FCC Part 15C Compliance Test Report

Test Report no.:	FCC15C_RM-484_18.doc	**Date of Report:**	03-Nov-2009
Number of pages:	23	**Customer's Contact person:**	Asko Pasanen
Testing laboratory:	TCC Nokia Copenhagen Laboratory Frederikskaj 1790 COPENHAGEN V DENMARK Tel. +45 33 292929 Fax. +45 33 292934	**Customer:**	Nokia Corporation P.O. Box 50 Mattilanniemi 6-8 FIN-40101 JYVÄSKYLÄ, FINLAND Tel. +358 (0) 7180 08000 Fax. +358 (0) 7180 78000
FCC listing no.: **IC recognition no.:**	99059 661AD-1		
Tested devices/ accessories:	**Phone: RM-484 (hw0800), Battery: BL-5K, Audio adapter: AD-54 Headset: HS-83, AC charger: AC-10E**		
FCC ID:	QURRM-484X	**IC:**	661AC-RM484
Supplement reports:	None		
Testing has been carried out in accordance with:	**CFR 47, FCC rules Part 15 Subpart C, ANSI C63.4 (2003), Public Notice DA 00-705, DTS procedures KDB 558074, IC standards RSS-GEN (Issue 2, June 2007) and RSS-210 (Issue 7, June 2007). Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit".**		
Documentation:	The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory. The documentation of the testing performed on the tested devices is archived for 15 years at TCC Nokia.		
Test Results:	**The EUT complies with the requirements in respect of all parameters subject to the test.** The test results relate only to devices specified in this document.		
Date and signature for the contents:	 Digitally signed by Sami Lehtonen Date: 2009.11.03 13:55:11 +02'00'		

Sami Lehtonen, System Specialist, EMC

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	19-Mar-2009
Testing completed	04-Apr-2009
The customer's contact person	Asko Pasanen
Test Plan referred to	T:\Projects\RM-484\TestPlan_RS\RS_testplan_RM-484_2nd.xls
Notes	None
Document name	T:\Projects\RM-484\EMC\FCC15C_RM-484_18.doc

1.1. EUT and Accessory Information

The EUT is a 7-band (GSM850/900/1800/1900 and WCDMA Band I/II(1900)/VIII) mobile phone with GPRS, EGPRS, Bluetooth, WLAN and FM transmitter. Bluetooth and WLAN are tested with maximum rated TX power.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-484	004401/10/565932/6	0800	-	0.527	25265
Battery	BL-5K	4620408441L10102991;0670580	-	-	-	25264
Audio adapter	AD-54	07508388344L2104250	-	-	-	25256
Headset	HS-83	0694557820318603163	-	-	-	25251
AC charger	AC-10E	3997918305050506207;0675408	-	-	-	25261

1.2. Summary of Test Results

WLAN:

Section in CFR 47	Section in *RSS-GEN* or RSS-210	Name of the test	Result
15.247(b)(1)	A8.4 (4)	Conducted peak output power	Passed
15.247(d)	A8.5	Band edge compliance of RF emissions	NP
15.247(d)	A8.5	Spurious RF conducted emissions	Passed
15.247(d), 15.209	A8.5	Spurious radiated emissions	NP
15.207	*7.2.2*	AC power line conducted emissions	NP
15.247(a)(2)	A8.2 (a)	6 dB bandwidth	Passed
15.247(e)	A8.2 (b)	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 Copenhagen Laboratory.

TCC Nokia Copenhagen Laboratory
Frederikskaj
1790 COPENHAGEN V
DENMARK
Tel. +45 33 292929
Fax. +45 33 292934

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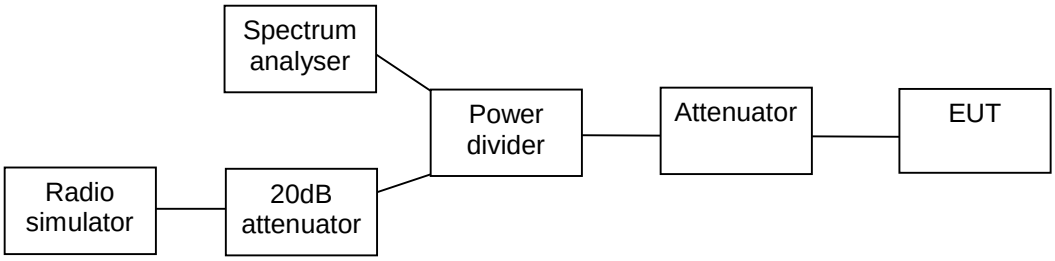
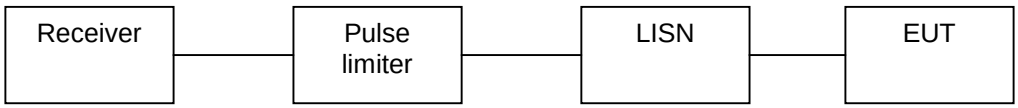
TCC Nokia Copenhagen Laboratory
Frederikskaj
1790 COPENHAGEN V
DENMARK
Tel. +45 33 292929
Fax. +45 33 292934

2. Test setups

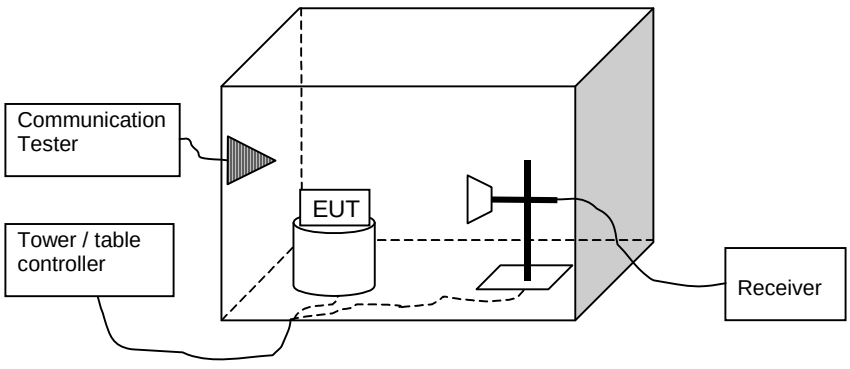
2.1. Conducted RF test setup



2.2. AC powerline conducted emissions test setup



2.3. Radiated test setup



TCC Nokia Copenhagen Laboratory
Frederikskaj
1790 COPENHAGEN V
DENMARK
Tel. +45 33 292929
Fax. +45 33 292934

3. Conducted peak output power

(FCC §15.247(b)(1), RSS-210 A8.4 (4))

EUT with DUT number	RM-484 dut 25265, BL-5K dut 25264
Accessories with DUT numbers	AD-54 dut 25256, HS.83 dut 25251, AC-10E dut 25261
Operation Voltage [V] / [Hz]	230 / 50
Result	
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24.8 / 32.3 102.7
Date of measurements	31-Mar-2009
Measured by	Jan Engelbrechtsen

3.1. Test method and limit

The measurement is made according to DTS procedures KDB 558074 and IC standard RSS-210.

Limits for conducted peak output power measurements

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

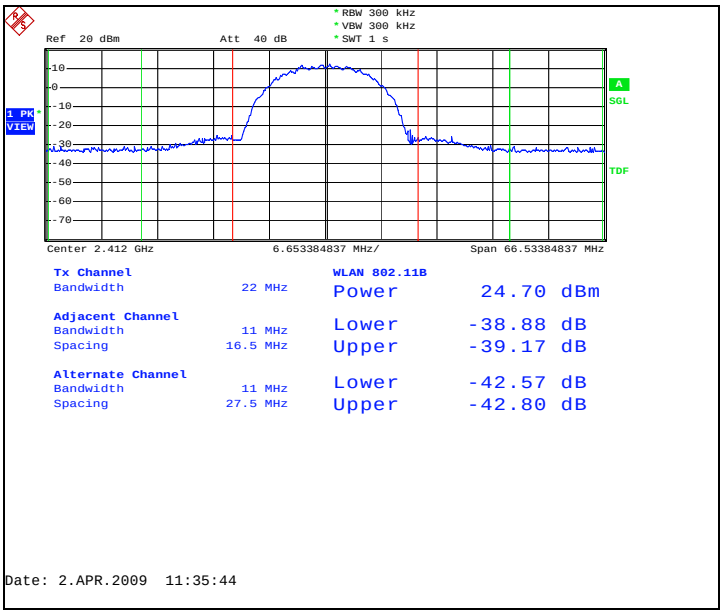
TCC Nokia Copenhagen Laboratory
Frederikskaj
1790 COPENHAGEN V
DENMARK
Tel. +45 33 292929
Fax. +45 33 292934

3.2. WLAN Test results

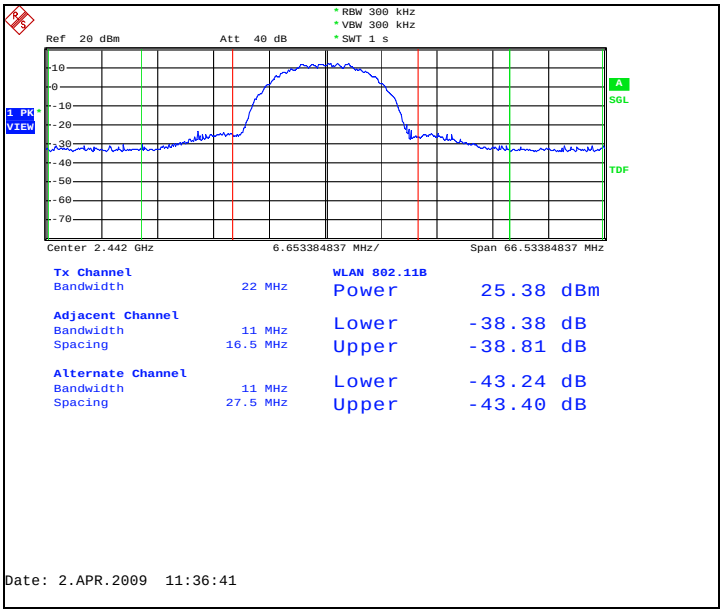
3.2.1 DSSS mode, QPSK modulation, 5.5 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [W]	Result
1 / 2412	24.70	0.295	
7 / 2442	25.38	0.345	
11 / 2462	25.74	0.375	

Channel 1 / 2412 MHz

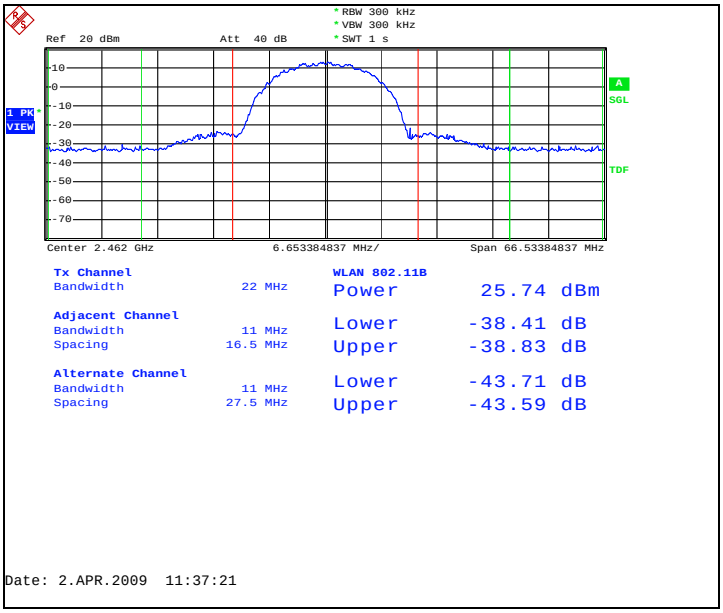


Channel 7 / 2442 MHz



TCC Nokia Copenhagen Laboratory
Frederikskaj
1790 COPENHAGEN V
DENMARK
Tel. +45 33 292929
Fax. +45 33 292934

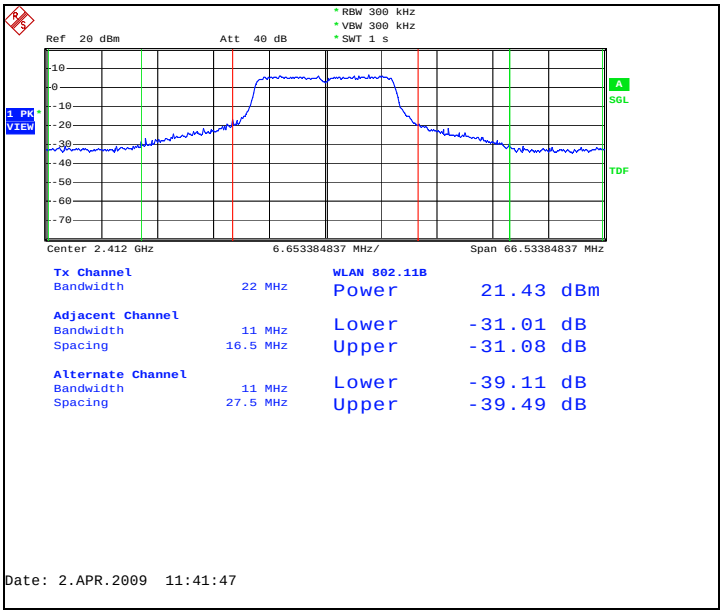
Channel 11 / 2462 MHz



3.2.2 OFDM mode, BPSK modulation, 6 Mbps data rate

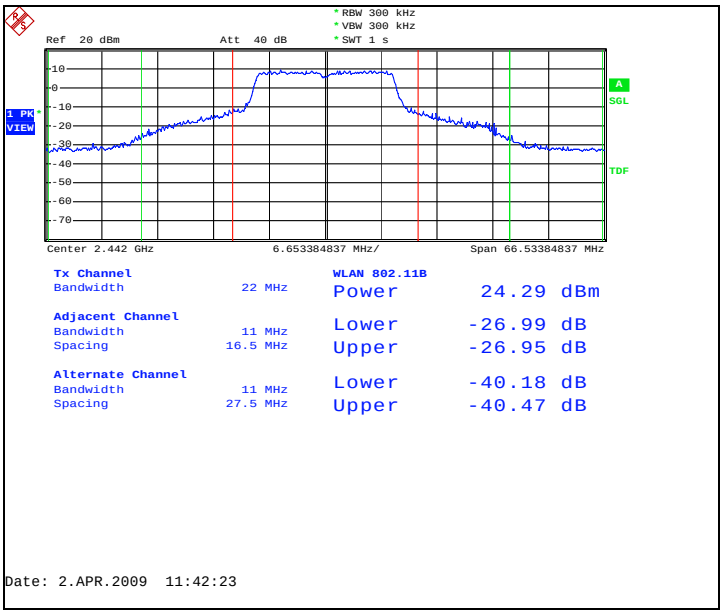
Channel / f_C [MHz]	P [dBm]	P [W]	Result
1 / 2412	21.43	0.139	
7 / 2442	24.29	0.269	
11 / 2462	22.60	0.182	

Channel 1 / 2412 MHz

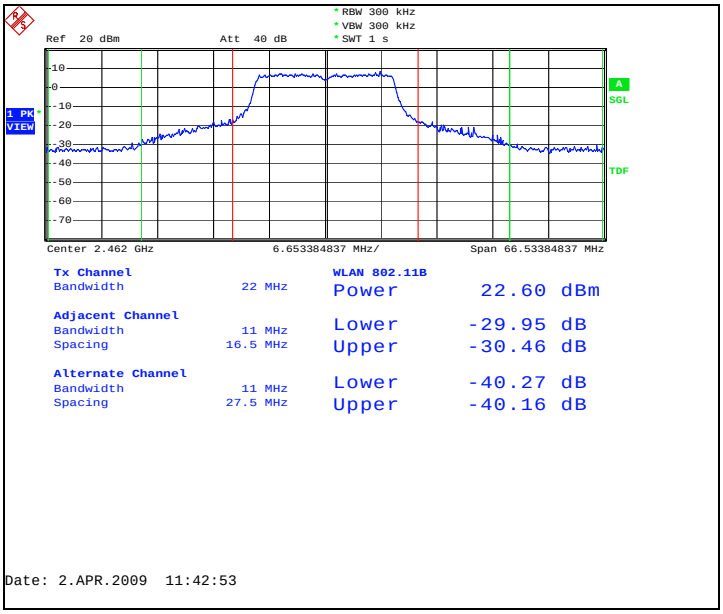


TCC Nokia Copenhagen Laboratory
Frederikskaj
1790 COPENHAGEN V
DENMARK
Tel. +45 33 292929
Fax. +45 33 292934

Channel 7 / 2442 MHz



Channel 11 / 2462 MHz



TCC Nokia Copenhagen Laboratory
Frederikskaj
1790 COPENHAGEN V
DENMARK
Tel. +45 33 292929
Fax. +45 33 292934

4. Spurious RF conducted emissions

(FCC §15.247(d), RSS-210 A8.5)

EUT with DUT number	RM-484 dut 25265, BL-5K dut 25264
Accessories with DUT numbers	AD-54 dut 25256, HS.83 dut 25251, AC-10E dut 25261
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24.8 / 32.3 102.7
Date of measurements	31-Mar-2009
Measured by	Jan Engelbrechtsen

4.1. Test method and limit

The measurement is made according to DTS procedures KDB 558074 and IC standard RSS-210.

Limits for spurious RF conducted emissions measurements

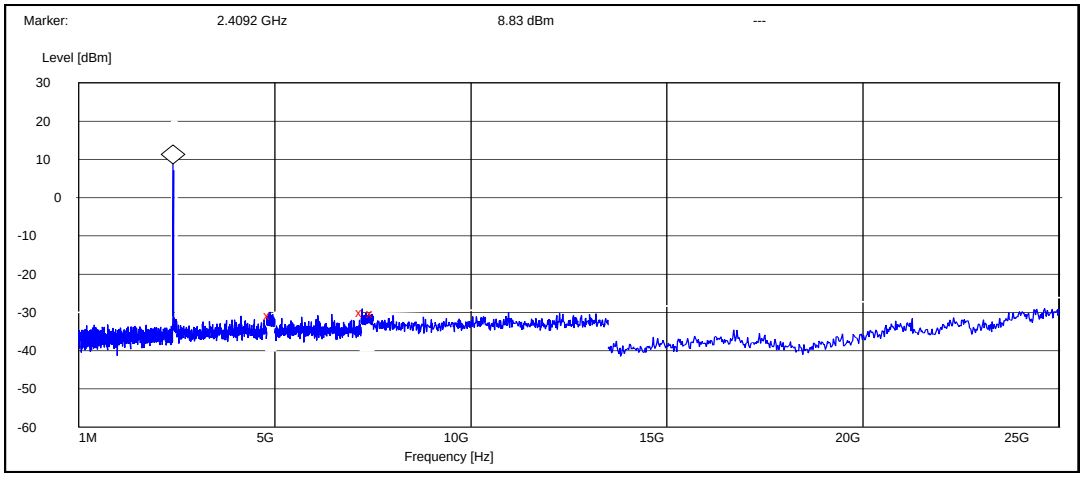
Frequency range [MHz]	Limit [dBc]
1 – 25000	≤ -20

TCC Nokia Copenhagen Laboratory
Frederikskaj
1790 COPENHAGEN V
DENMARK
Tel. +45 33 292929
Fax. +45 33 292934

4.2. WLAN Test results

4.2.1 DSSS mode, QPSK modulation, 5.5 Mbps data rate

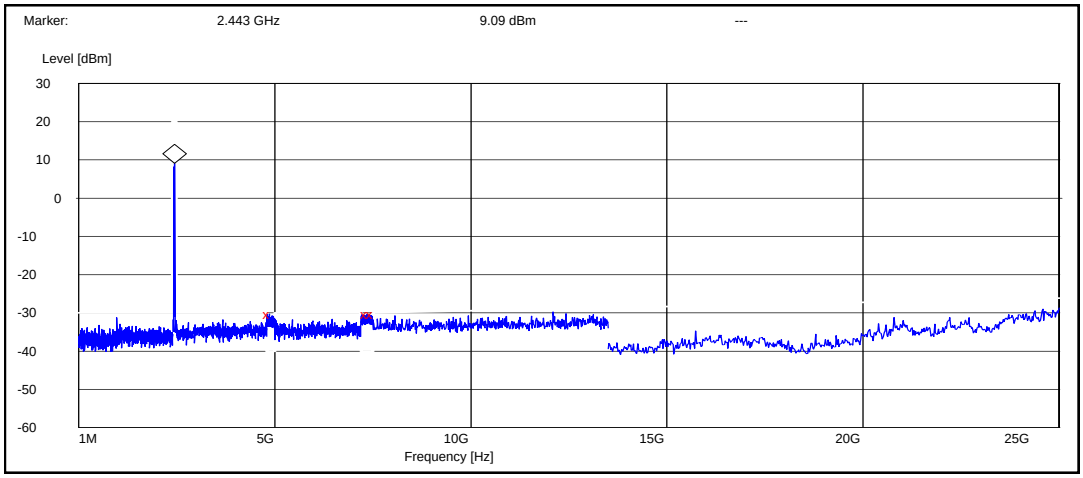
Channel 1 / 2412 MHz



Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4884.000000	-39.528116	Pass
7228.800000	-38.828116	Pass
7500.000000	-39.128116	Pass

Channel 7 / 2442 MHz

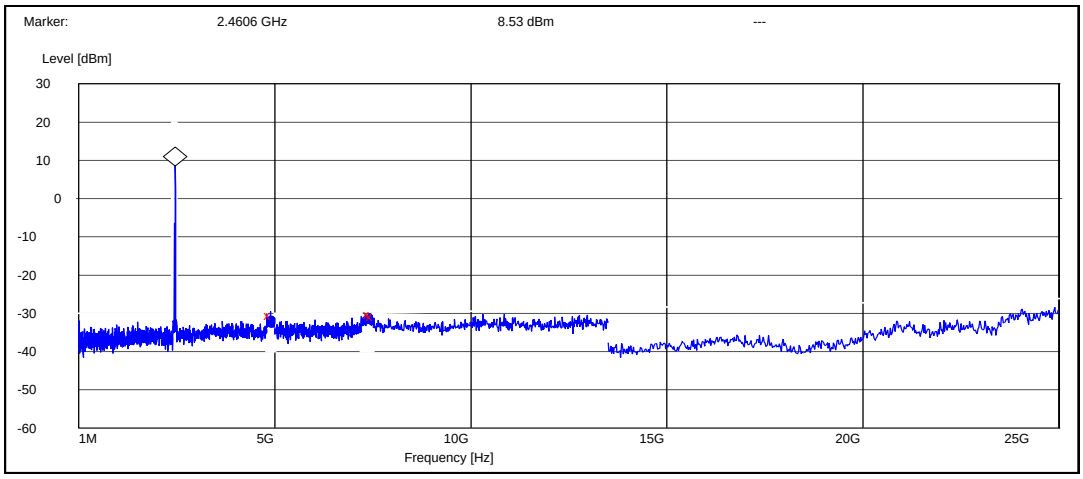


Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4868.400000	-39.393611	Pass
7352.400000	-39.393611	Pass
7500.000000	-39.493611	Pass

TCC Nokia Copenhagen Laboratory
Frederikskaj
1790 COPENHAGEN V
DENMARK
Tel. +45 33 292929
Fax. +45 33 292934

Channel 11 / 2462 MHz

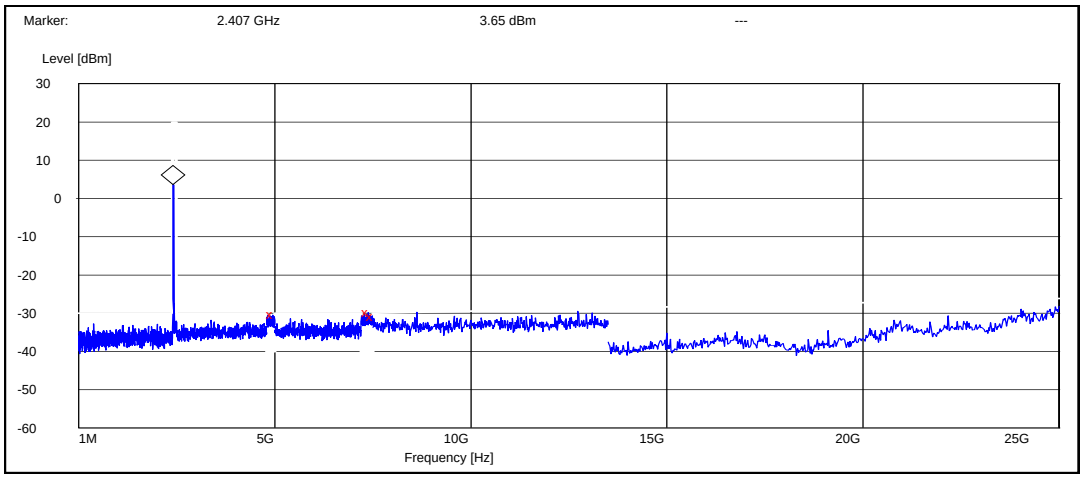


Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4891.200000	-38.930013	Pass
7416.000000	-38.730013	Pass
7500.000000	-39.230013	Pass

4.2.2 OFDM mode, BPSK modulation, 6 Mbps data rate

Channel 1 / 2412 MHz

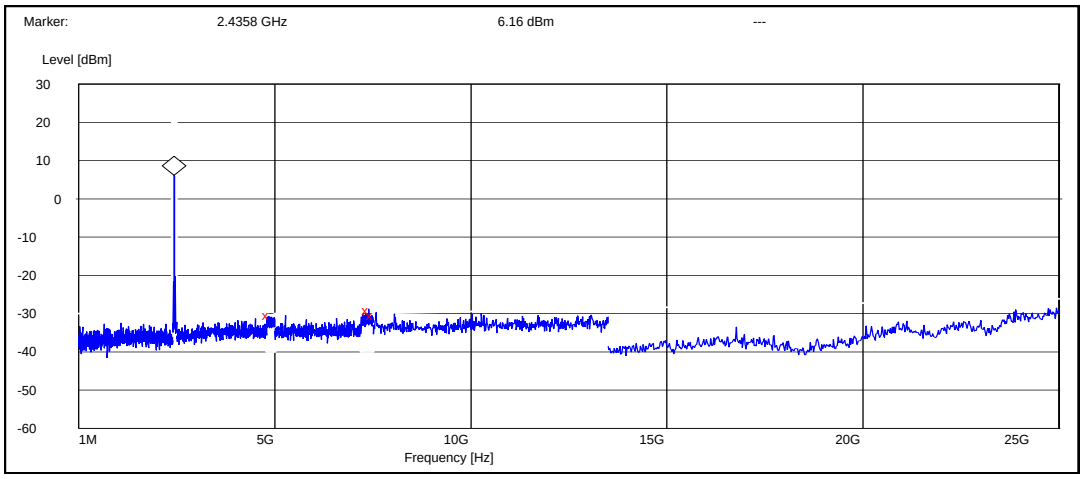


Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4948.400000	-34.046651	Pass
7387.200000	-33.346651	Pass
7500.000000	-34.346651	Pass

Channel 7 / 2442 MHz

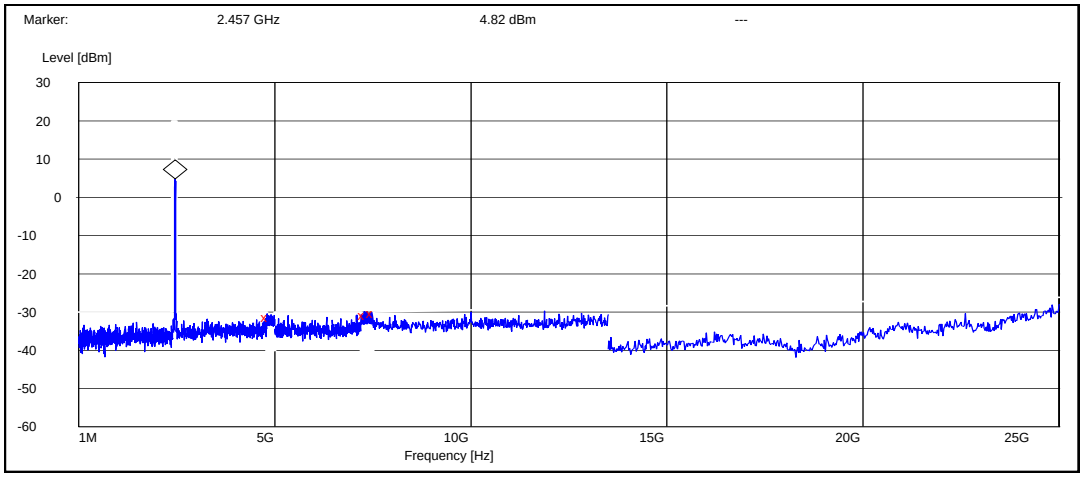
TCC Nokia Copenhagen Laboratory
Frederikskaj
1790 COPENHAGEN V
DENMARK
Tel. +45 33 292929
Fax. +45 33 292934



Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4855.200000	-36.563741	Pass
7392.000000	-35.463741	Pass
7500.000000	-36.563741	Pass

Channel 11 / 2462 MHz



Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4813.200000	-36.217854	Pass
7279.800000	-35.517854	Pass
7500.000000	-35.217854	Pass

TCC Nokia Copenhagen Laboratory
Frederikskaj
1790 COPENHAGEN V
DENMARK
Tel. +45 33 292929
Fax. +45 33 292934

5. 6 dB bandwidth

(FCC §15.247(a)(2), RSS-210 A8.2 (a))

EUT with DUT number	RM-484 dut 25265, BL-5K dut 25264
Accessories with DUT numbers	AD-54 dut 25256, HS.83 dut 25251, AC-10E dut 25261
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21.7 / 35.9 102.93
Date of measurements	03-Apr-2009
Measured by	Jan Engelbrechtsen

5.1. Test method and limit

The measurement is made according to DTS procedures KDB 558074 and IC standard RSS-210.

Limits for 6 dB bandwidth measurements

Limit [kHz]
≥ 500

TCC Nokia Copenhagen Laboratory
Frederikskaj
1790 COPENHAGEN V
DENMARK
Tel. +45 33 292929
Fax. +45 33 292934

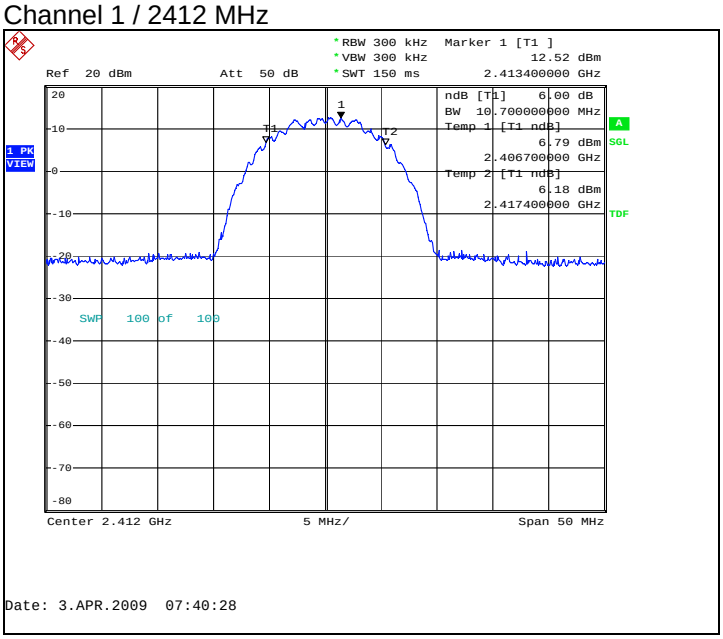
5.2. WLAN test results

5.3. WLAN test results

5.3.1 DSSS mode, QPSK modulation, 5.5 Mbps data rate

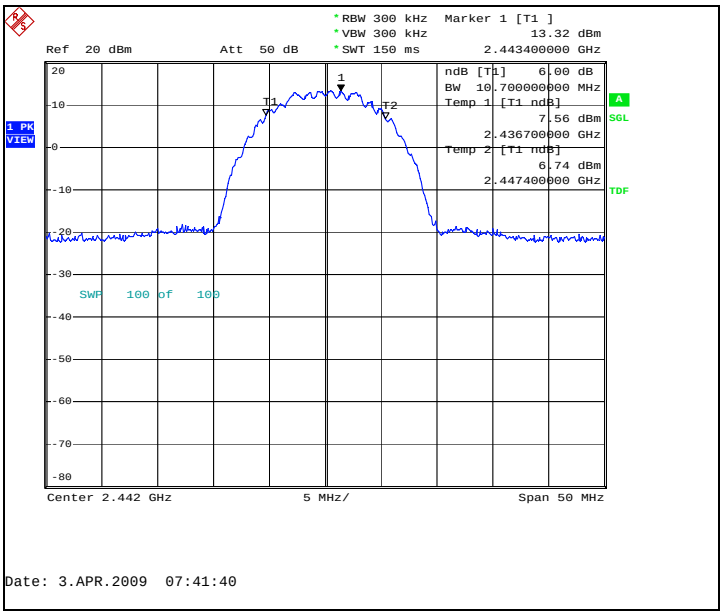
Channel / f_C [MHz]	6 dB bandwidth [kHz]	Result
1	10700.000	Pass
7	10700.000	Pass
11	10600.000	Pass

Channel 1 / 2412 MHz

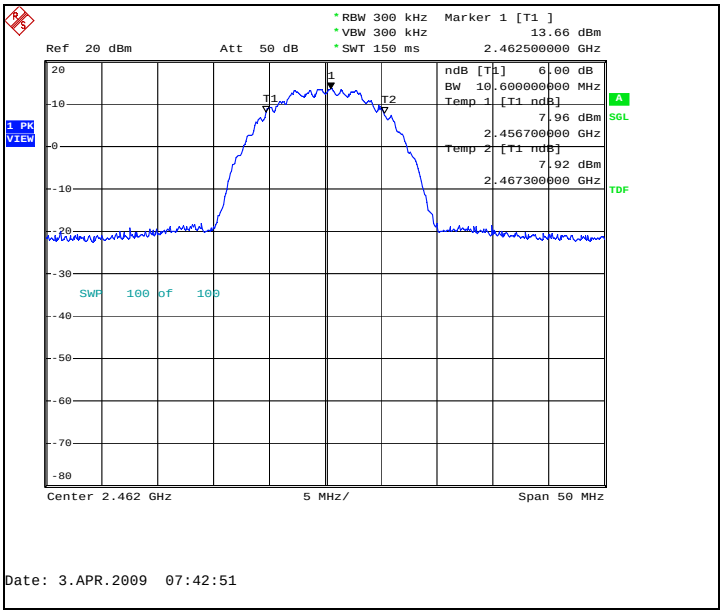


Channel 7 / 2442 MHz

TCC Nokia Copenhagen Laboratory
Frederikskaj
1790 COPENHAGEN V
DENMARK
Tel. +45 33 292929
Fax. +45 33 292934



Channel 11 / 2462 MHz

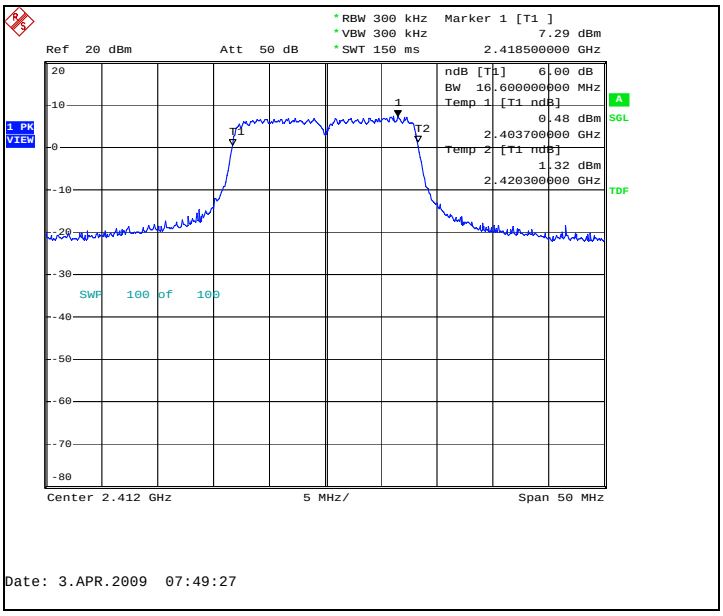


5.3.2 OFDM mode, BPSK modulation, 6 Mbps data rate

Channel / f_C [MHz]	6 dB bandwidth [kHz]	Result
1	16600.000	Pass
7	16600.000	Pass
11	16600.000	Pass

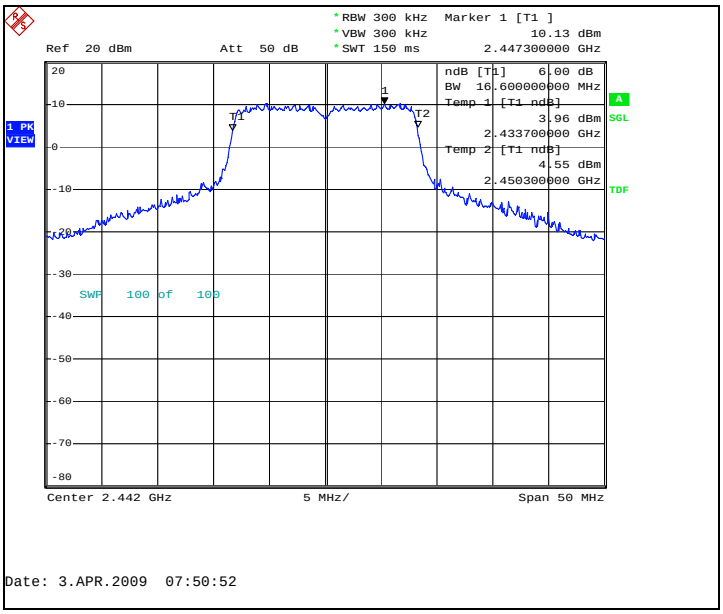
Channel 1 / 2412 MHz

TCC Nokia Copenhagen Laboratory
Frederikskaj
1790 COPENHAGEN V
DENMARK
Tel. +45 33 292929
Fax. +45 33 292934

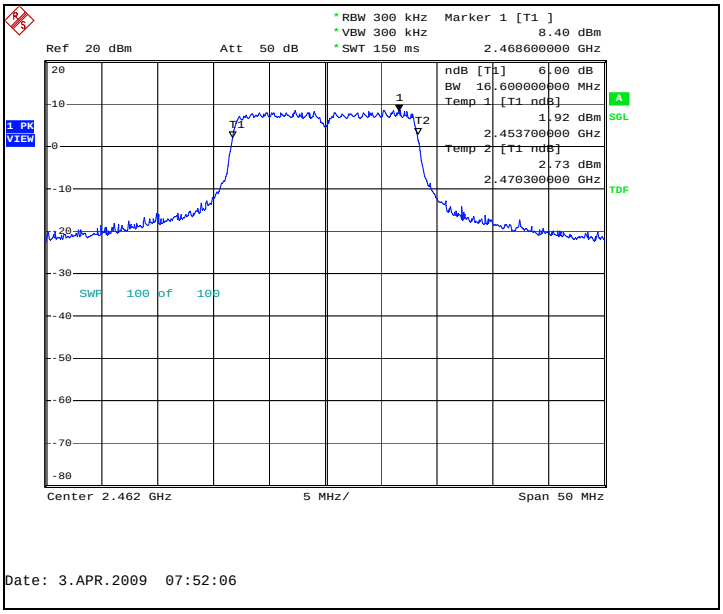


TCC Nokia Copenhagen Laboratory
Frederikskaj
1790 COPENHAGEN V
DENMARK
Tel. +45 33 292929
Fax. +45 33 292934

Channel 7 / 2442 MHz



Channel 11 / 2462 MHz



TCC Nokia Copenhagen Laboratory
Frederikskaj
1790 COPENHAGEN V
DENMARK
Tel. +45 33 292929
Fax. +45 33 292934

6. Power spectral density

(FCC §15.247(e), RSS-210 A8.2 (b))

EUT with DUT number	RM-484 dut 25265, BL-5K dut 25264
Accessories with DUT numbers	AD-54 dut 25256, HS.83 dut 25251, AC-10E dut 25261
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24.8 / 32.3 102.7
Date of measurements	31-Mar-2009
Measured by	Jan Engelbrechtsen

6.1. Test method and limit

The measurement is made according to DTS procedures KDB 558074 and IC standard RSS-210.

Limits for power spectral density measurements

Limit [dBm] @ 3 kHz
≤ 8

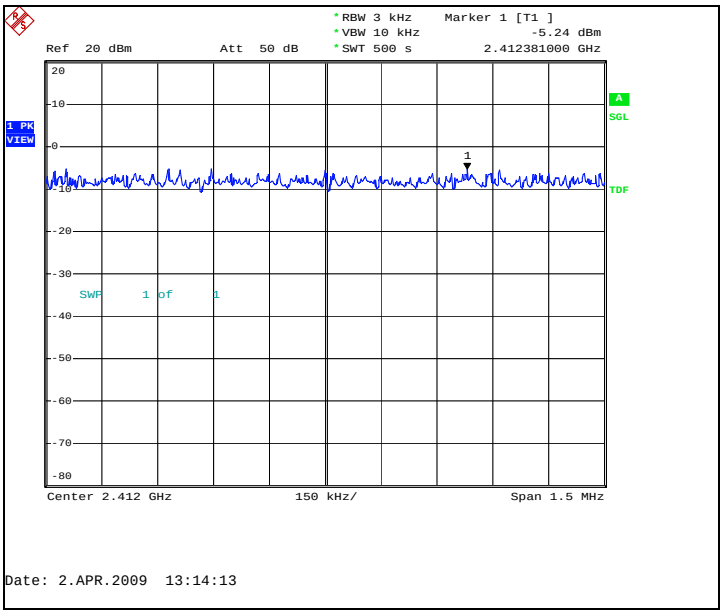
TCC Nokia Copenhagen Laboratory
Frederikskaj
1790 COPENHAGEN V
DENMARK
Tel. +45 33 292929
Fax. +45 33 292934

6.2. WLAN test results

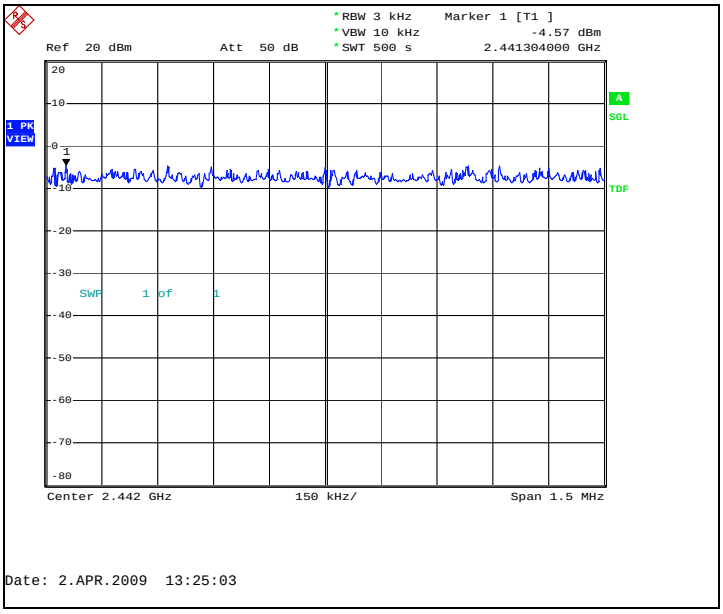
6.2.1 DSSS mode, QPSK modulation, 5.5 Mbps data rate

Channel / f_C [MHz]	P [dBm]	Result
1 / 2412	-5.24	Pass
7 / 2442	-4.57	Pass
11 / 2462	-3.72	Pass

Channel 1 / 2412 MHz

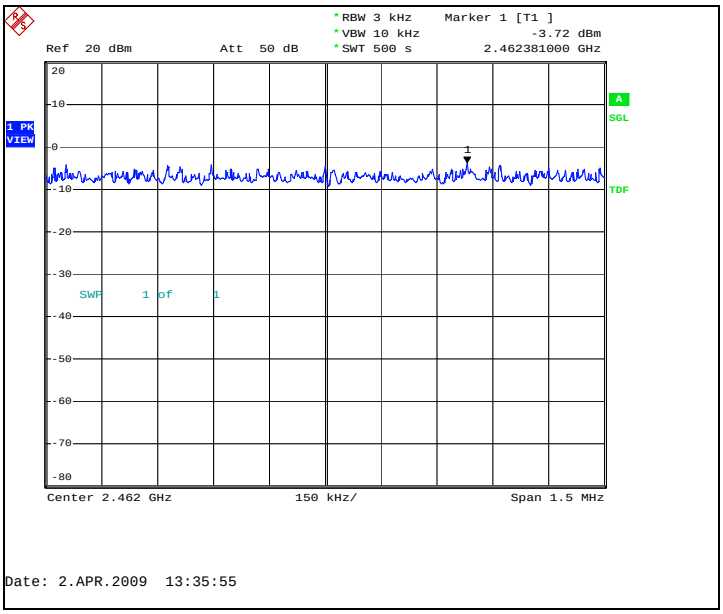


Channel 7 / 2442 MHz



TCC Nokia Copenhagen Laboratory
Frederikskaj
1790 COPENHAGEN V
DENMARK
Tel. +45 33 292929
Fax. +45 33 292934

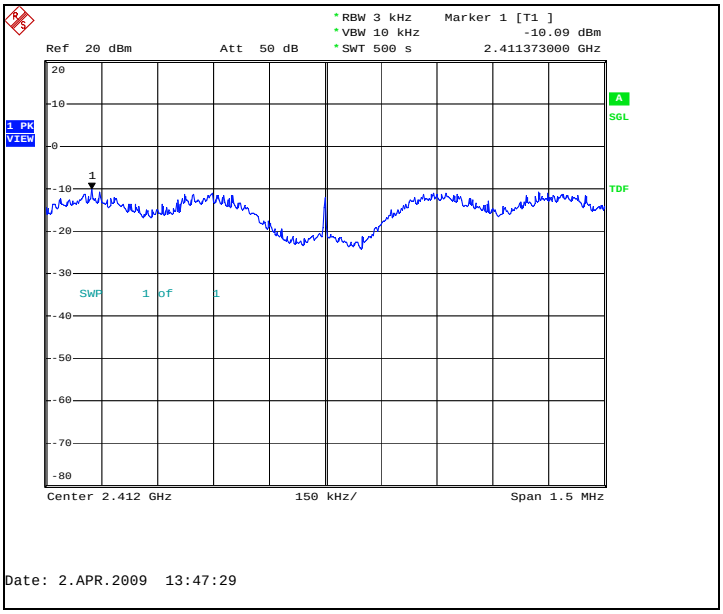
Channel 11 / 2462 MHz



6.2.2 OFDM mode, BPSK modulation, 6 Mbps data rate

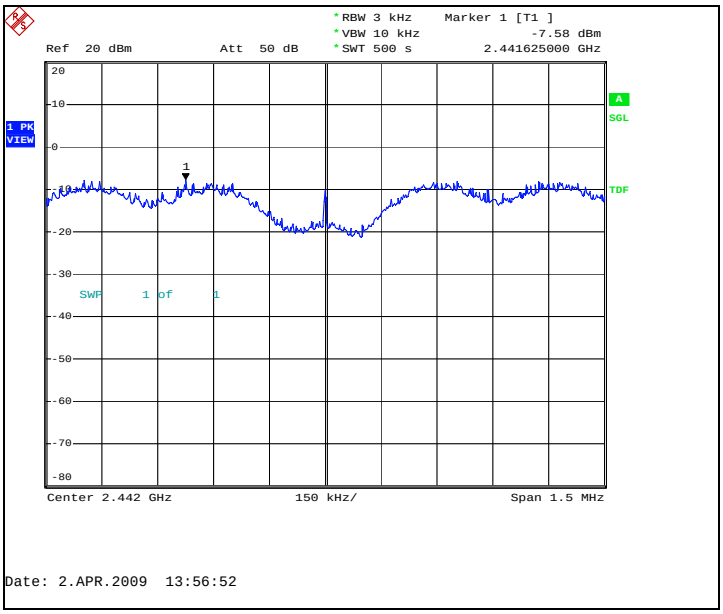
Channel / f_C [MHz]	P [dBm]	Result
1 / 2412	-10.09	Pass
7 / 2442	-7.58	Pass
11 / 2462	-9.60	Pass

Channel 1 / 2412 MHz

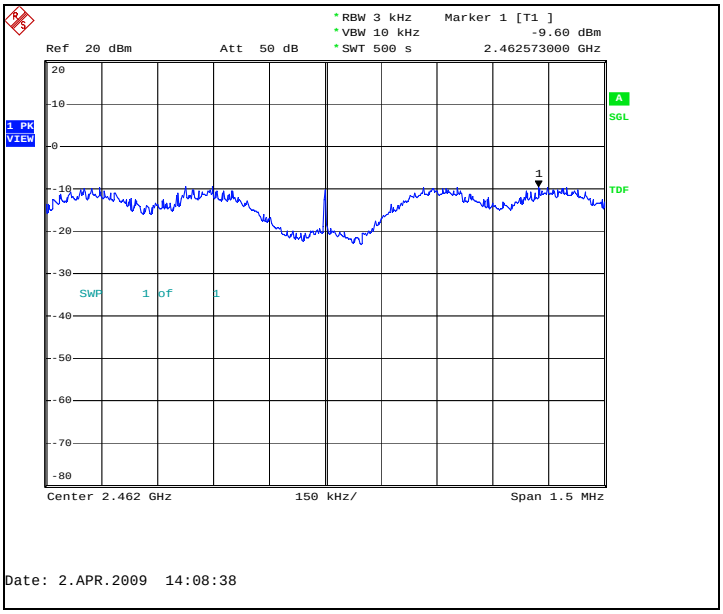


TCC Nokia Copenhagen Laboratory
Frederikskaj
1790 COPENHAGEN V
DENMARK
Tel. +45 33 292929
Fax. +45 33 292934

Channel 7 / 2442 MHz



Channel 11 / 2462 MHz



TCC Nokia Copenhagen Laboratory
Frederikskaj
1790 COPENHAGEN V
DENMARK
Tel. +45 33 292929
Fax. +45 33 292934

7. Test Equipment

7.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
13037	Power Supply 0-15V 10A	EA3012	LP Instruments	15C, 15B
13513	Pulse Limiter 9KHz-30MHz	ESH3Z2	Rohde&Schwarz	15C, 15B
13666	EMI Test Receiver 9KHz-2,5GHz	ESPC	Rohde&Schwarz	15C, 15B
13935	Two Lines Artificial Mains Network	ESH3-Z5	Rohde&Schwarz	15C, 15B
16995	Directional Coupler 20dB 0,5-2,0 GHz SMA Conn.	1538RA-20	Weinschel	15C, 15B
18772	Shielded Chamber	RFD-100	ETS-Lindgren	15C, 15B
19171	Universal Radio Communication Tester	CMU200	Rohde&Schwarz	15C, 15B
11386	System DC Power Supply	HP6632A	Hewlett Packard	22/24/27, 15C, 15B
19678	Spectrum Analyzer 26 GHz	FSP	Rohde&Schwarz	22/24/27, 15C, 15B
16601	Universal Radio Communication Tester	CMU200	Rohde&Schwarz	22/24/27, 15C, 15B
19625	Vötsch Climatic Chamber	VT4002EMC	Vötsch	22/24/27, 15C, 15B
13357	Rohde & Schwartz Signal Generator	SMP02	Rohde&Schwarz	22/24/27, 15C, 15B
20168	Bluetooth EDR Tester	CBT	Rohde&Schwarz	22/24/27, 15C, 15B

7.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
18416	Universal Radio Communication Tester	CMU200	Rohde&Schwarz	22/24/27, 15C, 15B
	Programmable Relay Switching System	----------	Pickering	22/24/27, 15C, 15B
15742	Programmable Relay Switching System	----------	Pickering	22/24/27, 15C, 15B
14020	Power Supply Module Relay Switching System 45W	10-910-002	Pickering	22/24/27, 15C, 15B
15743	Power Supply Module Relay Switching System 50W	10-910L-001	Pickering	22/24/27, 15C, 15B
16490	RS-232/IEEE-488.2 Interface	10-921-001	Pickering	22/24/27, 15C, 15B
	RS-232/IEEE-488.2 Interface	10-921-001	Pickering	22/24/27, 15C, 15B
20078	Relay 2x6 Chnl µWave Mux	10-785B-522	Pickering	22/24/27, 15C, 15B
14021	Relay Dual 6 Chnl µWave Mux	10-785-522		22/24/27, 15C, 15B
	Relay Dual 6 Chnl µWave Mux	10-785-522		22/24/27, 15C, 15B
17644	Dual 6 Channel MUX Microwave Relay SMA 50 Ohm	10-785-522	Pickering	22/24/27, 15C, 15B
16948	Dual 6 Channel MUX Microwave Relay SMA 50 Ohm	10-785-522	Pickering	22/24/27, 15C, 15B
16949	Dual 6 Channel MUX Microwave Relay SMA 50 Ohm	10-785-522	Pickering	22/24/27, 15C, 15B
18792	Multi Device Controller	2090	ETS-EMCO	22/24/27, 15C, 15B
14963	RF Preamplifier 100MHz-4GHz (Metal Chassis)	AFS3-00100400	Miteq/NMP Cph	22/24/27, 15C, 15B
18861	EMI Test Receiver 20Hz-26,5GHz	ESI	Rohde&Schwarz	22/24/27, 15C, 15B
20335	Ultra Broadband Antenna Ultralog 30-3000MHz	HL562	Rohde&Schwarz	22/24/27, 15C, 15B
18773	Shielded Chamber	RFD-100	ETS-Lindgren	22/24/27, 15C, 15B
18774	Shielded Chamber	RFSD-F/A-100	ETS-Lindgren	22/24/27, 15C, 15B
19151	High Pass Filter 3GHz	WHJS3000-10SS	Wainwright	22/24/27, 15C, 15B

TCC Nokia Copenhagen Laboratory
Frederikskaj
1790 COPENHAGEN V
DENMARK
Tel. +45 33 292929
Fax. +45 33 292934

Eq. No	Equipment	Type	Manufacturer	Used in
	WHK3.0/18G-10ss			
13937	Ultra Stable Notch Filter 850MHz	WRCA902.4-0.2/40-6SS	Wainwright Instruments	22/24/27, 15C, 15B
13936	Ultra Stable Notch Filter 1747,5MHz	WRCD1747.5-0.2/40-10SS	Wainwright Instruments	22/24/27, 15C, 15B
14114	Highpass filter	WHK1000-12SS	Wainwright Instruments	22/24/27, 15C, 15B
14188	Ultra Stable Notch Filter 902,4MHz	WRCA902.4-0.2/40-6SS	Wainwright	22/24/27, 15C, 15B
14187	Ultra Stable Notch Filter 1747,5MHz	WRCD1747.5-0.2/40-10SS	Wainwright	22/24/27, 15C, 15B
16633	Ultra Stable Notch Filter 1880,0MHz	WRCD1880.0-0.2/40-10SS	Wainwright	22/24/27, 15C, 15B
19587	BT/WLAN Band Reject Filter	WRCG2400/2483-2390/2493-35/10SS	Wainwright	22/24/27, 15C, 15B
20115	WDCMA Band 2 filter		Wainwright	24, 15C, 15B
20114	WDCMA Band 4 filter	WRCG1737/1743-1733/1747-40/6SS	Wainwright	27, 15C, 15B
20116	WDCMA Band 5&6 filter	WRCG832/83/-825/845-40/5SS	Wainwright	22, 15C, 15B
18323	Band reject filter 1947-1953MHz 40dB	WRCG1947/1953-1940/1960-40/6SS	Wainwright	22/24/27, 15C, 15B
20031	Double Ridged Broadband Horn	BBHA 9120 D	SCHWARZBECK	22/24/27, 15C, 15B
19966	Magnetic Loop Antenna 9 kHz - 30 MHz	HFH2-Z2	Rohde&Schwarz	15C, 15B
14993	EMI Test Receiver 9KHz-2750MHz	ESCS30	Rohde&Schwarz	22/24/27, 15C, 15B
15191	Turntable Contoller Unit	G-800SDX	YAESU	22/24/27, 15C, 15B
14900	Antenna Controller	HD100	HD GmbH	22/24/27, 15C, 15B
19374	Resonant Dipole Antenna 850MHz SMA m Conn.	---------	NMP Cph	22/24/27, 15C, 15B
19375	Resonant Dipole Antenna 1900MHz SMA m Conn.	----------	NMP Cph	22/24/27, 15C, 15B
20168	Bluetooth EDR Tester	CBT	Rohde&Schwarz	22/24/27, 15C, 15B

TCC Nokia Copenhagen Laboratory
Frederikskaj
1790 COPENHAGEN V
DENMARK
Tel. +45 33 292929
Fax. +45 33 292934