FCC Part 15C Compliance Test Report

Test Report no.:	FCC15CWLAN_RM-937_20.docx	**Date of Report:**	30-Sep-2013
Number of pages:	75	**Customer's Contact person:**	Lasse Vaattovaara
Testing laboratory:	TCC Nokia Salo Laboratory P.O.Box(86) Joensuunkatu 7H / Kiila 1B FIN-24101 SALO, FINLAND Tel. +358 (0) 7180 08000 Fax. +358 (0) 7180 45220	**Customer:**	Nokia Corporation P.O.Box(86) Joensuunkatu 7 FIN-24101 SALO, FINLAND Tel. +358 (0) 7180 08000 Fax. +358 (0) 7180 45220
FCC listing no.: **IC recognition no.:**	533467 661V-1		
Tested devices/ accessories:	**Phone RM-937 / AC-Charger AC-60E / Data Cable CA-190CD / Headset WH-208**		
FCC ID:	PYAC	**IC:**	-
Supplement reports:	-		
Testing has been carried out in accordance with:	**CFR 47, FCC rules Part 15 Subpart C, ANSI C63.4 (2003), DTS procedures KDB 558074, IC standards. 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 DN: cn=Sami Lehtonen, o=Nokia, ou, email=sami.k.lehtonen@nokia.com, c=FI Date: 2013.09.30 19:03:20 +03'00'		

Sami Lehtonen, Specialist, EMC

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	19-Jul-2013
Testing completed	1-Aug-2013
The customer's contact person	Lasse Vaattovaara
Test Plan referred to	T:\Projects\RM-940\TestPlan\RS_Testplan_RM-940.xlsm
Notes	-
Document name	T:\Projects\RM-937\EMC\FCC15CWLAN_RM-937_20.docx

1.1. EUT and Accessory Information

The EUT is a mobile phone with following features:
GSM/WCDMA/WLAN/Bluetooth
The EUT is tested with maximum rated TX power.

Devices under tests

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-940	004402473425498	2102	-	1028.0301.1326	17563
AC-Charger	AC-60E	4090493154610302853ö0675677	CE	-	-	17584
Data Cable	CA-190CD	-	CE	-	-	17585
Headset	WH-208	2131731	CE	-	-	17586
Phone	RM-940	004402473425951	2100	-	1028.0301.1326.10115	17583
Phone	RM-940	004402473425571	2100	-	1028.0301.1326.10115	17579
AC-Charger	AC-60E	4090493154610302676ö0675677	-	-	-	17580
Headset	WH-208	2131731	-	-	-	17581
Data Cable	CA-190CD	-	CE	-	-	17608

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(0.4(4))	Conducted peak output power	PASSED
15.247(d), 15.205(b)	A8(0.5)	Band edge compliance of RF emissions	NP
15.247(d)	A8(0.5)	Spurious RF conducted emissions	PASSED
15.247(d), 15.209	A8(0.5)	Spurious radiated emissions	NP
15.207	7.2.2	AC powerline conducted emissions	PASSED
15.247(a)(2)	A8(0.1(1))	6dB(bandwidth)	PASSED
15.247(e)	A8(0.1(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 Laboratory.

The test results of PYAB *are re-used for certification of the* PYARM-937. *The table above indicates the results, which will be re-used*.

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

CONTENTS

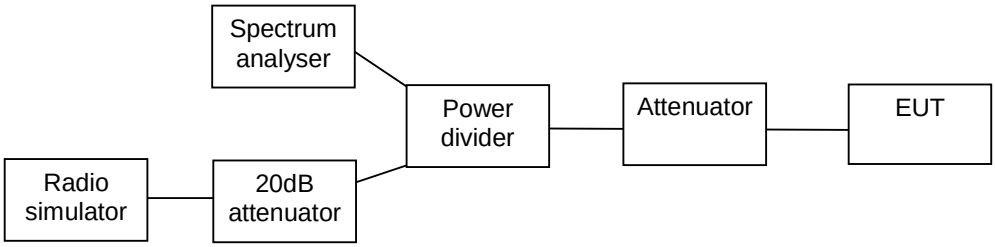
TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

2. Conducted peak output power
(15.247(b)(1), RSS-210 A8.4 (4))

EUT with DUT number	RM-940, DUT 17563
Accessories with DUT numbers	AC-60E, DUT 17584; CA-190CD, DUT 17585; WH-208, DUT 17586
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 44 / 101
Date of measurements	17-Jul-2013
Measured by	Tomi Lipponen

2.1. Test Setup



2.2. 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 5725 - 5850	<= 1	<= 30

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

2.3. Power results summary, all modes

Channel / f_C [MHz]	Mode	Modulation	Data rate	Level [dBm]
6 / 2437	802.11b	BPSK	1 Mbps	18.22
6 / 2437	802.11b	QPSK	2 Mbps	18.02
6 / 2437	802.11b	QPSK	5.5 Mbps	19.48
6 / 2437	802.11b	QPSK	11 Mbps	20.71
6 / 2437	802.11g	BPSK	6 Mbps	21.1
6 / 2437	802.11g	BPSK	9 Mbps	20.52
6 / 2437	802.11g	QPSK	12 Mbps	20.15
6 / 2437	802.11g	QPSK	18 Mbps	20.12
6 / 2437	802.11g	16QAM	24 Mbps	19.9
6 / 2437	802.11g	16QAM	36 Mbps	19.92
6 / 2437	802.11g	64QAM	48 Mbps	18.97
6 / 2437	802.11g	64QAM	54 Mbps	18.92
6 / 2437	802.11n	BPSK	6.5 / 7.25 Mbps	20.21
6 / 2437	802.11n	QPSK	13.0 / 14.4 Mbps	19.72
6 / 2437	802.11n	QPSK	19.5 / 21.7 Mbps	19.72
6 / 2437	802.11n	16QAM	26.0 / 28.9 Mbps	19.14
6 / 2437	802.11n	16QAM	39.0 / 43.3 Mbps	19.09
6 / 2437	802.11n	64QAM	52.0 / 57.8 Mbps	17.97
6 / 2437	802.11n	64QAM	58.5 / 65.0 Mbps	17.99
6 / 2437	802.11n	64QAM	65.0 / 72.2 Mbps	17.99

2.4. Power results summary, selected modes

1 / 2412	802.11g	BPSK	6 Mbps	21.19
11 / 2462	802.11g	BPSK	6 Mbps	20.5
1 / 2412	802.11b	QPSK	11 Mbps	20.65
11 / 2462	802.11b	QPSK	11 Mbps	20.34
149 / 5745	802.11a	BPSK	6 Mbps	18.78
157 / 5785	802.11a	BPSK	6 Mbps	19.02
165 / 5825	802.11a	BPSK	6 Mbps	19.01
149 / 5745	802.11a	QPSK	18 Mbps	18.17
157 / 5785	802.11a	QPSK	18 Mbps	18.38
165 / 5825	802.11a	QPSK	18 Mbps	18.41
149+153 / 5755	802.11n	BPSK	13.5 / 15.0 Mbps	16.86
157+161 / 5795	802.11n	BPSK	13.5 / 15.0 Mbps	17.22
149+153 / 5755	802.11n	QPSK	27.0 / 30.0 Mbps	16.39
157+161 / 5795	802.11n	QPSK	27.0 / 30.0 Mbps	16.76
149-161 / 5775	802.11ac	BPSK	29.3 / 32.5 Mbps	14.59
149-161 / 5775	802.11ac	QPSK	87.8 / 97.5 Mbps	15

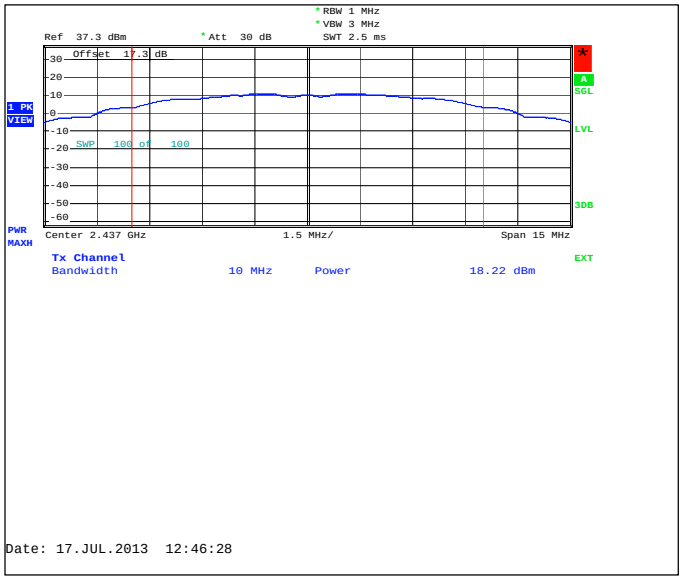
TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

2.5. WLAN Test results

2.5.1 802.11b mode, BPSK modulation, 1 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
6 / 2437	18.22	66.374	PASSED

Channel 6 / 2437 MHz

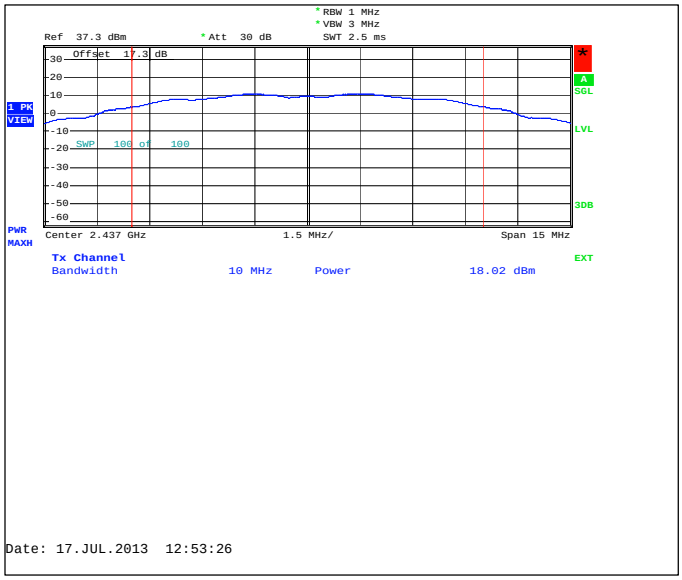


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

2.5.2 802.11b mode, QPSK modulation, 2 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
6 / 2437	18.02	63.387	PASSED

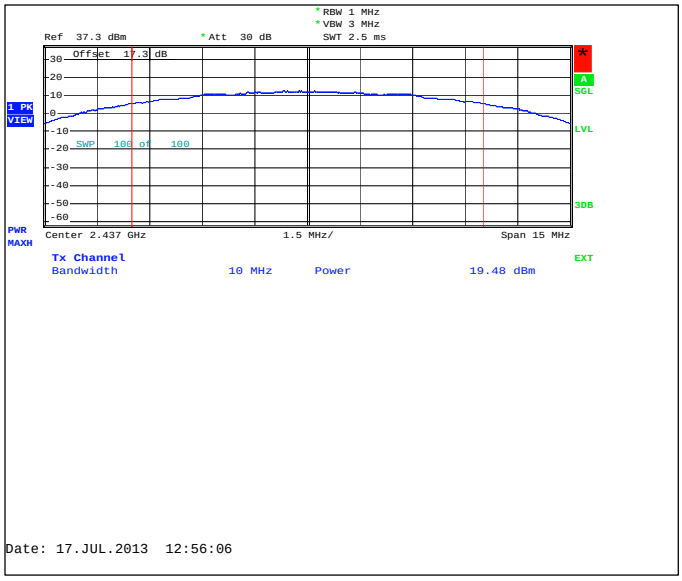
Channel 6 / 2437 MHz



2.5.3 802.11b mode, QPSK modulation, 5.5 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
6 / 2437	19.48	88.716	PASSED

Channel 6 / 2437 MHz

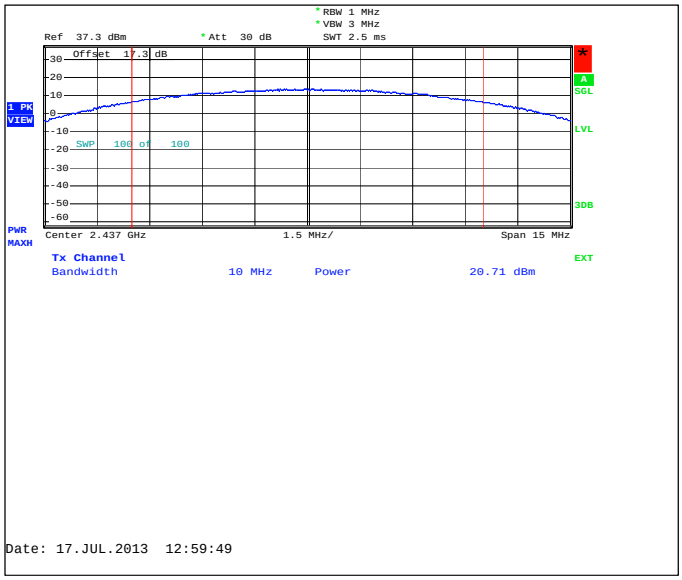


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

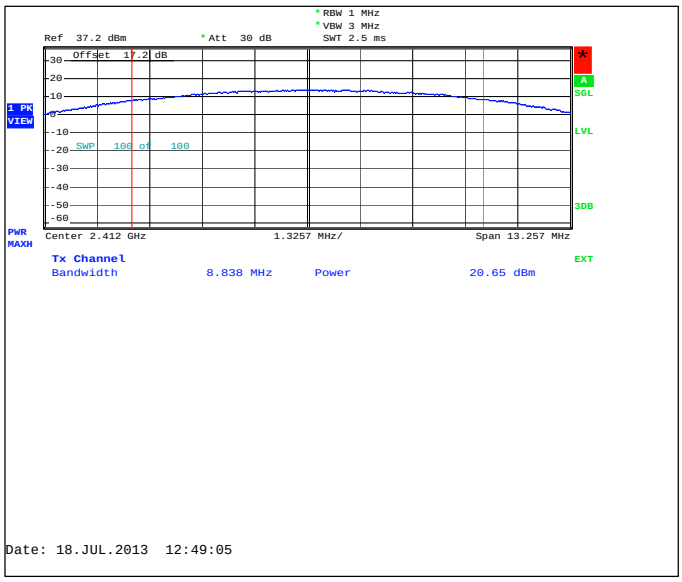
2.5.4 802.11b mode, QPSK modulation, 11 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
6 / 2437	20.71	117.761	PASSED
1 / 2412	20.65	116.145	PASSED
11 / 2462	20.34	108.143	PASSED

Channel 6 / 2437 MHz

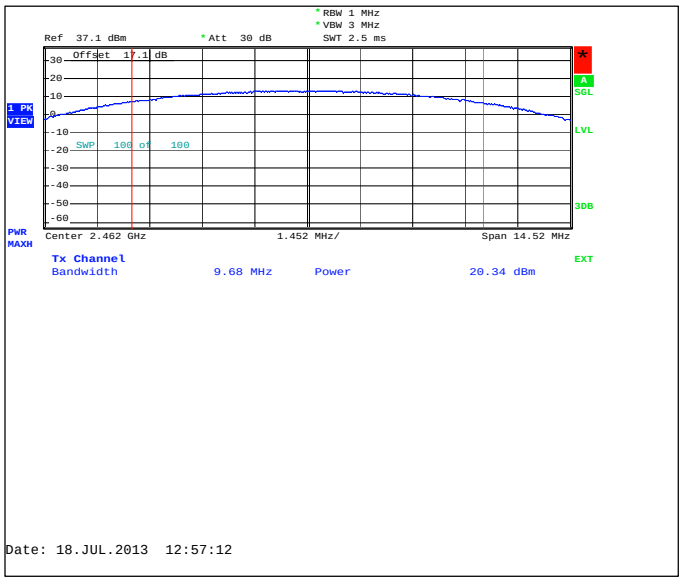


Channel 1 / 2412 MHz



TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

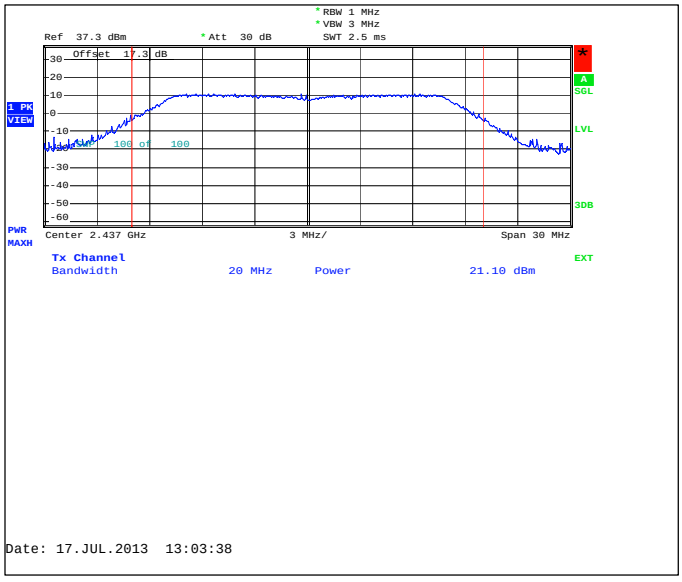
Channel 11 / 2462 MHz



2.5.5 802.11g mode, BPSK modulation, 6 Mbps data rate

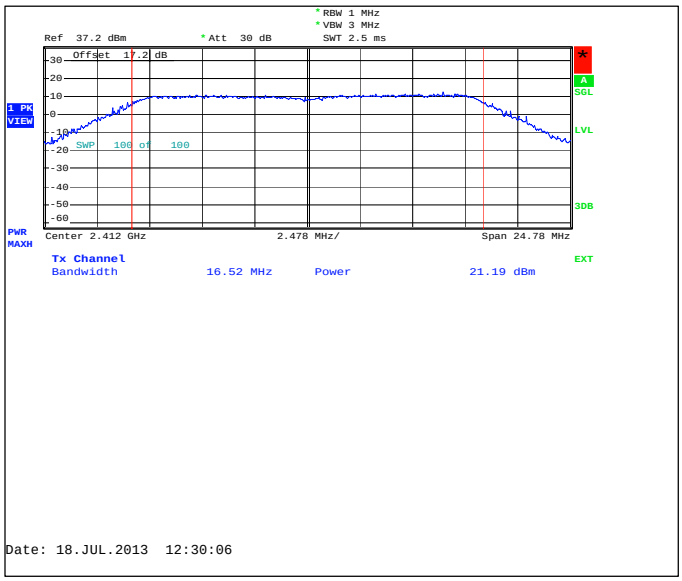
Channel / f_C [MHz]	P [dBm]	P [mW]	Result
6 / 2437	21.1	128.825	PASSED
1 / 2412	21.19	131.522	PASSED
11 / 2462	20.5	112.202	PASSED

Channel 6 / 2437 MHz

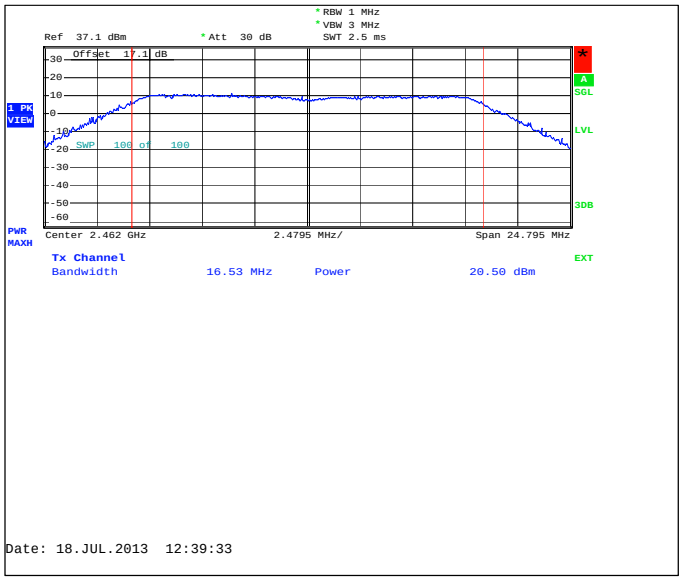


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

Channel 1 / 2412 MHz



Channel 11 / 2462 MHz

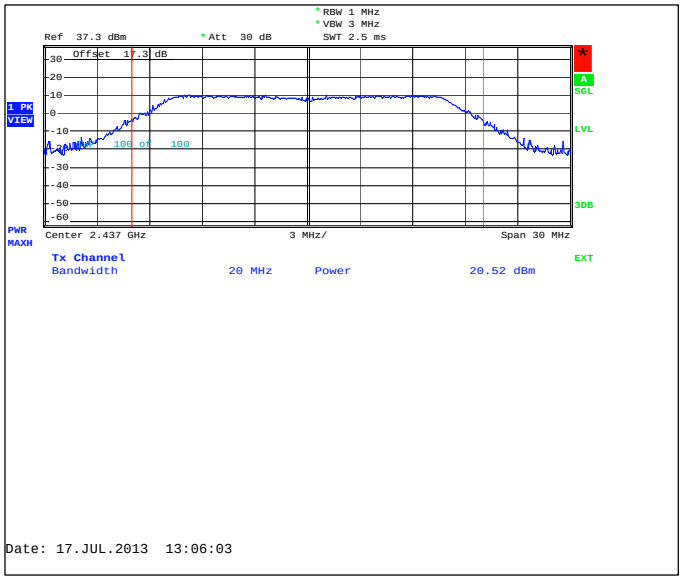


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

2.5.6 802.11g mode, BPSK modulation, 9 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
6 / 2437	20.52	112.72	PASSED

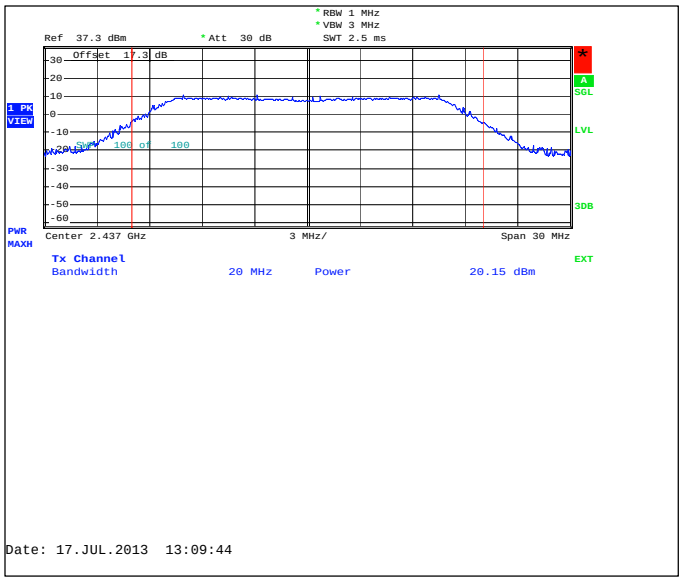
Channel 6 / 2437 MHz



2.5.7 802.11g mode, QPSK modulation, 12 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
6 / 2437	20.15	103.514	PASSED

Channel 6 / 2437 MHz

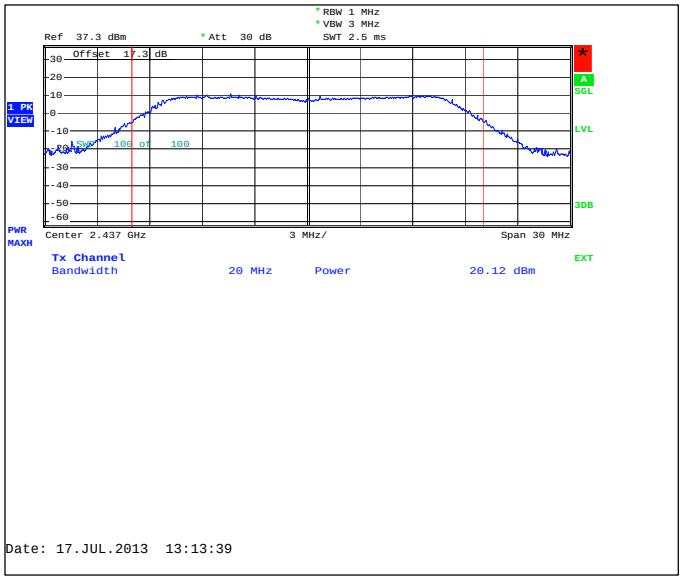


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

2.5.8 802.11g mode, QPSK modulation, 18 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
6 / 2437	20.12	102.802	PASSED

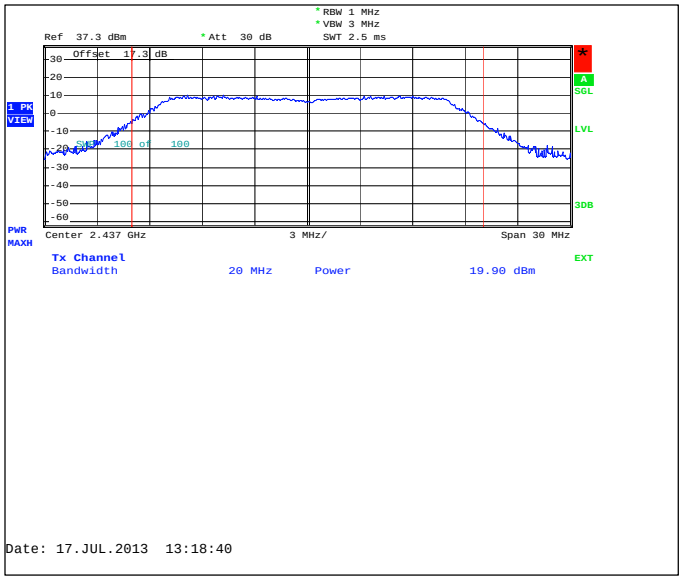
Channel 6 / 2437 MHz



2.5.9 802.11g mode, 16QAM modulation, 24 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
6 / 2437	19.9	97.724	PASSED

Channel 6 / 2437 MHz

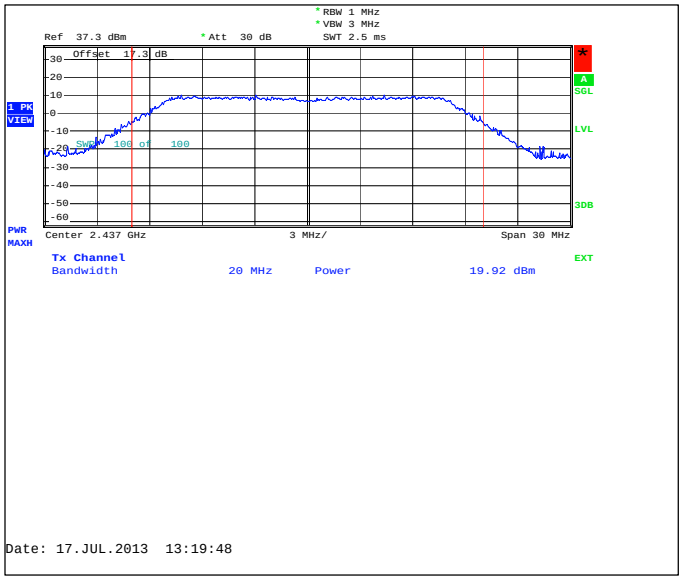


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

2.5.10 802.11g mode, 16QAM modulation, 36 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
6 / 2437	19.92	98.175	PASSED

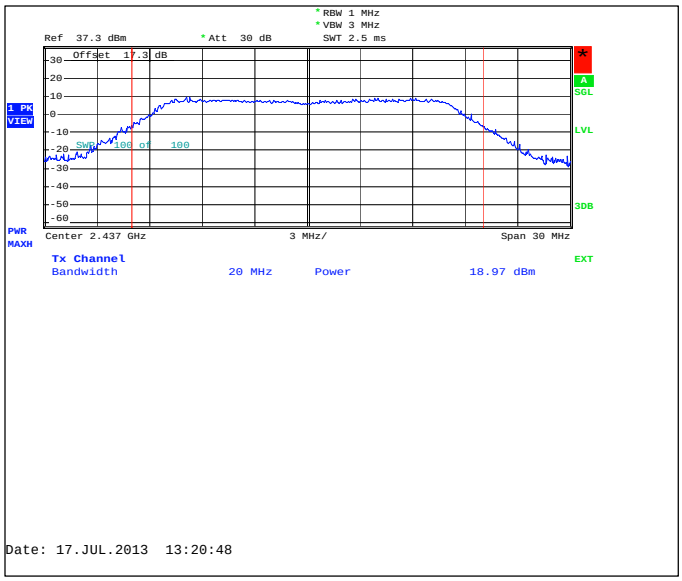
Channel 6 / 2437 MHz



2.5.11 802.11g mode, 64QAM modulation, 48 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
6 / 2437	18.97	78.886	PASSED

Channel 6 / 2437 MHz

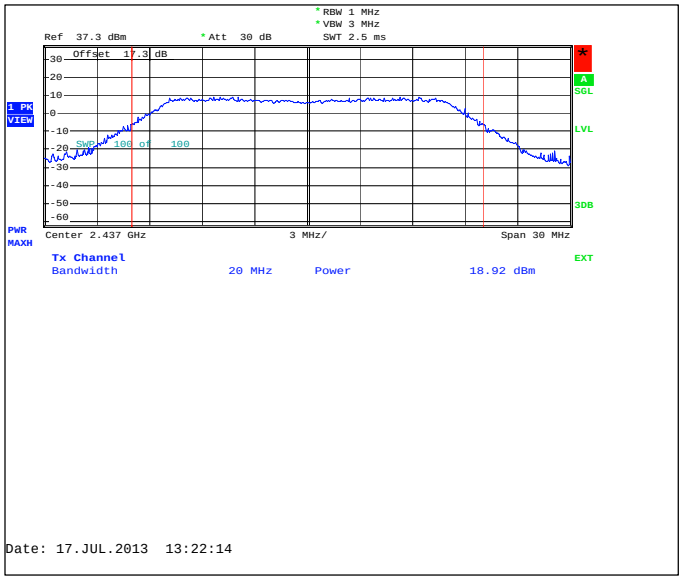


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

2.5.12 802.11g mode, 64QAM modulation, 54 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
6 / 2437	18.92	77.983	PASSED

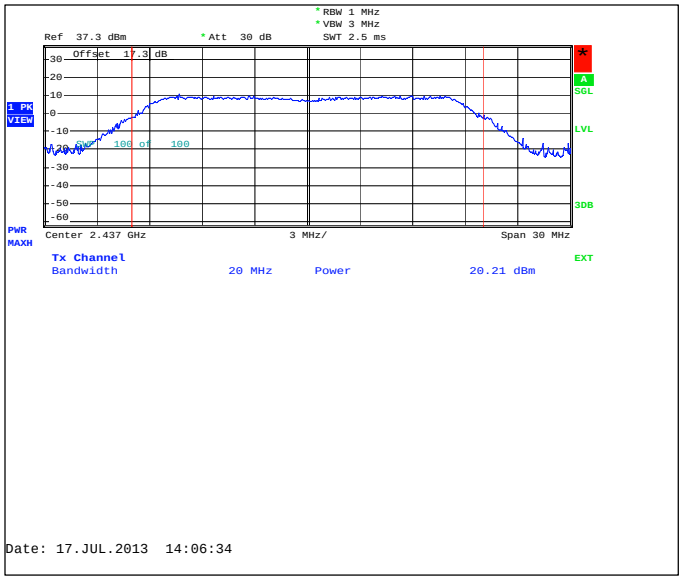
Channel 6 / 2437 MHz



2.5.13 802.11n mode, BPSK modulation, 6.5 / 7.25 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
6 / 2437	20.21	104.954	PASSED

Channel 6 / 2437 MHz

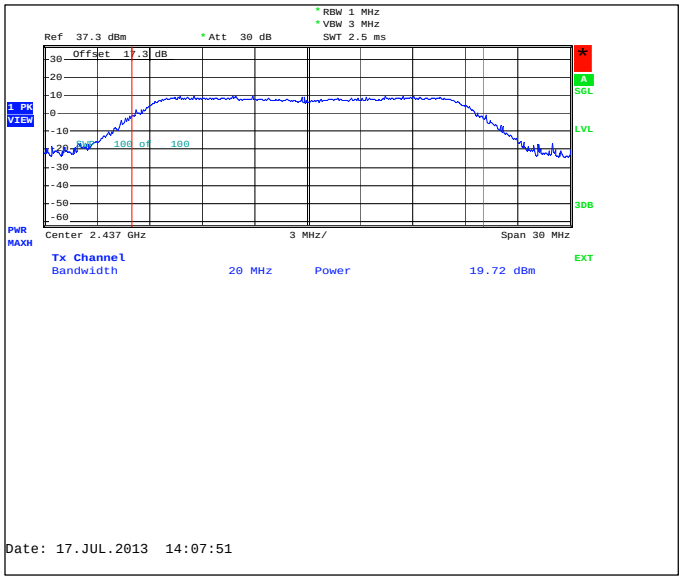


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

2.5.14 802.11n mode, QPSK modulation, 13.0 / 14.4 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
6 / 2437	19.72	93.756	PASSED

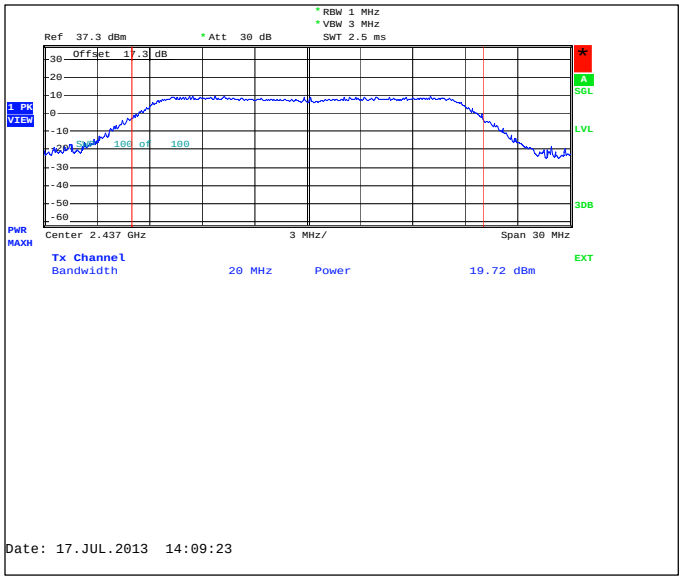
Channel 6 / 2437 MHz



2.5.15 802.11n mode, QPSK modulation, 19.5 / 21.7 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
6 / 2437	19.72	93.756	PASSED

Channel 6 / 2437 MHz

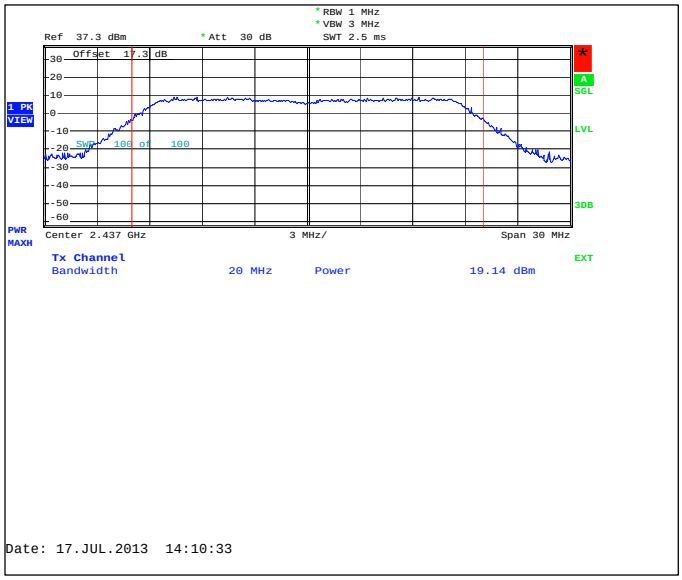


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

2.5.16 802.11n mode, 16QAM modulation, 26.0 / 28.9 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
6 / 2437	19.14	82.035	PASSED

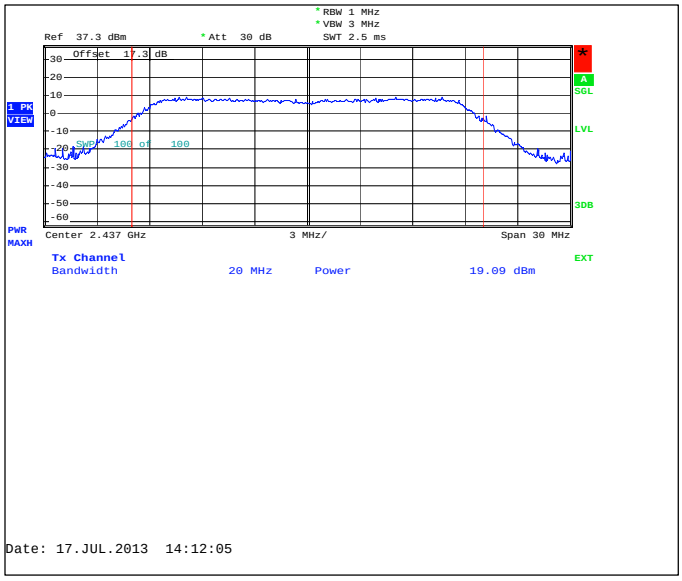
Channel 6 / 2437 MHz



2.5.17 802.11n mode, 16QAM modulation, 39.0 / 43.3 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
6 / 2437	19.09	81.096	PASSED

Channel 6 / 2437 MHz

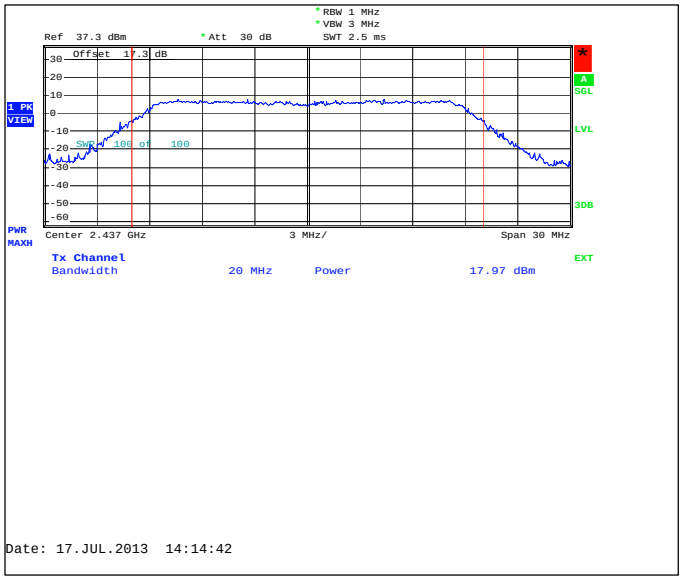


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

2.5.18 802.11n mode, 64QAM modulation, 52.0 / 57.8 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
6 / 2437	17.97	62.661	PASSED

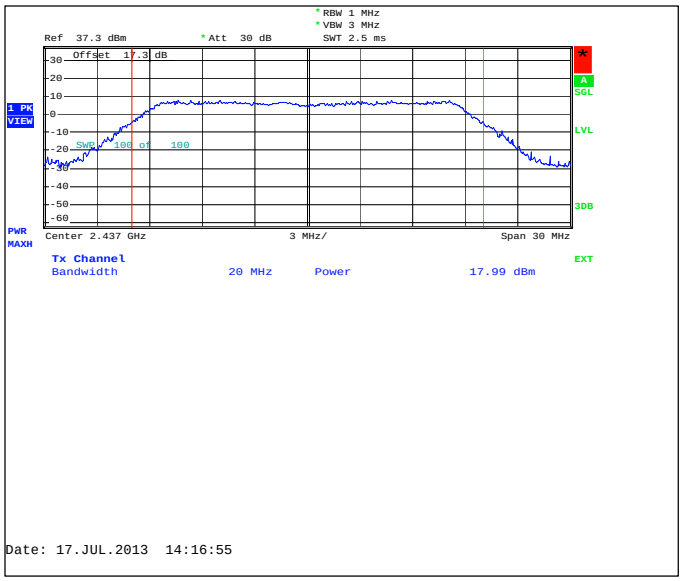
Channel 6 / 2437 MHz



2.5.19 802.11n mode, 64QAM modulation, 58.5 / 65.0 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
6 / 2437	17.99	62.951	PASSED

Channel 6 / 2437 MHz

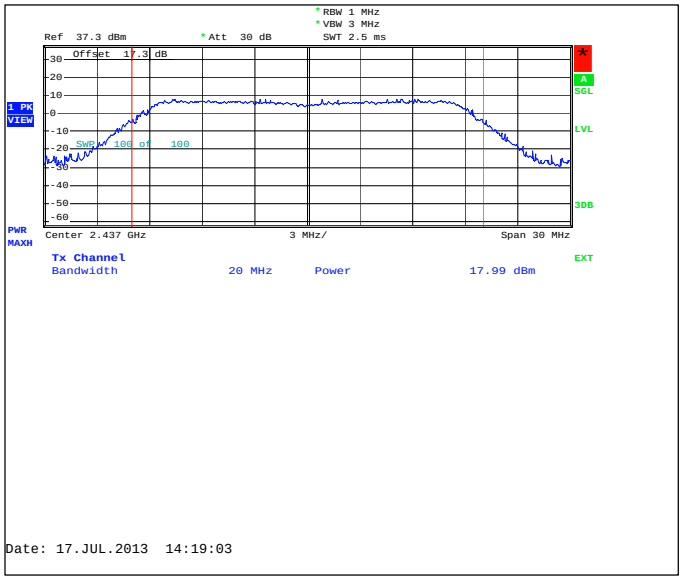


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

2.5.20 802.11n mode, 64QAM modulation, 65.0 / 72.2 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
6 / 2437	17.99	62.951	PASSED

Channel 6 / 2437 MHz



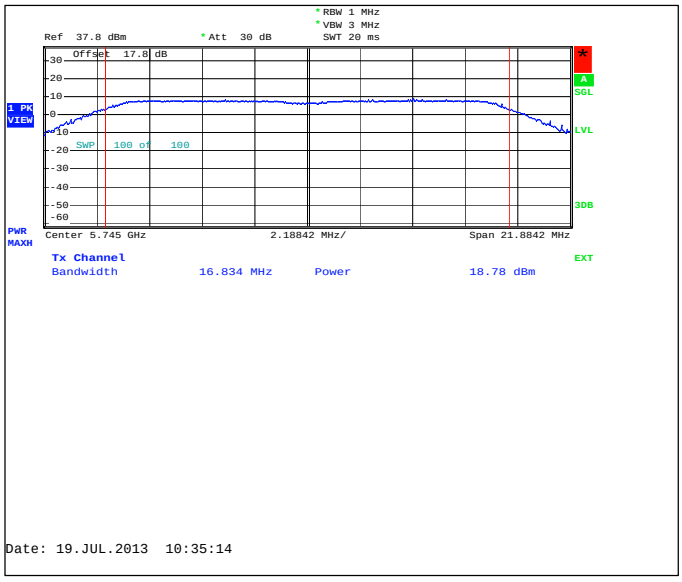
TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

2.6. 5 GHz RLAN Test results

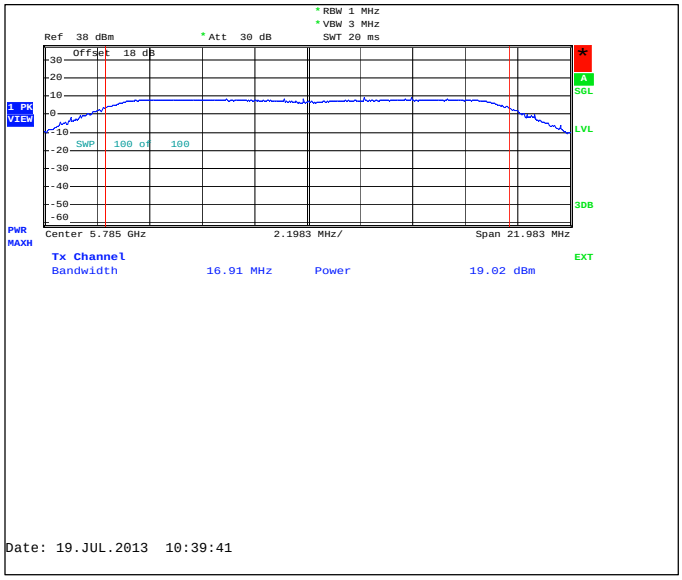
2.6.1 802.11a mode, BPSK modulation, 6 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
149 / 5745	18.78	75.509	PASSED
157 / 5785	19.02	79.799	PASSED
165 / 5825	19.01	79.616	PASSED

Channel 149 / 5745MHz

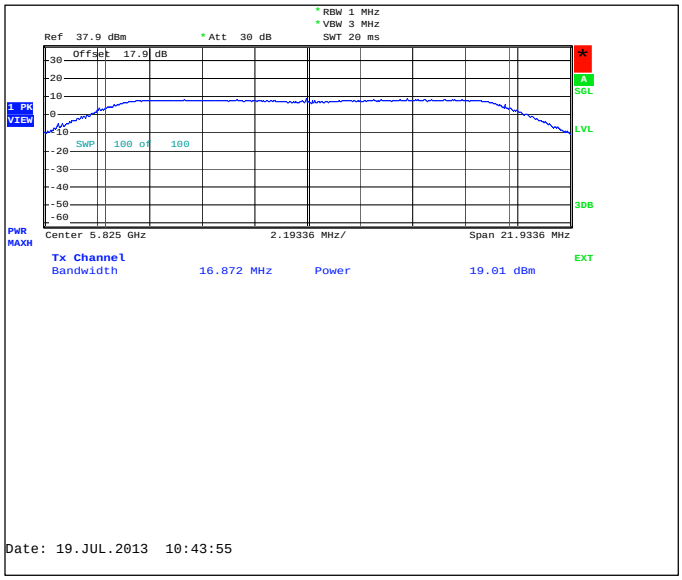


Channel 157 / 5785MHz



TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

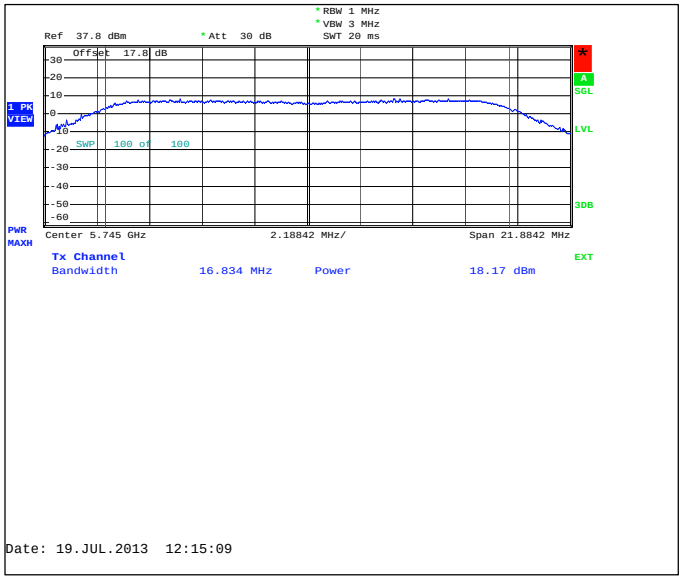
Channel 165 / 5825MHz



2.6.2 802.11a mode, QPSK modulation, 18 Mbps data rate

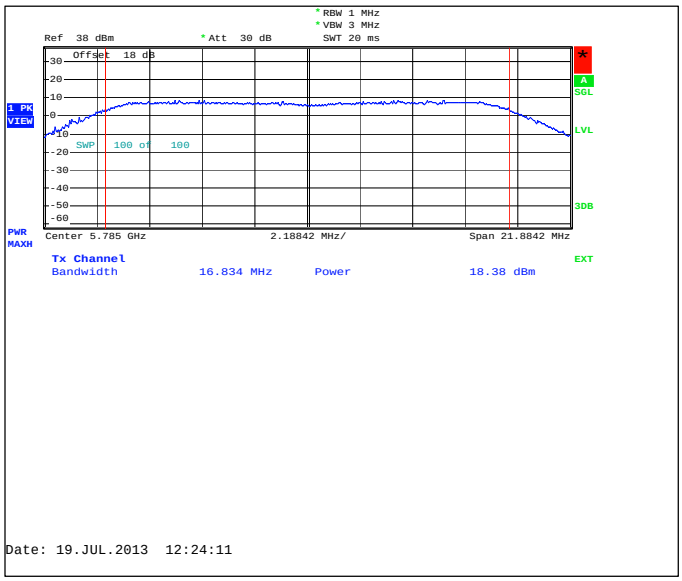
Channel / f_C [MHz]	P [dBm]	P [mW]	Result
149 / 5745	18.17	65.615	PASSED
157 / 5785	18.38	68.865	PASSED
165 / 5825	18.41	69.343	PASSED

Channel 149 / 5745MHz

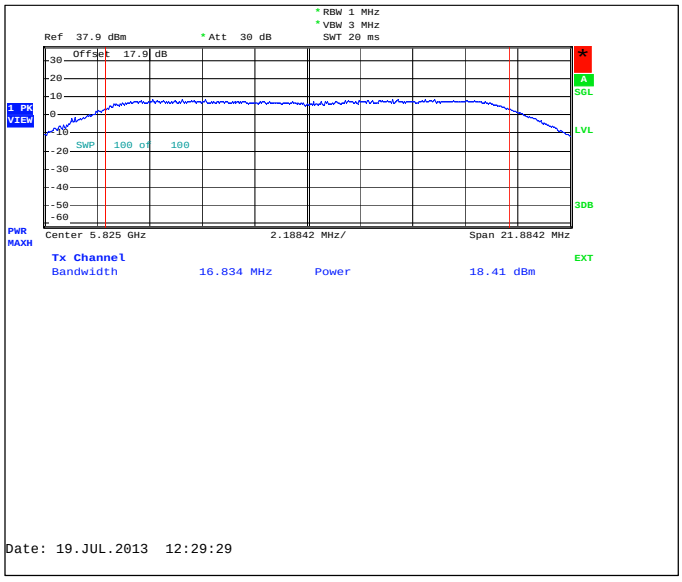


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

Channel 157 / 5785MHz



Channel 165 / 5825MHz

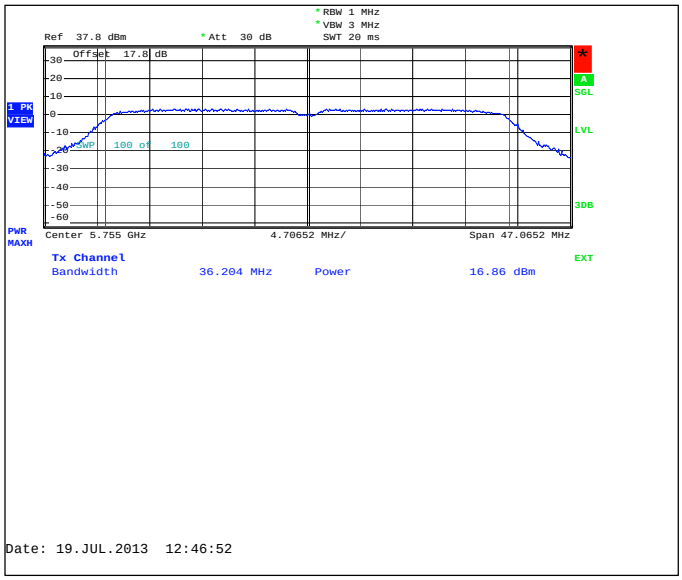


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

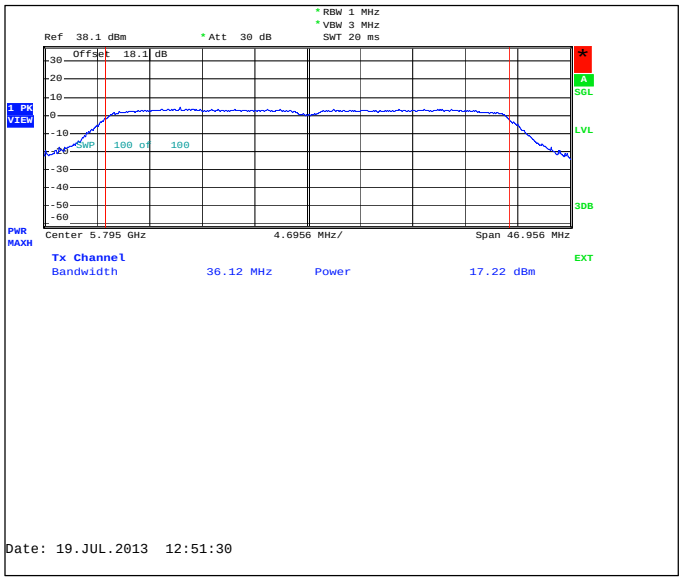
2.6.3 802.11n mode, BPSK modulation, 13.5 / 15.0 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
149+153 / 5755	16.86	48.529	PASSED
157+161 / 5795	17.22	52.723	PASSED

Channel 149+153 / 5755MHz



Channel 157+161 / 5795MHz

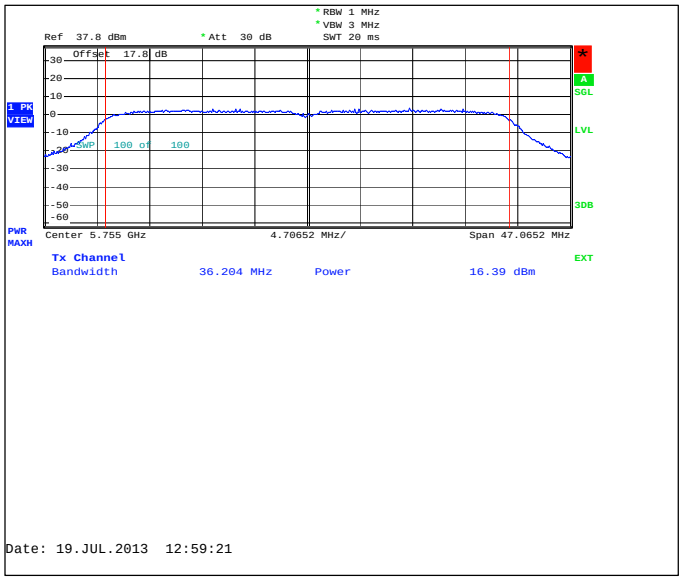


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

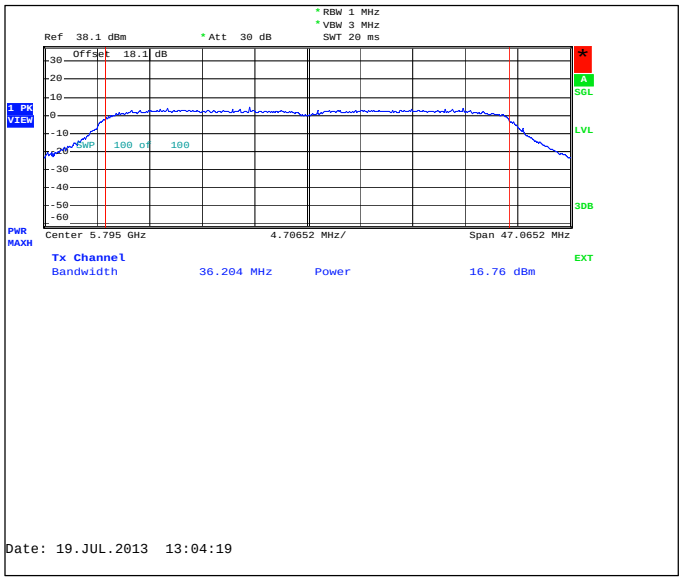
2.6.4 802.11n mode, QPSK modulation, 27.0 / 30.0 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
149+153 / 5755	16.39	43.551	PASSED
157+161 / 5795	16.76	47.424	PASSED

Channel 149+153 / 5755MHz



Channel 157+161 / 5795MHz

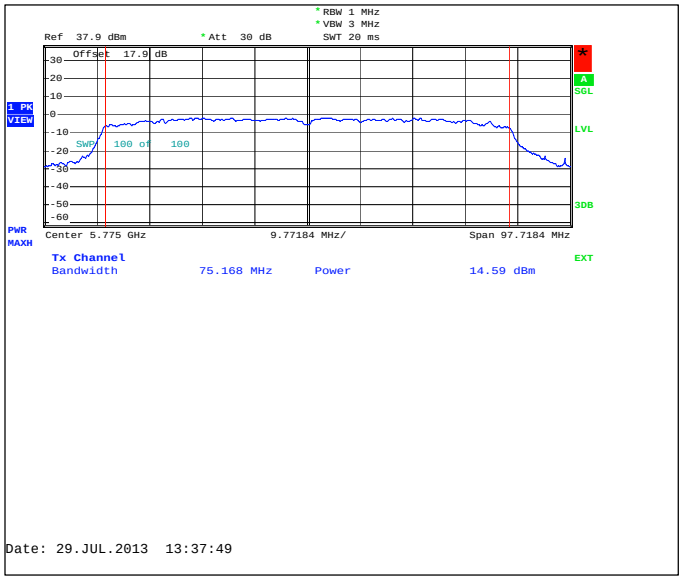


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

2.6.5 802.11ac mode, BPSK modulation, 29.3 / 32.5 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
149-161 / 5775	14.59	28.774	PASSED

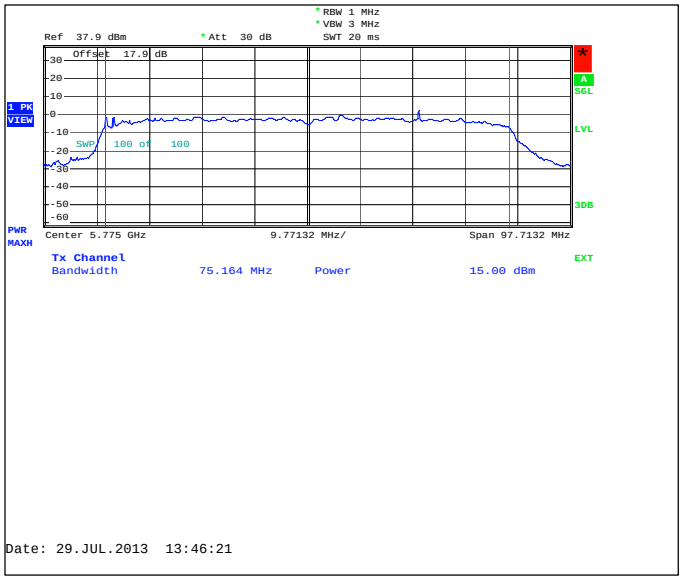
Channel 149-161 / 5775MHz



2.6.6 802.11ac mode, QPSK modulation, 87.8 / 97.5 Mbps data rate

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
149-161 / 5775	15	31.623	PASSED

Channel 149-161 / 5775MHz



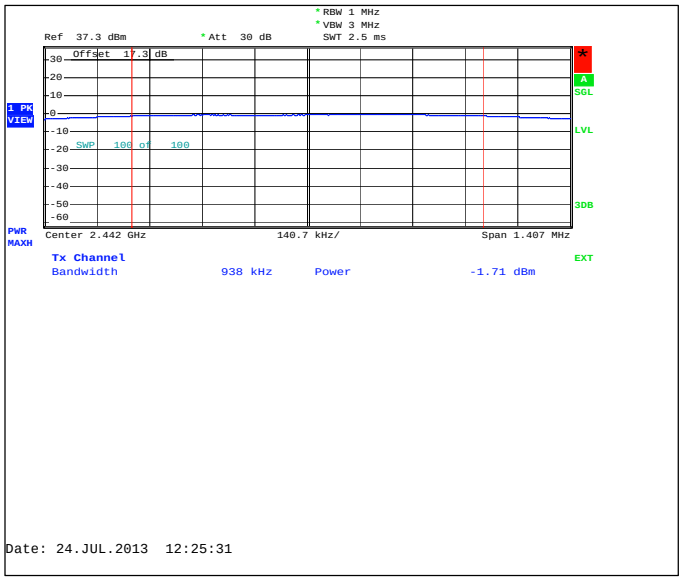
TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

2.7. Bluetooth Low Energy Test results

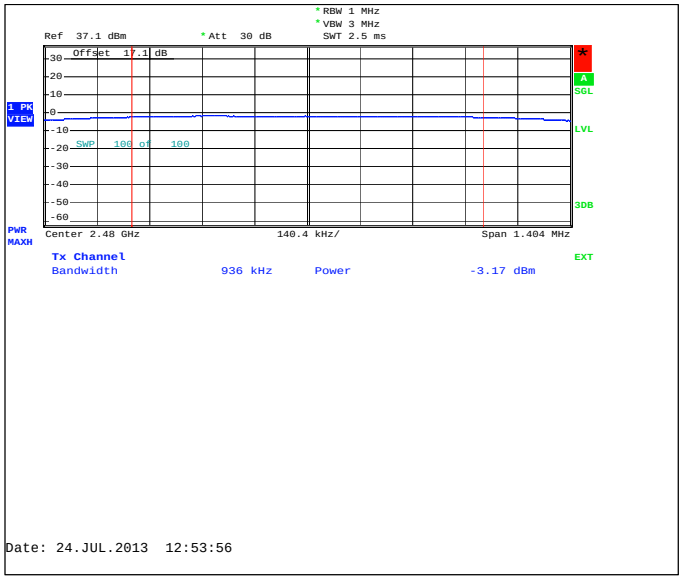
2.7.1 BTLE modulation, PRBS packet type

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
0 / 2402	-1.22	0.755	PASSED
20 / 2442	-1.71	0.675	PASSED
39 / 2480	-3.17	0.482	PASSED

Channel 20 / 2442 MHz

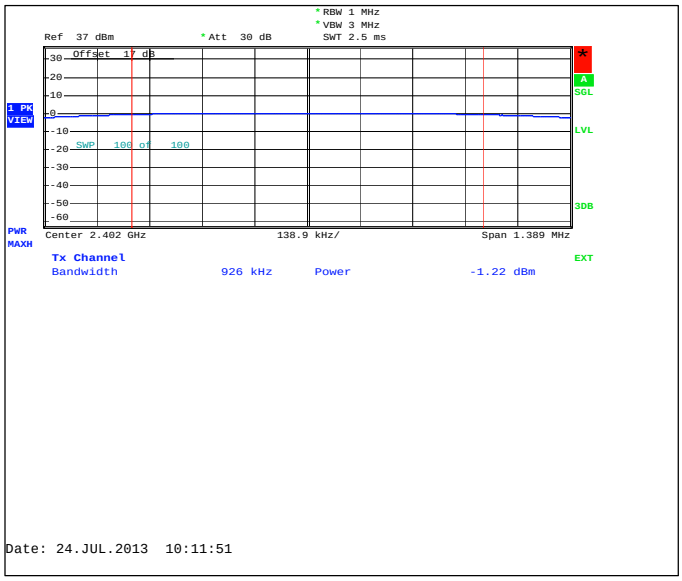


Channel 39 / 2480 MHz



TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

Channel 0 / 2402 MHz

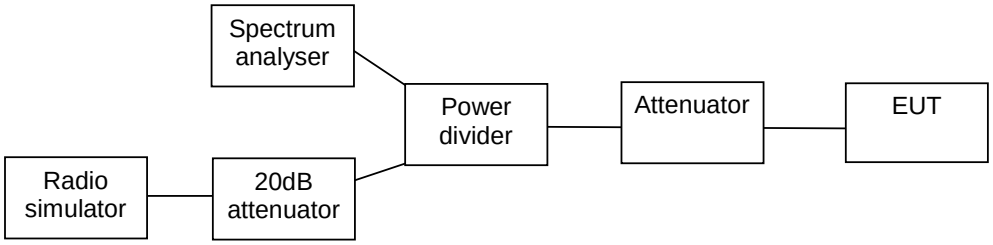


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

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

EUT with DUT number	RM-940, DUT 17563
Accessories with DUT numbers	AC-60E, DUT 17584; CA-190CD, DUT 17585; WH-208, DUT 17586
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 44 / 101
Date of measurements	18-Jul-2013
Measured by	Tomi Lipponen

3.1. Test Setup



3.2. Test method and limit

The measurement is made according to Public notice KDB 558 074 and IC standard RSS-210.

The reference level for the -20 dBc measurement was obtained as instructed in section 11.2 of the KDB 558074, using span of 1.5 times the OBW.

Limits for spurious RF conducted emissions measurements

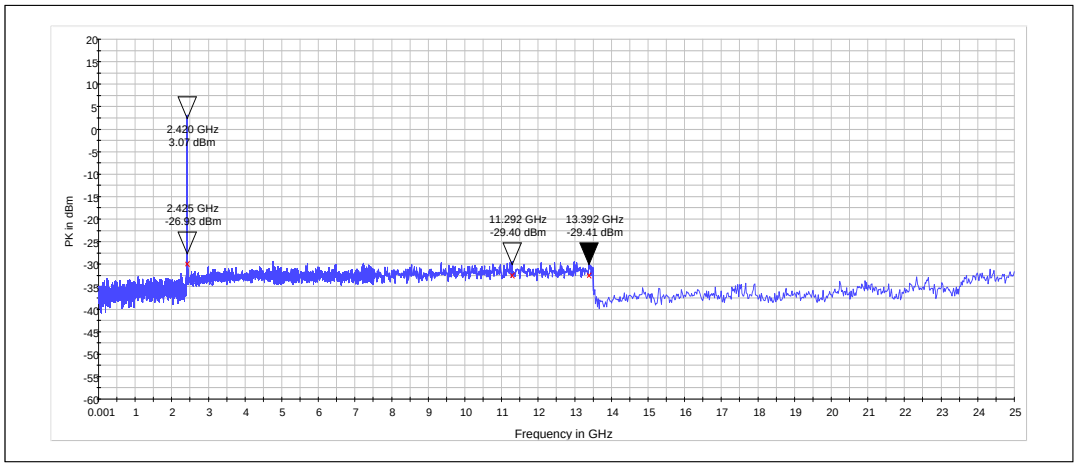
Frequency range [MHz]	Limit [dBc]
1 – 25000	<= -20

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

3.3. WLAN Test results

3.3.1 802.11g mode, BPSK modulation, 6 Mbps data rate

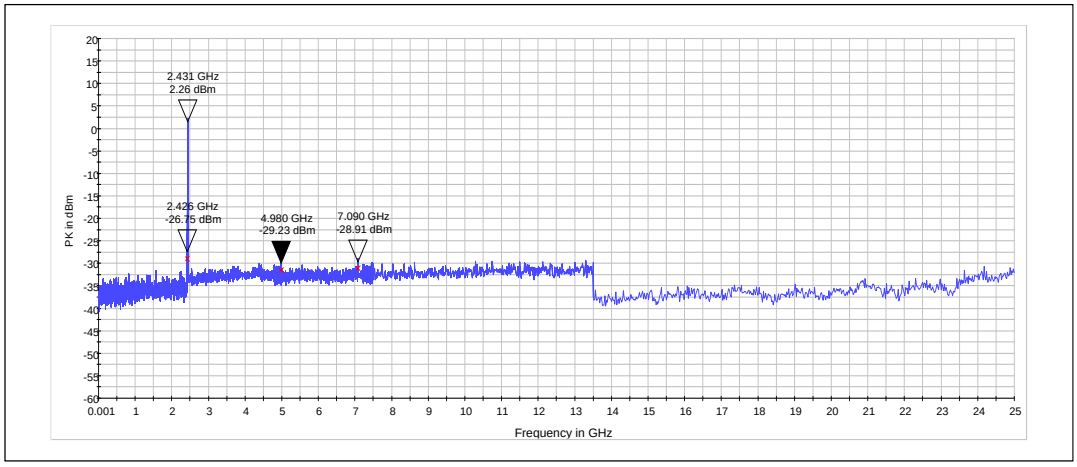
Channel 1 / 2412 MHz



Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
2424.760	-30.01	PASSED
11292.000	-32.48	PASSED
13392.000	-32.48	PASSED

Channel 6 / 2437 MHz

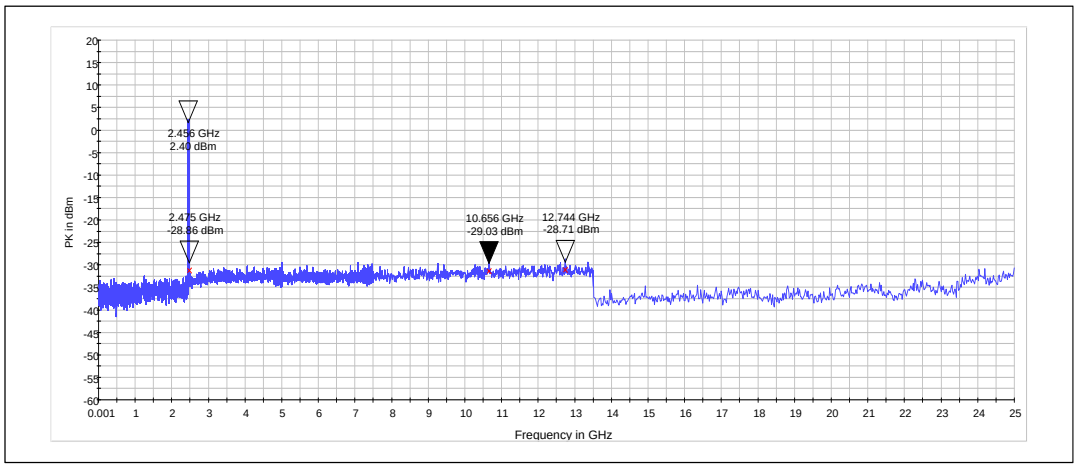


Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
2426.142	-29.01	PASSED
7090.000	-31.17	PASSED
4980.000	-31.49	PASSED

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

Channel 11 / 2462 MHz

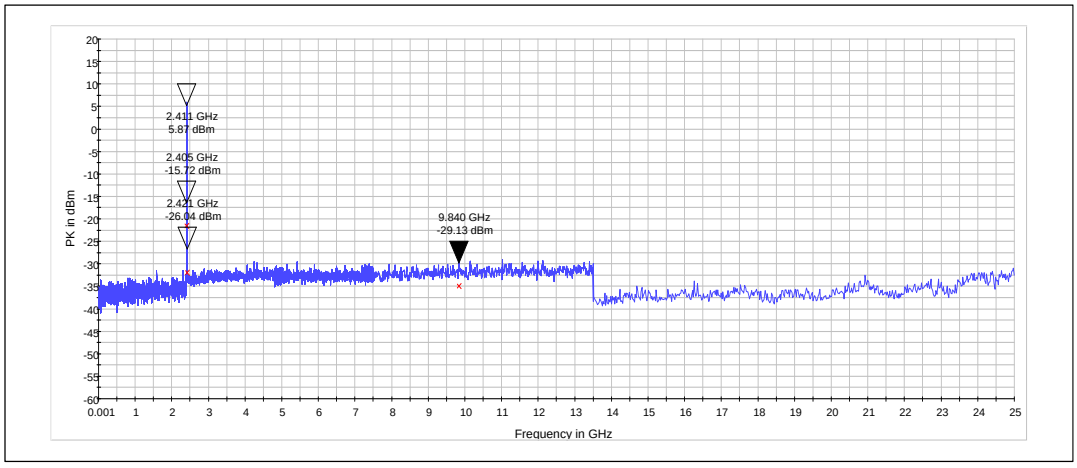


Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
12744.000	-31.10	PASSED
2474.660	-31.26	PASSED
10656.000	-31.43	PASSED

3.3.2 802.11b mode, QPSK modulation, 11 Mbps data rate

Channel 1 / 2412 MHz

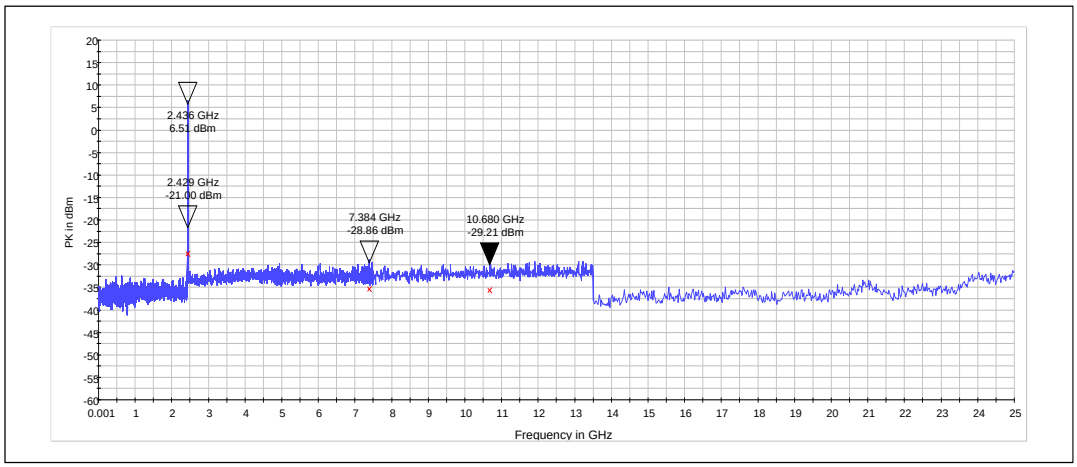


Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
2405.184	-21.58	PASSED
2420.768	-31.91	PASSED
9840.000	-35.00	PASSED

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

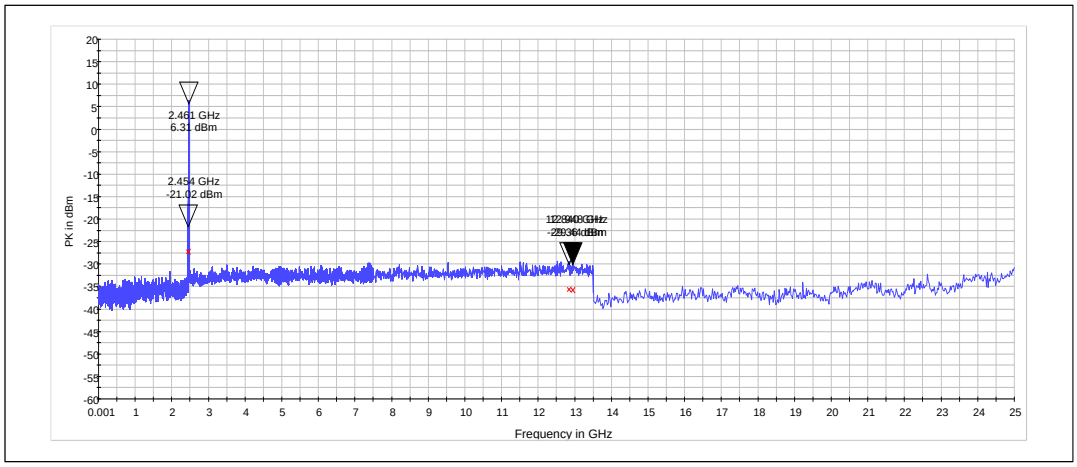
Channel 6 / 2437 MHz



Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
2429.136	-27.51	PASSED
7384.200	-35.37	PASSED
10680.000	-35.72	PASSED

Channel 11 / 2462 MHz



Peak (RBW: 100 kHz, VBW: 300 kHz)

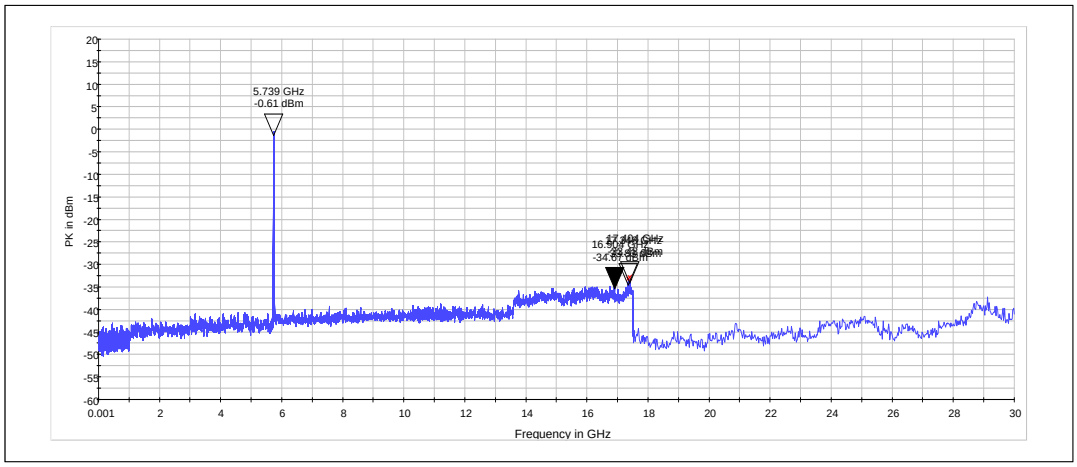
Frequency [MHz]	P [dBc]	Result
2454.086	-27.33	PASSED
12840.000	-35.67	PASSED
12948.000	-35.75	PASSED

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

3.4. 5 GHz RLAN Test results

3.4.1 802.11a mode, BPSK modulation, 6 Mbps data rate

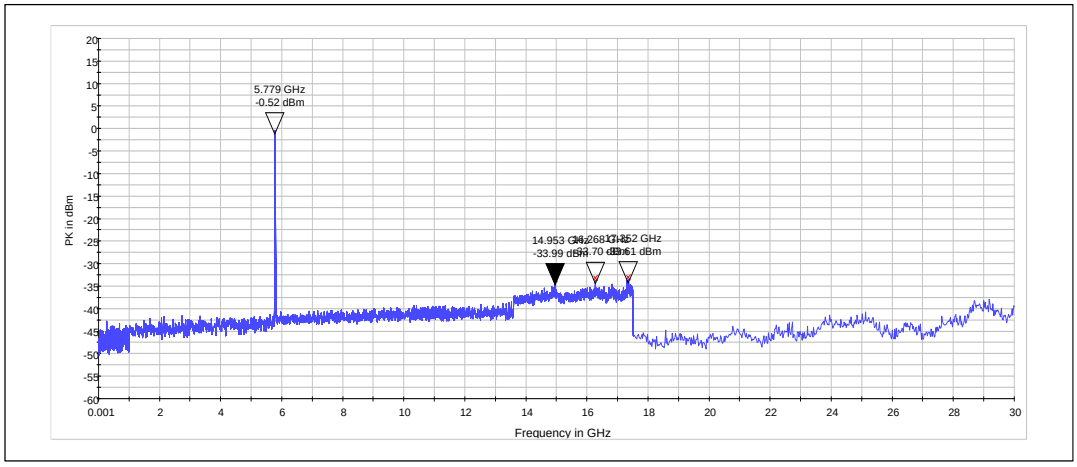
Channel 149 / 5745MHz



Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
17404.000	-32.87	PASSED
17348.000	-33.22	PASSED
16904.000	-34.06	PASSED

Channel 157 / 5785MHz

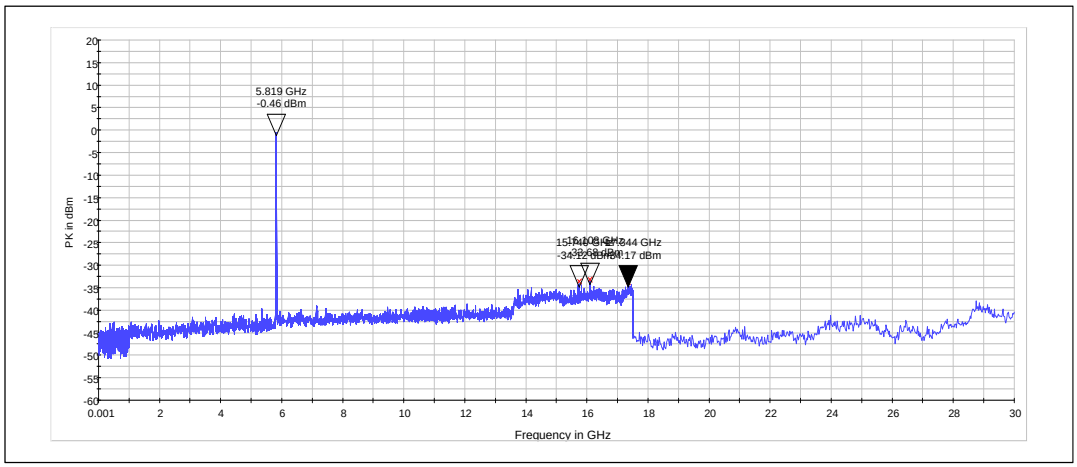


Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
17352.000	-33.10	PASSED
16268.000	-33.18	PASSED
14952.800	-33.47	PASSED

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

Channel 165 / 5825MHz

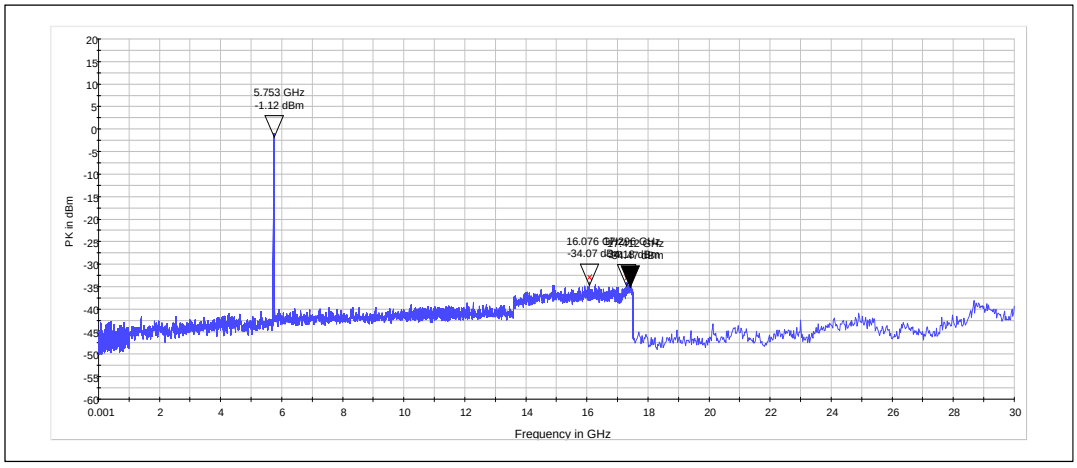


Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
16108.000	-33.22	PASSED
15740.000	-33.66	PASSED
17344.000	-33.71	PASSED

3.4.2 802.11a mode, QPSK modulation, 18 Mbps data rate

Channel 149 / 5745MHz

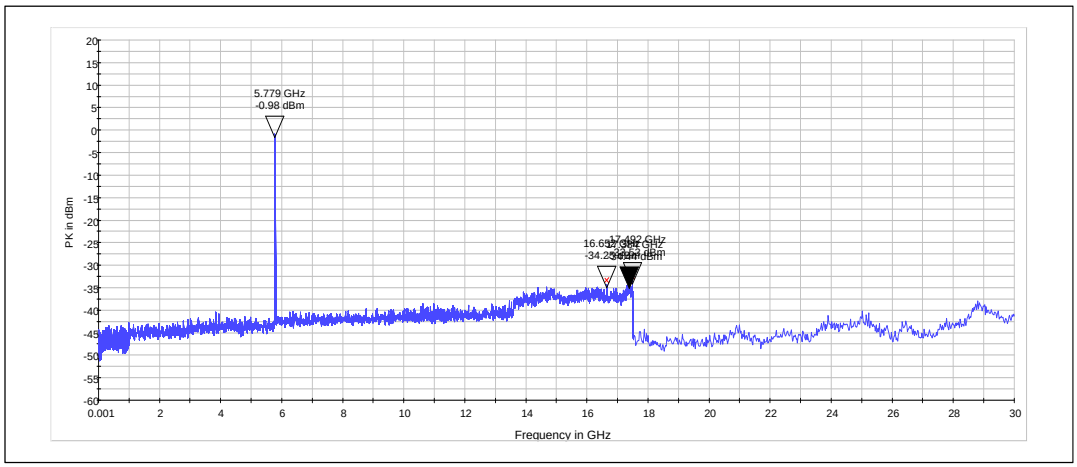


Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
16076.000	-32.96	PASSED
17296.000	-33.07	PASSED
17412.000	-33.36	PASSED

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

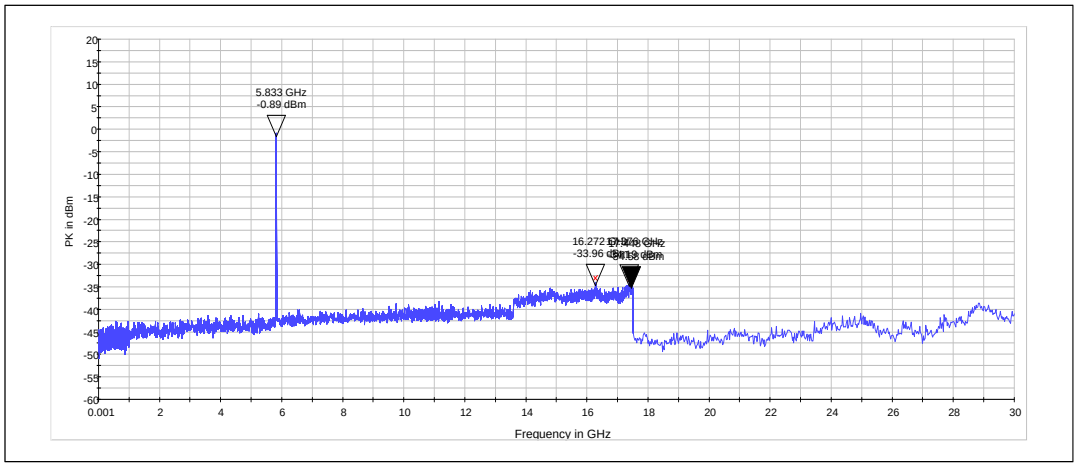
Channel 157 / 5785MHz



Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
17492.000	-32.56	PASSED
16652.000	-33.28	PASSED
17384.000	-33.46	PASSED

Channel 165 / 5825MHz



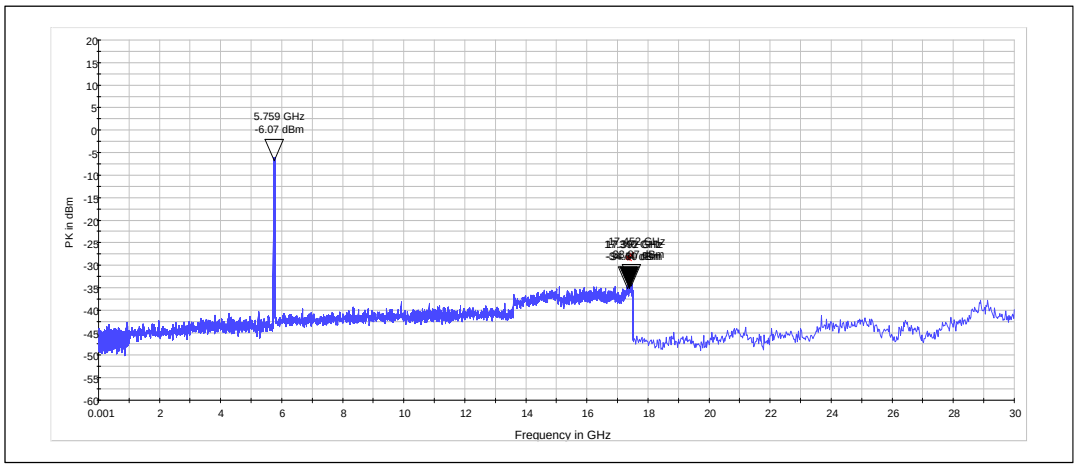
Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
16272.000	-33.07	PASSED
17376.000	-33.30	PASSED
17448.000	-33.68	PASSED

3.4.3 802.11n mode, BPSK modulation, 13.5 / 15.0 Mbps data rate

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

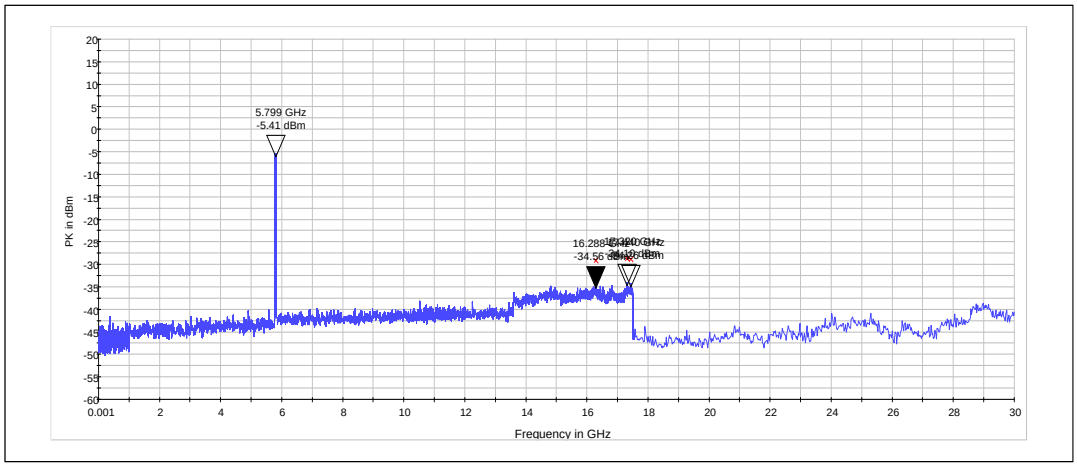
Channel 149+153 / 5755MHz



Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
17452.000	-27.80	PASSED
17340.000	-28.37	PASSED
17392.000	-28.43	PASSED

Channel 157+161 / 5795MHz



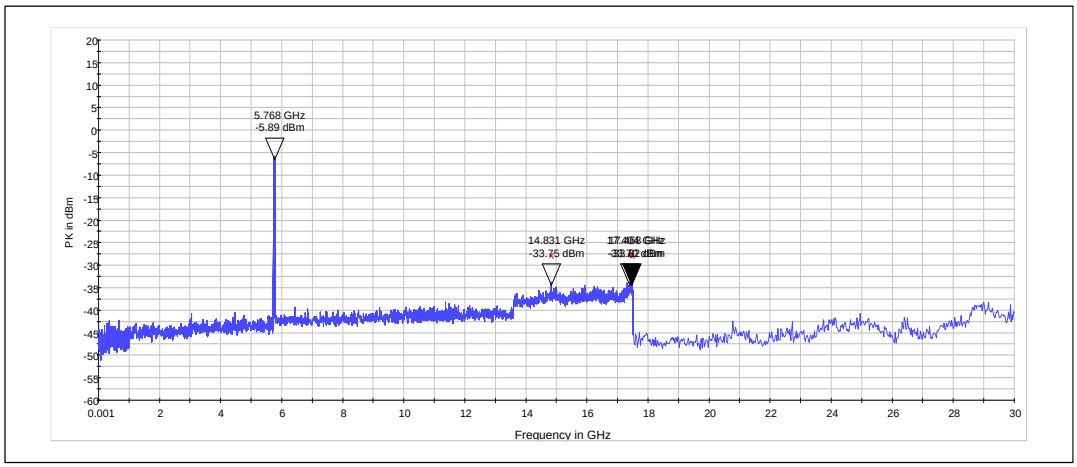
Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
17320.000	-28.69	PASSED
17440.000	-28.86	PASSED
16288.000	-29.15	PASSED

3.4.4 802.11n mode, QPSK modulation, 27.0 / 30.0 Mbps data rate

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

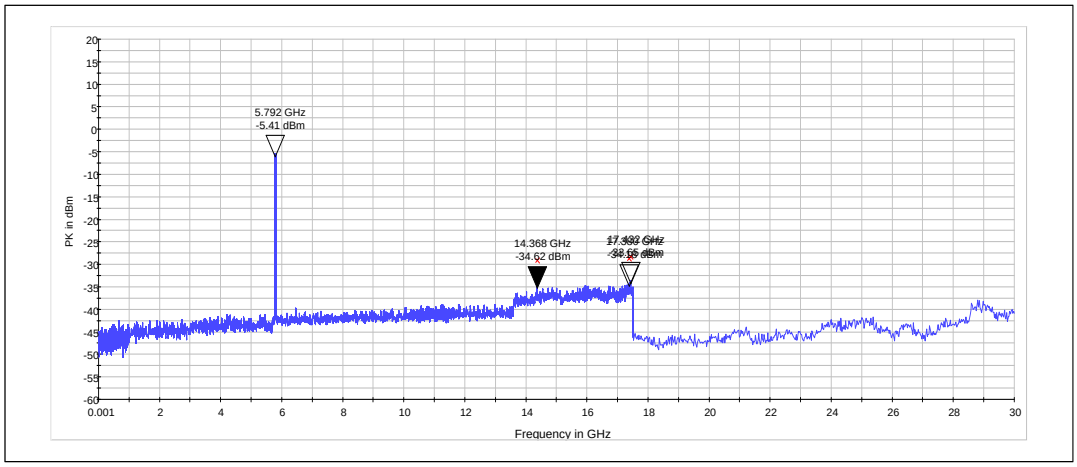
Channel 149+153 / 5755MHz



Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
17404.000	-27.81	PASSED
14831.200	-27.87	PASSED
17468.000	-27.93	PASSED

Channel 157+161 / 5795MHz



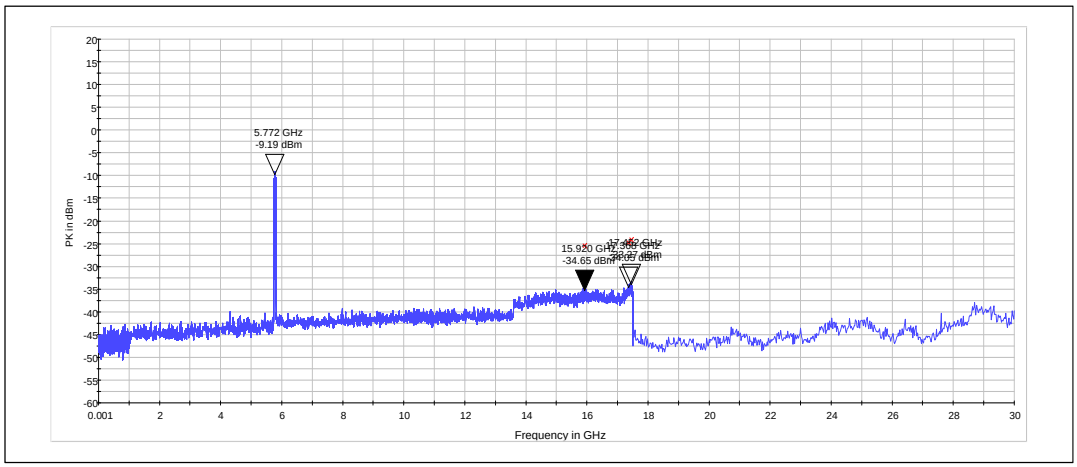
Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
17432.000	-28.24	PASSED
17380.000	-28.77	PASSED
14367.600	-29.21	PASSED

3.4.5 802.11ac mode, BPSK modulation, 29.3 / 32.5 Mbps data rate

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

Channel 149-161 / 5775MHz

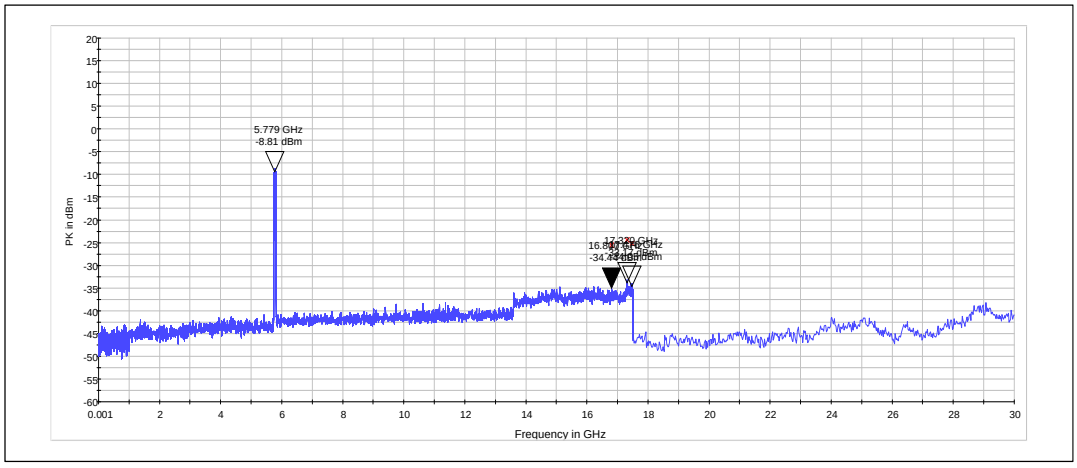


Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
17452.000	-24.08	PASSED
17368.000	-24.86	PASSED
15920.000	-25.46	PASSED

3.4.6 802.11ac mode, QPSK modulation, 87.8 / 97.5 Mbps data rate

Channel 149-161 / 5775MHz



Peak (RBW: 100 kHz, VBW: 300 kHz)

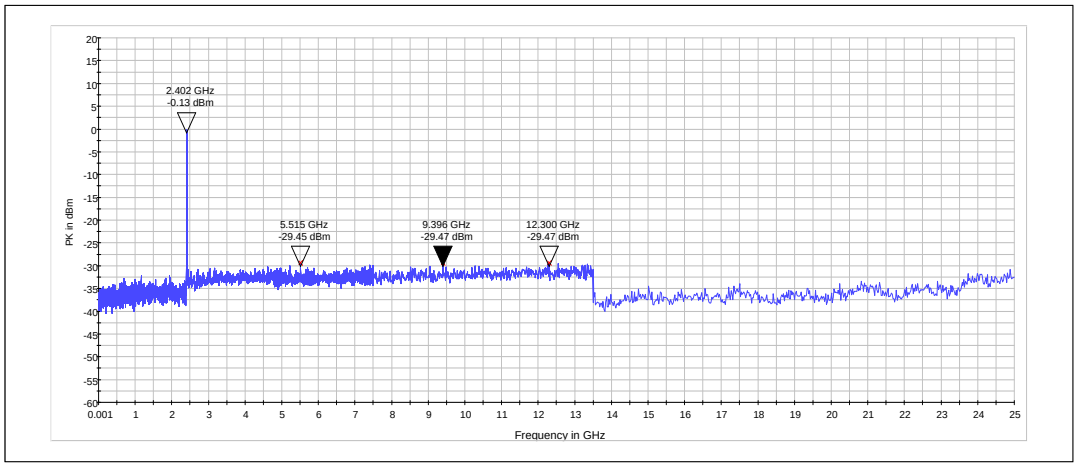
Frequency [MHz]	P [dBc]	Result
17320.000	-24.36	PASSED
17476.000	-25.24	PASSED
16800.000	-25.63	PASSED

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

3.5. Bluetooth Low Energy Test results

3.5.1 BTLE modulation, PRBS packet type

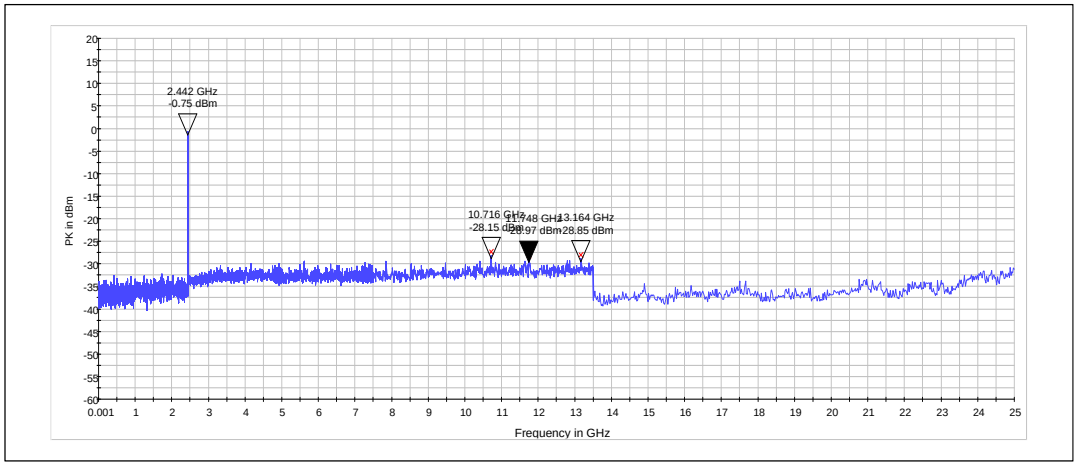
Channel 0 / 2402 MHz



Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
5514.800	-29.32	PASSED
12300.000	-29.34	PASSED
9396.000	-29.34	PASSED

Channel 20 / 2442 MHz

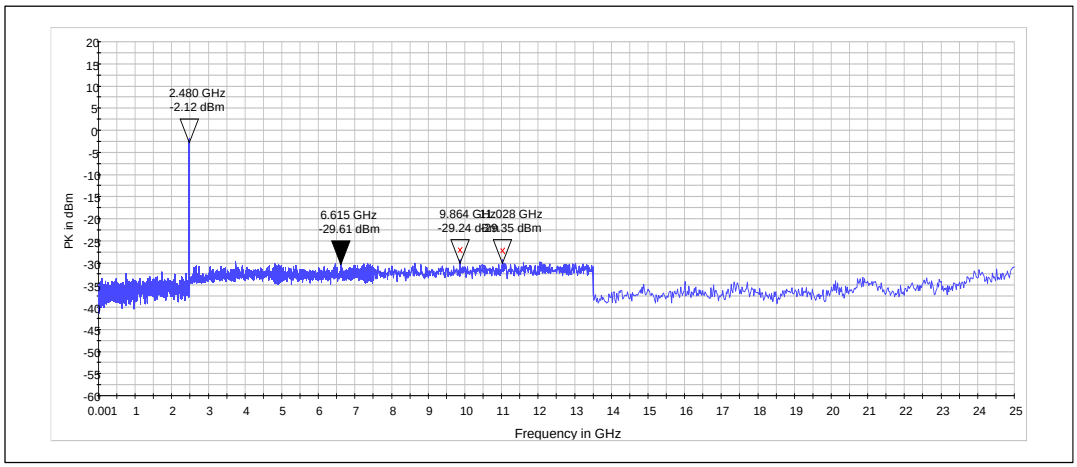


Peak (RBW: 100 kHz, VBW: 300 kHz)

Frequency [MHz]	P [dBc]	Result
10716.000	-27.40	PASSED
13164.000	-28.09	PASSED
11748.000	-28.22	PASSED

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

Channel 39 / 2480 MHz



Peak (RBW: 100 kHz, VBW: 300 kHz)

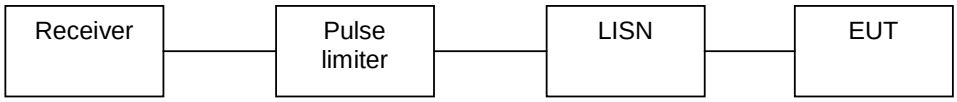
Frequency [MHz]	P [dBc]	Result
9864.000	-27.12	PASSED
11028.000	-27.24	PASSED
6614.800	-27.50	PASSED

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

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

EUT with DUT number	RM-940, DUT 17583
Accessories with DUT numbers	AC-60E, DUT 17584; CA-190CD, DUT 17585; WH-208, DUT 17586
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 50 / 101
Date of measurements	22-Jul-2013
Measured by	Tomi Lipponen

4.1. Test Setup



4.2. Test method and limit

FCC15CWLAN_RM-940_02.docxThe 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.

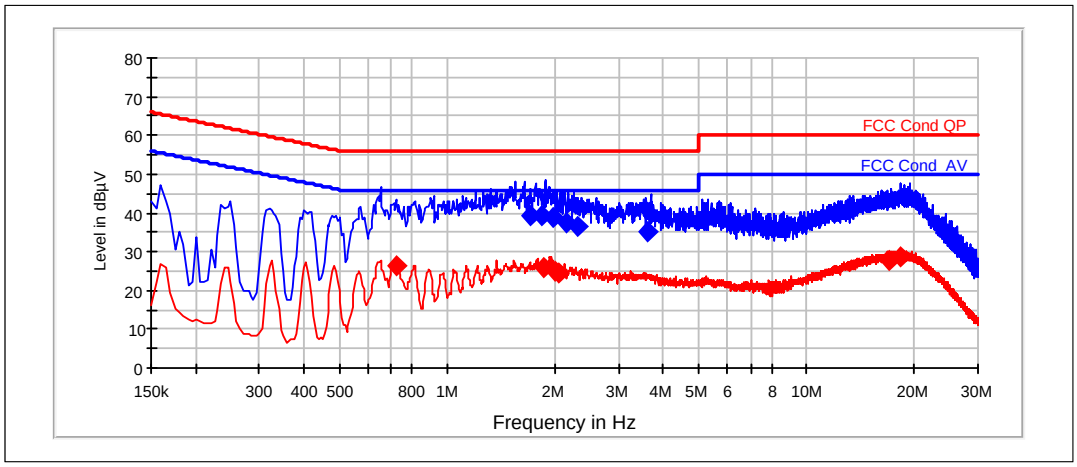
CISPR 22 Class B limits

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 Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

4.3. 5 GHz RLAN Test results

4.3.1 802.11g mode, BPSK modulation, 6 Mbps data rate



QuasiPeak (RBW: 9 kHz)

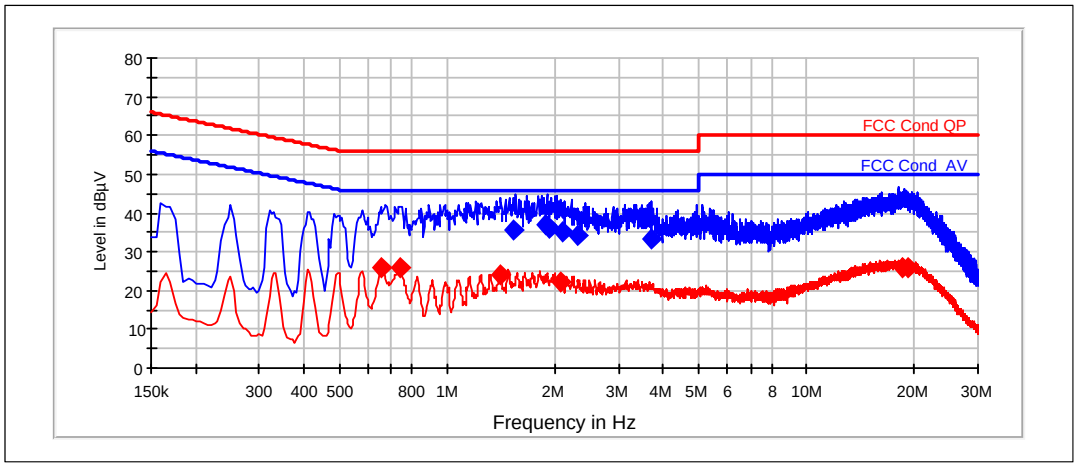
Frequency [MHz]	U [dBµV]	Line	Result
1.705	39.47	N	PASSED
1.83	39.11	N	PASSED
1.965	38.71	N	PASSED
2.145	37.27	N	PASSED
2.305	36.49	N	PASSED
3.605	35.22	N	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.72	26.23	N	PASSED
1.855	25.72	N	PASSED
1.995	24.83	N	PASSED
2.045	24.7	N	PASSED
17.09	27.92	N	PASSED
18.2	28.52	N	PASSED

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

4.3.2 802.11a, QPSK modulation, 18 Mbps data rate



QuasiPeak (RBW: 9 kHz)

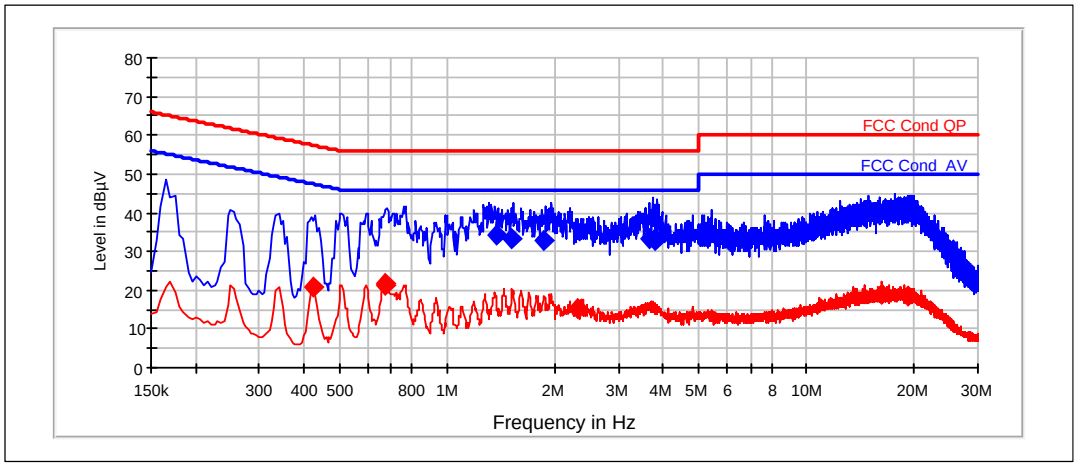
Frequency [MHz]	U [dBµV]	Line	Result
1.535	35.64	N	PASSED
1.88	36.82	N	PASSED
1.93	36.22	N	PASSED
2.09	35.34	N	PASSED
2.295	34.15	N	PASSED
3.695	33.51	N	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.655	25.93	N	PASSED
0.745	25.68	N	PASSED
1.405	24.12	N	PASSED
2.08	22.36	N	PASSED
18.48	25.85	N	PASSED
19.17	25.88	N	PASSED

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

4.3.3 802.11n mode, BPSK modulation, 13.5 / 15.0 Mbps data rate



QuasiPeak (RBW: 9 kHz)

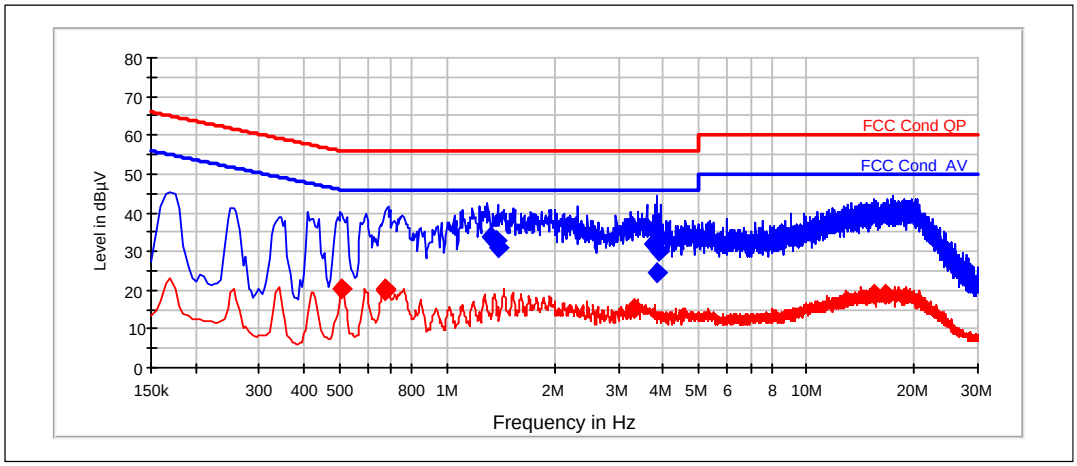
Frequency [MHz]	U [dBµV]	Line	Result
1.38	34.25	N	PASSED
1.515	33.5	N	PASSED
1.86	32.71	N	PASSED
3.655	33.26	N	PASSED
3.79	33.46	N	PASSED
3.805	32.95	N	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.425	20.82	N	PASSED
0.67	21.11	N	PASSED
0.675	21.64	N	PASSED
2.305	15.14	N	PASSED
16.28	18.98	N	PASSED
19.06	18.55	N	PASSED

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

4.3.4 802.11n mode, QPSK modulation, 27.0 / 30.0 Mbps data rate



QuasiPeak (RBW: 9 kHz)

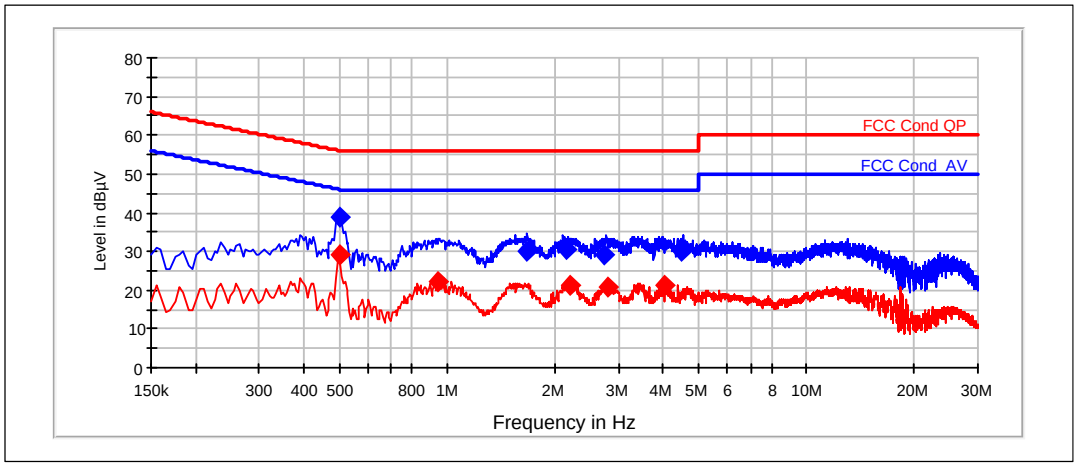
Frequency [MHz]	U [dBµV]	Line	Result
1.32	33.96	N	PASSED
1.37	32.93	N	PASSED
1.39	31.06	N	PASSED
3.73	31.77	N	PASSED
3.835	24.59	L1	PASSED
3.885	29.99	N	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.51	20.15	N	PASSED
0.67	19.87	N	PASSED
0.675	20.48	N	PASSED
3.325	15.44	N	PASSED
15.455	18.97	N	PASSED
16.64	18.89	N	PASSED

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

4.3.5 802.11ac mode, BPSK modulation, 29.3 / 32.5 Mbps data rate



QuasiPeak (RBW: 9 kHz)

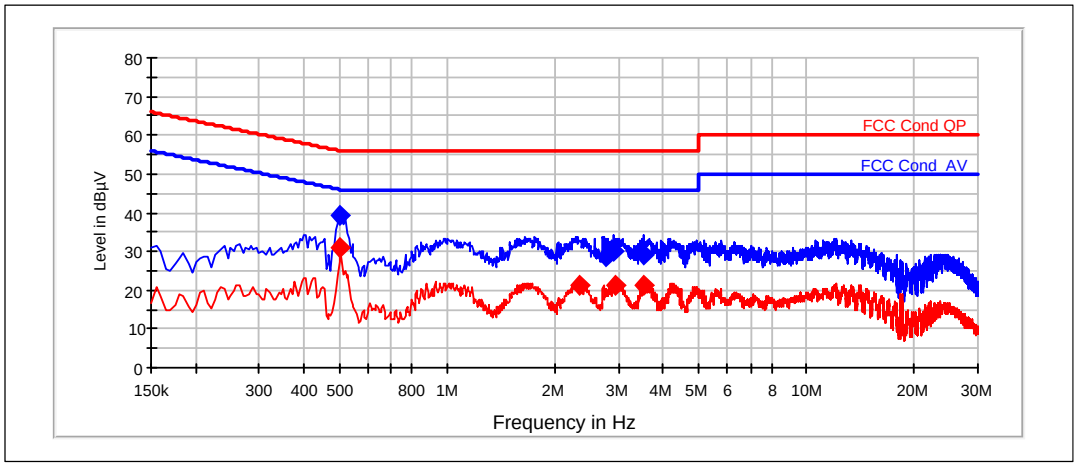
Frequency [MHz]	U [dBµV]	Line	Result
0.505	38.81	N	PASSED
1.675	29.86	N	PASSED
2.15	30.35	N	PASSED
2.735	29.34	N	PASSED
4.51	29.91	N	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.505	29.34	N	PASSED
0.945	22.09	N	PASSED
2.2	21.26	N	PASSED
2.795	20.91	N	PASSED
4.01	21.09	N	PASSED

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

4.3.6 802.11ac mode, QPSK modulation, 87.8 / 97.5 Mbps data rate



QuasiPeak (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.505	39.17	N	PASSED
2.78	28.84	N	PASSED
2.9	30.01	N	PASSED
3.505	29.07	N	PASSED

Average (RBW: 9 kHz)

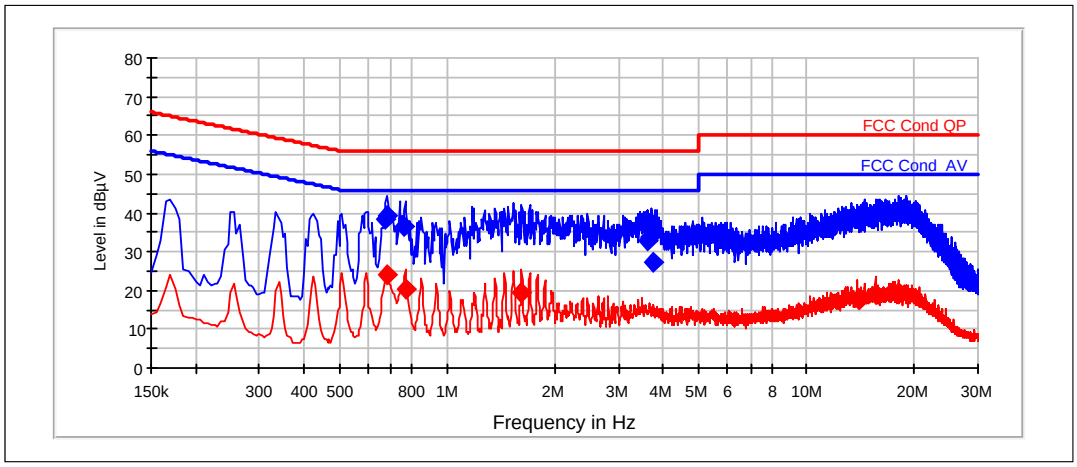
Frequency [MHz]	U [dBµV]	Line	Result
0.505	30.83	N	PASSED
2.34	21.11	N	PASSED
2.95	21.2	N	PASSED
3.535	21.06	N	PASSED

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

4.4. WLAN Test results

4.4.1 802.11g mode, BPSK modulation, 6 Mbps data rate

Channel 6 / 2437 MHz



QuasiPeak (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.675	38.36	N	PASSED
0.68	39.48	N	PASSED
0.76	36.76	N	PASSED
3.62	32.97	N	PASSED
3.66	33.66	N	PASSED
3.75	27.34	L1	PASSED

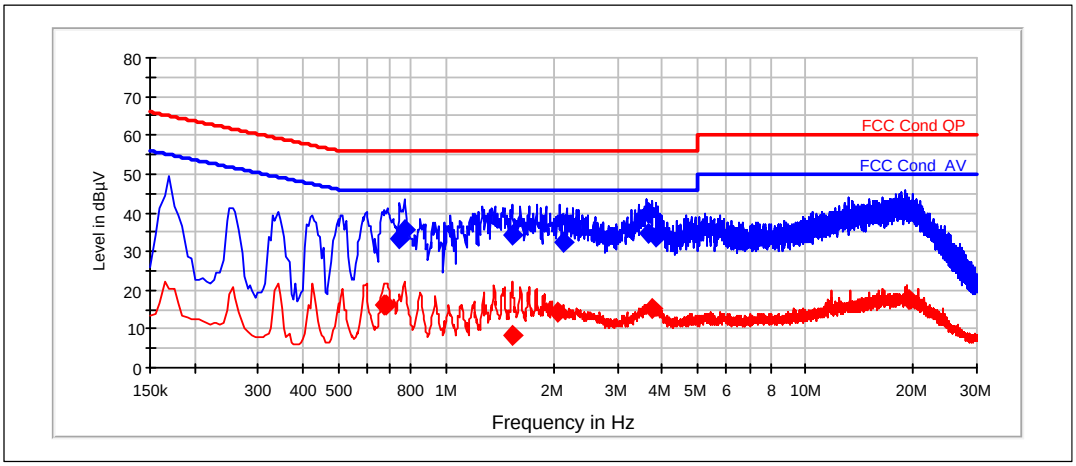
Average (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.68	24.03	N	PASSED
0.765	20.51	N	PASSED
1.615	19.63	N	PASSED
13.965	17.78	N	PASSED
15.61	18.92	N	PASSED
17.995	19.27	N	PASSED

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

4.4.2 802.11b mode, QPSK modulation, 11 Mbps data rate

Channel 6 / 2437 MHz



QuasiPeak (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.745	33.37	N	PASSED
0.765	35.58	N	PASSED
1.53	34.28	N	PASSED
2.13	32.58	N	PASSED
3.665	34.52	N	PASSED
3.85	33.93	N	PASSED

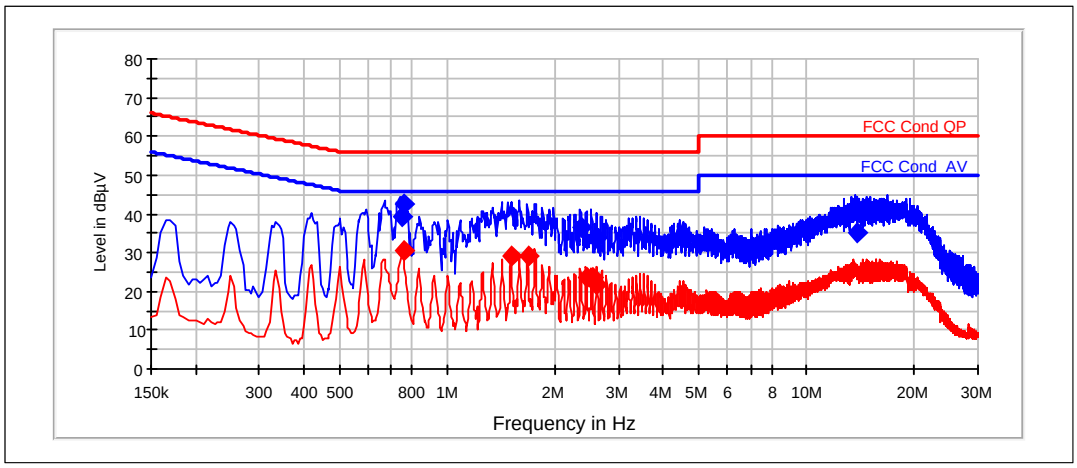
Average (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.675	16.17	N	PASSED
0.68	15.96	N	PASSED
1.525	8.19	L1	PASSED
2.04	14.52	N	PASSED
3.755	15.46	N	PASSED
19.305	17.35	N	PASSED

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

4.5. Bluetooth Low Energy Test results

Channel 20 / 2442 MHz



QuasiPeak (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.75	39.41	N	PASSED
0.755	42.42	N	PASSED
2.36	36.37	N	PASSED
2.61	33.69	N	PASSED
13.78	34.92	N	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.755	30.64	N	PASSED
1.51	28.95	N	PASSED
1.68	29.14	N	PASSED
2.445	23.4	N	PASSED
2.53	23.61	N	PASSED
2.61	21.58	N	PASSED

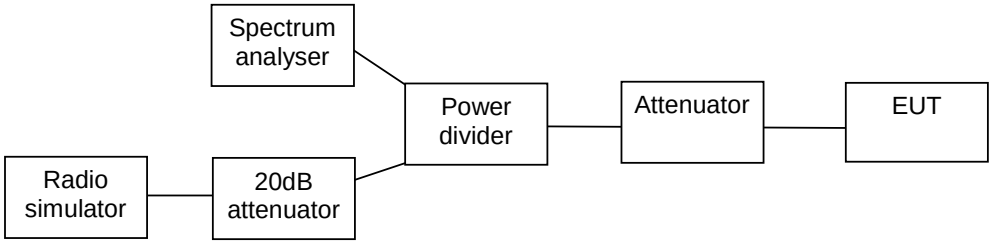
TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

5. 6 dB bandwidth

(FCC §15.247(a)(2), RSS-210 A8.2 (1))

EUT with DUT number	RM-940, DUT 17563
Accessories with DUT numbers	AC-60E, DUT 17584; CA-190CD, DUT 17585; WH-208, DUT 17586
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 44 / 101
Date of measurements	18-Jul-2013
Measured by	Tomi Lipponen

5.1. Test Setup



5.2. 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

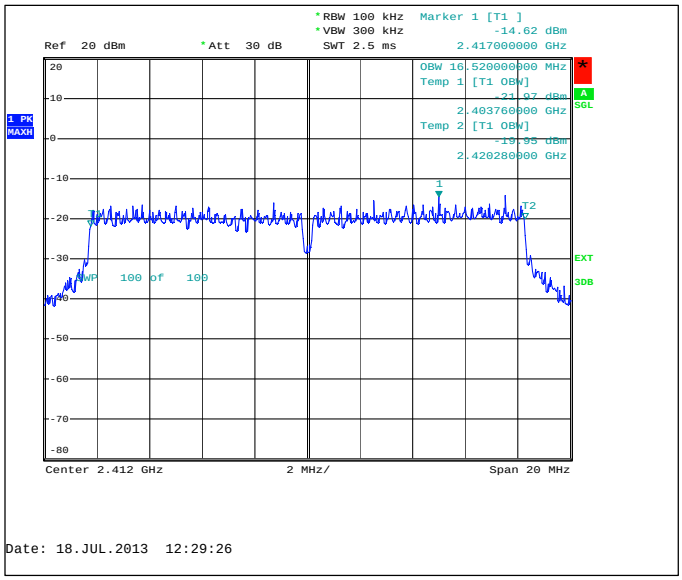
TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

5.3. WLAN Test results

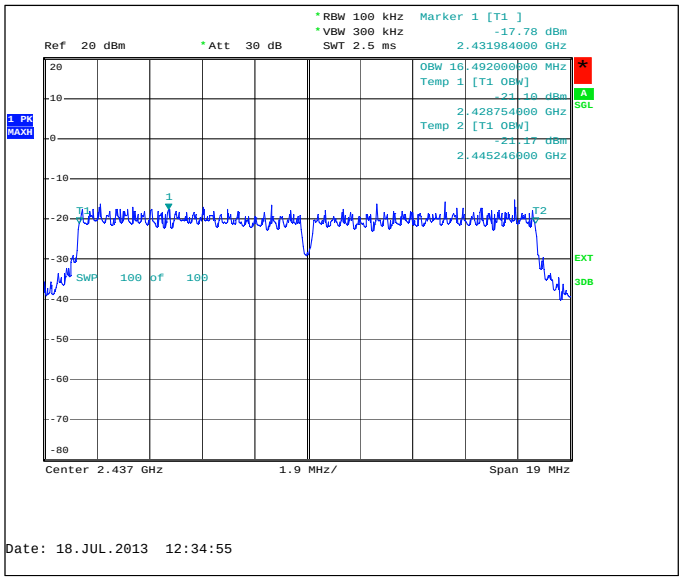
5.3.1 802.11g mode, BPSK modulation, 6 Mbps data rate

Channel / f_C [MHz]	6 dB bandwidth [kHz]	Result
1 / 2412	16520	PASSED
6 / 2437	16492	PASSED
11 / 2462	16530	PASSED

Channel 1 / 2412 MHz

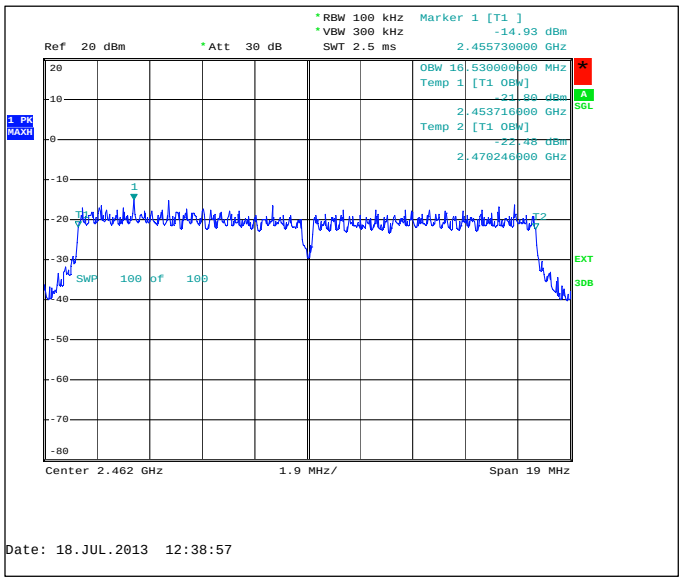


Channel 6 / 2437 MHz



TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

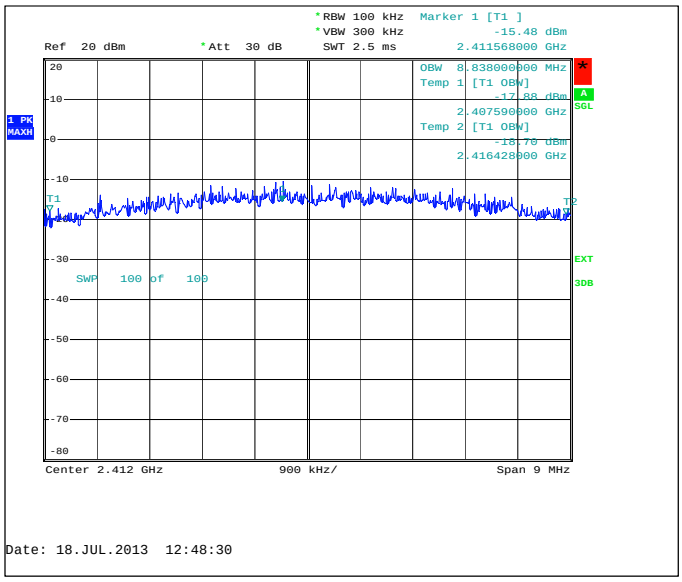
Channel 11 / 2462 MHz



5.3.2 802.11b mode, QPSK modulation, 11 Mbps data rate

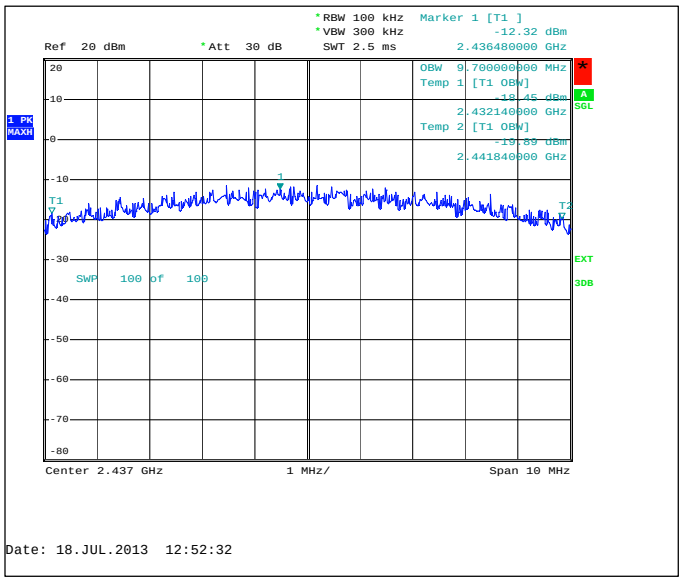
Channel / f_C [MHz]	6 dB bandwidth [kHz]	Result
1 / 2412	8838	PASSED
6 / 2437	9700	PASSED
11 / 2462	9680	PASSED

Channel 1 / 2412 MHz

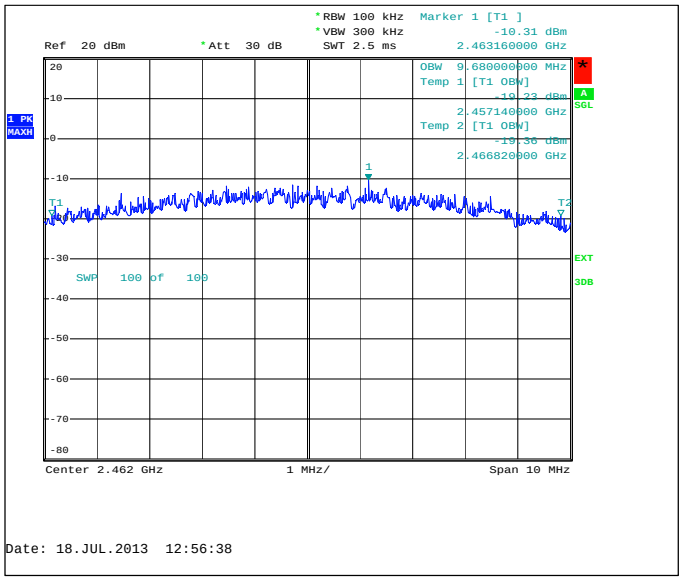


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

Channel 6 / 2437 MHz



Channel 11 / 2462 MHz



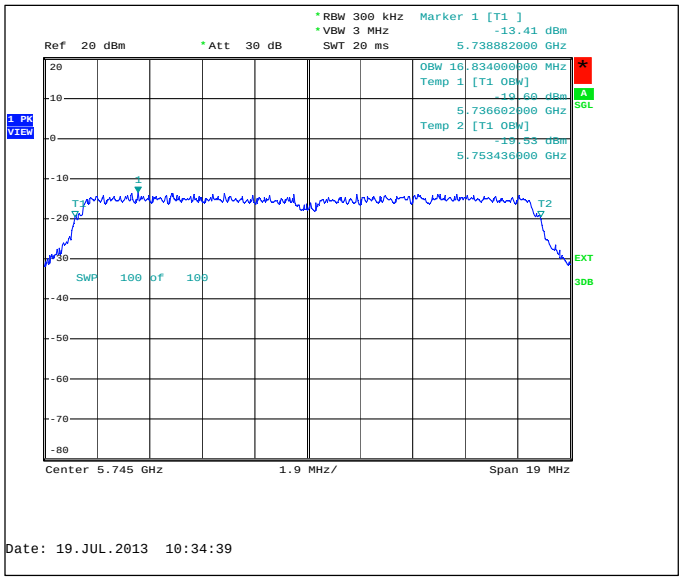
TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

5.4. 5 GHz RLAN Test results

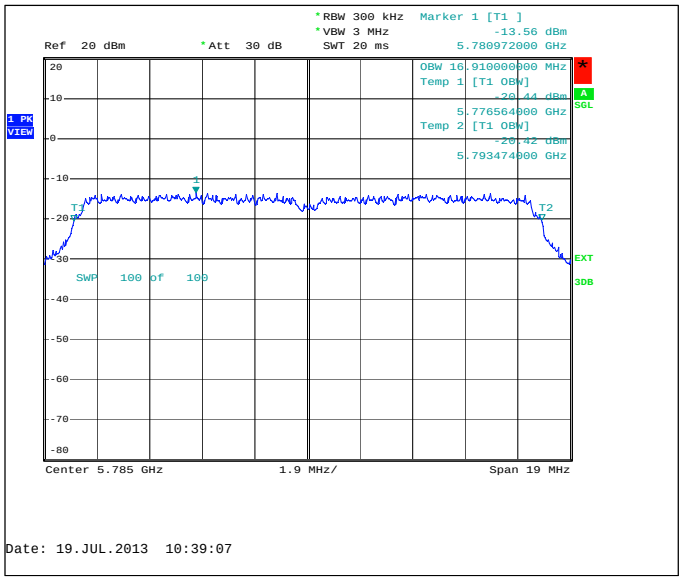
5.4.1 802.11a mode, BPSK modulation, 6 Mbps data rate

Channel / f_C [MHz]	6 dB bandwidth [kHz]	Result
149 / 5745	16834	PASSED
157 / 5785	16910	PASSED
165 / 5825	16872	PASSED

Channel 149 / 5745MHz

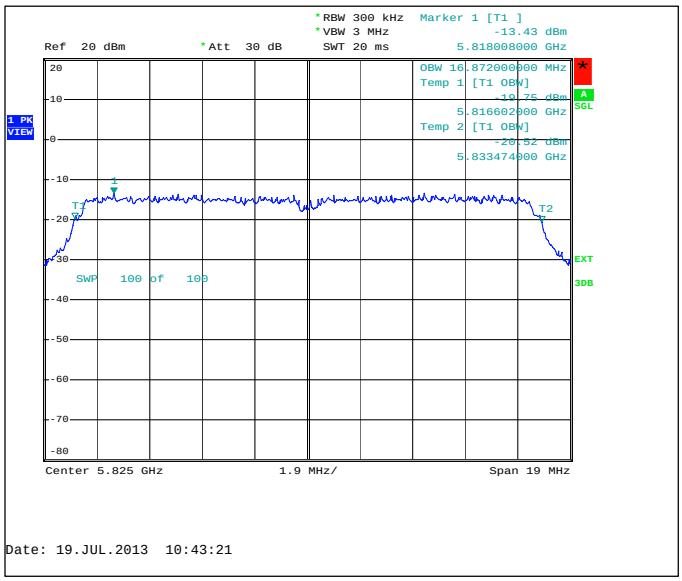


Channel 157 / 5785MHz



TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

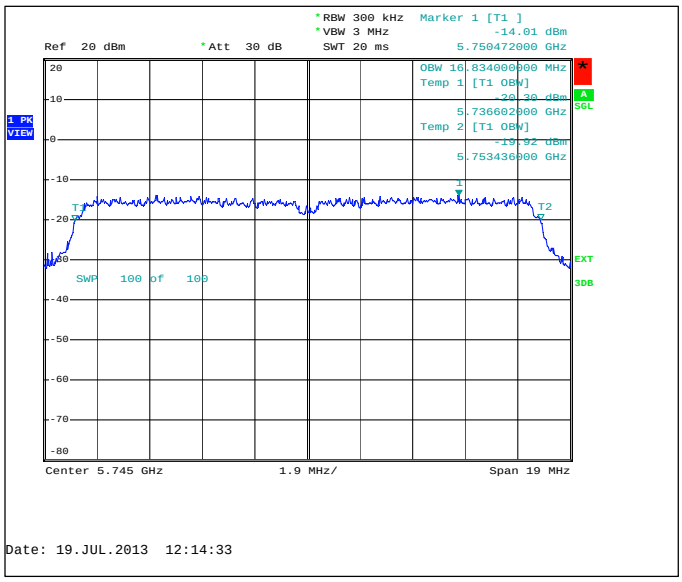
Channel 165 / 5825MHz



5.4.2 802.11a mode, QPSK modulation, 18 Mbps data rate

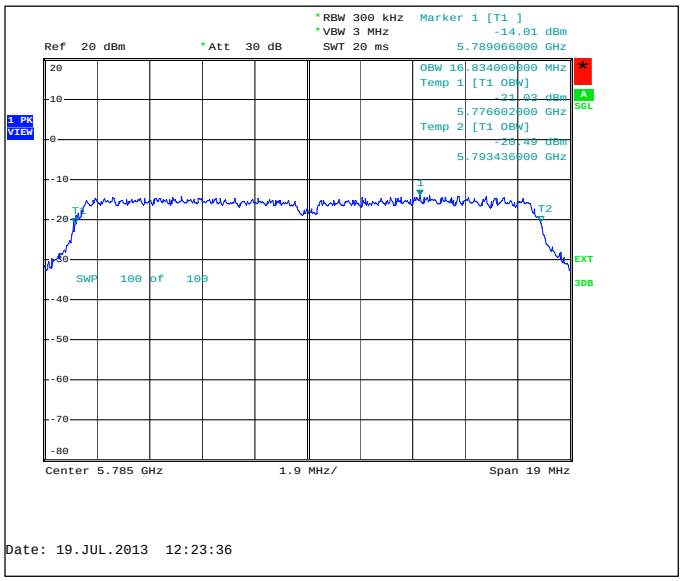
Channel / f_C [MHz]	6 dB bandwidth [kHz]	Result
149 / 5745	16834	PASSED
157 / 5785	16834	PASSED
165 / 5825	16834	PASSED

Channel 149 / 5745MHz

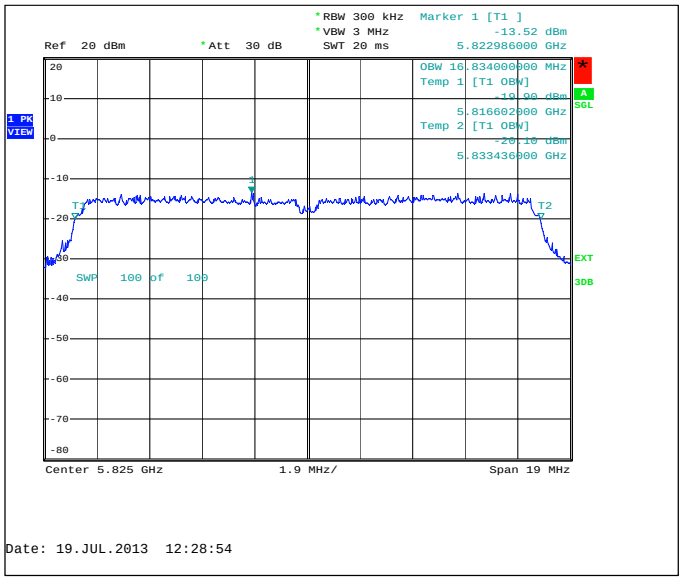


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

Channel 157 / 5785MHz



Channel 165 / 5825MHz

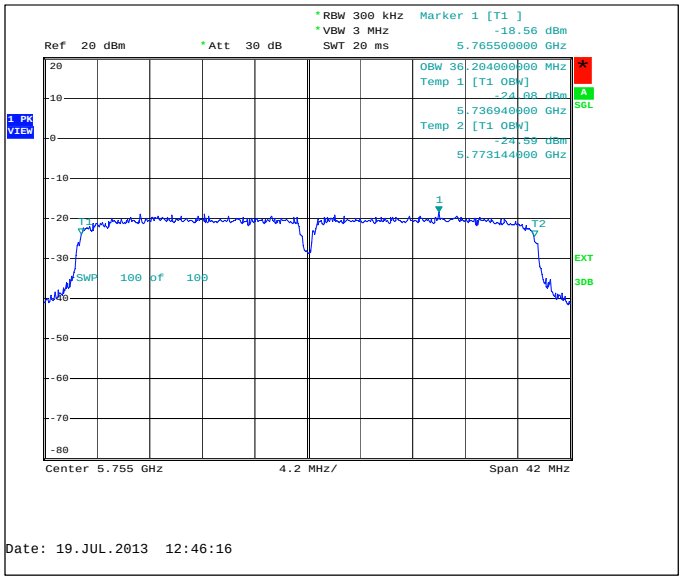


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

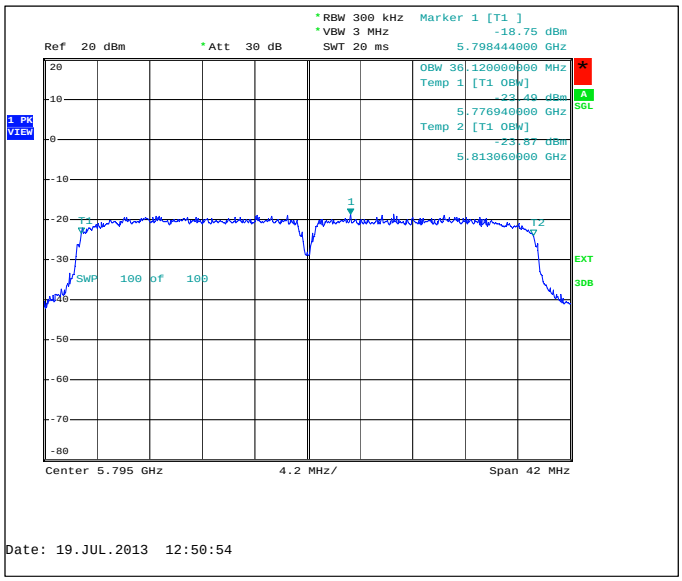
5.4.3 802.11n mode, BPSK modulation, 13.5 / 15.0 Mbps data rate

Channel / f_C [MHz]	6 dB bandwidth [kHz]	Result
149+153 / 5755	36204	PASSED
157+161 / 5795	36120	PASSED

Channel 149+153 / 5755MHz



Channel 157+161 / 5795MHz

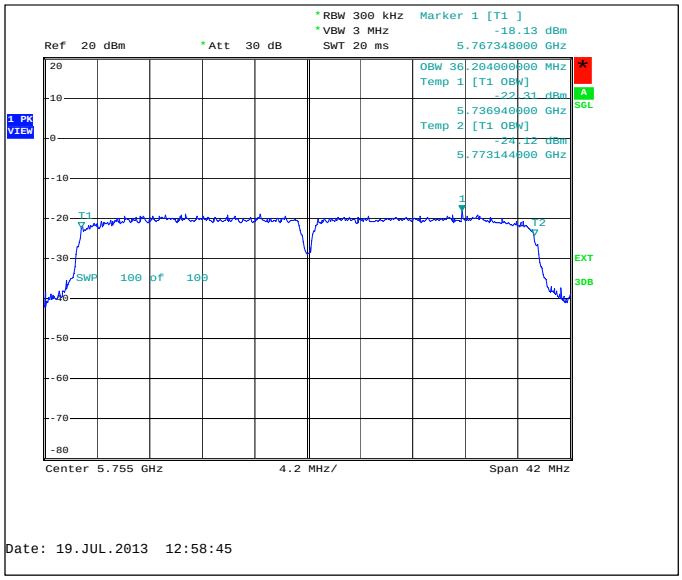


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

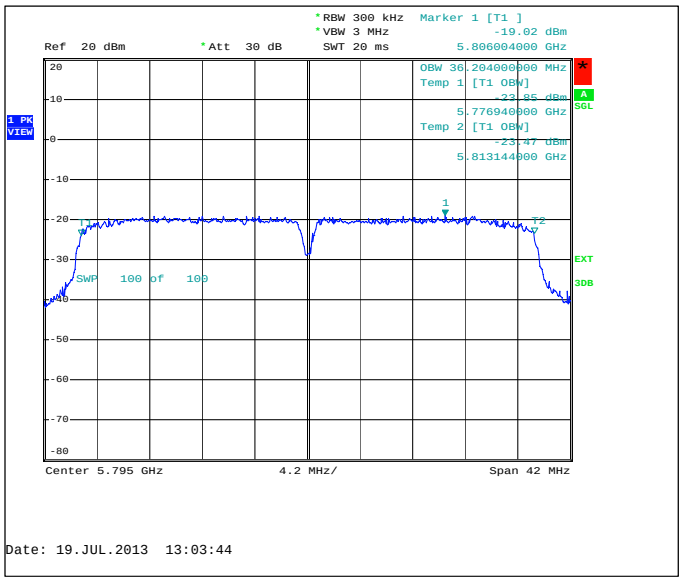
5.4.4 802.11n mode, QPSK modulation, 27.0 / 30.0 Mbps data rate

Channel / f_C [MHz]	6 dB bandwidth [kHz]	Result
149+153 / 5755	36204	PASSED
157+161 / 5795	36204	PASSED

Channel 149+153 / 5755MHz



Channel 157+161 / 5795MHz

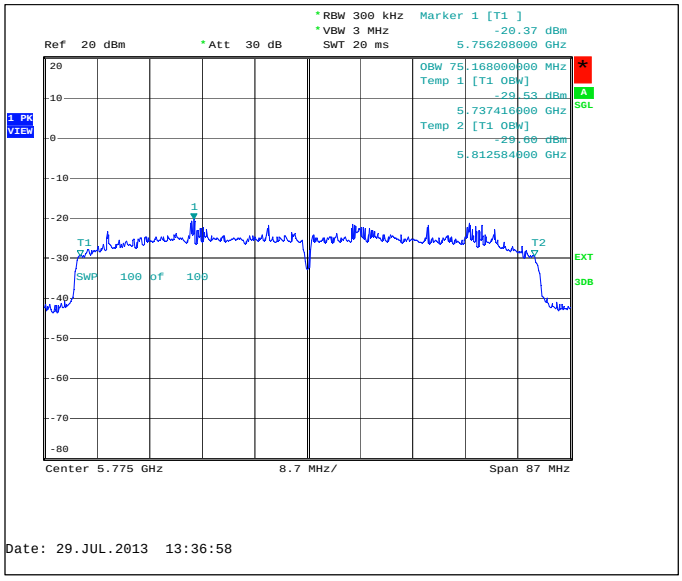


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

5.4.5 802.11ac mode, BPSK modulation, 29.3 / 32.5 Mbps data rate

Channel / f_C [MHz]	6 dB bandwidth [kHz]	Result
149-161 / 5775	75168	PASSED

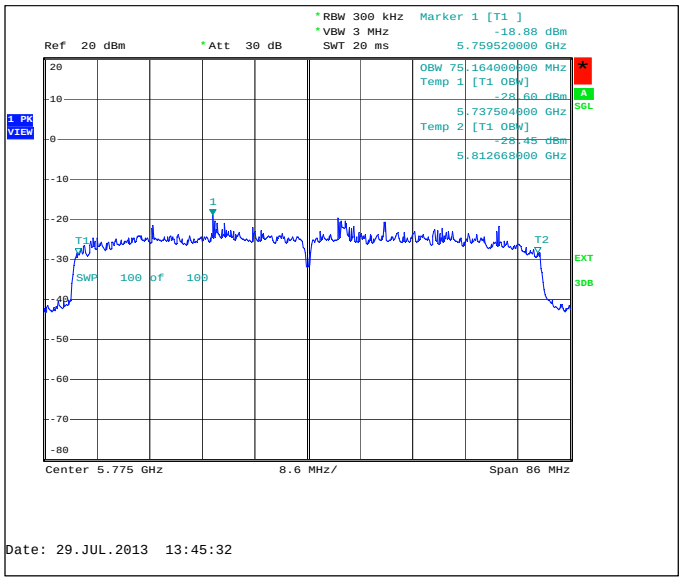
Channel 149-161 / 5775MHz



5.4.6 802.11ac mode, QPSK modulation, 87.8 / 97.5 Mbps data rate

Channel / f_C [MHz]	6 dB bandwidth [kHz]	Result
149-161 / 5775	75164	PASSED

Channel 149-161 / 5775MHz



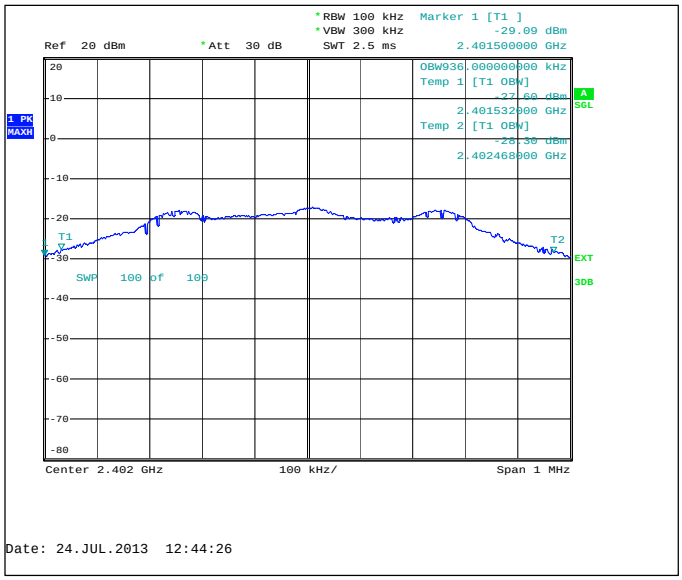
TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

5.5. Bluetooth Low Energy Test results

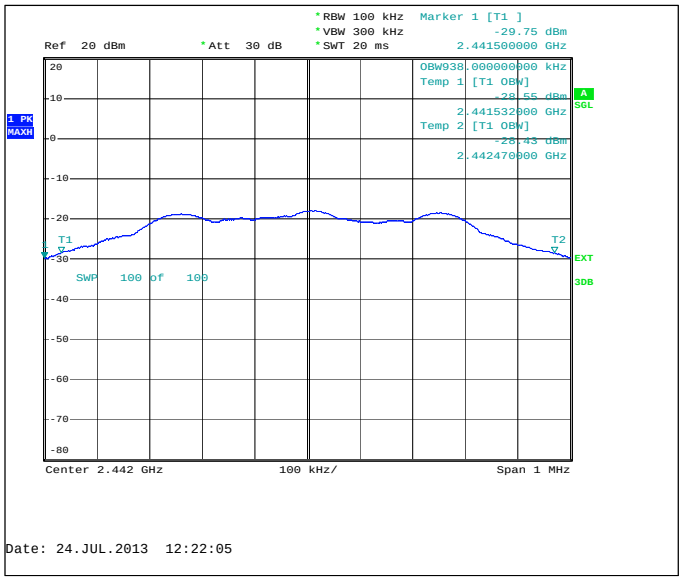
5.5.1 BTLE modulation, PRBS packet type

Channel / f_C [MHz]	6 dB bandwidth [kHz]	Result
0 / 2402	936	PASSED
20 / 2442	938	PASSED
39 / 2480	930	PASSED

Channel 0 / 2402 MHz

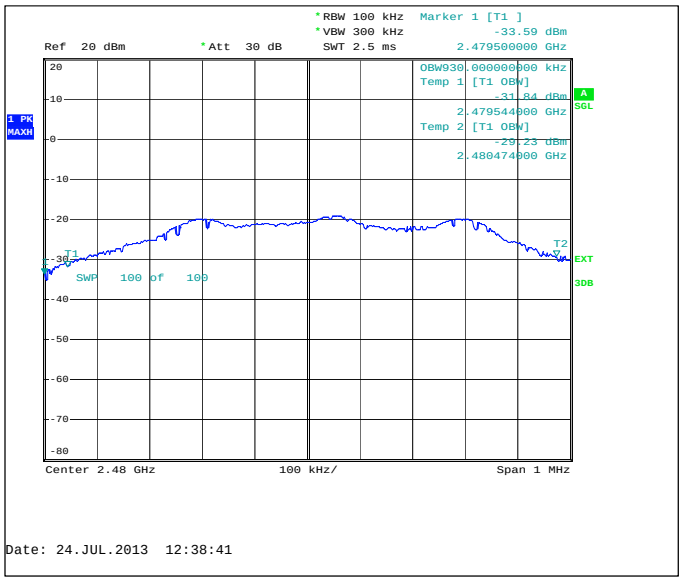


Channel 20 / 2442 MHz



TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

Channel 39 / 2480 MHz

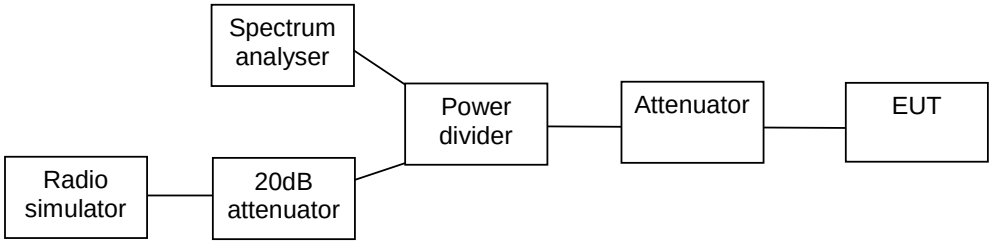


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

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

EUT with DUT number	RM-940, DUT 17563
Accessories with DUT numbers	AC-60E, DUT 17584; CA-190CD, DUT 17585; WH-208, DUT 17586
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 44 / 101
Date of measurements	18-Jul-2013
Measured by	Tomi Lipponen

6.1. Test Setup



6.2. 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 Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

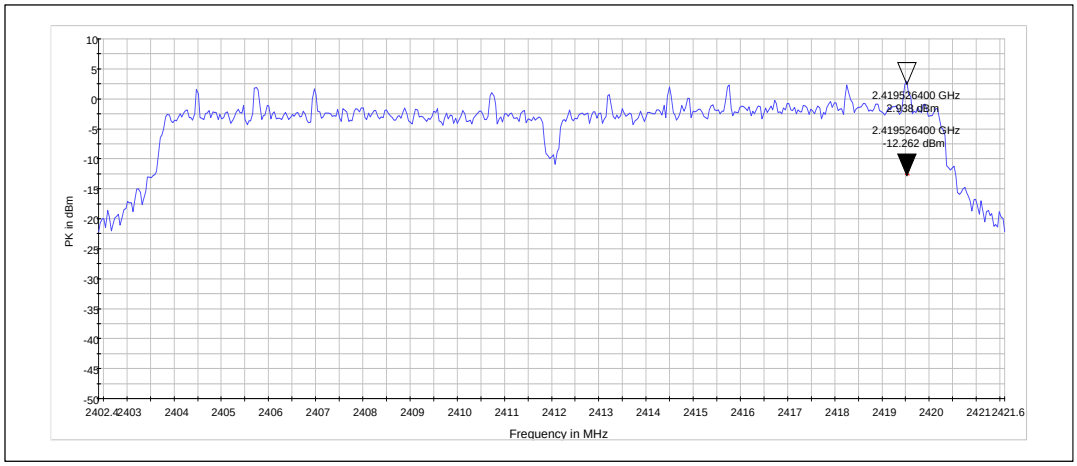
6.3. WLAN Test results

6.3.1 802.11g mode, BPSK modulation, 6 Mbps data rate

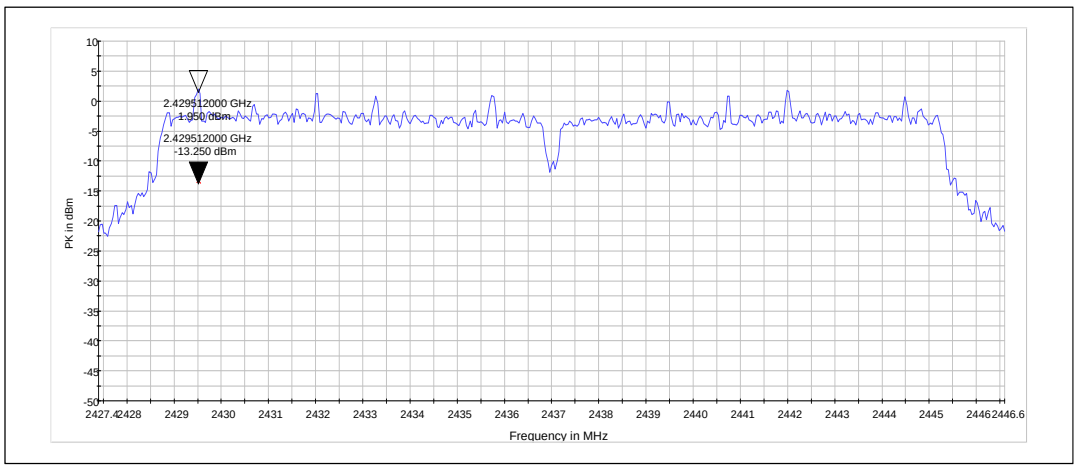
Peak (RBW: 100 kHz, VBW: 300 kHz, Max hold)

Channel / f_C [MHz]	P [dBm]	Result
1 / 2412	-12.26	PASSED
6 / 2437	-13.25	PASSED
11 / 2462	-13.55	PASSED

Channel 1 / 2412 MHz

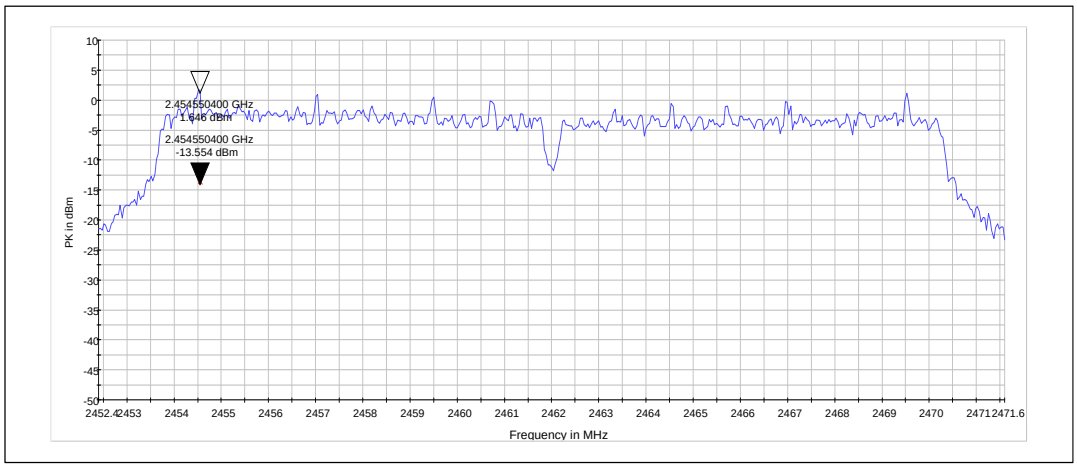


Channel 6 / 2437 MHz



TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

Channel 11 / 2462 MHz

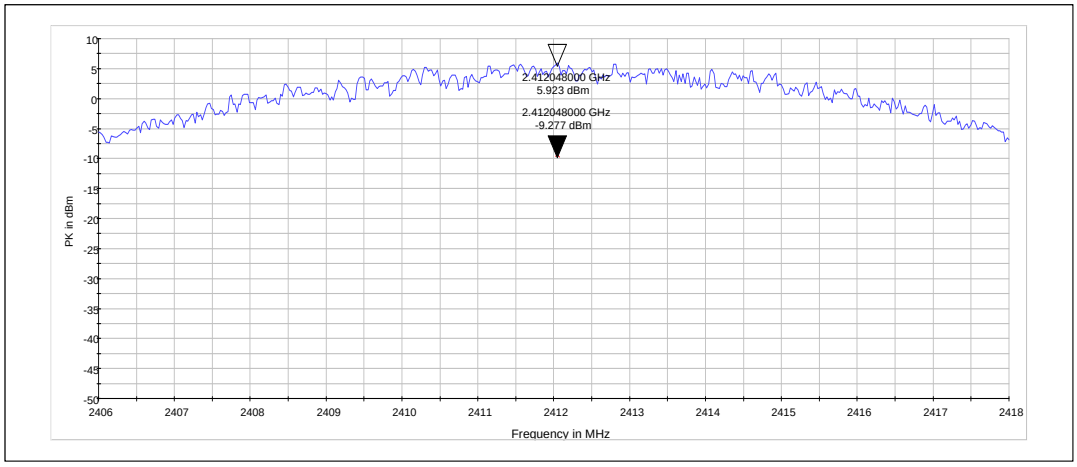


6.3.2 802.11b mode, QPSK modulation, 11 Mbps data rate

Peak (RBW: 100 kHz, VBW: 300 kHz, Max hold)

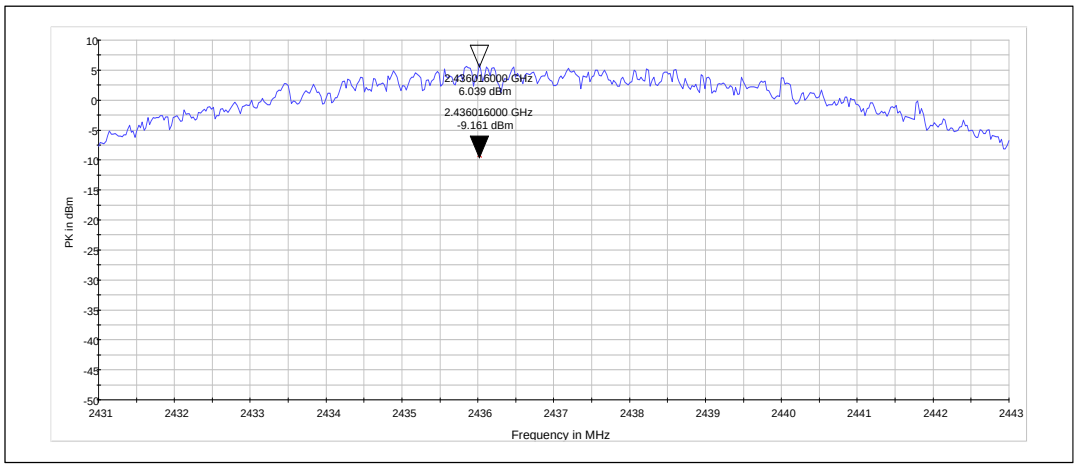
Channel / f_C [MHz]	P [dBm]	Result
1 / 2412	-9.28	PASSED
6 / 2437	-9.16	PASSED
11 / 2462	-8.97	PASSED

Channel 1 / 2412 MHz

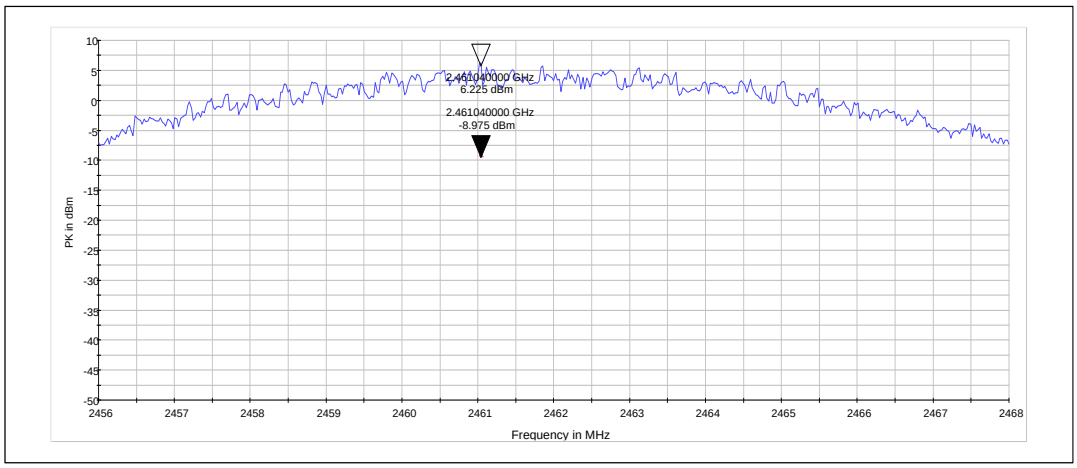


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

Channel 6 / 2437 MHz



Channel 11 / 2462 MHz



TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

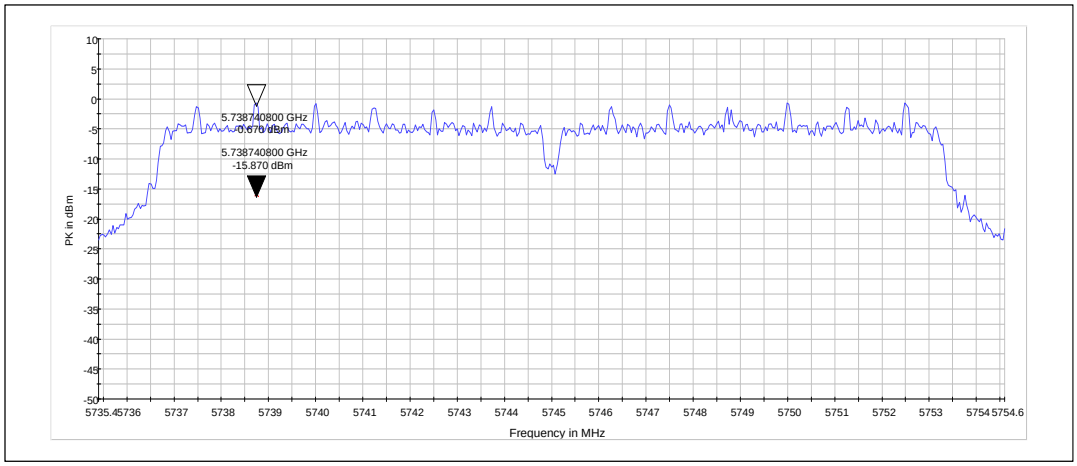
6.4. 5 GHz RLAN Test results

6.4.1 802.11a mode, BPSK modulation, 6 Mbps data rate

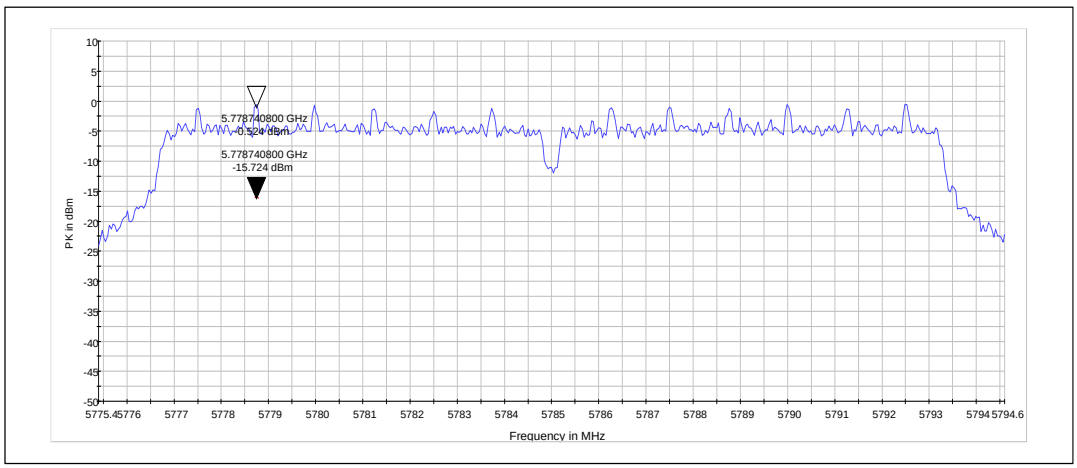
Peak (RBW: 100 kHz, VBW: 300 kHz, Max hold)

Channel / f_C [MHz]	P [dBm]	Result
149 / 5745	-15.87	PASSED
157 / 5785	-15.72	PASSED
165 / 5825	-15.68	PASSED

Channel 149 / 5745MHz

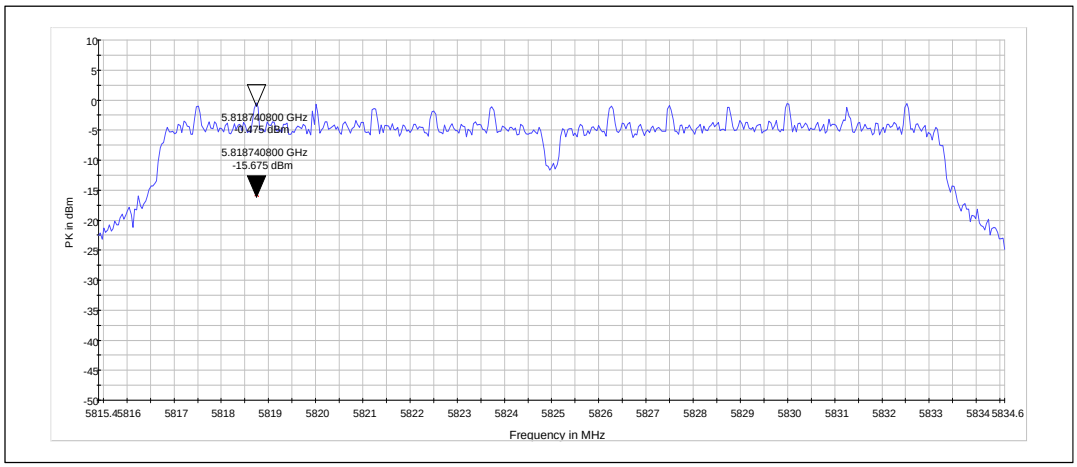


Channel 157 / 5785MHz



TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

Channel 165 / 5825MHz

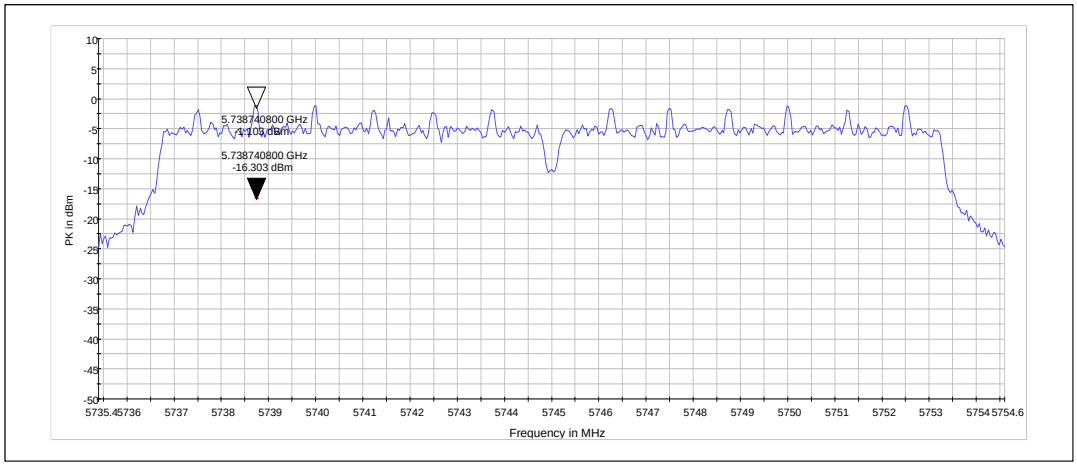


6.4.2 802.11a mode, QPSK modulation, 18 Mbps data rate

Peak (RBW: 100 kHz, VBW: 300 kHz, Max hold)

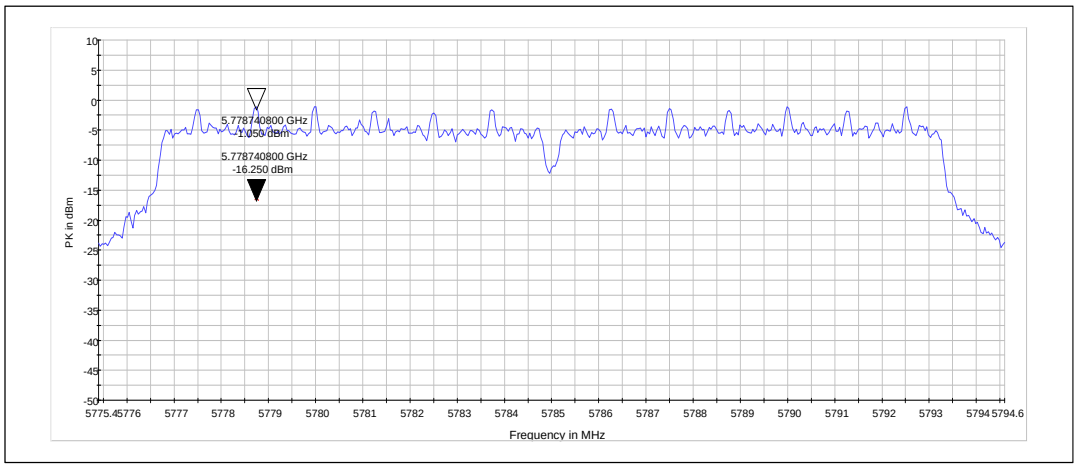
Channel / f_C [MHz]	P [dBm]	Result
149 / 5745	-16.3	PASSED
157 / 5785	-16.25	PASSED
165 / 5825	-16.16	PASSED

Channel 149 / 5745MHz

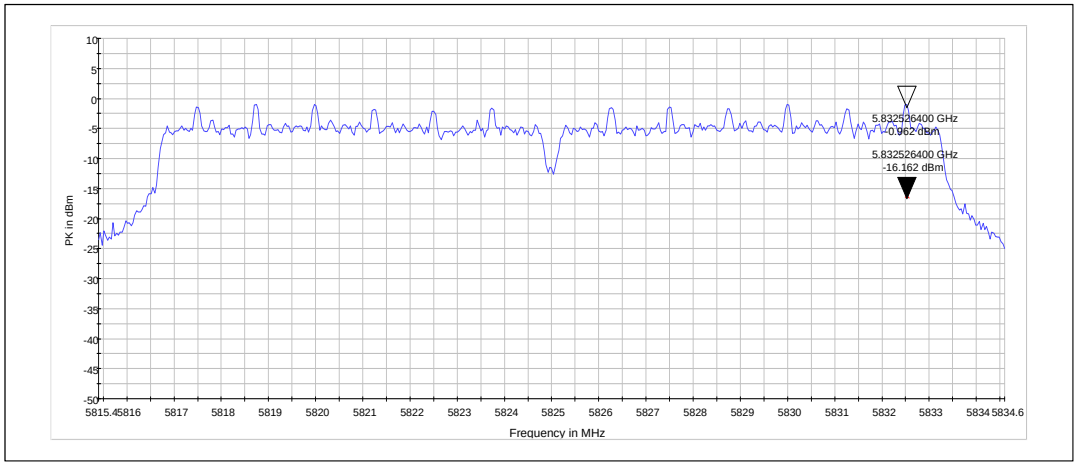


TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

Channel 157 / 5785MHz



Channel 165 / 5825MHz



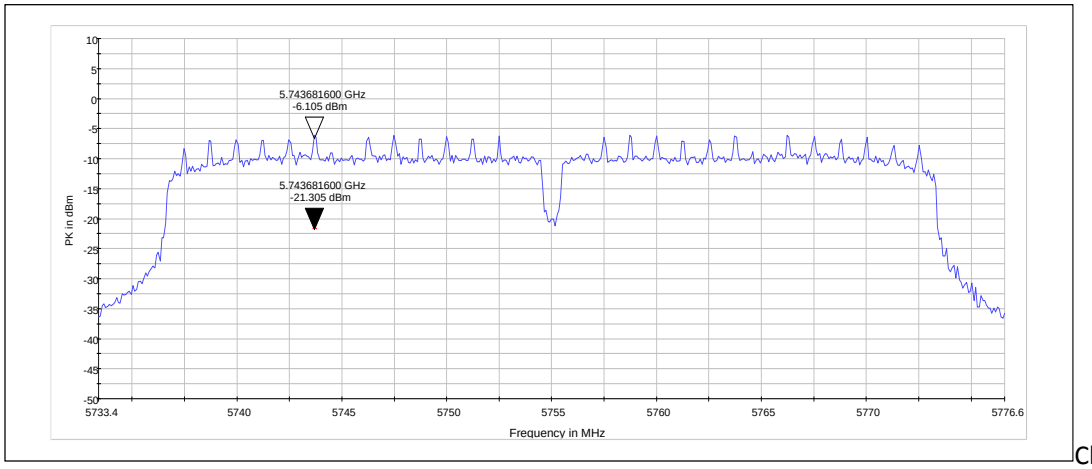
TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

6.4.3 802.11n mode, BPSK modulation, 13.5 / 15.0 Mbps data rate

Peak (RBW: 100 kHz, VBW: 300 kHz, Max hold)

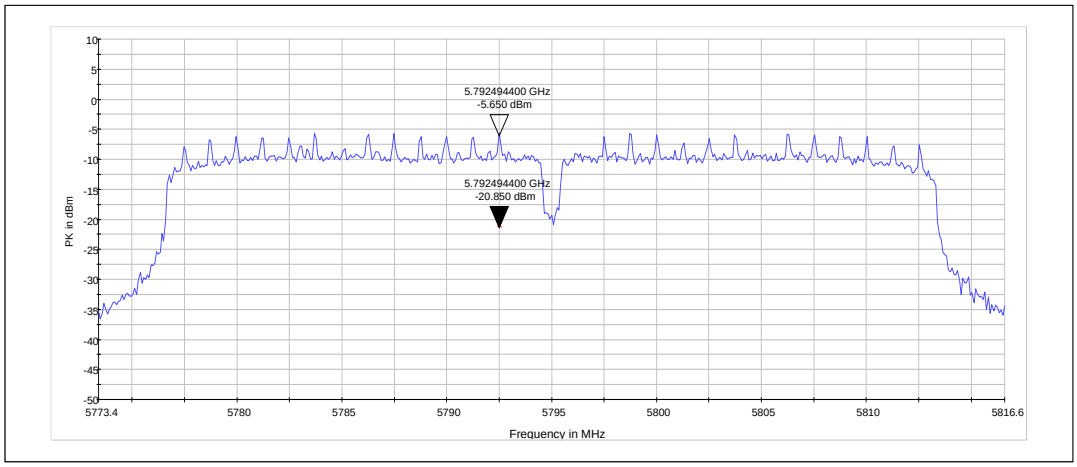
Channel / f_C [MHz]	P [dBm]	Result
149+153 / 5755	-21.3	PASSED
157+161 / 5795	-20.85	PASSED

Channel 149+153 / 5755MHz



Channel

157+161 / 5795MHz



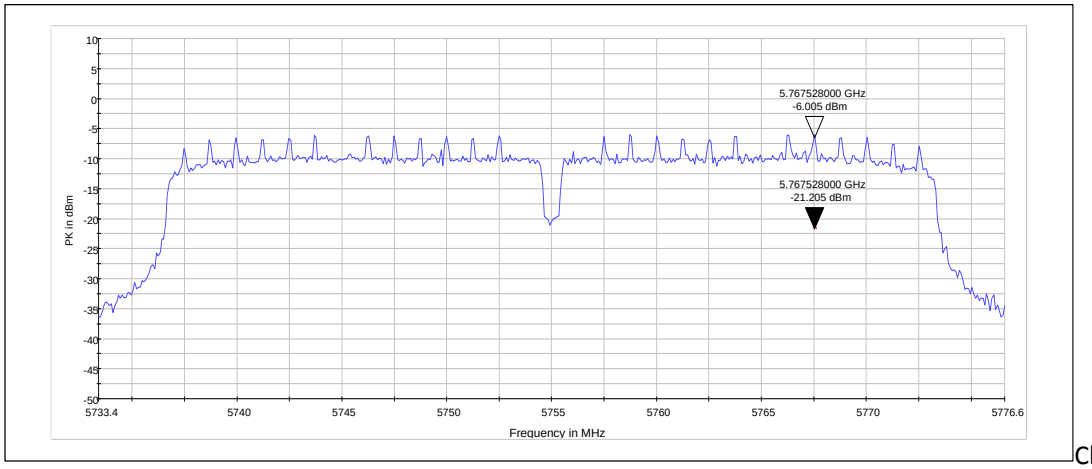
TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

6.4.4 802.11n mode, QPSK modulation, 27.0 / 30.0 Mbps data rate

Peak (RBW: 100 kHz, VBW: 300 kHz, Max hold)

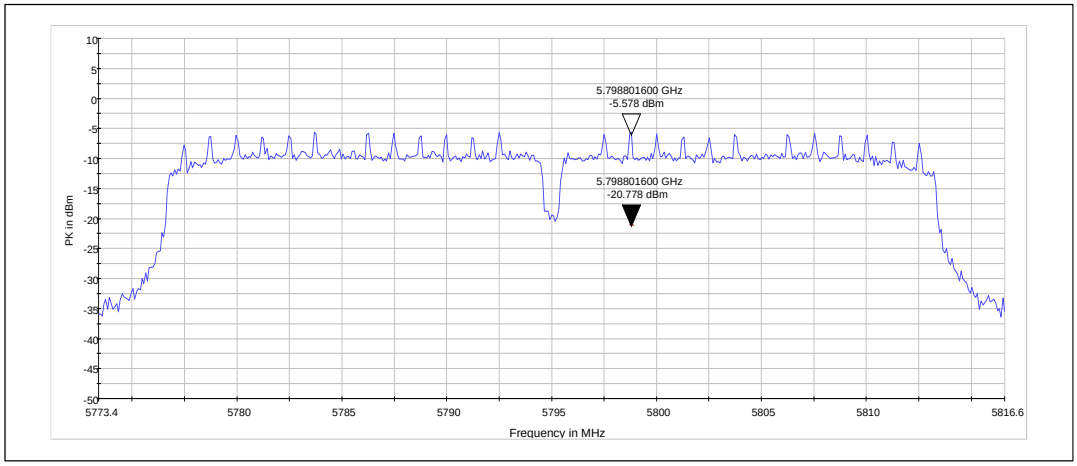
Channel / f_C [MHz]	P [dBm]	Result
149+153 / 5755	-21.2	PASSED
157+161 / 5795	-20.78	PASSED

Channel 149+153 / 5755MHz



Channel

157+161 / 5795MHz



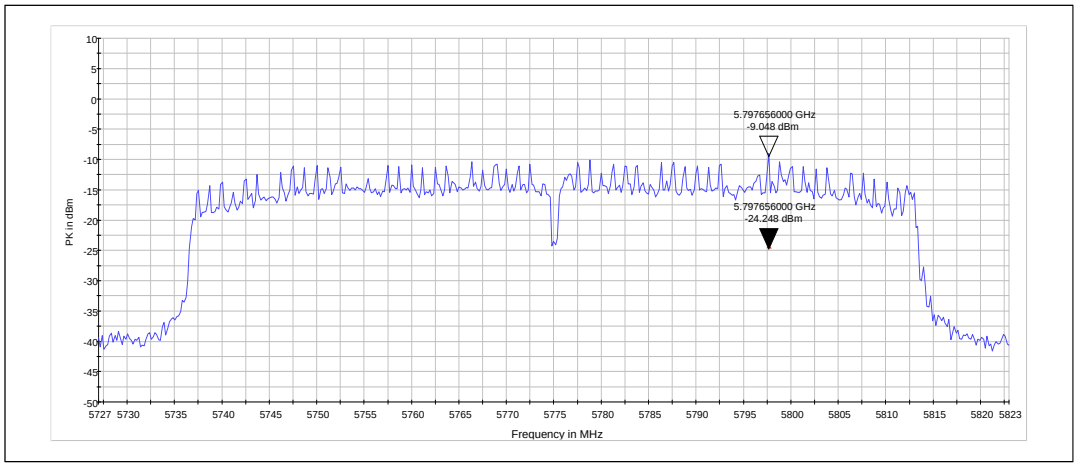
TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

6.4.5 802.11ac mode, BPSK modulation, 29.3 / 32.5 Mbps data rate

Peak (RBW: 100 kHz, VBW: 300 kHz, Max hold)

Channel / f_C [MHz]	P [dBm]	Result
149-161 / 5775	-24.25	PASSED

Channel 149-161 / 5775MHz

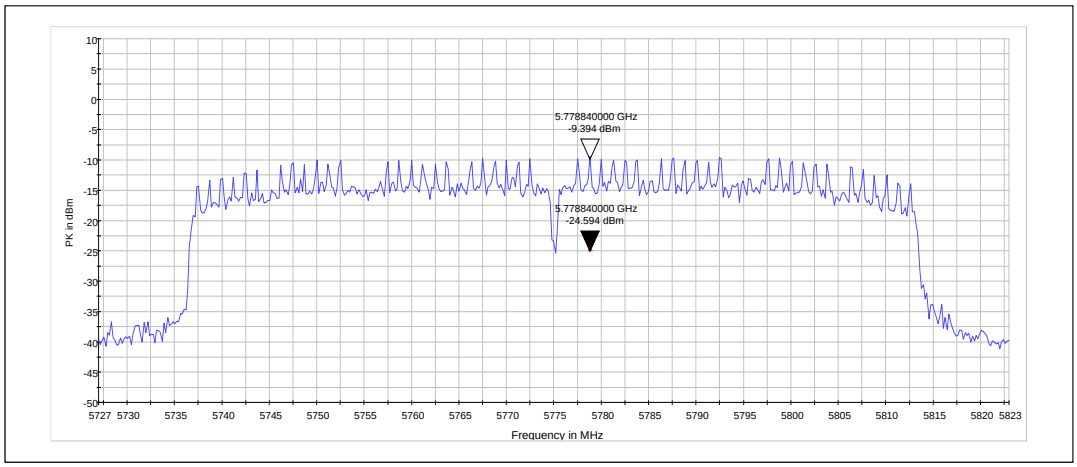


6.4.6 802.11ac mode, QPSK modulation, 87.8 / 97.5 Mbps data rate

Peak (RBW: 100 kHz, VBW: 300 kHz, Max hold)

Channel / f_C [MHz]	P [dBm]	Result
149-161 / 5775	-24.59	PASSED

Channel 149-161 / 5775MHz



TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

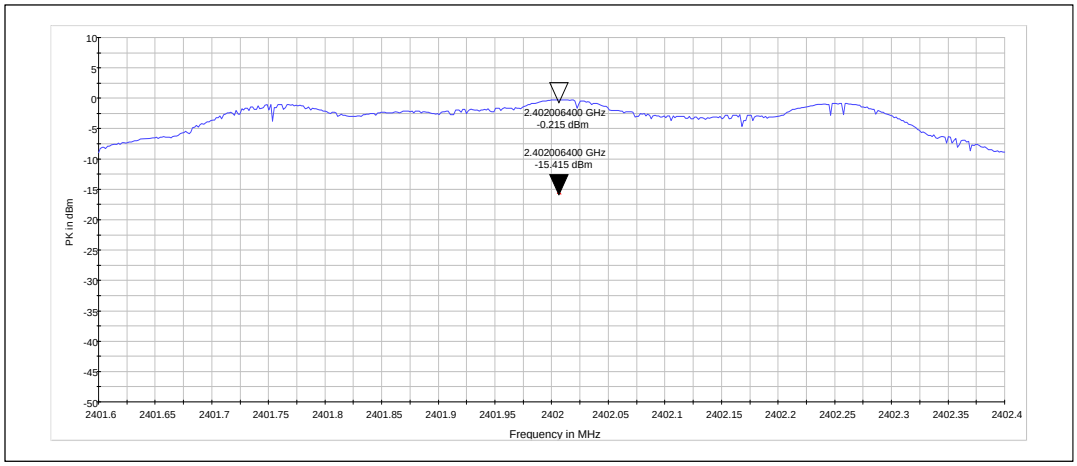
6.5. Bluetooth Low Energy Test results

6.5.1 BTLE modulation, PRBS packet type

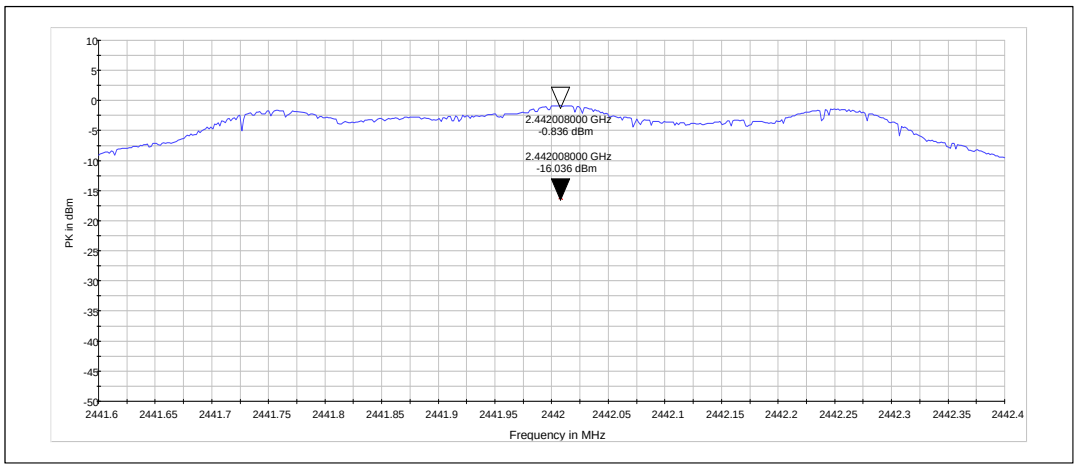
Peak (RBW: 100 kHz, VBW: 300 kHz, Max hold)

Channel / f_C [MHz]	P [dBm]	Result
0 / 2402	-15.41	PASSED
20 / 2442	-16.04	PASSED
39 / 2480	-17.43	PASSED

Channel 0 / 2402 MHz

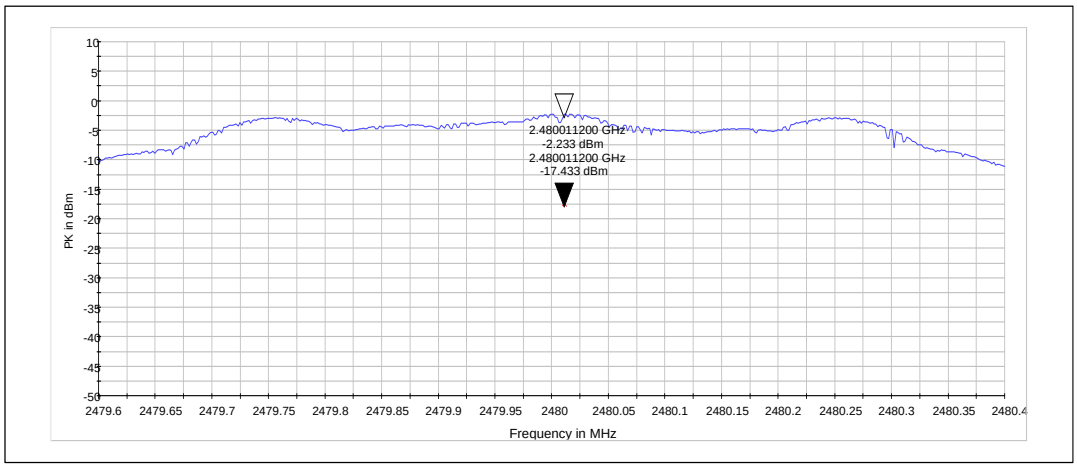


Channel 20 / 2442 MHz



TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

Channel 39 / 2480 MHz



TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

7. Test Equipment

7.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
1759	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
1916	Communication Tester	CMTA84	R&S	15B
1992	Signal Generator	83630B	Agilent	15C, 15B
1999	Receiver	ESIB26	R&S	22/24/27, 15C, 15B
2039	Power Supply	PL330QMD	Thurlby	15C, 15B
2059	V-network	ESH3-Z6	R&S	-
2097	Pulse Limiter	ESH3-Z2	R&S	15C, 15B
2156	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2180	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2206	Signal Generator	SMX	R&S	15C, 15B
2347	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2352	Spectrum Analyzer	FSP-30	R&S	22/24/27, 15C
2359	Temperature Test Chamber	VT4002	Vötsch	22/24/27
2388	Bluetooth Tester	CBT	R&S	15B
2389	Signal Generator	SMJ 100A	R&S	15B
2390	Directional Coupler	DC2600	AR	-
6009	GPS Antenna	SA-700	Chronos	15C
6010	GPS Network amplifier	NLA20FPDC	GPS Networking, Inc	15C
6011	GPS signal Splitter	LDCBS1x4	GPS Networking, Inc	15C
6012	CDN	CDN USB/c	Teseq	-
6015	Receiver	ESI	R&S	22/24, 15C, 15B
6036	Data Logger	175-H2	Testo	22/24/27, 15C, 15B
6038	Data Logger	Testo 580	Testo	22/24/27, 15C, 15B
6039	USB Interface	5541765	Testo	22/24/27, 15C, 15B
6044	V-network	ESH3-Z6	R&S	-
6045	Power splitter	11667B	Agilent	22/24/27, 15C
6046	Attenuator 10dB	8493C	Agilent	22/24/27, 15C
6047	Attenuator 20dB	8493C	Agilent	22/24/27, 15C
6094	Communication Tester	CMW500	R&S	22/24/27, 15C, 15B
6096	EMC Analyzer	E7405A	HP	-
6098	Signal Generator	8648C	Agilent	-
6103	Bluetooth tester	CBT	R&S	15B
6113	Signal Generator	SMF100A	R&S	22/24/27, 15C 15B
6120	Thermal Chamber	WT 20/40	Weiss	22/24/27, 15C 15B
6121	Power Splitter	HP11667B	Agilent	22/24/27, 15C 15B
6122	Power Splitter	HP11667B	Agilent	22/24/27, 15C 15B
6134	Attenuator 10dB	BW-S10-2W263+	Mini-Circuits	22/24/27, 15C
6136	Attenuator 20dB	BW-S20-2W263+	Mini-Circuits	22/24/27, 15C
10479	Communication Tester	CMW500	R&S	22/24/27, 15C, 15B
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	15C, 15B
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	15C, 15B

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220

7.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
1917	Communication Tester	CMTA84	R&S	15B
1984	Antenna	BBHA 9120 D	Schwarzbeck	22/24/27, 15C, 15B
2009	Signal Generator	SMP 22	R&S	22/24/27, 15C, 15B
2027	CDN	M2 (modified) DC1	MEB	22/24/27, 15C, 15B
2028	CDN	M3 (modified) DC2	MEB	22/24/27, 15C, 15B
2029	Power Supply	PL330	Thurlby	22/24/27, 15C
2043	Band Reject Filter	WRCA824/849-0,2-6SS	Wainwright	22
2135	CDN	CDN 801-M3	Lüthi	22/24/27, 15C, 15B
2140	Antenna	EMCO93110B	EMCO	22/24/27, 15C
2142	Antenna	3146	EMCO	22/24/27, 15C
2156	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2176	CDN	CDN 801-M3	Lüthi	22/24/27, 15C, 15B
2180	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2347	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2353	Receiver	ESIB26	R&S	22/24/27, 15C, 15B
2357	Band Reject Filter	WRCG2400/2483-2390/2493-35/10SS	Wainwright	15C
2361	Anechoic Chamber	3 m Semi / Full Anechoic Chamber	Euroshield	22/24/27, 15C, 15B
2364	Band Reject Filter	WRCG1877/1883 - 1870/1890-40/6SS	Wainwright	24
2384	Band Reject Filter	WRCG832/838-825/845-40/5SS	Wainwright	22
2388	Bluetooth Tester	CBT	R&S	15B
2389	Signal Generator	SMJ 100A	R&S	15B
2391	Band Reject Filter	WRCG1729.4/1735.4-1722.4/1742.4-40/6SS	Wainwright	27
6009	GPS Antenna	SA-700	Chronos	15C
6010	GPS Network amplifier	NLA20FPDC	GPS Networking, Inc	15C
6011	GPS signal Splitter	LDCBS1x4	GPS Networking, Inc	15C
6014	Substitute Calibration Cable	Sucoflex 104PB	Suhner	-
6017	Antenna	SBA 9113	Schwarzbeck	22 / 24 / 27
6037	Data Logger	175-H2	Testo	22/24/27, 15C, 15B
6038	Data Logger	Testo 580	Testo	22/24/27, 15C, 15B
6039	USB Interface	5541765	Testo	22/24/27, 15C, 15B
6087	Antenna	BBHA 9120D	Scharzbeck	22/24/27, 15C
6088	Antenna	VUBA 9117	Scharzbeck	22/24/27, 15C
6089	Antenna	HFH2-Z2	R&S	15C, 15B
6094	Communication Tester	CMW500	R&S	22/24/27, 15C, 15B
6103	Bluetooth tester	CBT	R&S	15B
6113	Signal Generator	SMF100A	R&S	22/24/27, 15C 15B
6115	Open switch and control unit	OSP 130	R&S	22/24/27, 15C 15B
6116	Open switch and control unit	OSP 150	R&S	22/24/27, 15C 15B
6130	Notch Filter	WRCD1880-1.1.25/50-10SS	Wainwright	22/24/27
6131	Notch Filter	WRCT902.4-0.4/40-8SS	Wainwright	-
6135	Notch Filter	WRCJV2531/2539-2523/2547-60/12SS	Wainwright	22/24/27
10479	Communication Tester	CMW500	R&S	22/24/27, 15C, 15B
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	15C, 15B
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	15C, 15B
-	RF immunity / Emission Software	EMC32	R&S	22/24/27, 15C, 15B

TCC Nokia Salo Laboratory
P.O.Box(86)
Joensuunkatu 7H / Kiila 1B
FIN-24101 SALO, FINLAND
Tel. +358 (0) 7180 08000
Fax. +358 (0) 7180 45220