

FCC Part 15C Compliance Test Report

Test Report no.:	FCC15C_RM-662_20	Date of Report:	09-Aug-2010
Number of pages:	34	Customer's Contact person:	Vivian Kill-Tollnek
Testing laboratory:	TCC Nokia Copenhagen Laboratory Frederikskaj 1790 COPENHAGEN V DENMARK Tel. +45 33 292929 Fax. +45 33 292934	Customer:	Nokia Corporation Lise Meitner Strasse 10 89081 ULM GERMANY Tel. +49 731 1754 0 Fax. +49 731 1754 6800
FCC listing no.:	99059		
IC recognition no.:	661AL-1		
Tested devices/ accessories:	Phone RM-662 / Battery BL-5CT / Charger AC-8 / Headset WH-102		
FCC ID:	PPIRM-662	IC:	661U-RM662
Supplement reports:			
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:			

Christian Andersen, System Specialist, EMC

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	11-Jun-2010
Testing completed	12-July-2010
The customer's contact person	Vivian Kill-Tollnek
Test Plan referred to	T:\Projects\RM-640\TestPlan\RS_testplan_RM-640_CR_HW0211.xls
Notes	None
Document name	FCC15C_RM-640_20.docx

1.1. EUT and Accessory Information

The EUT is a 4-band (GSM850/900/1800/1900) mobile phone with GPRS, EGPRS, Bluetooth and WLAN.
The EUT is tested with maximum rated TX power, modulated with pseudo random bit sequence (PRBS9).

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-640	004402/13/036326/4	0211	-	re 5.04	24206
Battery	BL-5CT	3820669492155081047;0670555	-	-	-	24263
AC-Charger	AC-8E	4090499301040501804;0675387	-	-	-	24250
Headset	WH-102	06943239431A4102160	-	-	-	24247
Phone	RM-640	004402/13/036325/6	0211	-	re 5.04	24209
Battery	BL-5CT	3820669492155081023;0670555	-	-	-	24256
AC-Charger	AC-8E	4090499301040501808;0675387	-	-	-	24255
Headset	WH-102	06943239431A4102158	-	-	-	24240

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	PASSED
15.247(d)	A8.5	Spurious RF conducted emissions	PASSED
15.247(d), 15.209	A8.5	Spurious radiated emissions	PASSED
15.207	7.2.2	AC powerline conducted emissions	NP
15.247(a)(2)	A8.2 (a)	6 dB bandwidth	NP
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.

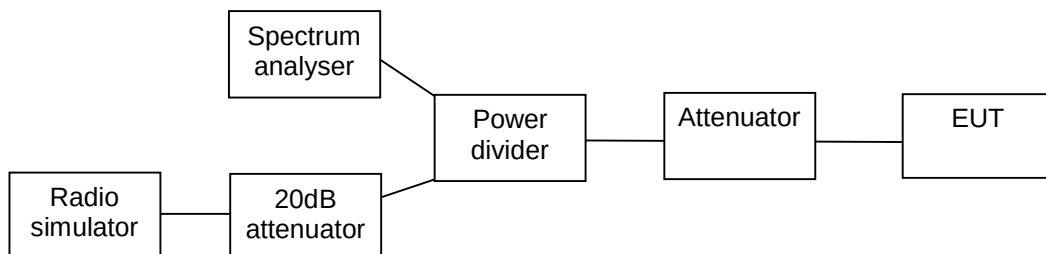
The test results of PPIRM-640 are re-used for certification of the PPIRM-662. The table above indicates the results, which will be re-used.

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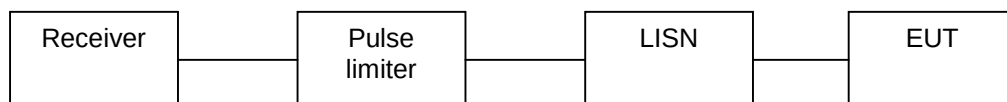
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2. Test setups

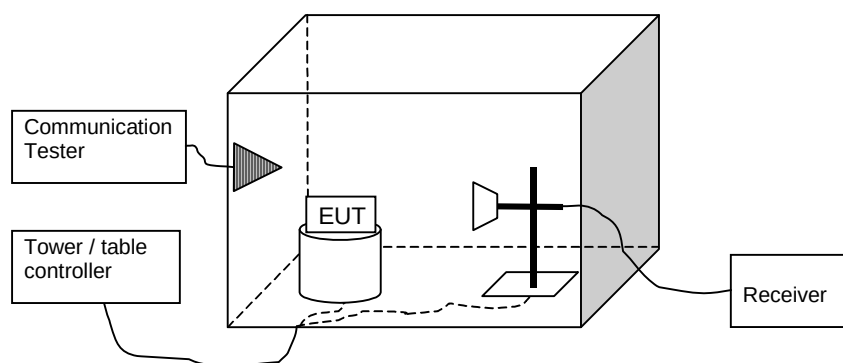
2.1. Conducted RF test setup



2.2. AC powerline conducted emissions test setup



2.3. Radiated test setup



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

EUT with DUT number	RM-640 DUT 24206
Accessories with DUT numbers	BL-5CT DUT 24263; AC-8 DUT 24250; WH-102 DUT 24247
Operation Voltage [V] / [Hz]	115 V / 60 Hz
Result	PASSED
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24 / 46 / 101.2
Date of measurements	8-July-2010
Measured by	Ruben Hansen

4.1. 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

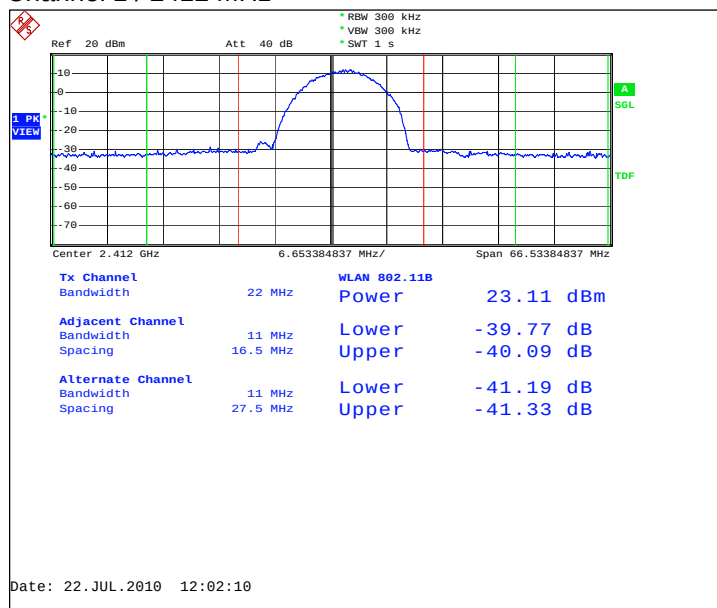
Frequency range [MHz]	Limit [W]	Limit [dBm]
2400 – 2483.5	≤ 1	≤ 30

4.2. WLAN Test results

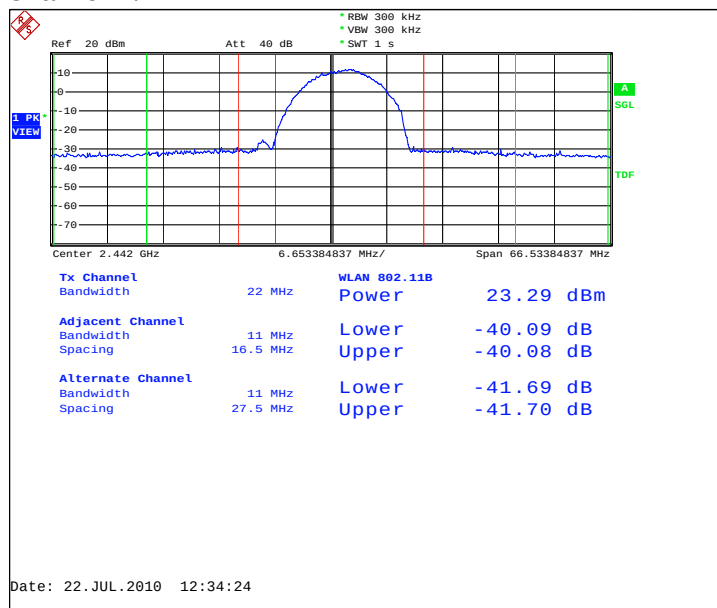
4.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [W]	Result
1 / 2412	23.11	0.205	PASSED
7 / 2442	23.29	0.213	PASSED
11 / 2462	22.60	0.182	PASSED

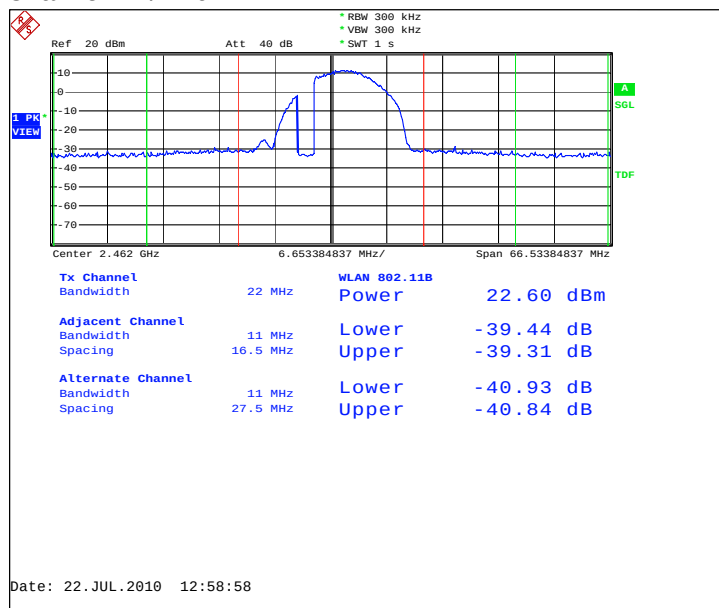
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



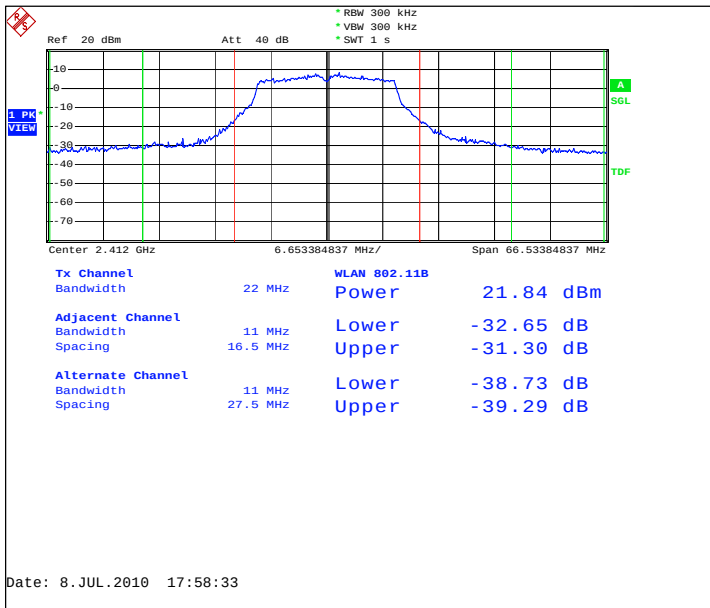
Channel 11 / 2462 MHz



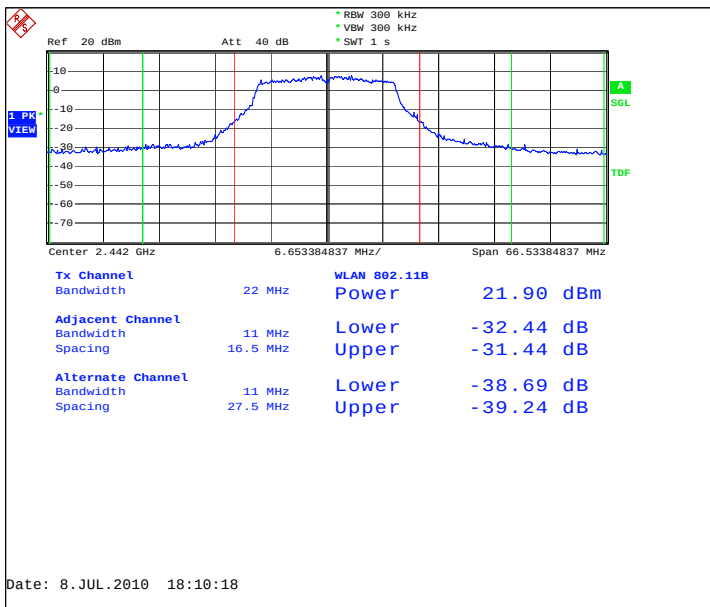
4.2.2 OFDM mode, BPSK modulation, 6 Mbps data rate

Channel / f_c [MHz]	P [dBm]	P [W]	Result
1 / 2412	21.84	0.153	PASSED
7 / 2442	21.90	0.155	PASSED
11 / 2462	21.97	0.157	PASSED

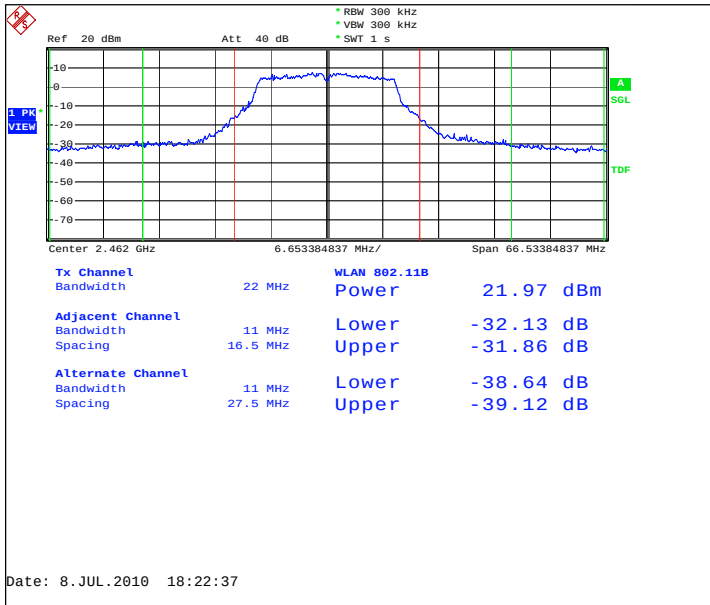
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



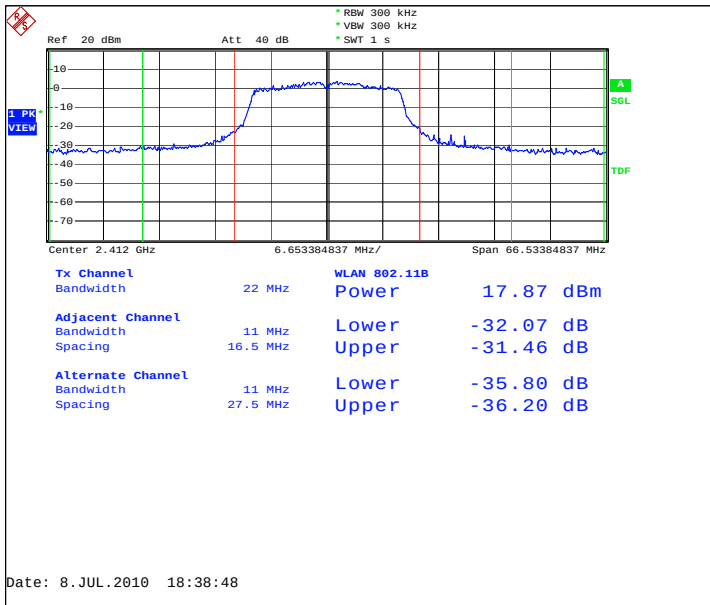
Channel 11 / 2462 MHz



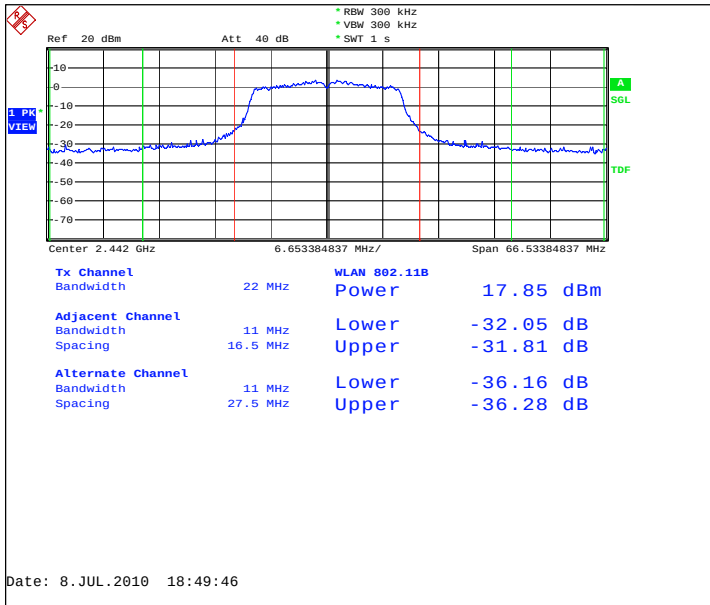
4.2.3 802.11n, MCS 0

Channel / f _c [MHz]	P [dBm]	P [W]	Result
1 / 2412	17.87	0.061	PASSED
7 / 2442	17.85	0.061	PASSED
11 / 2462	17.91	0.062	PASSED

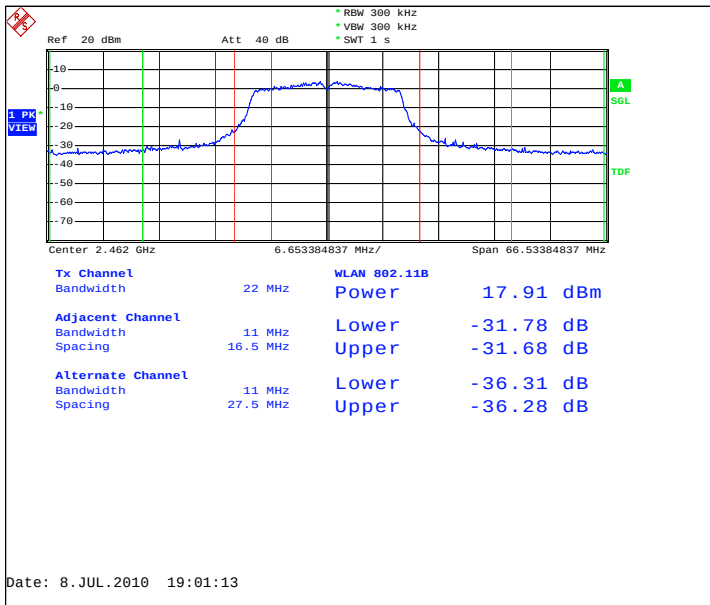
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



Channel 11 / 2462 MHz



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

EUT with DUT number	RM-640, DUT 24209
Accessories with DUT numbers	BL-5CT, DUT 24256; AC-8 DUT 24255; WH-102 DUT 24240
Operation Voltage [V] / [Hz]	115 V / 60 Hz
Result	PASSED
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 45 / 101.2
Date of measurements	07-Jul-2010
Measured by	Ruben Hansen

5.1. Test method and limit

The measurement is made according to DTS procedures KDB 558074 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

5.2. WLAN Test results

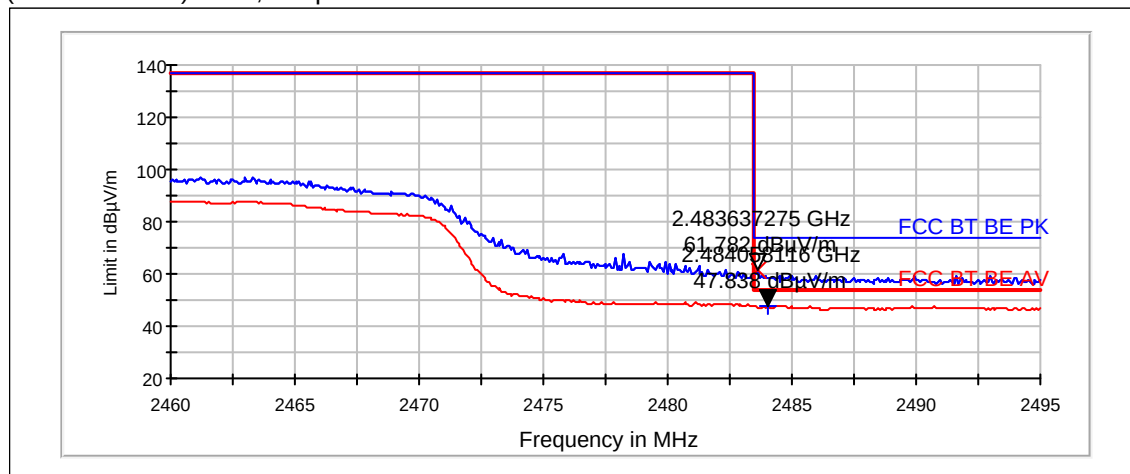
Average (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
11 / 2462 (802.11n MCS 0)	47.84	PASSED
1 / 2412 (802.11n MCS 0)	45.55	PASSED
1 / 2412 (DSSS)	45.52	PASSED
1 / 2412 (OFDM)	45.5	PASSED
11 / 2462 (OFDM)	48.43	PASSED
11 / 2462 (DSSS)	47.82	PASSED

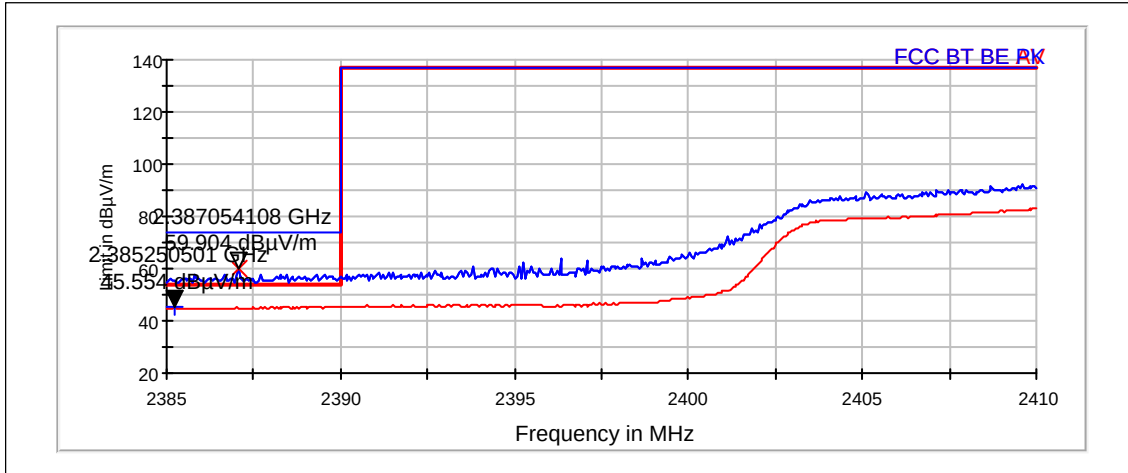
Peak (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
11 / 2462 (802.11n MCS 0)	61.78	PASSED
1 / 2412 (802.11n MCS 0)	59.9	PASSED
1 / 2412 (DSSS)	57.54	PASSED
1 / 2412 (OFDM)	57.28	PASSED
11 / 2462 (OFDM)	61.31	PASSED
11 / 2462 (DSSS)	60.64	PASSED

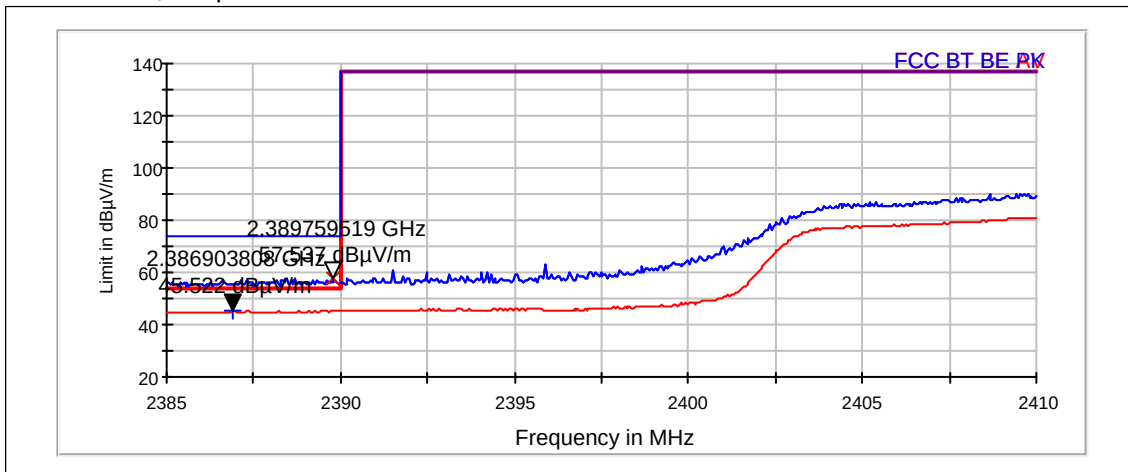
(802.11n MCS 0) mode, Mbps data rate. Channel 11 / 2462 MHz



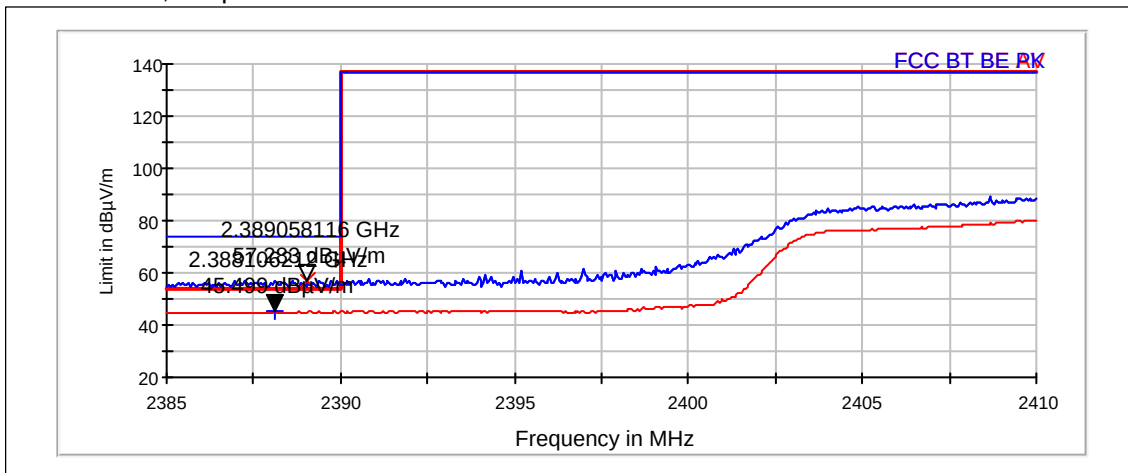
(802.11n MCS 0) mode, Mbps data rate. Channel 1 / 2412 MHz



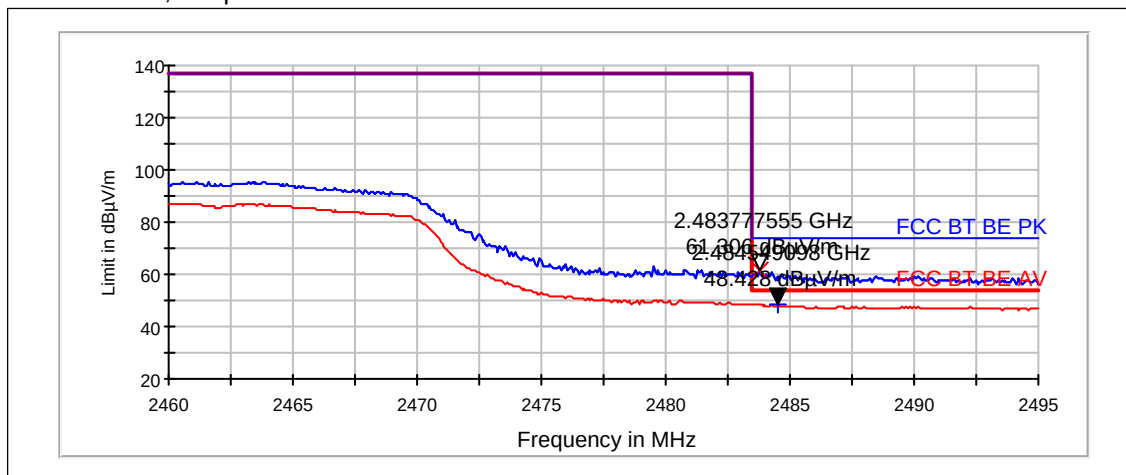
DSSS mode, Mbps data rate. Channel 1 / 2412 MHz



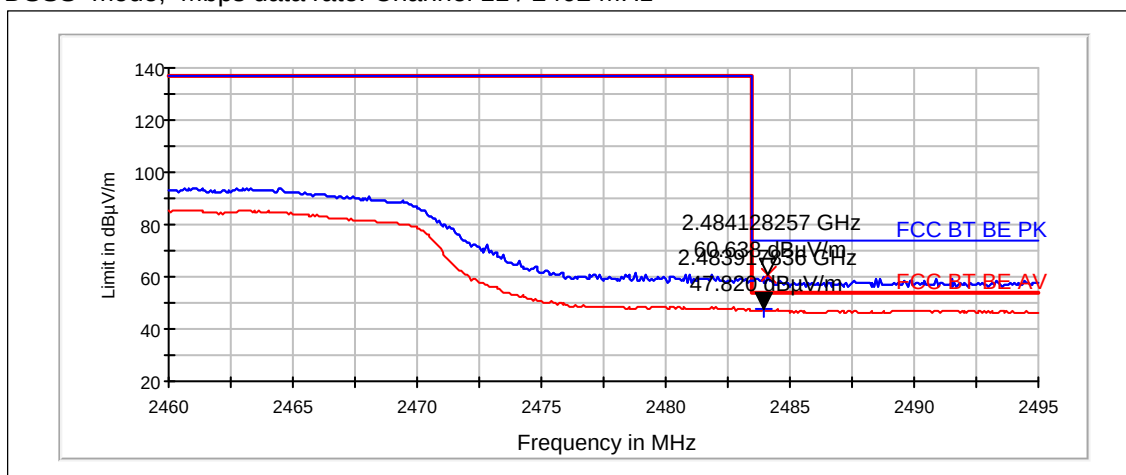
OFDM mode, Mbps data rate. Channel 1 / 2412 MHz



OFDM mode, Mbps data rate. Channel 11 / 2462 MHz



DSSS mode, Mbps data rate. Channel 11 / 2462 MHz



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

EUT with DUT number	RM-640 DUT 24206
Accessories with DUT numbers	BL-5CT DUT 24263; AC-8 DUT 24250; WH-102 DUT 24247
Operation Voltage [V] / [Hz]	115 V / 60 Hz
Result	PASSED
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24 / 46 / 101.2
Date of measurements	8-July-2010
Measured by	Ruben Hansen

6.1. Test method and limit

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

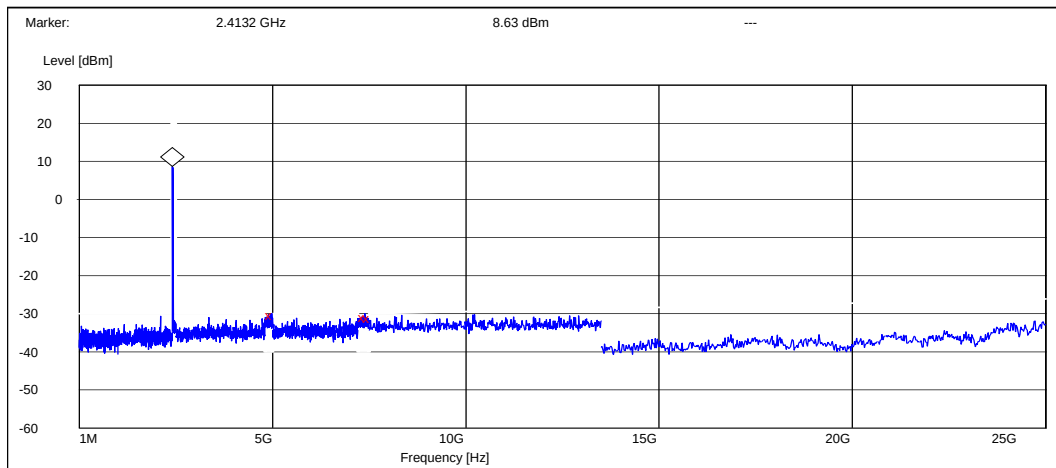
Limits for spurious RF conducted emissions measurements

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

6.2. WLAN Test results

6.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

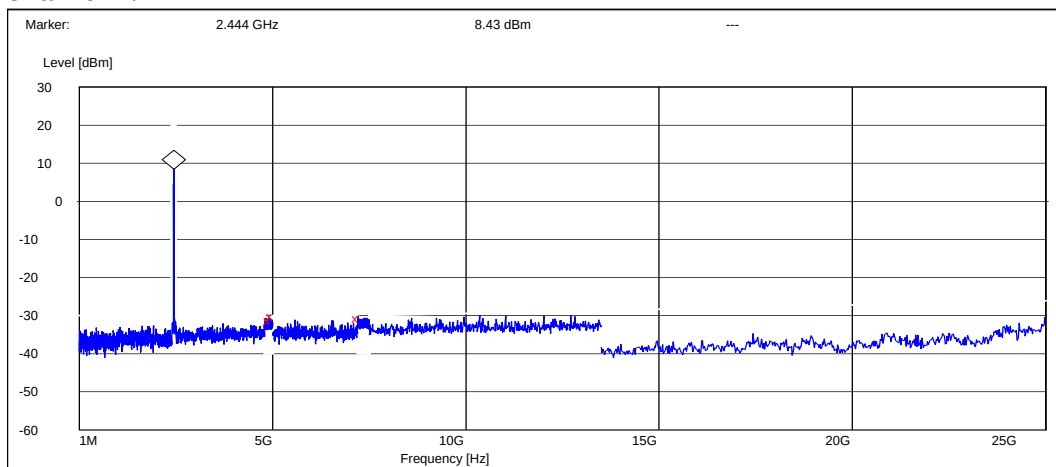
Channel 1 / 2412 MHz



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

Frequency [MHz]	P [dBc]	Result
4972.000000	-39.028906	PASSED
7384.200000	-39.428906	PASSED
7500.000000	-39.728906	PASSED

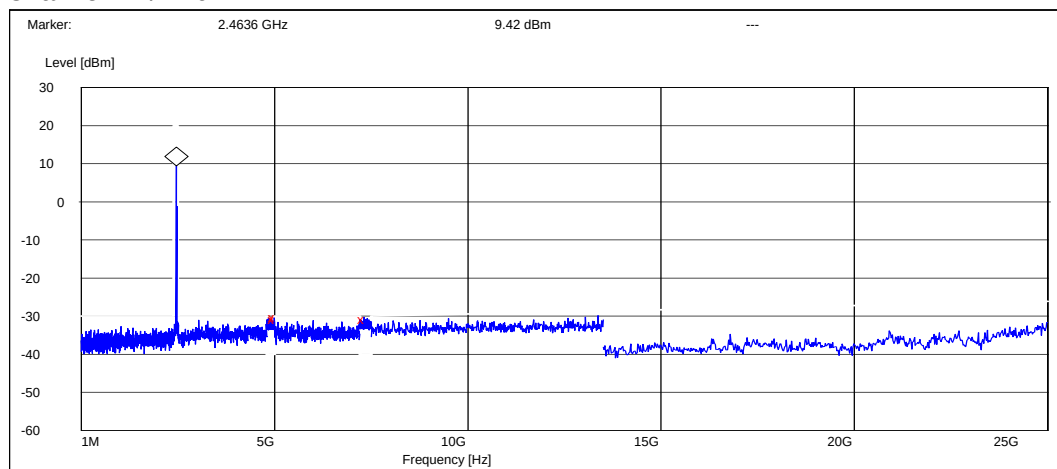
Channel 7 / 2442 MHz



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

Frequency [MHz]	P [dBc]	Result
4931.200000	-39.526025	PASSED
5000.000000	-38.526025	PASSED
7221.600000	-39.126025	PASSED

Channel 11 / 2462 MHz

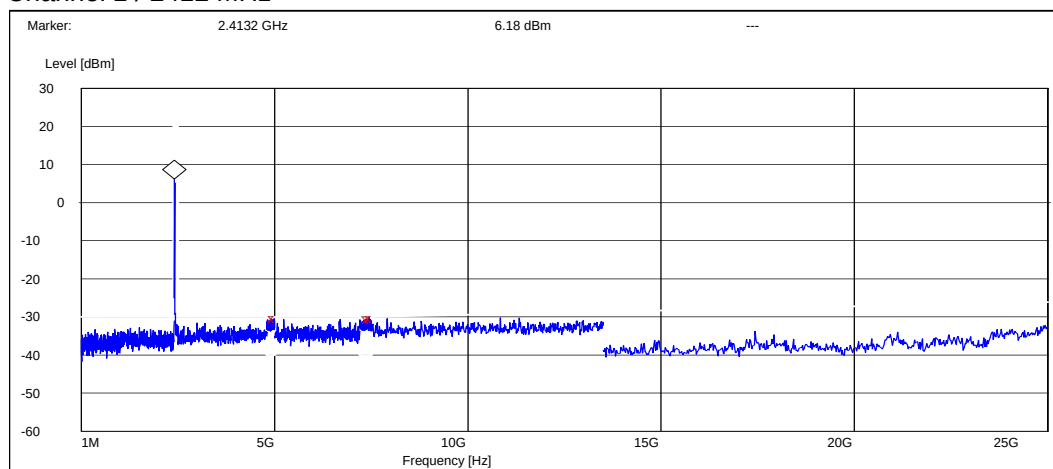


Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4996.000000	-40.120845	PASSED
5000.000000	-39.620845	PASSED
7309.200000	-40.320845	PASSED

6.2.2 OFDM mode, BPSK modulation, 6 Mbps data rate

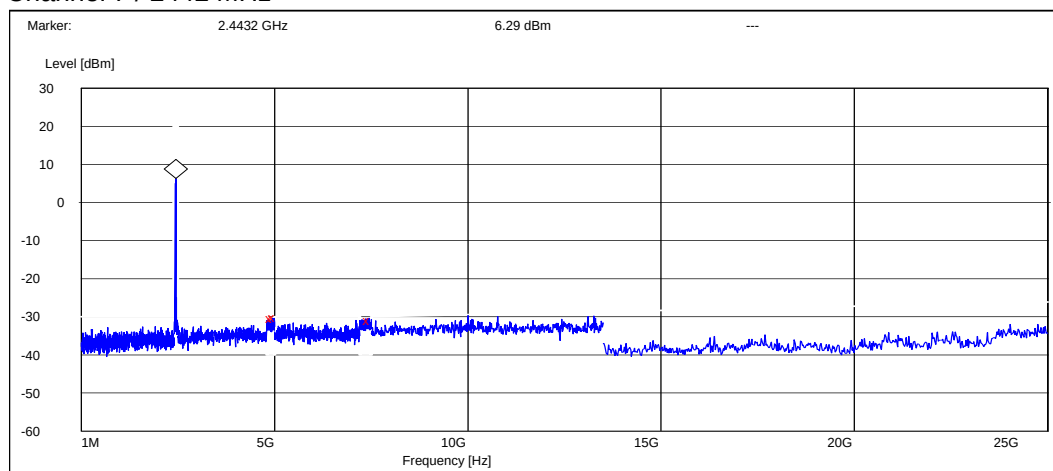
Channel 1 / 2412 MHz



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

Frequency [MHz]	P [dBc]	Result
4986.800000	-36.481419	PASSED
7441.800000	-36.781419	PASSED
7500.000000	-36.581419	PASSED

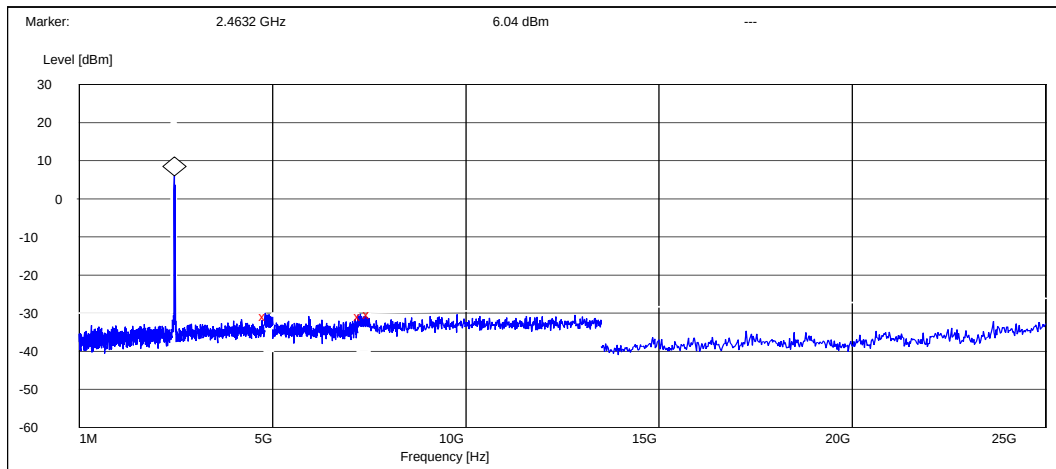
Channel 7 / 2442 MHz



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

Frequency [MHz]	P [dBc]	Result
4930.400000	-36.694907	PASSED
5000.000000	-36.594907	PASSED
7444.200000	-37.094907	PASSED

Channel 11 / 2462 MHz

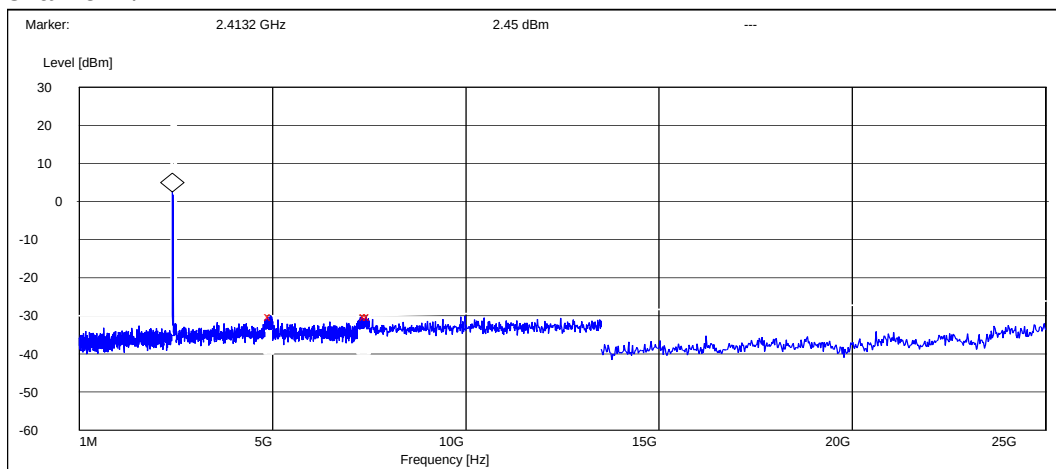


Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4818.000000	-36.837064	PASSED
7266.000000	-36.937064	PASSED
7500.000000	-36.237064	PASSED

6.2.3 802.11n, MCS 0

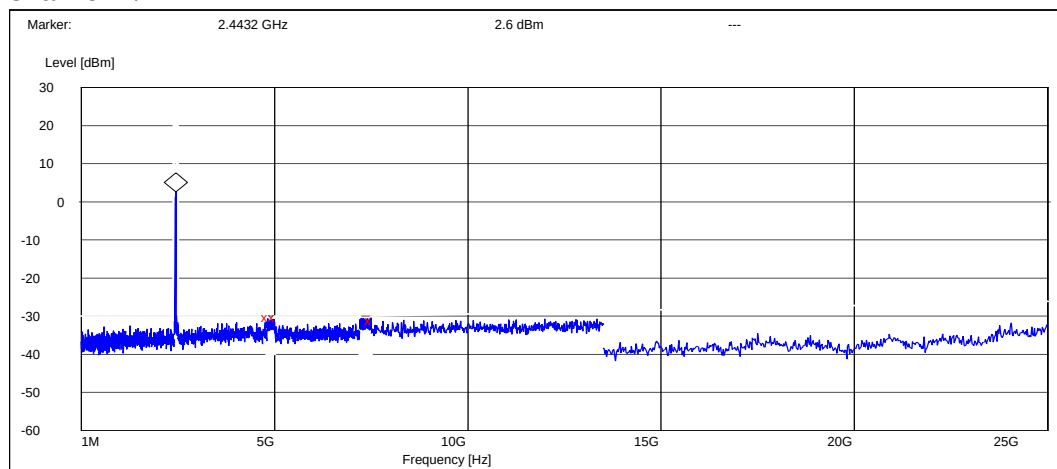
Channel 1 / 2412 MHz



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

Frequency [MHz]	P [dBc]	Result
4950.400000	-32.653979	PASSED
7417.200000	-32.653979	PASSED
7500.000000	-32.653979	PASSED

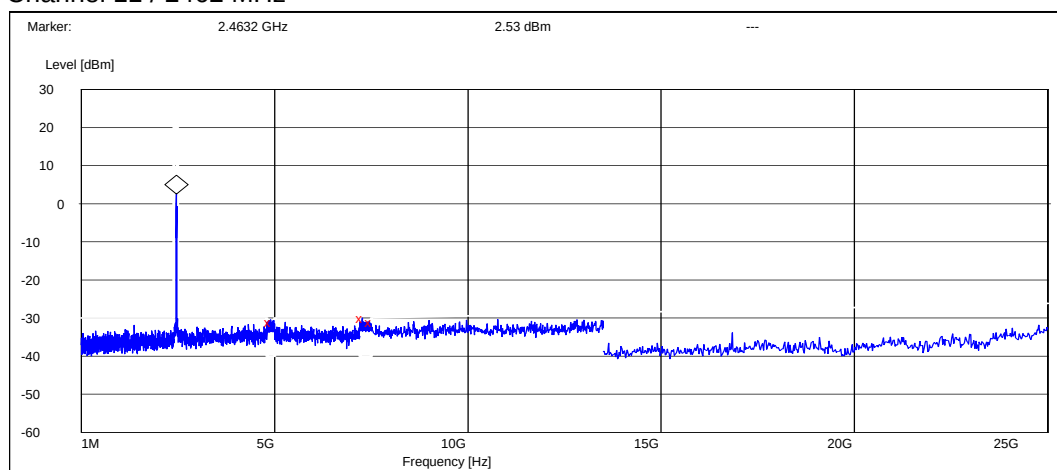
Channel 7 / 2442 MHz



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

Frequency [MHz]	P [dBc]	Result
4821.200000	-32.797603	PASSED
5000.000000	-32.997603	PASSED
7493.400000	-33.697603	PASSED

Channel 11 / 2462 MHz



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

Frequency [MHz]	P [dBc]	Result
4895.200000	-33.629900	PASSED
7266.000000	-32.529900	PASSED
7500.000000	-33.729900	PASSED

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

EUT with DUT number	RM-640, DUT 24209
Accessories with DUT numbers	BL-5CT, DUT 24256; AC-8 DUT 24255; WH-102 DUT 24240
Operation Voltage [V] / [Hz]	115 V / 60 Hz
Result	PASSED
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 45 / 101.3
Date of measurements	07-Jul-2010
Measured by	Ruben Hansen

8.1. Test method and limit

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

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with absorbers on the floor and measuring antenna at fixed height using 2-axis EUT position system.

The Final Measurement is performed in the Semi-Anechoic Chamber with conducting metal floor, if the Preliminary Measurement results are closer than 20 dB to the permissible value.

The EUT is placed at nonconductive plate at the turntable center.

For each suspected frequency, the turntable is rotated 360 degrees and antenna is scanned from 1 to 4 m. This is repeated for both horizontal and vertical receive antenna polarizations.

The emissions less than 20 dB below the permissible value are reported.

The measurement results are obtained as described below:

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

Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable loss, antenna factor and preamplifier gain ($A_{TOT} = L_{CABLES} + AF - G_{PREAMP}$).

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

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

8.2. WLAN Test results

8.2.1 802.11n mode

Channel 1 / 2412 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
4824.2	27.94	24.943	26.4	1.54	VERTICAL	PASSED
7236.6	34.32	52.024	24.42	9.9	HORIZONTAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
4824.2	41.64	120.795	40.1	1.54	VERTICAL	PASSED
7236.6	47.19	228.718	37.29	9.9	HORIZONTAL	PASSED

Channel 7 / 2442 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
1320.842	22.56	13.432	30.43	-7.87	VERTICAL	PASSED
2361.145	38.36	82.766	38.85	-0.49	VERTICAL	PASSED
3907.816	24.9	17.575	25.98	-1.08	VERTICAL	PASSED
3938.774	24.9	17.583	25.92	-1.02	VERTICAL	PASSED

Quasi peak (RBW: 100 kHz)

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
41.382	29.54	29.988	42.14	-12.6	VERTICAL	PASSED
41.453	29.73	30.641	42.38	-12.65	VERTICAL	PASSED
41.524	29.75	30.708	42.45	-12.7	VERTICAL	PASSED
43.337	29.68	30.482	43.58	-13.9	VERTICAL	PASSED
44.749	28.77	27.435	43.6	-14.83	VERTICAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
1320.842	35.41	58.939	43.28	-7.87	VERTICAL	PASSED
2361.145	50.49	334.542	50.98	-0.49	VERTICAL	PASSED
3907.816	38.16	80.863	39.24	-1.08	VERTICAL	PASSED
3938.774	37.97	79.132	38.99	-1.02	VERTICAL	PASSED

Channel 11 / 2462 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4922.4	30.25	32.55	27.92	2.33	VERTICAL	PASSED
7385.9	36.27	65.103	24.29	11.98	VERTICAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4922.4	43.3	146.235	40.97	2.33	VERTICAL	PASSED
7385.9	49.4	295.257	37.42	11.98	VERTICAL	PASSED

8.2.2 OFDM 6MBps mode

Channel 1 / 2412 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4825.2	27.89	24.791	26.33	1.56	VERTICAL	PASSED
7237.4	34.43	52.644	24.5	9.93	HORIZONTAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4825.2	40.67	108.069	39.11	1.56	VERTICAL	PASSED
7237.4	47.49	236.837	37.56	9.93	HORIZONTAL	PASSED

Channel 7 / 2442 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2201.403	28.92	27.909	30.4	-1.48	VERTICAL	PASSED
2362.617	39.01	89.248	39.49	-0.48	VERTICAL	PASSED
3898.898	24.52	16.817	25.6	-1.08	VERTICAL	PASSED
3911.223	24.54	16.867	25.63	-1.09	HORIZONTAL	PASSED

Quasi peak (RBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
41.604	28.67	27.143	41.42	-12.75	VERTICAL	PASSED
41.933	28.22	25.76	41.19	-12.97	VERTICAL	PASSED
44.147	28.79	27.517	43.22	-14.43	VERTICAL	PASSED
44.486	27.95	24.969	42.61	-14.66	VERTICAL	PASSED
44.619	28.92	27.922	43.66	-14.74	VERTICAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2201.403	41.42	117.761	42.9	-1.48	VERTICAL	PASSED
2362.617	50.89	350.308	51.37	-0.48	VERTICAL	PASSED
3898.898	37.15	72.011	38.23	-1.08	VERTICAL	PASSED
3911.223	37.77	77.384	38.86	-1.09	HORIZONTAL	PASSED

Channel 11 / 2462 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4926	30.29	32.711	27.9	2.39	VERTICAL	PASSED
7384	36.17	64.365	24.34	11.83	VERTICAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4926	42.99	141.107	40.6	2.39	VERTICAL	PASSED
7384	48.99	281.384	37.16	11.83	VERTICAL	PASSED

8.2.3 DSSS 11Mbps mode

Channel 1 / 2412 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4825.1	28.84	27.669	27.28	1.56	HORIZONTAL	PASSED
7234.7	34.45	52.753	24.47	9.98	VERTICAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4825.1	41.78	122.786	40.22	1.56	HORIZONTAL	PASSED
7234.7	47.53	238.067	37.55	9.98	VERTICAL	PASSED

Channel 7 / 2442 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
1172.144	20.85	11.032	29.94	-9.09	VERTICAL	PASSED
2364.517	42.24	129.375	42.7	-0.46	VERTICAL	PASSED
3902.205	25.15	18.088	26.22	-1.07	HORIZONTAL	PASSED
3936.474	25.24	18.27	26.28	-1.04	HORIZONTAL	PASSED

Quasi peak (RBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
42.776	14.66	5.408	28.18	-13.52	VERTICAL	PASSED
43.677	28.67	27.146	42.79	-14.12	VERTICAL	PASSED
43.888	29.5	29.844	43.76	-14.26	VERTICAL	PASSED
43.987	30.9	35.091	45.23	-14.33	VERTICAL	PASSED
44.289	17.07	7.134	31.6	-14.53	VERTICAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
1172.144	34.07	50.507	43.16	-9.09	VERTICAL	PASSED
2364.517	52.9	441.418	53.36	-0.46	VERTICAL	PASSED
3902.205	38.16	80.938	39.23	-1.07	HORIZONTAL	PASSED
3936.474	38.33	82.461	39.37	-1.04	HORIZONTAL	PASSED
17894.792	69.81	3092.787	38.99	30.82	VERTICAL	PASSED

Channel 11 / 2462 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4925.9	30.56	33.713	28.17	2.39	HORIZONTAL	PASSED
7385.4	36.13	64.032	24.19	11.94	HORIZONTAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4925.9	43.62	151.635	41.23	2.39	HORIZONTAL	PASSED
7385.4	49.64	303.249	37.7	11.94	HORIZONTAL	PASSED

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

EUT with DUT number	RM-640 DUT 24206
Accessories with DUT numbers	BL-5CT DUT 24263; AC-8 DUT 24250; WH-102 DUT 24247
Operation Voltage [V] / [Hz]	115 V / 60 Hz
Result	PASSED
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24 / 46 / 101.2
Date of measurements	8-July-2010
Measured by	Ruben Hansen

9.1. 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

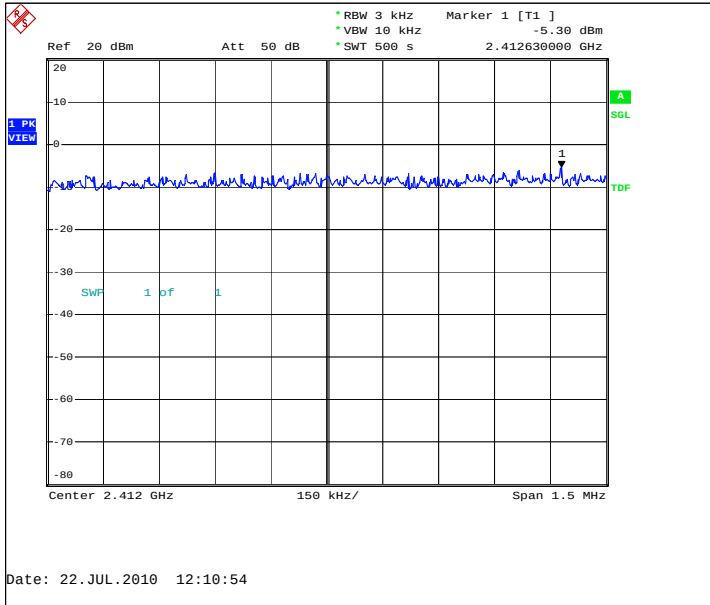
Limit [dBm] @ 3 kHz
≤ 8

9.2. WLAN test results

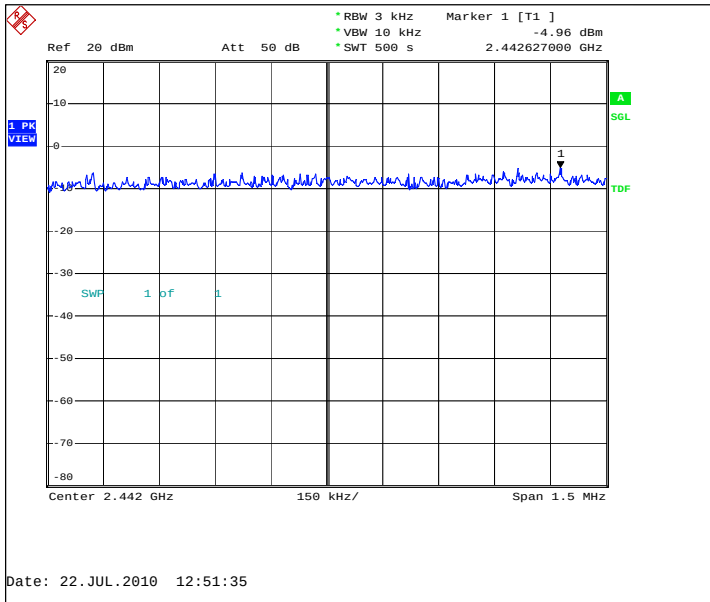
9.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

Frequency	Level	Transd	Result
2412.000000	-5.30	17.0	PASSED

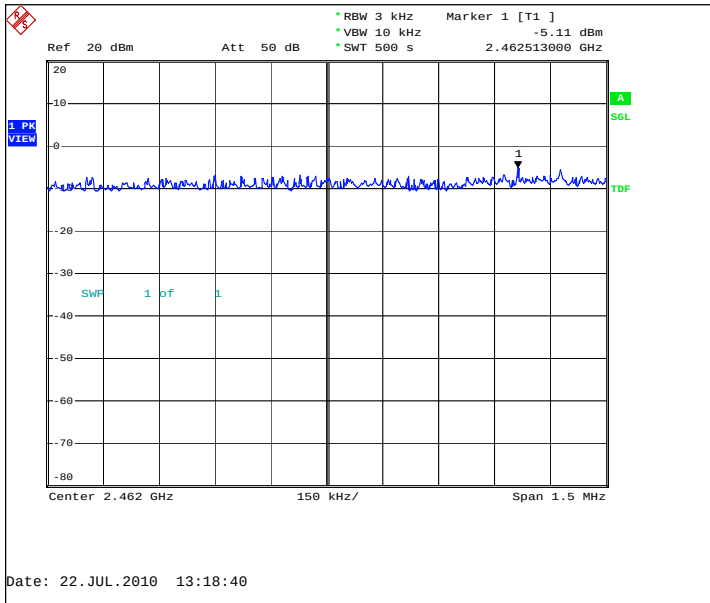
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



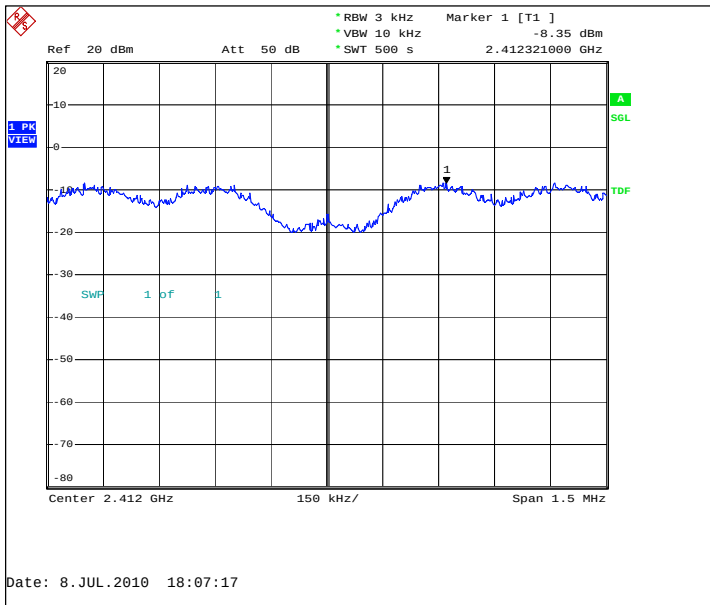
Channel 11 / 2462 MHz



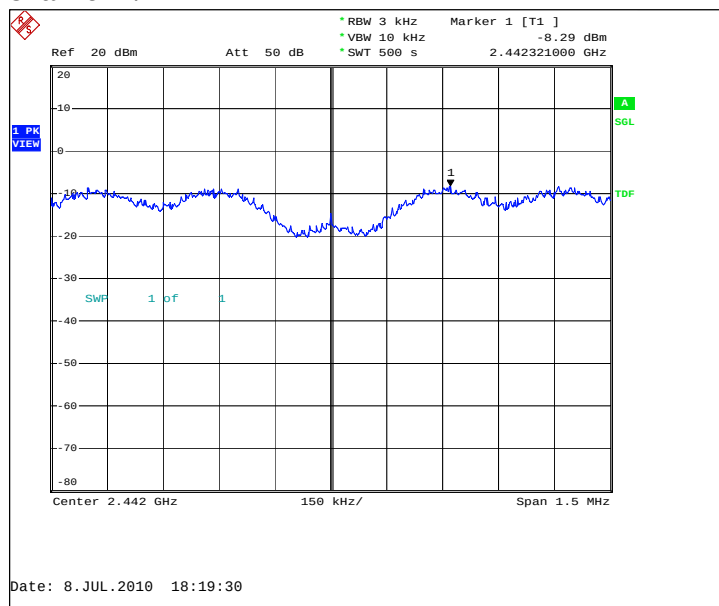
9.2.2 OFDM mode, BPSK modulation, 6 Mbps data rate

Frequency	Level	Transd	Result
2412.000000	-8.35	17.0	PASSED

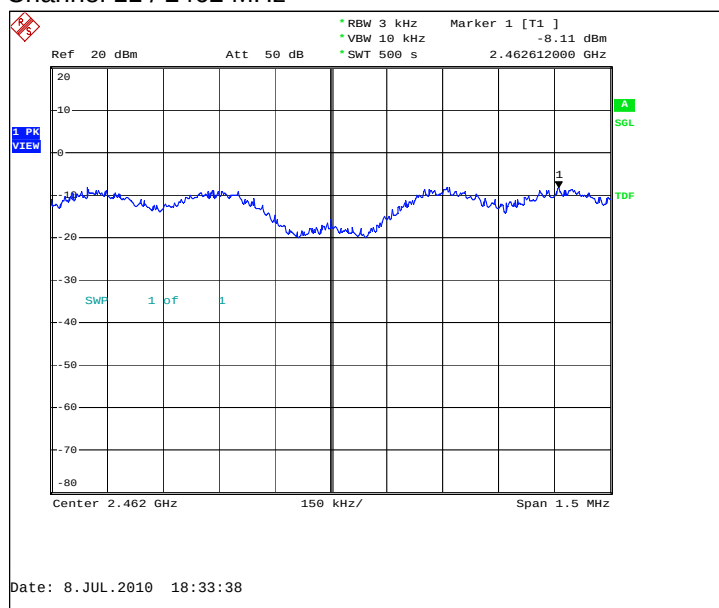
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



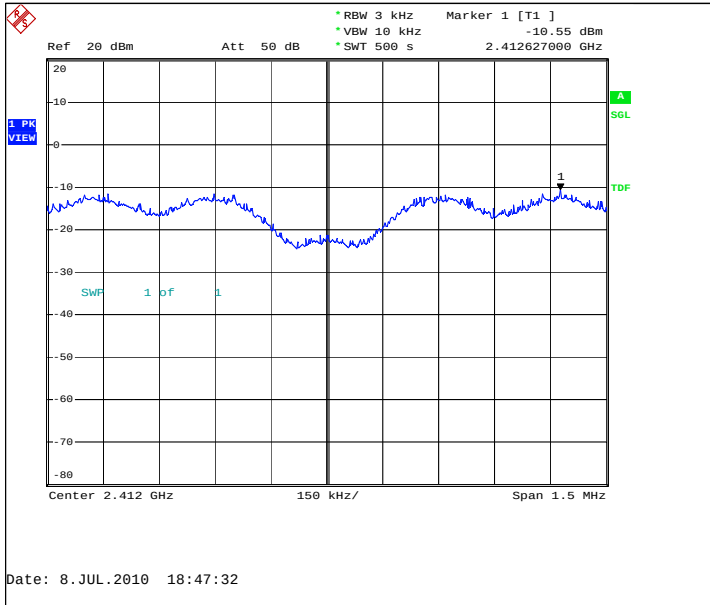
Channel 11 / 2462 MHz



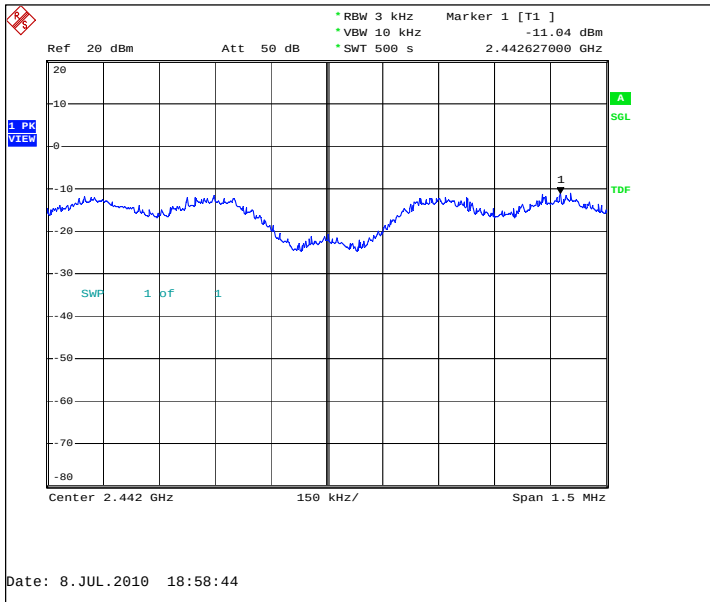
9.2.3 802.11n, MCS 0

Frequency	Level	Transd	Result
2412.000000	-10.55	17.0	PASSED

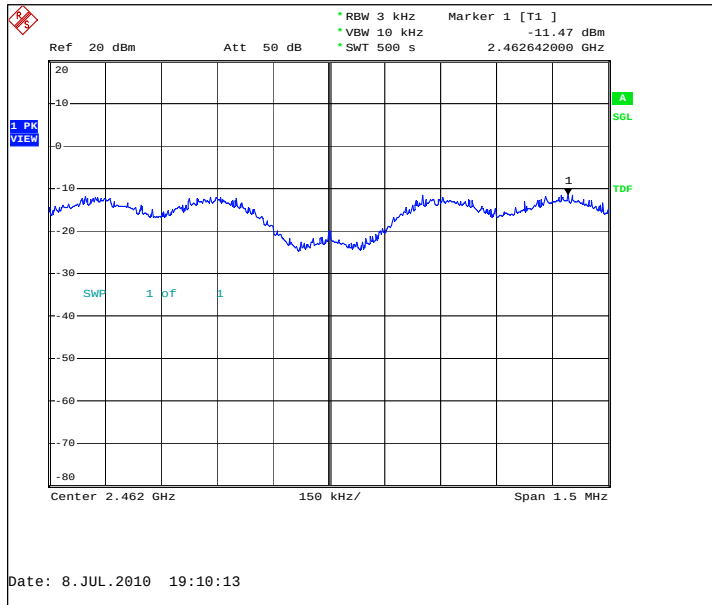
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



Channel 11 / 2462 MHz



11. Test Equipment

11.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
20168	Bluetooth Tester	CBT	Rohde&Schwarz	22/24/27, 15C, 15B
18772	Shielded Chamber	RFD-100	ETS-Lindgren	15C, 15B
13037	Power Supply 0-15V 10A	EA3012	LP Instruments	15C, 15B
13513	Pulse Limiter	ESH3Z2	Rohde&Schwarz	15C, 15B
13666	Receiver	ESPC	Rohde&Schwarz	15C, 15B
13935	LISN	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	Communication Tester	CMU200	Rohde&Schwarz	15C, 15B
11386	DC Power Supply	HP6632A	Hewlett Packard	22/24/27, 15C, 15B
19678	Spectrum Analyzer	FSP	Rohde&Schwarz	22/24/27, 15C, 15B
16601	Communication Tester	CMU200	Rohde&Schwarz	22/24/27, 15C, 15B
19625	Climatic Chamber	VT4002EMC	Vötsch	22/24/27, 15C, 15B
13357	Signal Generator	SMP02	Rohde&Schwarz	22/24/27, 15C, 15B
19116	Power splitter	-	various	22/24/27, 15C, 15B
20544	Transformer. 230/115V	-	Nokia	22/24/27, 15C, 15B
20543	UPS. 700V/A 490W	PW 9120 700i	Powerware	22/24/27, 15C, 15B

11.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
18792	Mast/turntable controller	2090	ETS-EMCO	22/24/27, 15C, 15B
18416	Communication Tester	CMU200	Rohde&Schwarz	22/24/27, 15C, 15B
20168	Bluetooth Tester	CBT	Rohde&Schwarz	22/24/27, 15C, 15B
13077	Power Supply	EA-3016	-	22/24/27, 15C, 15B
15742	Programmable Relay Switching System	-----	Pickering	22/24/27, 15C, 15B
20078	Relay 2x6 Chnl μ Wave Mux	10-785B-522	Pickering	22/24/27, 15C, 15B
14021	Relay Dual 6 Chnl μ Wave Mux	10-785-522	-	22/24/27, 15C, 15B
-	Relay Dual 6 Chnl μ Wave 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
18861	Receiver	EMI Test Receiver 20Hz-26,5GHz ESI	Rohde&Schwarz	22/24/27, 15C, 15B
18860	Antenna	HL562	Rohde&Schwarz	22/24/27, 15C, 15B
18773	Anechoic chamber	RFD-100	ETS-Lindgren	22/24/27, 15C, 15B
18774	Anechoic chamber	RFSD-F/A-100	ETS-Lindgren	22/24/27, 15C, 15B
19151	High Pass Filter	WHJS3000-10SS	Wainwright	22/24/27, 15C, 15B
13937	Band reject filter	WRCA902.4-0.2/40-6SS	Wainwright Instruments	22/24/27, 15C, 15B
13936	Band reject filter	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	Band reject filter	WRCA902.4-0.2/40-6SS	Wainwright	22/24/27, 15C, 15B
14187	Band reject filter	WRCD1747.5-0.2/40-10SS	Wainwright	22/24/27, 15C, 15B

Eq. No	Equipment	Type	Manufacturer	Used in
16633	Band reject filter	WRCD1880.0-0.2/40-10SS	Wainwright	22/24/27, 15C, 15B
19587	Band reject filter	WRCG2400/2483-2390/2493-35/10SS	Wainwright	22/24/27, 15C, 15B
20115	Band reject filter	-	Wainwright	22/24/27, 15C, 15B
20114	Band reject filter	WRCG1737/1743-1733/1747-40/6SS	Wainwright	22/24/27, 15C, 15B
20116	Band reject filter	WRCG832/83/-825/845-40/5SS	Wainwright	22/24/27, 15C, 15B
20698	Antenna	BBHA 9120 D	SCHWARZBECK	22/24/27, 15C, 15B
19966	Antenna	HFH2-Z2	Rohde&Schwarz	15C, 15B
13799	Signal Generator	SMP02	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
20544	Transformer. 230/115V	-	Nokia	22/24/27, 15C, 15B
20543	UPS. 700V/A 490W	PW 9120 700i	Powerware	22/24/27, 15C, 15B