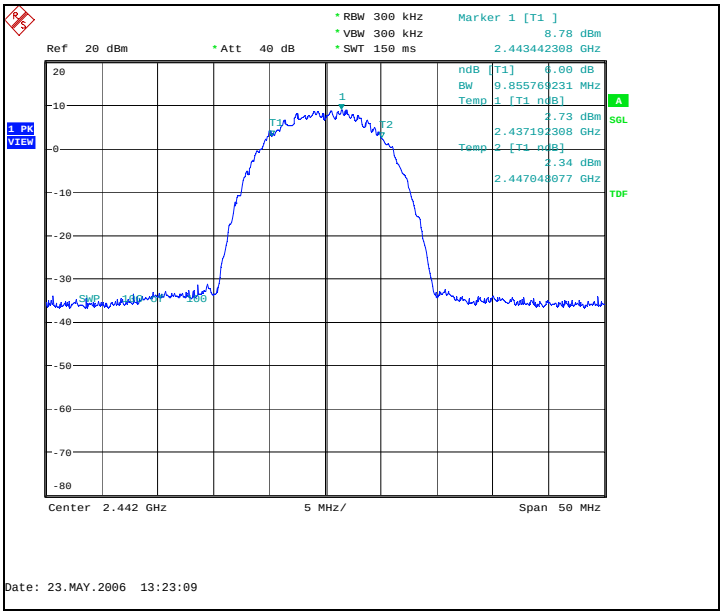
Channel / f_C [MHz]	6 dB bandwidth [kHz]	Result
1	9615.385	Passed
7	9855.769	Passed
11	10176.282	Passed

Channel 1 / 2412 MHz

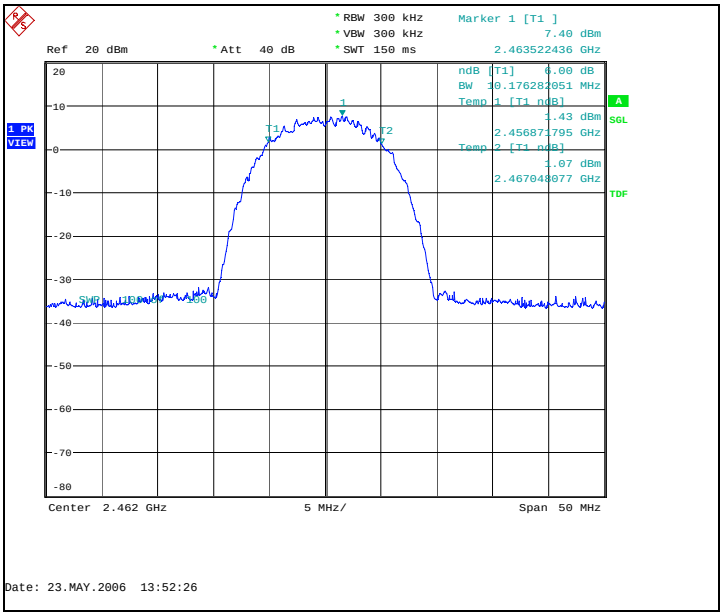


TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

Channel 7 / 2442 MHz



Channel 11 / 2462 MHz

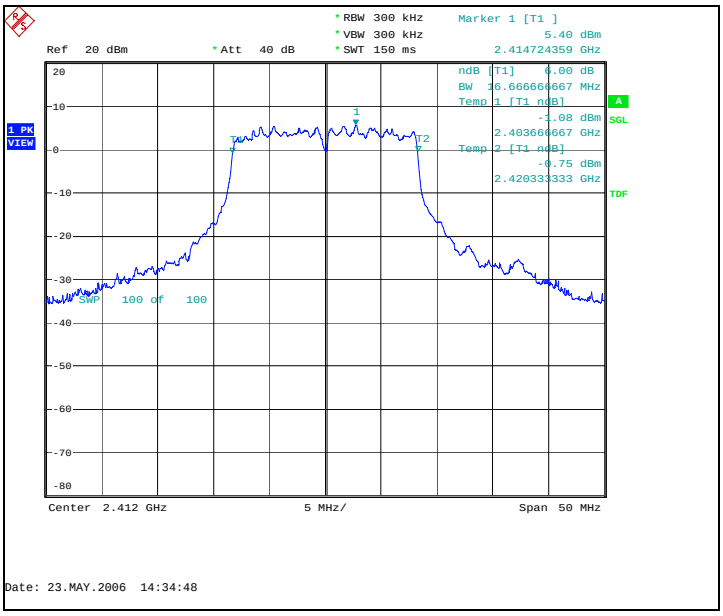


17.2.2 OFDM mode, BPSK modulation, 24 Mbps data rate

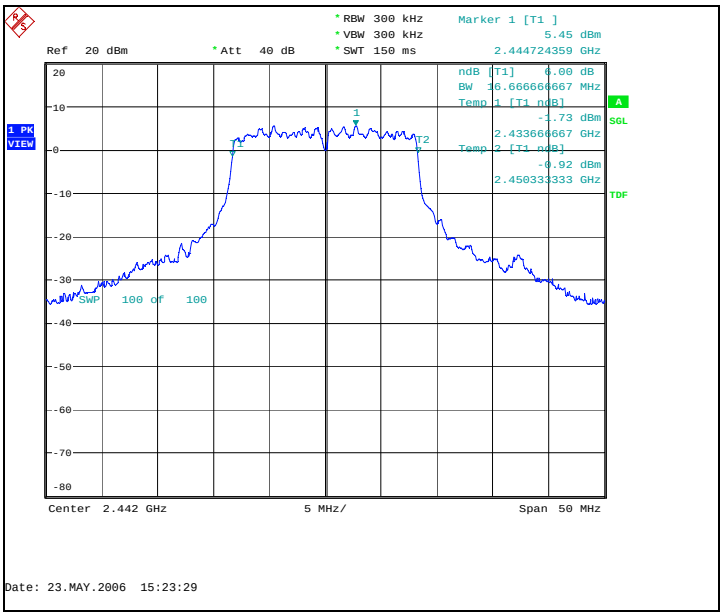
Channel / f_C [MHz]	6 dB bandwidth [kHz]	Result
1	16666.667	Passed
7	16666.667	Passed
11	16666.667	Passed

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

Channel 1 / 2412 MHz

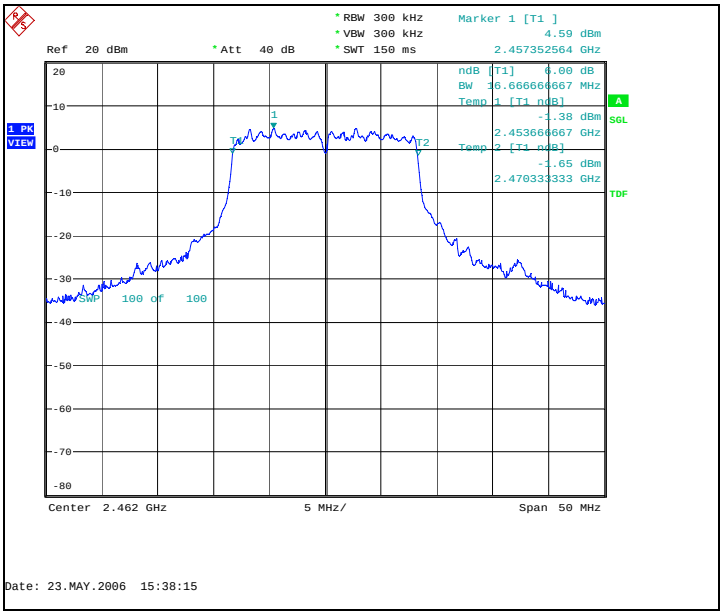


Channel 7 / 2442 MHz



Channel 11 / 2462 MHz

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880



TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

18. Power spectral density
(FCC §15.247(e), RSS-210 A8.2 (2))

EUT with DUT number	RM-100:DUT 40671
Accessories with DUT numbers	BP-5L: DUT 40672
Operation Voltage [V] / [Hz]	-
Result	Passed
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21/42/100.0
Date of measurements	23.5.2006
Measured by	Jan-Erik Lilja

18.1. Test method and limit

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

Limits for power spectral density measurements

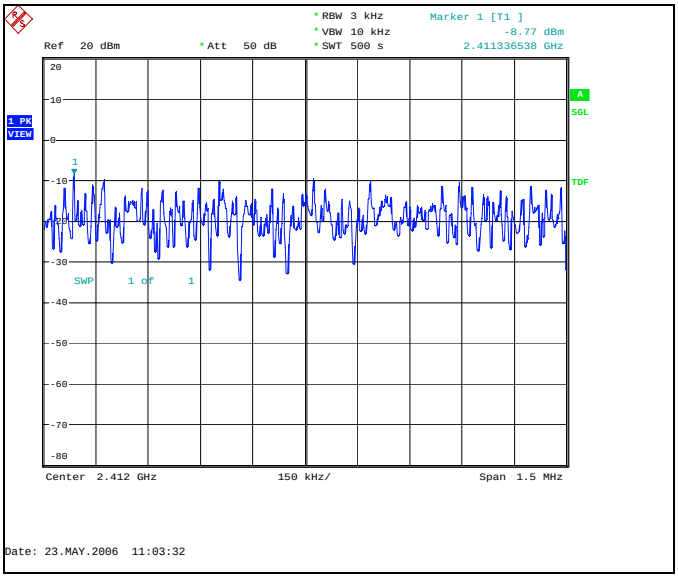
Limit [dBm] @ 3 kHz
≤ 8

18.2. WLAN test results

18.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

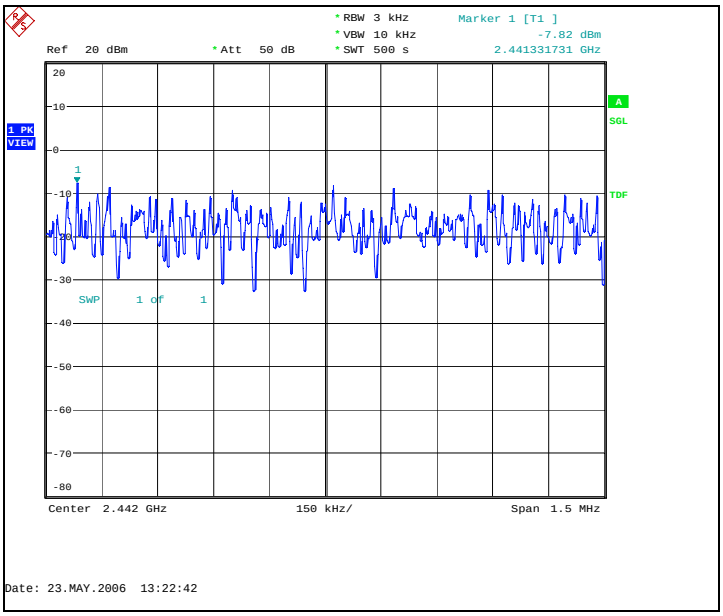
Channel / f_C [MHz]	**P [dBm]**	**Result**
1 / 2412	-8.77	Passed
7 / 2442	-7.82	Passed
11 / 2462	-9.25	Passed

Channel 1 / 2412 MHz

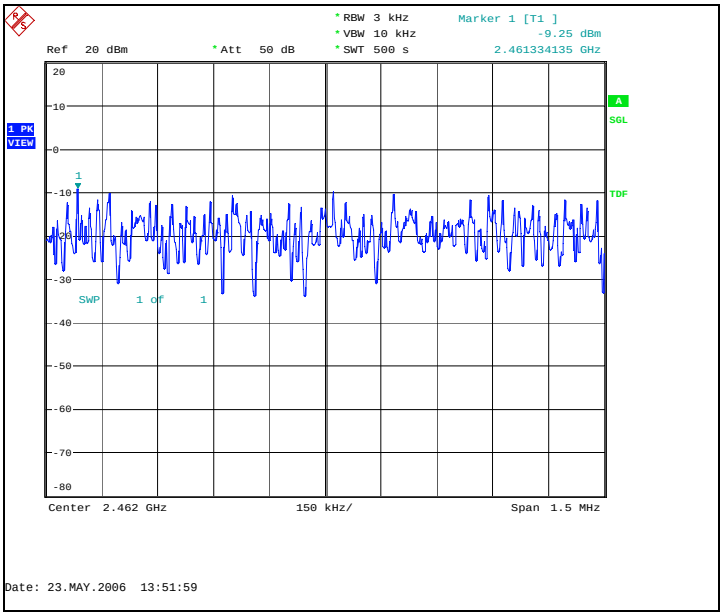


TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

Channel 7 / 2442 MHz



Channel 11 / 2462 MHz

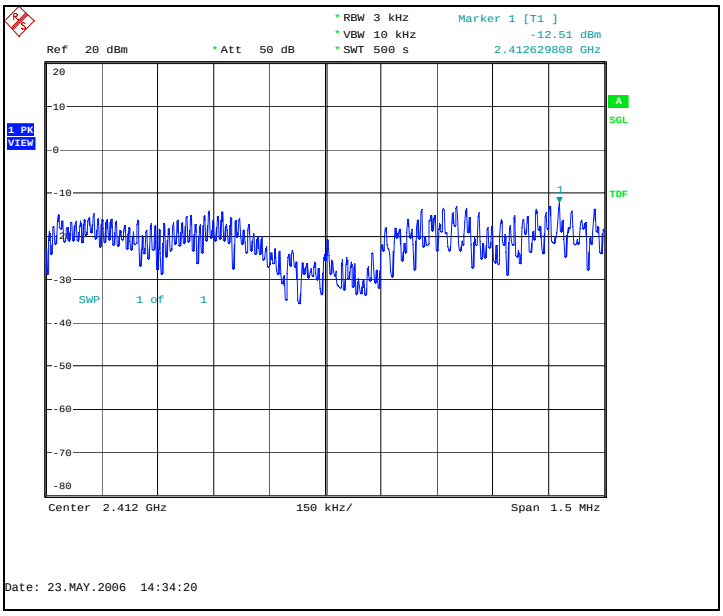


18.2.2 OFDM mode, BPSK modulation, 24 Mbps data rate

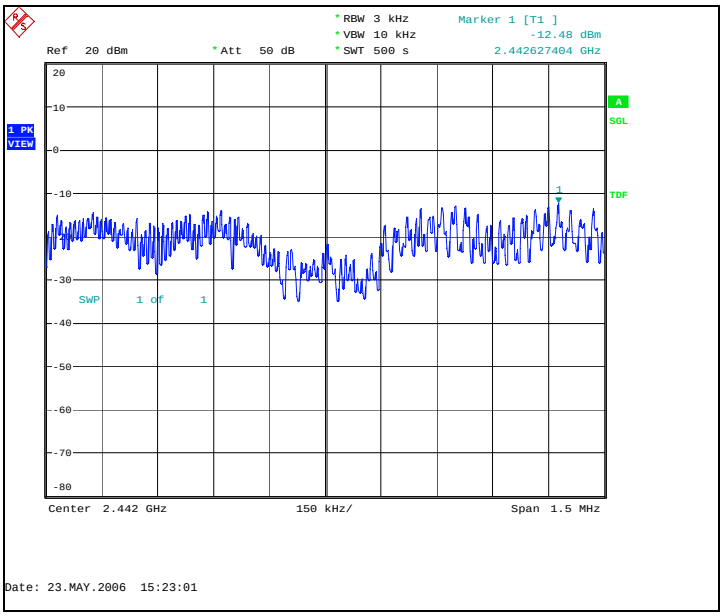
Channel / f_C [MHz]	P [dBm]	Result
1 / 2412	-12.51	Passed
7 / 2442	-12.48	Passed
11 / 2462	-13.10	Passed

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

Channel 1 / 2412 MHz

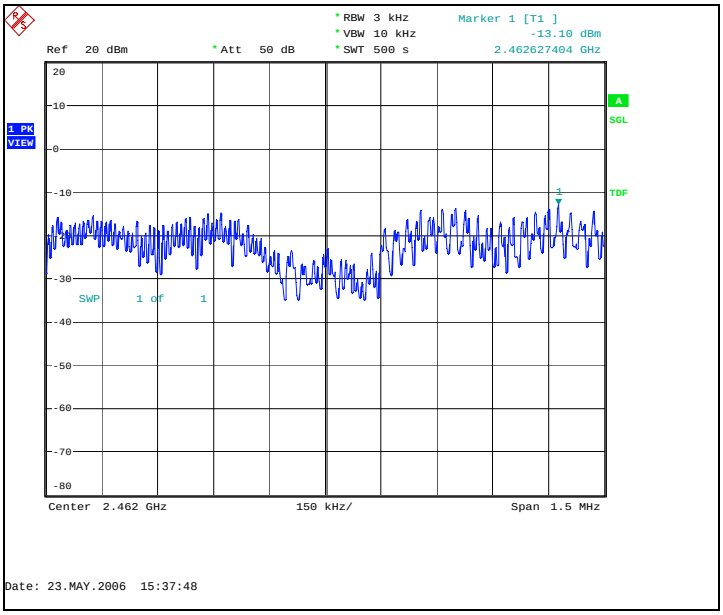


Channel 7 / 2442 MHz



TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

Channel 11 / 2462 MHz



TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880

19. Test Equipment

19.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
TM37610	Spectrum analyzer	FSU	R&S	15C,22/24
TM37678	Radio communication tester	CMU-200	R&S	15C,22/24
	Attenuator 10 dB	6251.17.A	Huber+Suhner AG	15C,22/24
TM22901	Step attenuator 110dB	8496A	Agilent	15C,22/24
TM37499	Power splitter	11667A	Agilent	15C,22/24
	Temperature chamber	VT4002	Vötsch	15C,22/24
TM38112	DC power supply	6632A	Agilent	15C,22/24
TM38111	Multimeter	34401A	Agilent	15C,22/24
TM38845	EMI receiver	ESI 40	R&S	15B,15C
TM37773	Radio communication tester	CMU-200	R&S	15B,15C
TM38631	Signal generator	83640L	Agilent	15B,15C
TM38114	DC power supply	6632A	Agilent	15B,15C
TM22835	Multimeter	87	Fluke	15B,15C
TM30600	Pulse Limiter	ESH3-Z2	R&S	15B,15C
TM26490	LISN 50 µH	ESH3-Z5/	R&S	15B,15C
TM30636	LISN 50 µH	L2-16/	PMM	15B,15C

19.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
TM30599	3m semi-anechoic chamber		TDK	15B,15C, 22/24
TM38845	EMI receiver	ESI 40	R&S	15B,15C, 22/24
TM37498	Preamplifier	AMF-5D-020180-26-10P	MITEQ	15B,15C, 22/24
TM37523	Preamplifier	AMF-4D-10M-3G-25-20P	MITEQ	15B,15C, 22/24
TM37516	Biconilog antenna	HL562	R&S	15B,15C, 22/24
TM26496	Double ridged waveguide antenna	3115	EMCO	15B,15C, 22/24
TM39158	Horn antenna	3116	EMCO	15B,15C, 22/24
TM26492	Reference dipole set	UHAP/VHAP	Schwarzbeck	15B,15C, 22/24
TM37501	Dipole antenna	3125-870	EMCO	22/24
TM37502	Dipole antenna	3125-1880	EMCO	22/24
TM37773	Radio communication tester	CMU-200	R&S	15B,15C, 22/24
TM38631	Signal generator	83640L	Agilent	15B,15C, 22/24
TM38066	High pass filter	4HC3000/18000-3-KK	Trilithic	15B,15C, 22/24
	High pass filter	WHK2010-10SS	Trilithic	15B,15C, 22/24
	Low pass filter	WLK1750-10SS	Trilithic	15B,15C, 22/24
TM26511	Tunable notch filter	WRCA870	Wainwright	22/24
TM38215	Tunable notch filter	WRCD1850/1910-0.2/40	Wainwright	22/24
TM38214	Band reject filter	WRCT 2402/2480-2400/2483.5-30	Wainwright	15C
TM30642	Turntable controller	HD-100	Deisel	15B,15C, 22/24
TM26500	Turntable	DS412	Deisel	15B,15C, 22/24
TM38842	Antenna mast controller	2090	EMCO	15B,15C, 22/24
TM38843	Antenna mast	2075	EMCO	15B,15C, 22/24
TM38114	DC power supply	6632A	Agilent	15B,15C, 22/24
TM22835	Multimeter	87	Fluke	15B,15C, 22/24

TCC Nokia Tampere Laboratory
P.O. Box 68
Sinitaival 5
FIN-33720 TAMPERE, FINLAND
Tel. +358 (0) 7180 46800
Fax. +358 (0) 7180 46880