

FCC Part 15C Compliance Test Report

Test Report no.:	Cph_FCC_0646_07.doc	Date of Report:	29-11-2006
Number of pages:	86	Customer's Contact person:	Janne Ilkka
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FCC listing no.:	99059		
IC recognition no.:	4820 and 4820-1		
Tested devices/ accessories:	Phone; RM-159 (HW: 5500), Battery; BL-5F, AC-Charger; AC-5E, Headset; HS-45		
FCC ID:	PDNRM-159	IC:	661R-RM159
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 and RSS-210. Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit".		
Documentation:	The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory. The documentation of the testing performed on the tested devices is archived for 15 years at TCC Nokia.		
Test Results:	The EUT complies with the requirements in respect of all parameters subject to the test. The test results relate only to devices specified in this document.		
Date and signature for the contents:			

Niels Christian Andersen, Engineer

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	20-11-2006
Testing completed	29-11-2006
The customer's contact person	Janne Ilkka
Test Plan referred to	\\EMC\TESTPLAN\
Notes	None
Document name	T:\Projects\RM-159\EMC\Results\FCC\Cph_FCC_0646_07.doc

1.1. EUT and Accessory Information

The EUT is a 5-band (GSM850/900/1800/1900 and WCDMA Band I) mobile phone with GPRS, EGPRS, Bluetooth and WLAN. Bluetooth and WLAN are tested with maximum rated TX power.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-159	004400/82/168644/9	5500	-	1.43.050	27783
Phone	RM-159	004400/82/168645/6	5500	-	1.43.050	27779
Phone	RM-159	004400/82/168684/5	5500	-	1.43.050	28540
Battery	BL-5F	3635636384310500830;0670498	PWB Ver. 6.0	-	-	27794
Battery	BL-5F	3635636384310500881;0670498	ver.6.0	-	-	27780
AC-Charger	AC-5E	3943496433040500009;0675540	1.9	1.9	-	27792
AC Charger	AC-5E	3943496433040500005;0675540	1.9	1.9	-	27781
Headset	HS-45	-	-	-	-	27788
Headset	HS-45	-	-	-	-	27782

1.2. Summary of Test Results

Bluetooth:

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

WLAN:

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

PASSED

The EUT complies with the essential requirements in the standard.

FAILED

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

NP

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

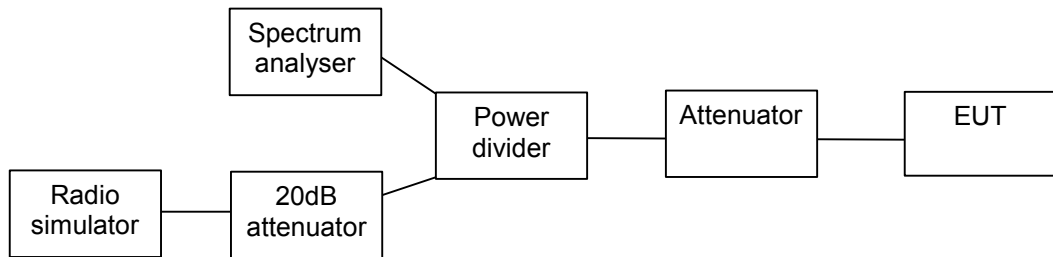
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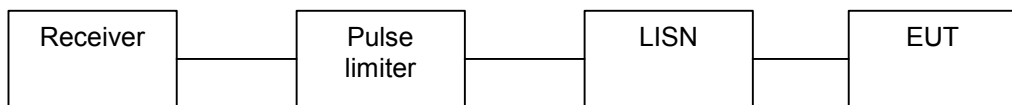
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2. Test setups

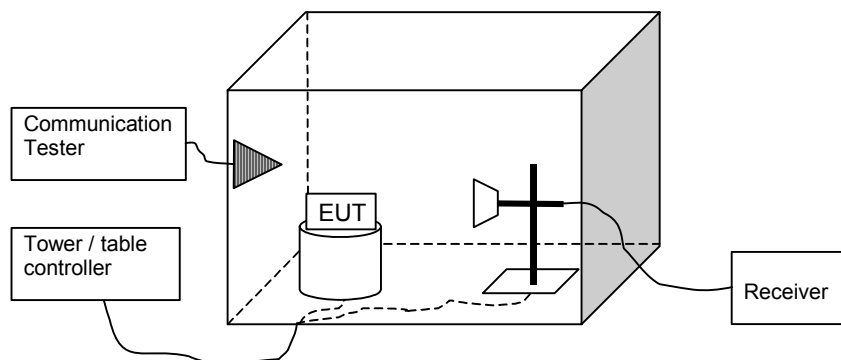
2.1. Conducted RF test setup



2.2. AC powerline conducted emissions test setup



2.3. Spurious radiated emissions test setup



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

EUT with DUT number	RM-159 dut 27779, BL-5F dut 27780
Accessories with DUT numbers	HS-45 dut 27782, AC-5E dut 27781
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	23.9 / 28.0 1017.7
Date of measurements	20-11-2006
Measured by	Jan Engelbrechtsen

3.1. Test method and limit

The measurement is made according to Public notice DA 00-705 and IC standard RSS-210.

Limits for conducted peak output power measurements

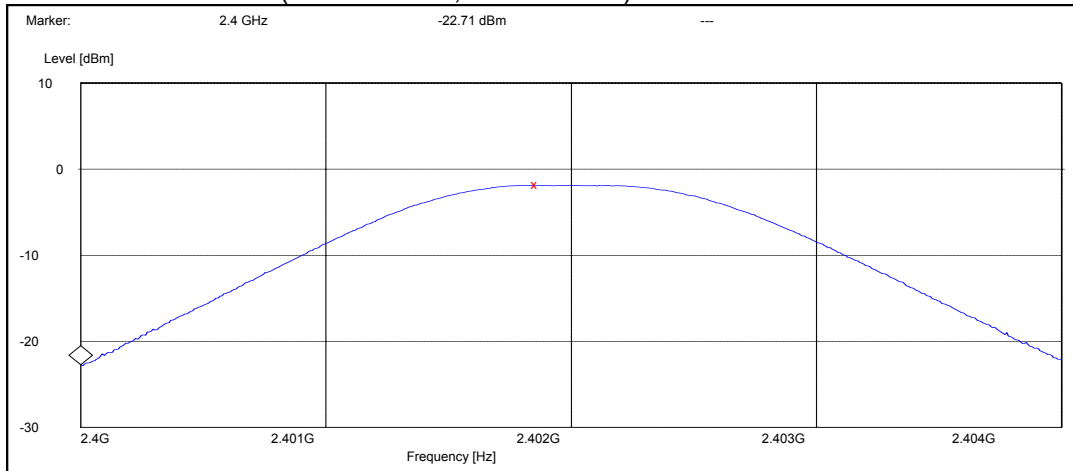
Frequency range [MHz]	Limit [W]	Limit [dBm]
2400 – 2483.5	≤ 1	≤ 30

3.2. Bluetooth Test results

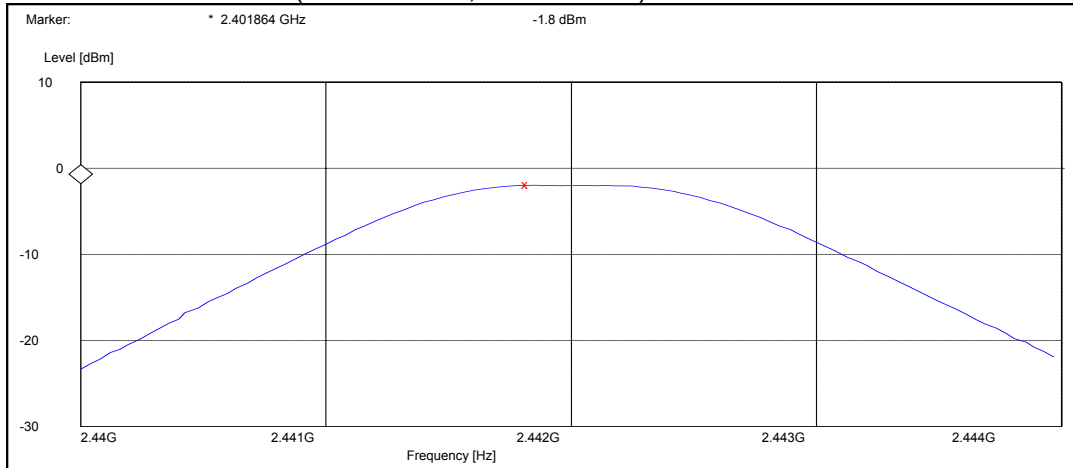
3.2.1 GFSK modulation, PRBS packet type

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
0 / 2402	-1.80	0.661	Passed
40 / 2442	-1.90	0.646	Passed
78 / 2480	-2.20	0.603	Passed

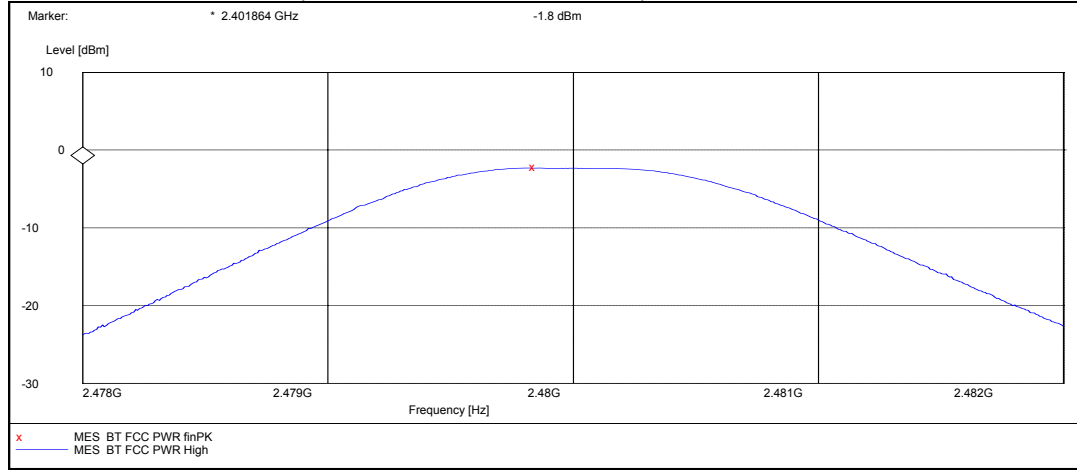
Channel 0 / 2402 MHz (Peak detector, RBW: 1 MHz)



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



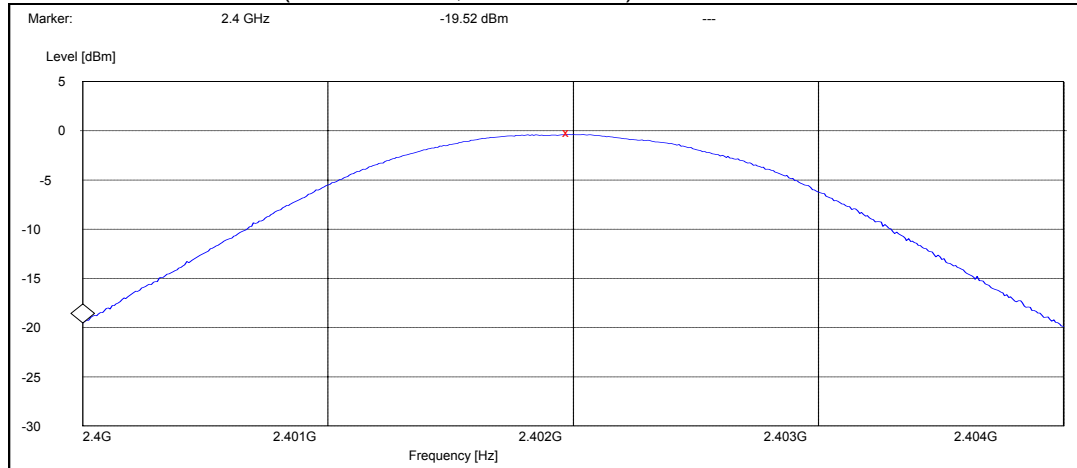
Channel 78 / 2480 MHz (Peak detector, RBW: 1 MHz)



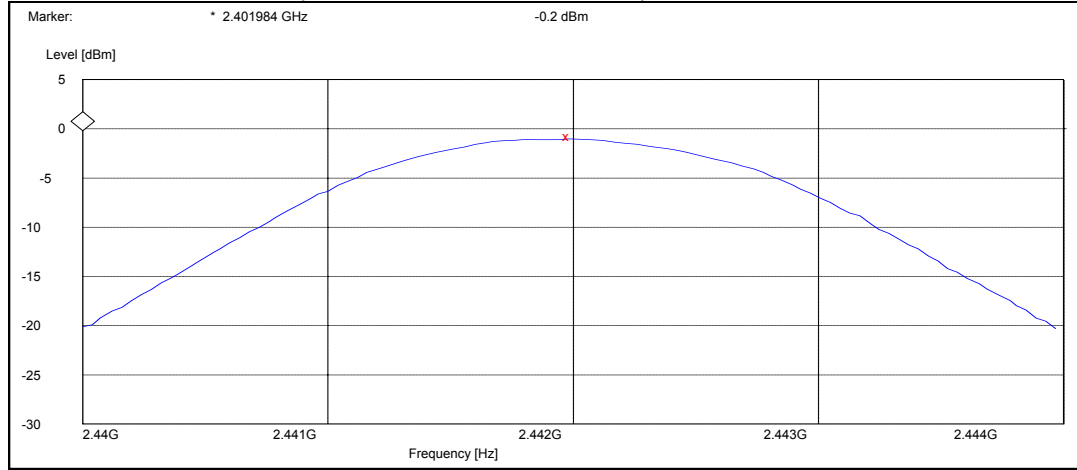
3.2.2 8DPSK modulation, PRBS packet type

Channel / f _c [MHz]	P [dBm]	P [mW]	Result
0 / 2402	-0.20	0.955	Passed
40 / 2442	-0.80	0.832	Passed
78 / 2480	-2.00	0.631	Passed

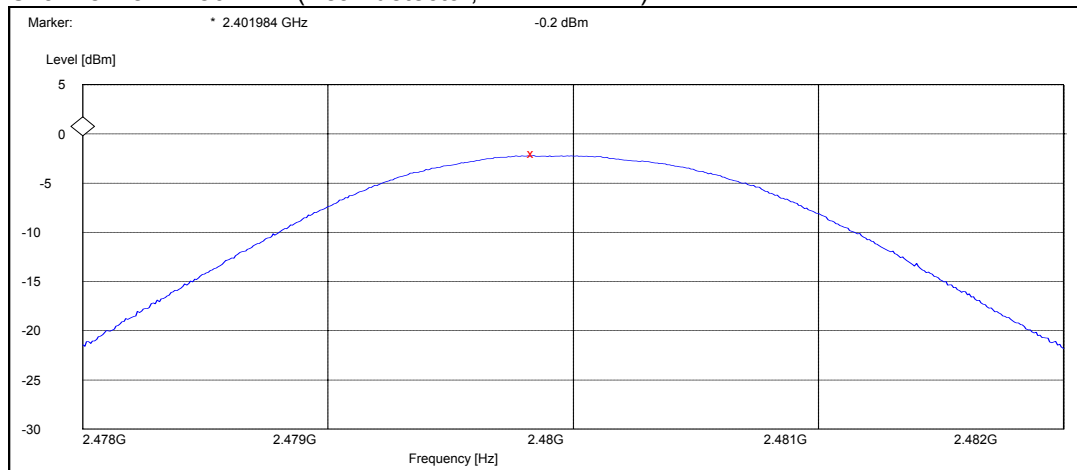
Channel 0 / 2402 MHz (Peak detector, RBW: 1 MHz)



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



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



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

EUT with DUT number	RM-159 Dut#29107
Accessories with DUT numbers	BL-5F Dut#29105, AC-5E Dut#29104, HS-45 Dut#27787
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	23 / 48 / 1012
Date of measurements	28-11-2006
Measured by	Christian Andersen

4.1. Test method and limit

The measurement is made according to Public notice DA 00-705 and IC standard RSS-210.

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

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

4.2. Bluetooth Test results

4.2.1 GFSK modulation, PRBS packet type

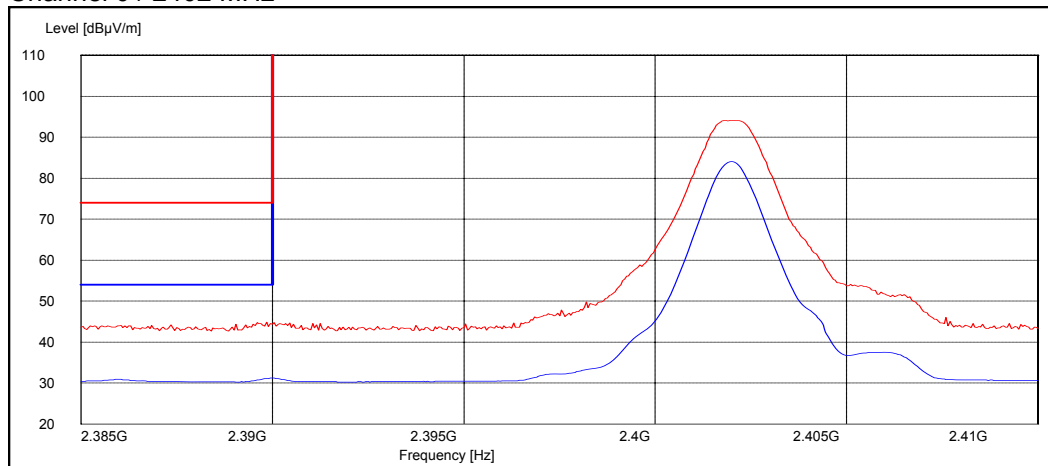
Average (RBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
0 / 2402	31.12	Passed
78 / 2480	35.81	Passed
Hopping on, low end	36.57	Passed
Hopping on, high end	44.61	Passed

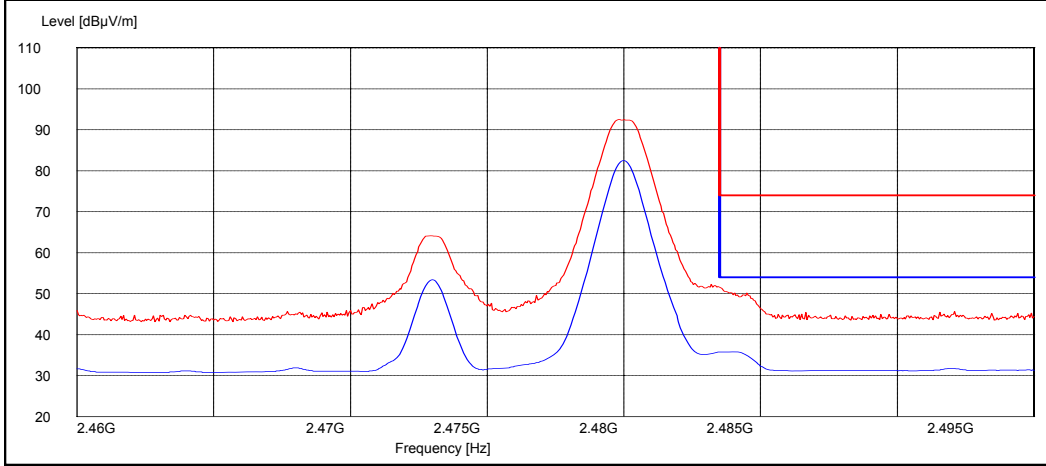
Peak (RBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
0 / 2402	44.91	Passed
78 / 2480	51.64	Passed
Hopping on, low end	49.72	Passed
Hopping on, high end	53.56	Passed

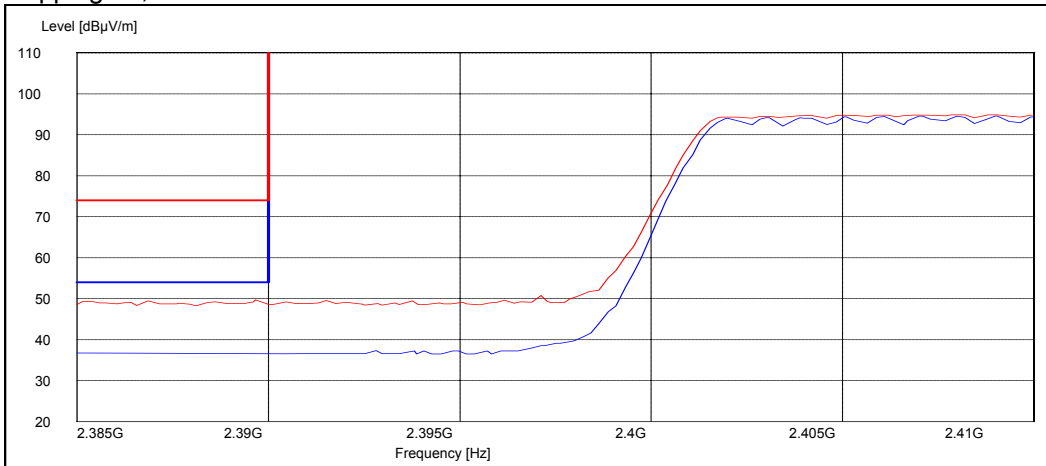
Channel 0 / 2402 MHz



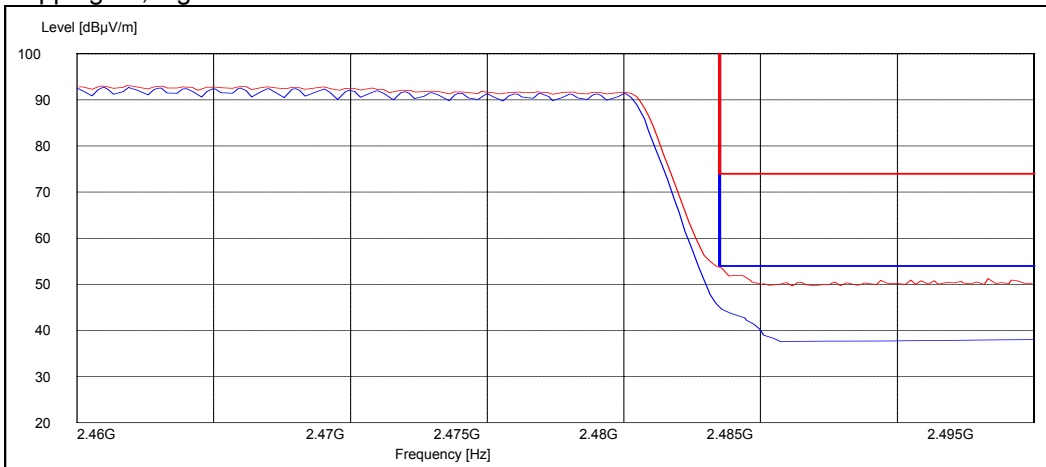
Channel 78 / 2480 MHz



Hopping on, low end



Hopping on, high end



4.2.2 8DPSK modulation, PRBS packet type

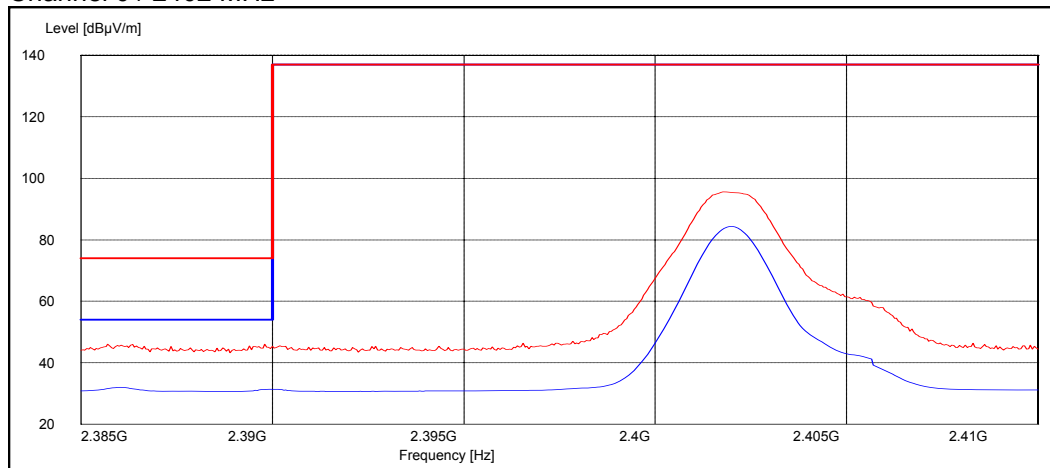
Average (RBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
0 / 2402	31.24	Passed
78 / 2480	38.29	Passed
Hopping on, low end	38.00	Passed
Hopping on, high end	48.02	Passed

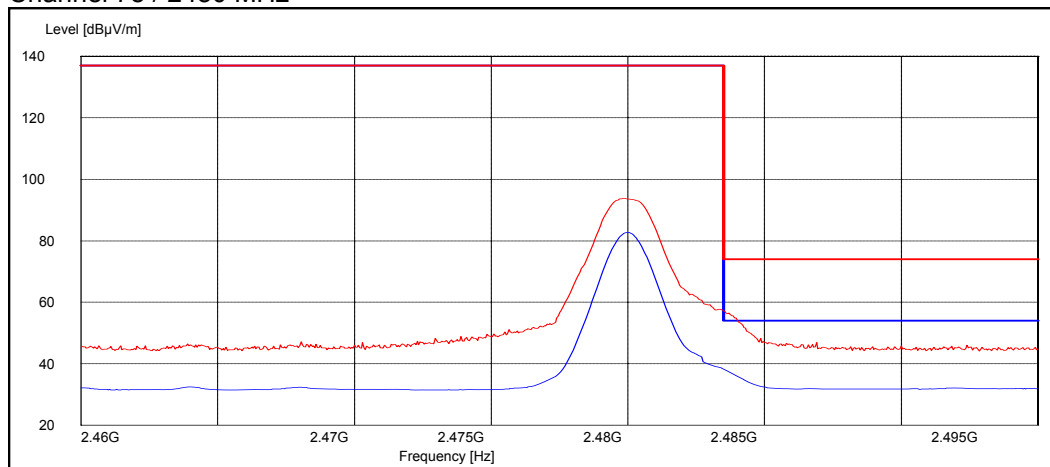
Peak (RBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
0 / 2402	46.01	Passed
78 / 2480	57.17	Passed
Hopping on, low end	49.55	Passed
Hopping on, high end	57.72	Passed

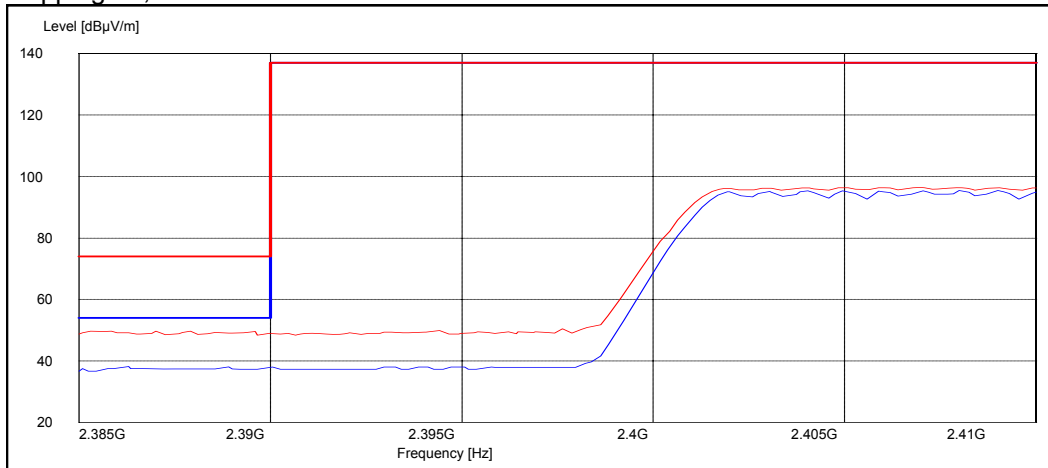
Channel 0 / 2402 MHz



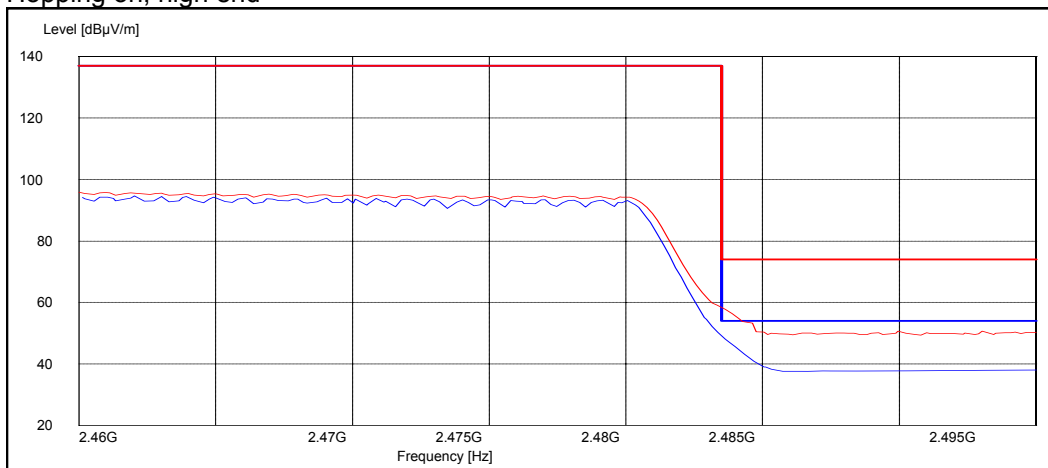
Channel 78 / 2480 MHz



Hopping on, low end



Hopping on, high end



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

EUT with DUT number	RM-159 dut 27779, BL-5F dut 27780
Accessories with DUT numbers	HS-45 dut 27782, AC-5E dut 27781
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	24.1 / 38.0 1000.8
Date of measurements	20-11-2006
Measured by	Jan Engelbrechtsen

5.1. Test method and limit

The measurement is made according to Public notice DA 00-705 and IC standard RSS-210.

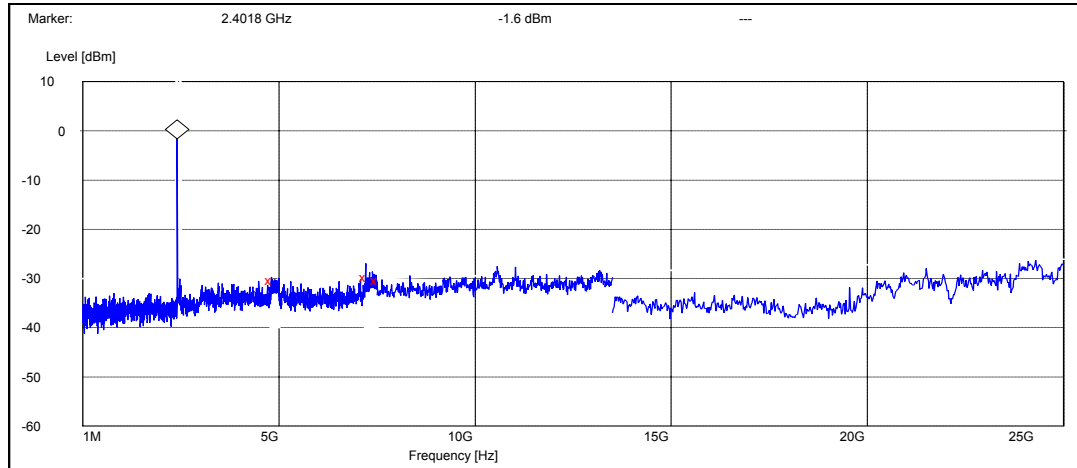
Limits for spurious RF conducted emissions measurements

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

5.2. Bluetooth Test results

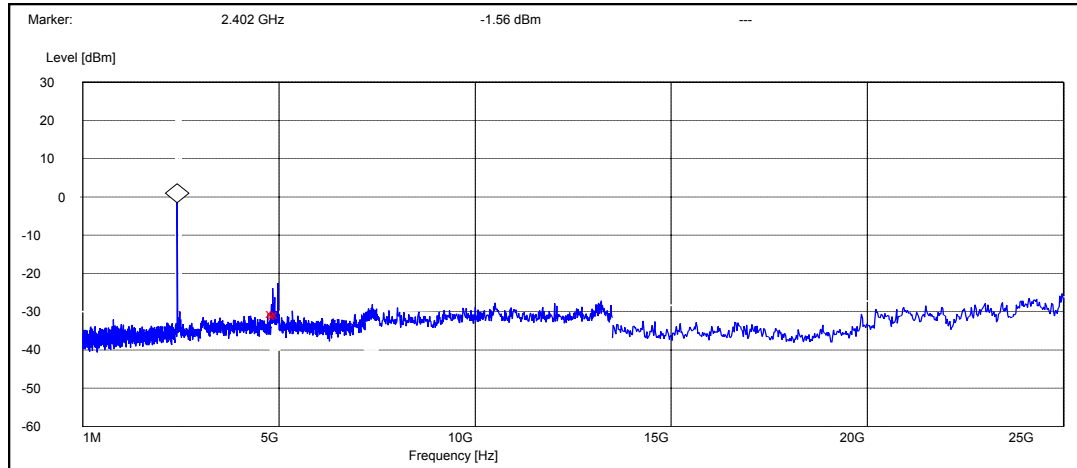
5.2.1 GFSK modulation, PRBS packet type

Channel 0 / 2402 MHz



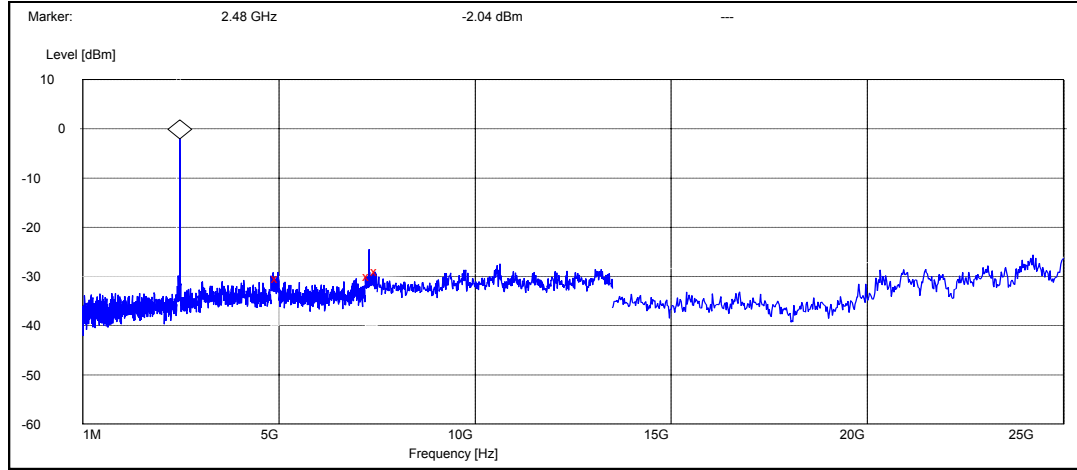
Frequency [MHz]	P [dBc]	Result
4807.200000	-28.899829	Passed
7214.400000	-28.099829	Passed
7500.000000	-28.899829	Passed

Channel 40 / 2442 MHz



Frequency [MHz]	P [dBc]	Result
4843.200000	-28.939926	Passed
4896.000000	-29.439926	Passed
4975.200000	-29.239926	Passed

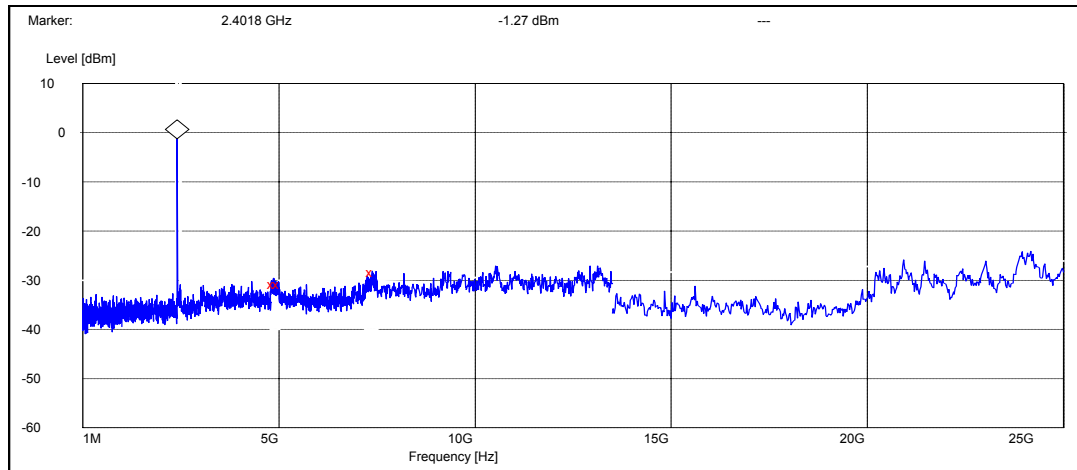
Channel 78 / 2480 MHz



Frequency [MHz]	P [dBc]	Result
4977.200000	-28.464824	Passed
7306.200000	-27.864824	Passed
7500.000000	-26.964824	Passed

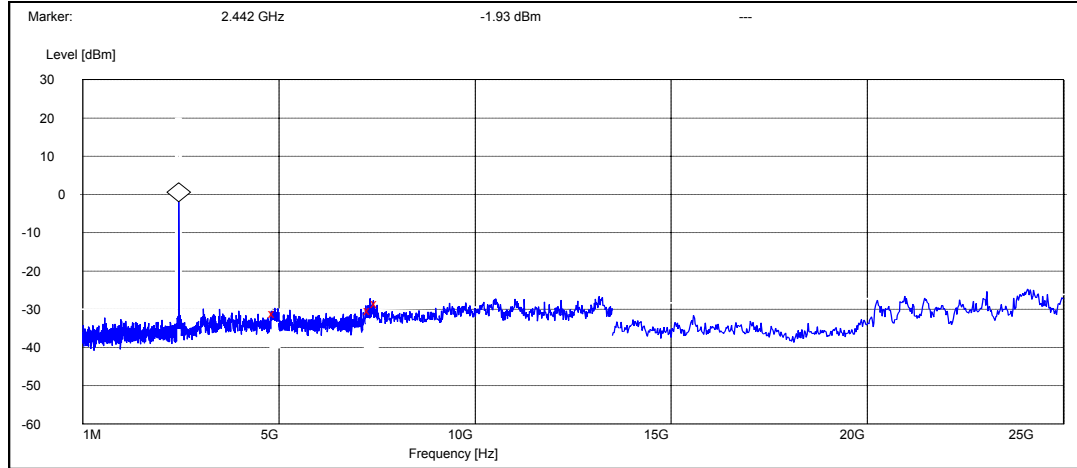
5.2.2 8DPSK modulation, PRBS packet type

Channel 0 / 2402 MHz



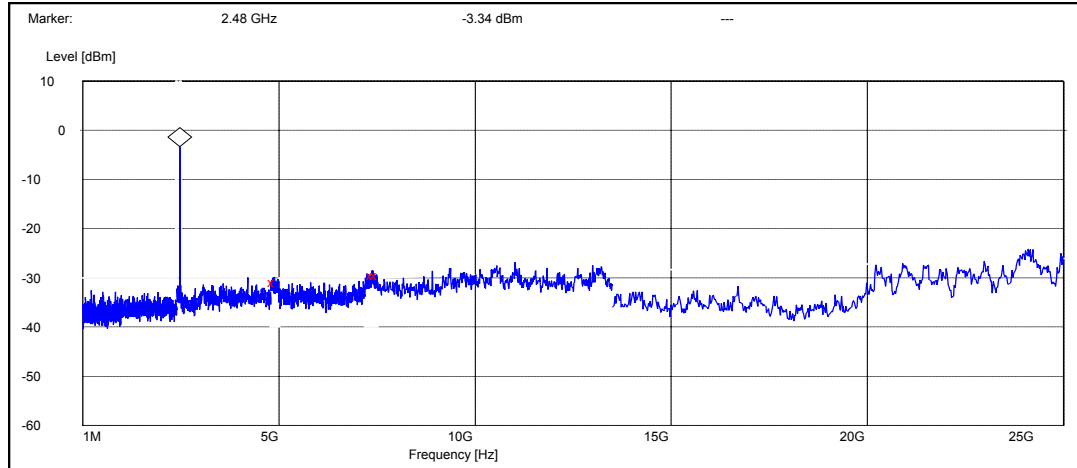
Frequency [MHz]	P [dBc]	Result
4862.000000	-29.529113	Passed
5000.000000	-29.429113	Passed
7388.400000	-27.229113	Passed

Channel 40 / 2442 MHz



Frequency [MHz]	P [dBc]	Result
4895.600000	-29.065764	Passed
7327.200000	-28.265764	Passed
7500.000000	-26.565764	Passed

Channel 78 / 2480 MHz



Frequency [MHz]	P [dBc]	Result
4884.400000	-27.558893	Passed
7399.200000	-26.258893	Passed
7500.000000	-26.158893	Passed

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

EUT with DUT number	RM-159 Dut#29107
Accessories with DUT numbers	BL-5F Dut#29105, HS-45 Dut#27787, AC-5E Dut#29104
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	22.1 / 42.1 1026
Date of measurements	20-11-2006
Measured by	Christian N. Andersen

6.1. Test method and limit

The measurement is made according to Public notice DA 00-705 and IC standard RSS-210 as follows:

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

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

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

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

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

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

The measurement results are obtained as described below:

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

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

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

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

6.2. Bluetooth Test results

6.2.1 GFSK modulation, PRBS packet type

Channel 0 / 2402 MHz

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
4804.000000	36.10	63.83	38.10	-2.00	VERTICAL	Passed
7206.000000	39.10	90.16	34.90	4.20	VERTICAL	Passed

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
4804.000000	23.30	14.62	25.30	-2.00	VERTICAL	Passed
7206.000000	26.40	20.89	22.20	4.20	VERTICAL	Passed

Channel 40 / 2442 MHz

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
38.076353	21.00	11.22	39.00	-18.00	VERTICAL	Passed
73.767535	16.50	6.68	43.70	-27.20	HORIZONTAL	Passed
74.969940	11.70	3.85	38.70	-27.00	VERTICAL	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
4910.815631	36.50	66.83	38.20	-1.70	HORIZONTAL	Passed
4918.333667	37.20	72.44	38.80	-1.60	VERTICAL	Passed
7325.645291	40.70	108.39	36.50	4.20	VERTICAL	Passed
7330.669339	40.90	110.92	36.50	4.40	VERTICAL	Passed
7351.705411	40.50	105.93	35.60	4.90	VERTICAL	Passed
7422.843687	41.60	120.23	36.80	4.80	VERTICAL	Passed
17888.269539	57.10	716.14	31.80	25.30	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U _{RX} [dBµV]	A _{TOT} [dB]	Polarisation	Result
4910.815631	23.80	15.49	25.50	-1.70	HORIZONTAL	Passed
4917.833667	24.30	16.41	25.90	-1.60	VERTICAL	Passed
7319.145291	27.70	24.27	23.40	4.30	VERTICAL	Passed
7333.169339	27.70	24.27	23.30	4.40	VERTICAL	Passed
7353.705411	27.50	23.71	22.60	4.90	VERTICAL	Passed
7418.843687	28.60	26.92	23.60	5.00	VERTICAL	Passed
17881.269539	44.50	167.88	19.10	25.40	VERTICAL	Passed

Channel 78 / 2480 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U _{RX} [dBµV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	37.30	73.28	38.90	-1.60	VERTICAL	Passed
7440.000000	40.40	104.71	35.50	4.90	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U _{RX} [dBµV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	24.40	16.60	26.00	-1.60	VERTICAL	Passed
7440.000000	27.80	24.55	22.90	4.90	VERTICAL	Passed

6.2.2 8DPSK modulation, PRBS packet type

Channel 0 / 2402 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U _{RX} [dBµV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	36.80	69.18	38.80	-2.00	HORIZONTAL	Passed
7206.000000	39.60	95.50	35.40	4.20	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U _{RX} [dBµV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	23.80	15.49	25.80	-2.00	VERTICAL	Passed
7206.000000	26.90	22.13	22.70	4.20	VERTICAL	Passed

Channel 40 / 2442 MHz

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U _{RX} [dBµV]	A _{TOT} [dB]	Polarisation	Result
37.595391	23.70	15.31	41.40	-17.70	VERTICAL	Passed
73.848497	17.40	7.41	44.60	-27.20	HORIZONTAL	Passed
74.269940	15.10	5.69	42.20	-27.10	HORIZONTAL	Passed

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4901.805611	37.70	76.74	39.60	-1.90	VERTICAL	Passed
4912.321643	38.00	79.43	39.70	-1.70	VERTICAL	Passed
7321.143287	41.20	114.82	37.00	4.20	VERTICAL	Passed
7327.147295	41.10	113.50	36.90	4.20	HORIZONTAL	Passed
7409.815631	41.70	121.62	36.50	5.20	VERTICAL	Passed
7414.833667	42.40	131.83	37.30	5.10	VERTICAL	Passed
17876.759519	58.20	812.83	32.80	25.40	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4903.805611	24.50	16.79	26.30	-1.80	VERTICAL	Passed
4910.821643	24.80	17.38	26.50	-1.70	VERTICAL	Passed
7322.147295	28.30	26.00	24.10	4.20	HORIZONTAL	Passed
7323.643287	28.30	26.00	24.10	4.20	VERTICAL	Passed
7411.315631	28.80	27.54	23.60	5.20	VERTICAL	Passed
7416.333667	29.20	28.84	24.20	5.00	VERTICAL	Passed
17878.759519	44.80	173.78	19.40	25.40	VERTICAL	Passed

Channel 78 / 2480 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4960.000000	38.20	81.28	39.80	-1.60	HORIZONTAL	Passed
7440.000000	41.60	120.23	36.70	4.90	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4960.000000	24.80	17.38	26.40	-1.60	VERTICAL	Passed
7440.000000	28.20	25.70	23.30	4.90	VERTICAL	Passed

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

EUT with DUT number	RM-159 Dut # 27783
Accessories with DUT numbers	BL-5F Dut # 27794 + AC-5E Dut # 27792 + HS-45 Dut # 27788
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21.8 / 41.0 1000.2
Date of measurements	23-11-2006
Measured by	Allan F. Henriksen

7.1. Test method and limit

The measurement is made according to Public notice DA 00-705 and IC standard RSS-GEN as follows:

The EUT is placed on a wooden table 80 cm above the reference groundplane.

The EUT is connected via LISN to a test power supply.

The measurement results are obtained as described below:

$$U [dB\mu V] = U_{RX} + A_{TOT}$$

Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable and pulse limiter attenuations.

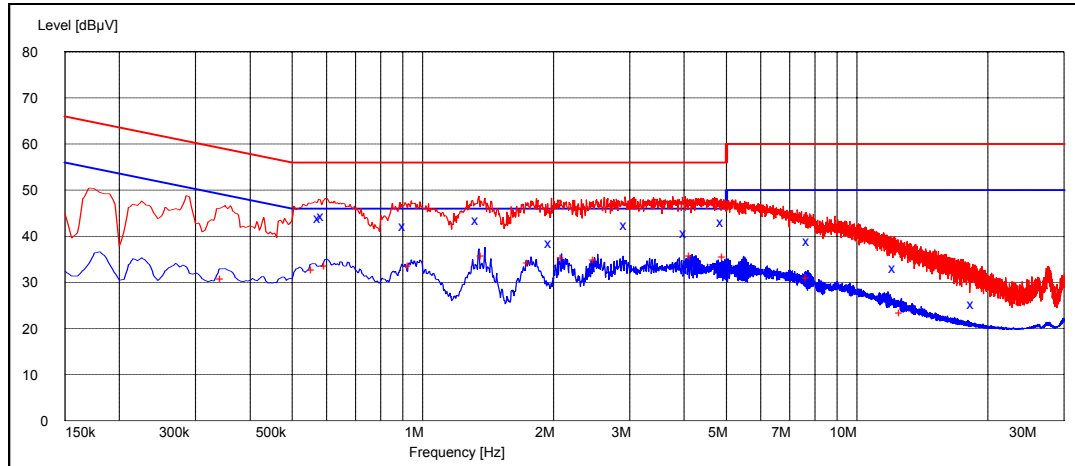
CISPR 22 Class B limits

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

7.2. Bluetooth Test results

7.2.1 GFSK modulation, PRBS packet type

Channel 40 / 2442 MHz



Quasi peak (RBW: 9 kHz)

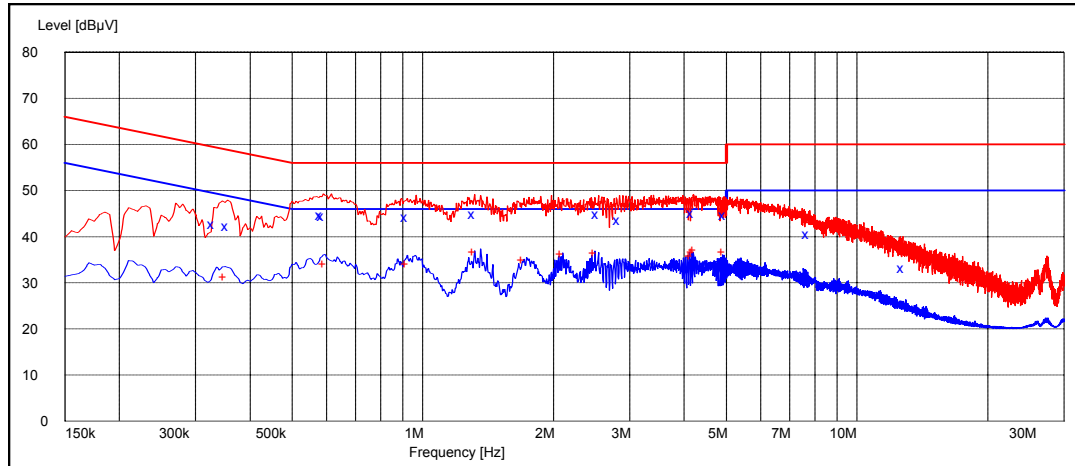
Frequency [MHz]	U [dBµV]	Line	Result
0.580000	44.00	L1	Passed
0.590000	44.30	L1	Passed
0.910000	42.20	L1	Passed
1.340000	43.60	N	Passed
1.970000	38.60	N	Passed
2.950000	42.40	L1	Passed
4.045000	40.70	N	Passed
4.915000	43.00	N	Passed
7.760000	38.90	L1	Passed
12.250000	33.00	L1	Passed
18.530000	25.20	L1	Passed

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.345000	30.70	L1	Passed
0.560000	32.60	N	Passed
0.600000	33.50	N	Passed
0.935000	33.50	N	Passed
1.380000	35.80	N	Passed
1.760000	34.30	N	Passed
2.105000	35.30	N	Passed
2.500000	34.80	N	Passed
4.165000	35.70	N	Passed
4.950000	35.40	N	Passed
7.715000	30.90	N	Passed
12.660000	23.30	L1	Passed

7.2.2 8DPSK modulation, PRBS packet type

Channel 40 / 2442 MHz



Quasi peak (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.330000	42.80	L1	Passed
0.355000	42.20	L1	Passed
0.585000	44.60	L1	Passed
0.590000	44.50	L1	Passed
0.920000	44.20	L1	Passed
1.315000	44.90	L1	Passed
2.535000	44.90	N	Passed
2.840000	43.60	L1	Passed
4.190000	45.20	L1	Passed
4.980000	44.60	L1	Passed
7.730000	40.60	L1	Passed
12.790000	33.10	L1	Passed

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.350000	31.20	N	Passed
0.595000	34.10	N	Passed
0.920000	34.10	N	Passed
1.315000	36.70	N	Passed
1.705000	35.00	N	Passed
2.095000	36.20	N	Passed
2.490000	36.40	N	Passed
4.150000	35.90	N	Passed
4.190000	36.70	N	Passed
4.235000	37.00	N	Passed
4.935000	36.60	N	Passed

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

EUT with DUT number	RM-159 dut 27779, BL-5F dut 27780
Accessories with DUT numbers	HS-45 dut 27782, AC-5E dut 27781
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	23.9 / 28.0 1017.7
Date of measurements	20-11-2006
Measured by	Jan Engelbrechtsen

8.1. Test method and limit

The measurement is made according to Public notice DA 00-705 and IC standard RSS-210.

Limits for 20 dB bandwidth measurements

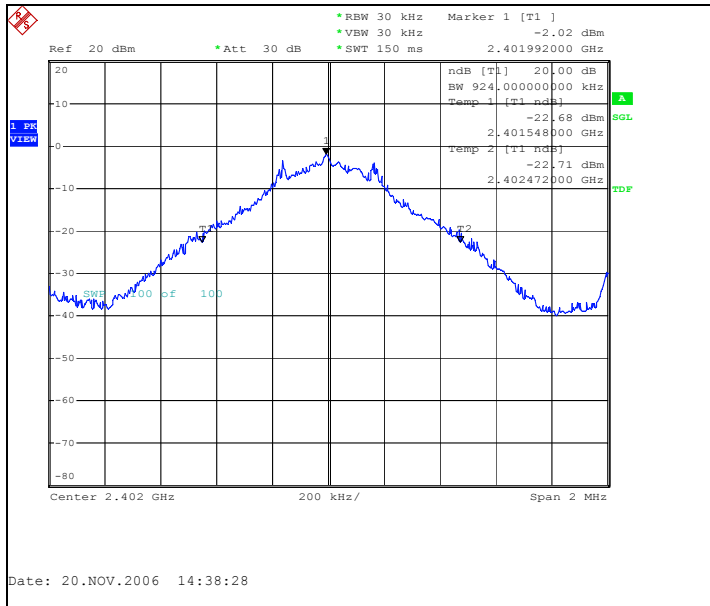
Limit [MHz]
N/A

8.2. Bluetooth Test results

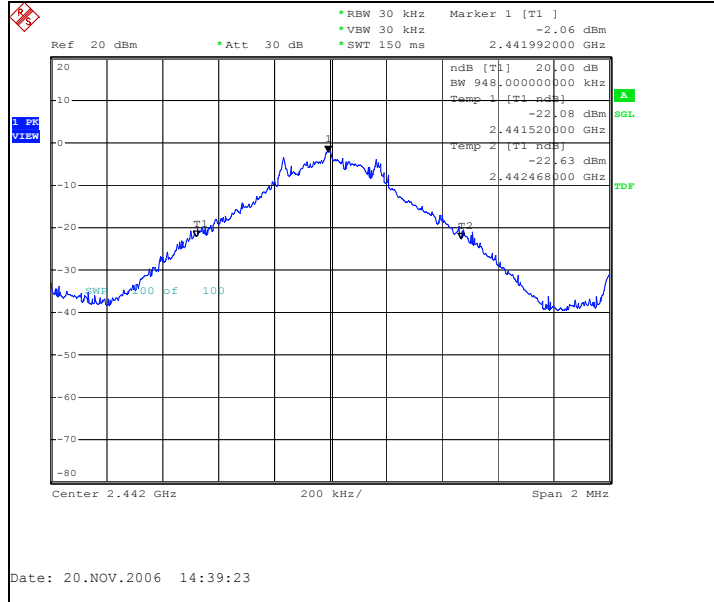
8.2.1 GFSK modulation, PRBS packet type

Channel / f _c [MHz]	20 dB bandwidth [kHz]	Result
0 / 2402	924.000	Passed
40 / 2442	948.000	Passed
78 / 2480	964.000	Passed

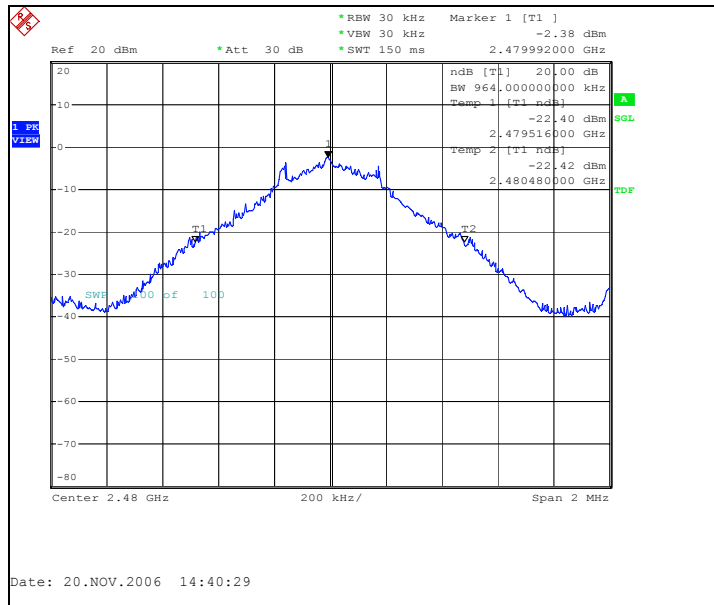
Channel 0 / 2402 MHz



Channel 40 / 2442 MHz



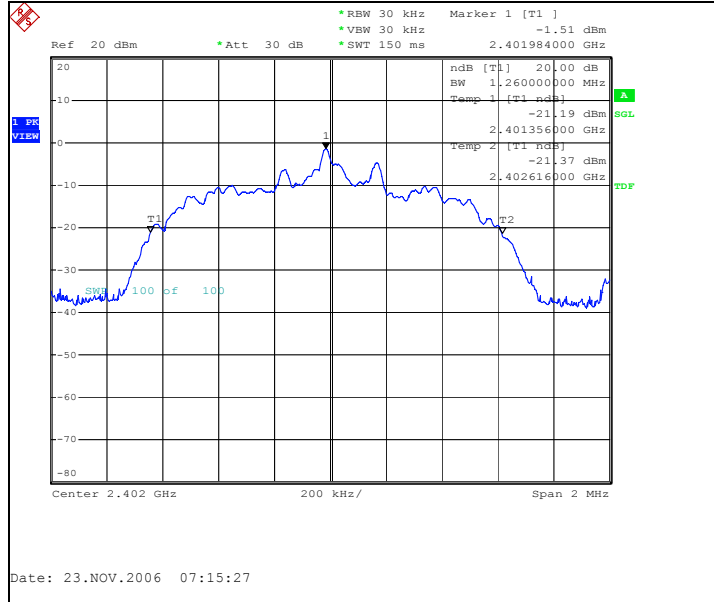
Channel 78 / 2480 MHz



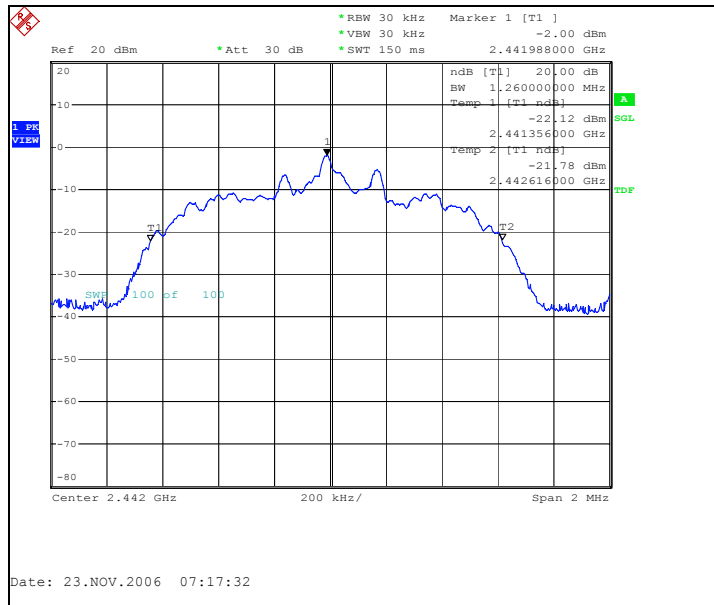
8.2.2 8DPSK modulation, PRBS packet type

Channel / f_c [MHz]	20 dB bandwidth [kHz]	Result
0 / 2402	1260.000	Passed
40 / 2442	1260.000	Passed
78 / 2480	1260.000	Passed

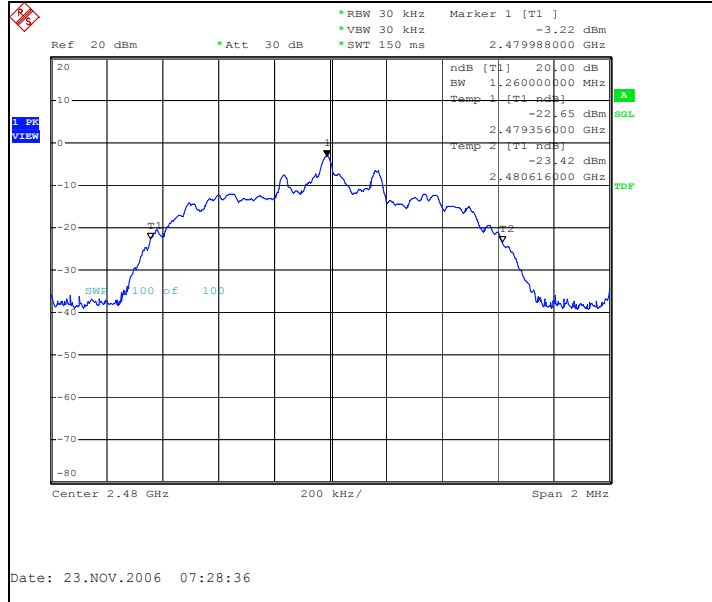
Channel 0 / 2402 MHz



Channel 40 / 2442 MHz



Channel 78 / 2480 MHz



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

EUT with DUT number	RM-159 dut 27779, BL-5F dut 27780
Accessories with DUT numbers	HS-45 dut 27782, AC-5E dut 27781
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	23.9 / 28.0 1017.7
Date of measurements	20-11-2006
Measured by	Jan Engelbrechtsen

9.1. Test method and limit

The measurement is made according to Public notice DA 00-705 and IC standard RSS-210.

Limits for carrier frequency separation measurements

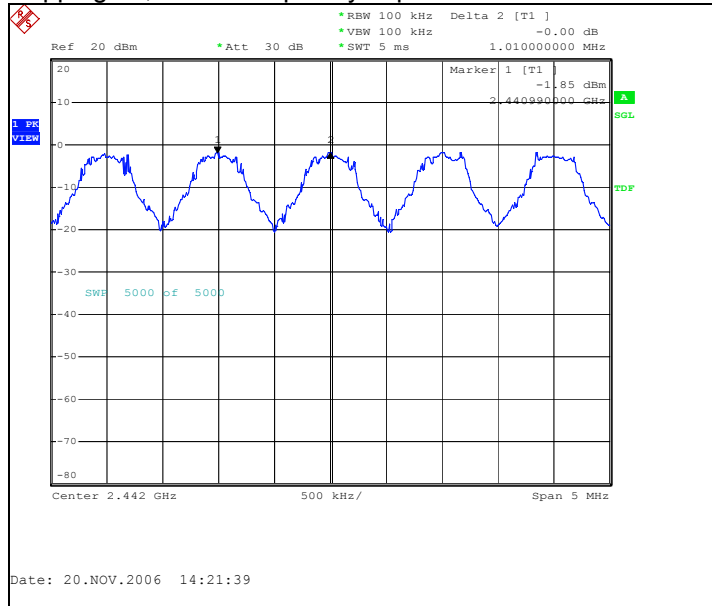
Limit [MHz]
≥ 0.025 or 2/3 of the 20 dB bandwidth

9.2. Bluetooth Test results

9.2.1 GFSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
1010	Passed

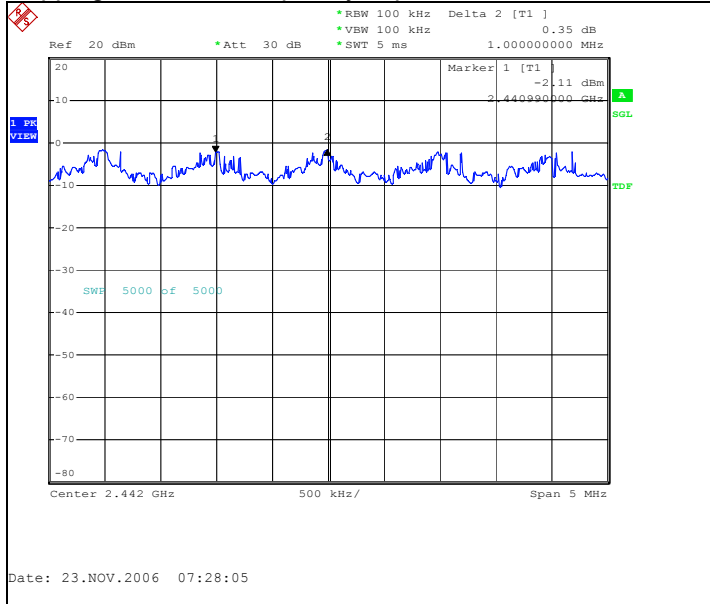
Hopping on, carrier frequency separation of channels 39 / 2441 MHz and 40 / 2442 MHz



9.2.2 8DPSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
1000	Passed

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



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

EUT with DUT number	RM-159 dut 27779, BL-5F dut 27780
Accessories with DUT numbers	HS-45 dut 27782, AC-5E dut 27781
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	23.9 / 28.0 1017.7
Date of measurements	20-11-2006
Measured by	Jan Engelbrechtsen

10.1. Test method and limit

The measurement is made according to Public notice DA 00-705 and IC standard RSS-210.

Limits for number of hopping frequencies measurements

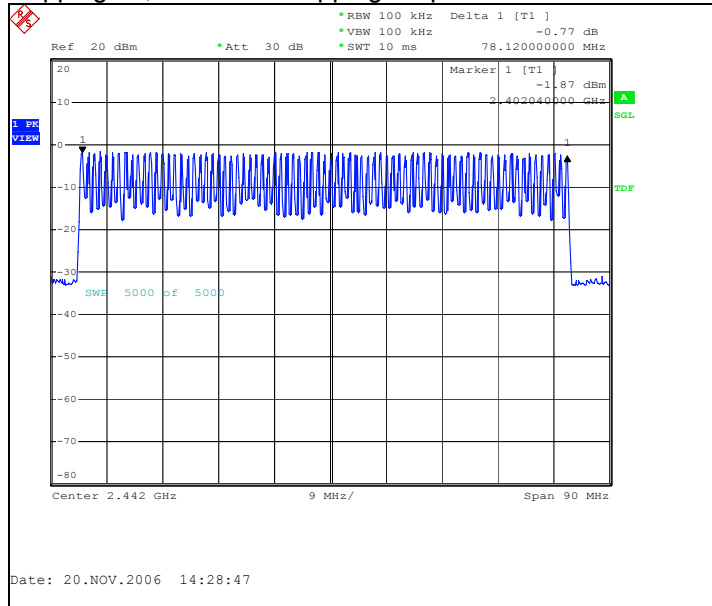
Limit [number]
≥ 15

10.2. Bluetooth Test results

10.2.1 GFSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
79	Passed

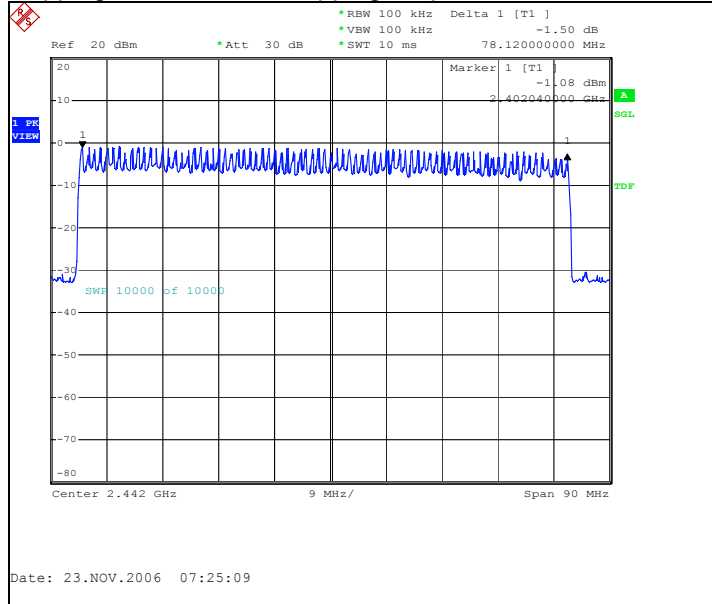
Hopping on, number of hopping frequencies



10.2.2 8DPSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
74	Passed

Hopping on, number of hopping frequencies



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

EUT with DUT number	RM-159 dut 27779, BL-5F dut 27780
Accessories with DUT numbers	HS-45 dut 27782, AC-5E dut 27781
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	23.9 / 28.0 1017.7
Date of measurements	20-11-2006
Measured by	Jan Engelbrechtsen

11.1. Test method and limit

The measurement is made according to Public notice DA 00-705 and IC standard RSS-210 as follows:

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

Limits for time of occupancy measurements

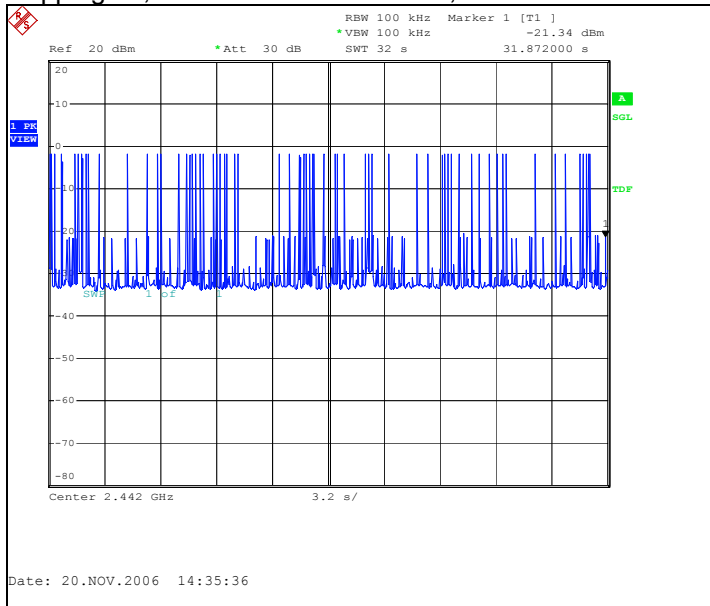
Limit [s]
≤ 0.4

11.2. Bluetooth test results

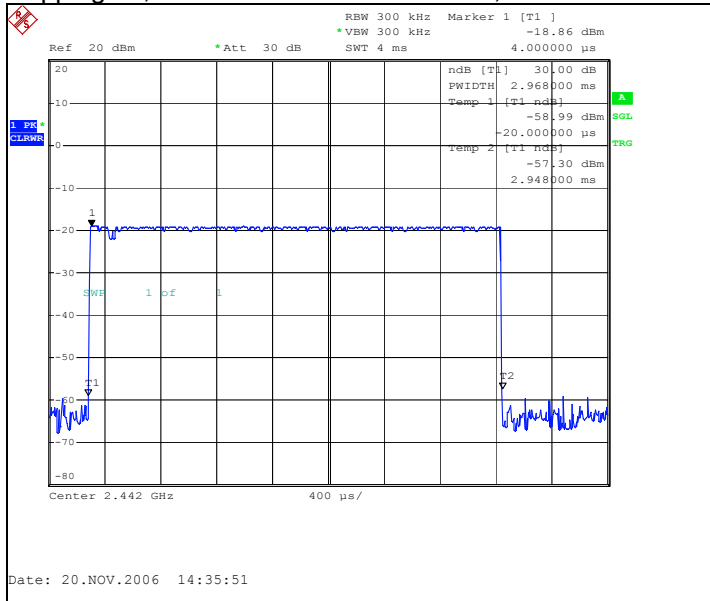
11.2.1 GFSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [μs]	Time of occupancy [s]	Result
62	2968.000	0.184016	Passed

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



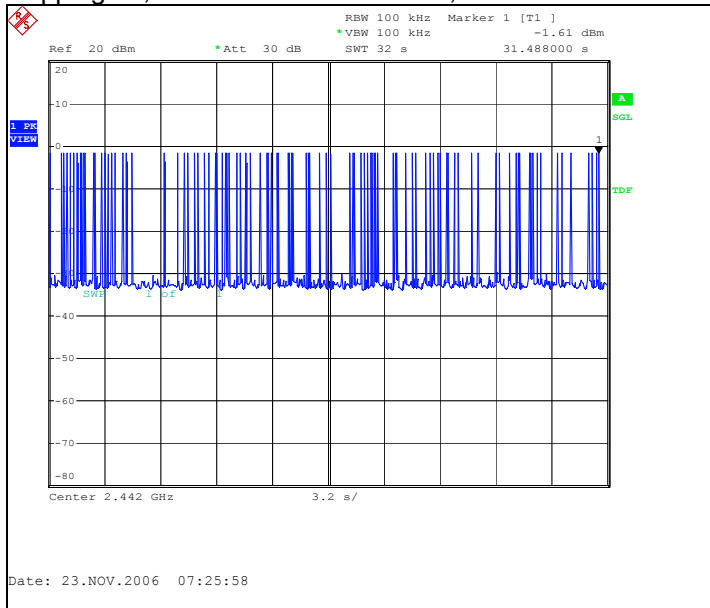
Hopping on, duration of one transmission, channel 40 / 2442 MHz



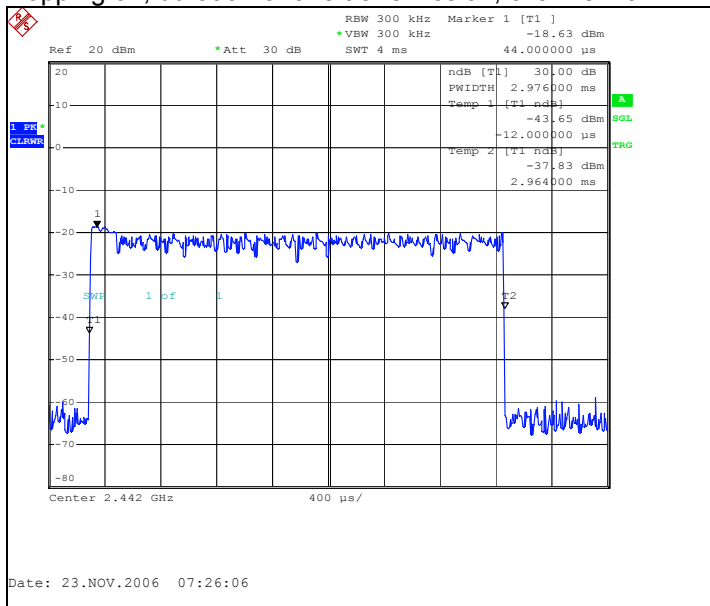
11.2.2 8DPSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [μs]	Time of occupancy [s]	Result
85	2976.000	0.252960	Passed

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



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



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

EUT with DUT number	RM-159 dut 27779, BL-5F dut 27780
Accessories with DUT numbers	HS-45 dut 27782, AC-5E dut 27781
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	23.9 / 28.0 1017.7
Date of measurements	20-11-2006
Measured by	Jan Engelbrechtsen

12.1. 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

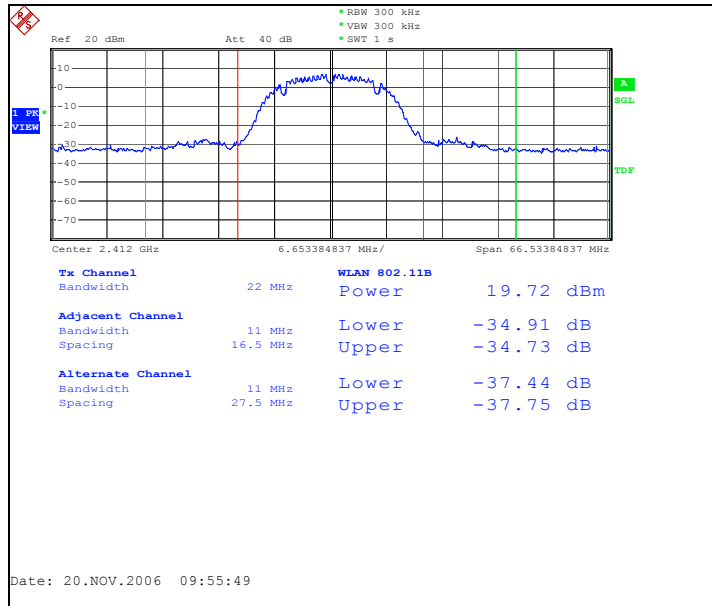
Frequency range [MHz]	Limit [W]	Limit [dBm]
2400 – 2483.5	≤ 1	≤ 30

12.2. WLAN Test results

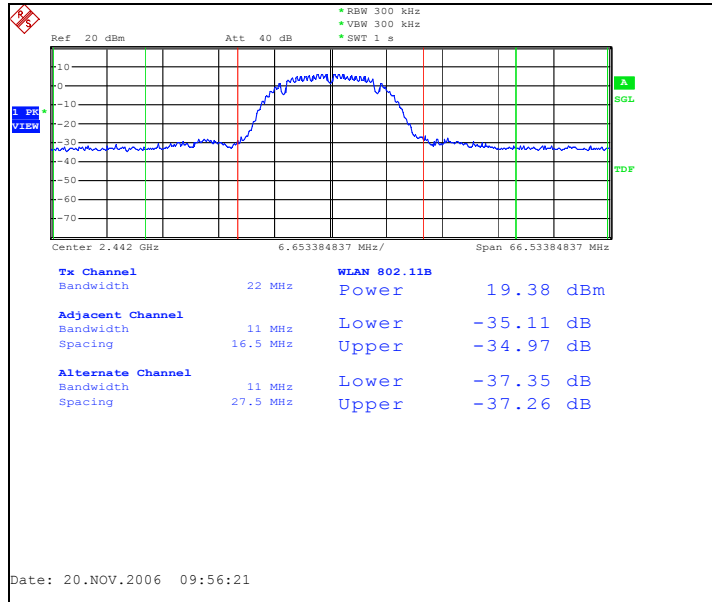
12.2.1 DSSS mode, BPSK modulation, 1 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [W]	Result
1 / 2412	19.72	0.094	Passed
7 / 2442	19.38	0.087	Passed
11 / 2462	19.48	0.089	passed

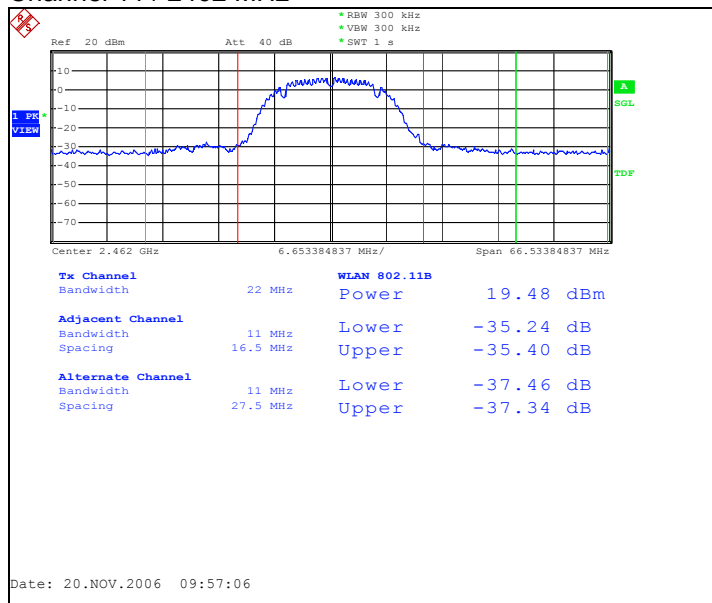
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



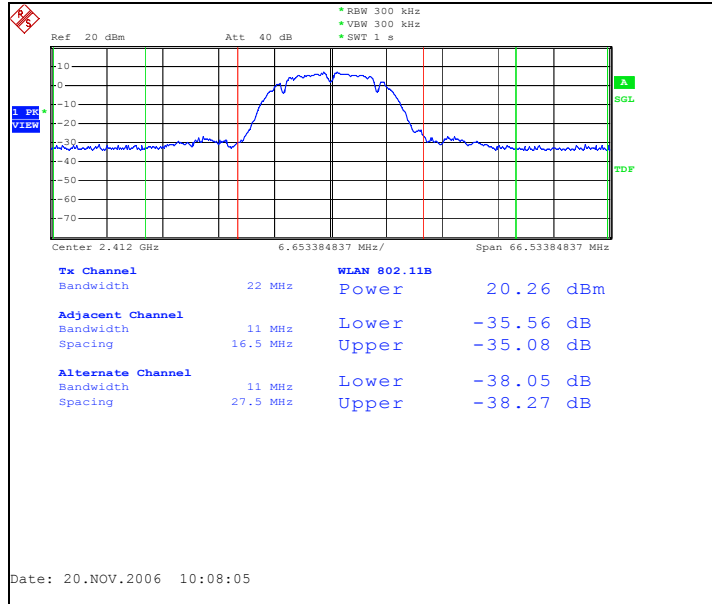
Channel 11 / 2462 MHz



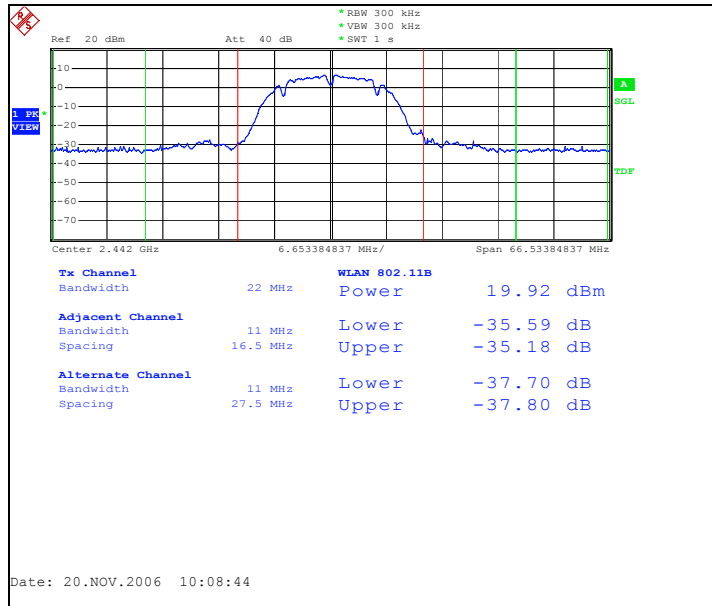
12.2.2 DSSS mode, QPSK modulation, 2 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [W]	Result
1 / 2412	20.26	0.106	Passed
7 / 2442	19.92	0.098	Passed
11 / 2462	20.04	0.101	passed

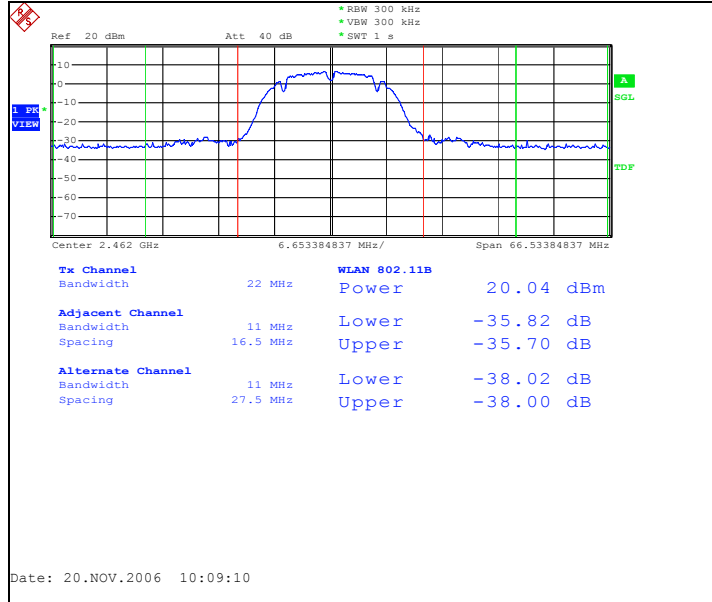
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



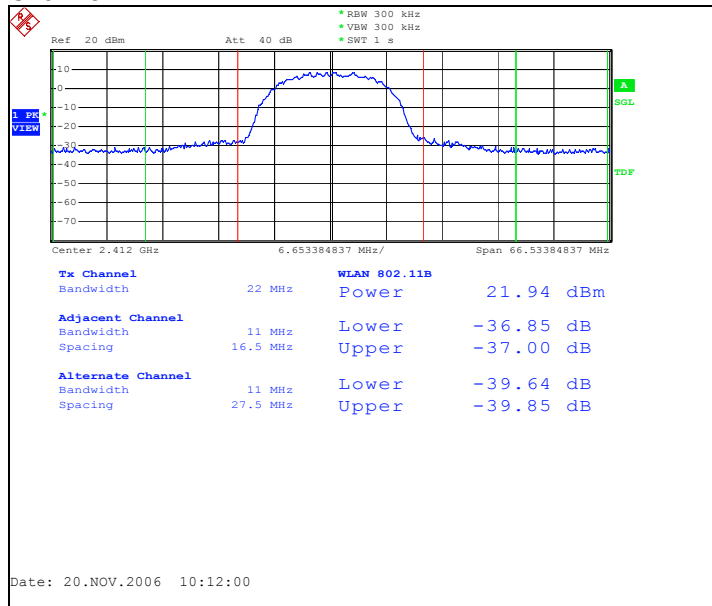
Channel 11 / 2462 MHz



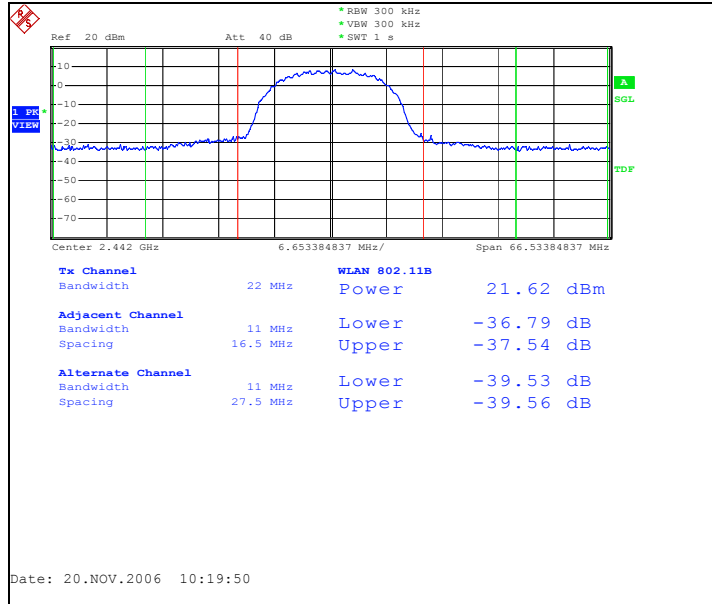
12.2.3 DSSS mode, QPSK modulation, 5.5 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [W]	Result
1 / 2412	21.94	0.156	Passed
7 / 2442	21.62	0.145	Passed
11 / 2462	21.74	0.149	passed

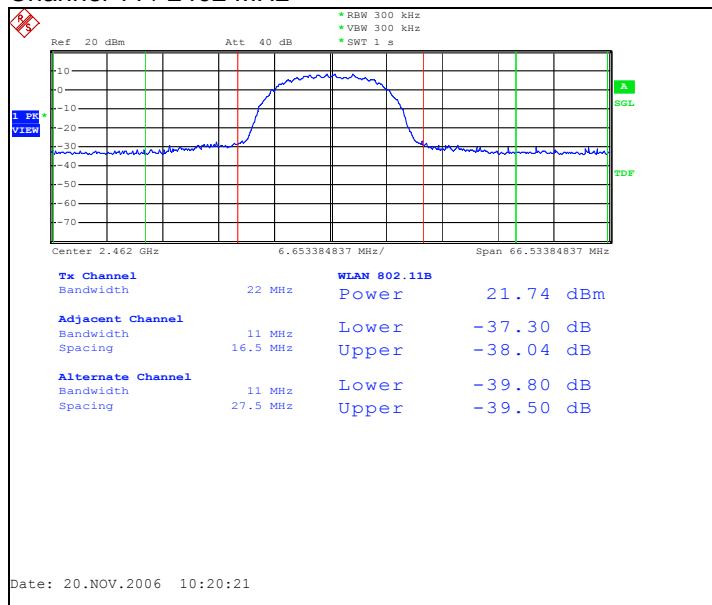
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



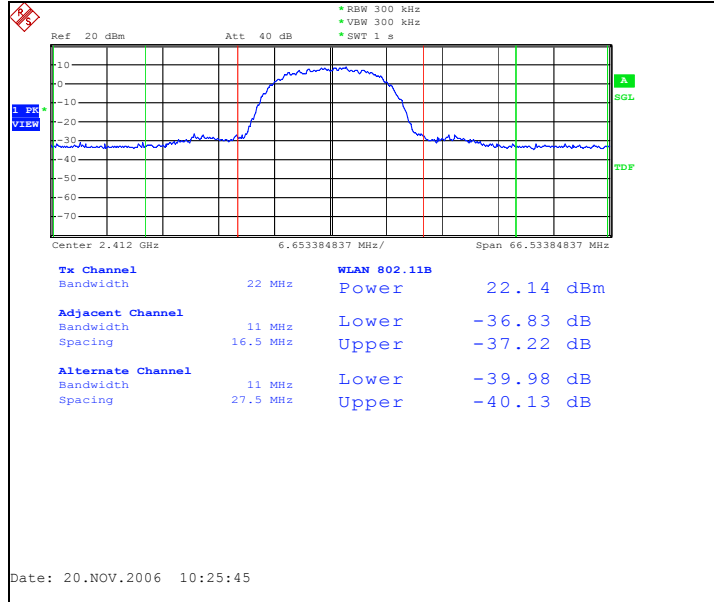
Channel 11 / 2462 MHz



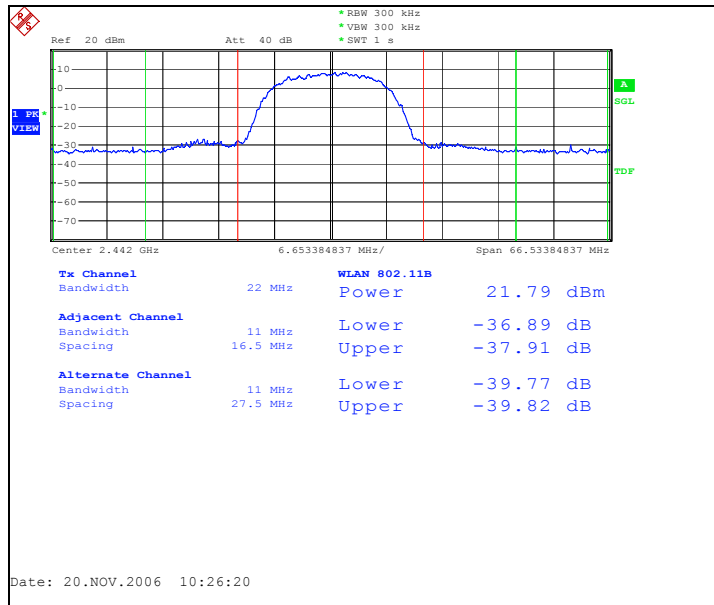
12.2.4 DSSS mode, QPSK modulation, 11 Mbps data rate

Channel / f _C [MHz]	P [dBm]	P [W]	Result
1 / 2412	22.14	0.164	Passed
7 / 2442	21.79	0.151	Passed
11 / 2462	21.94	0.156	passed

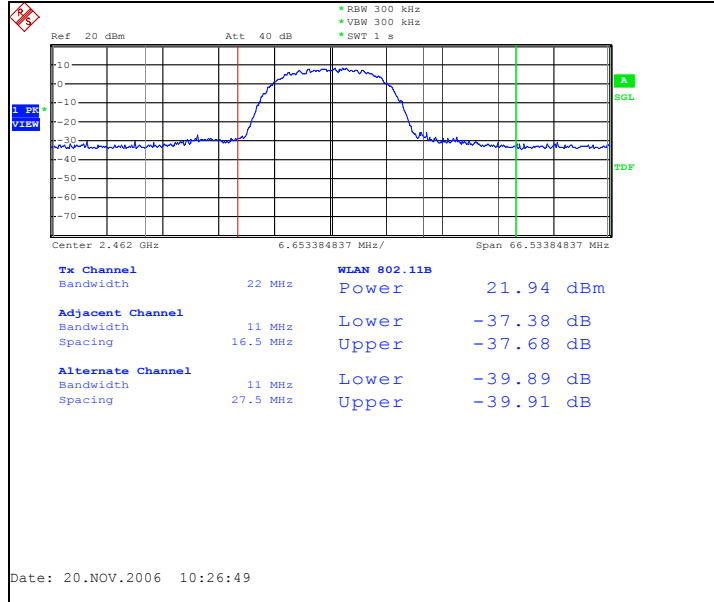
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



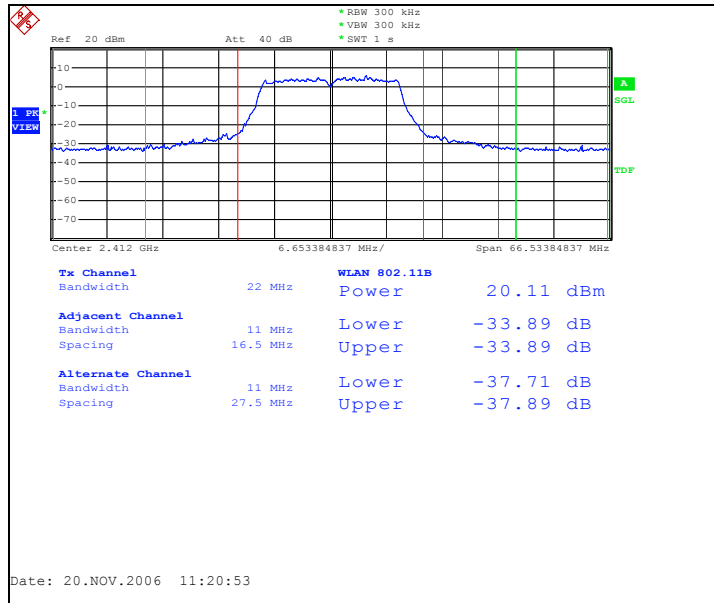
Channel 11 / 2462 MHz



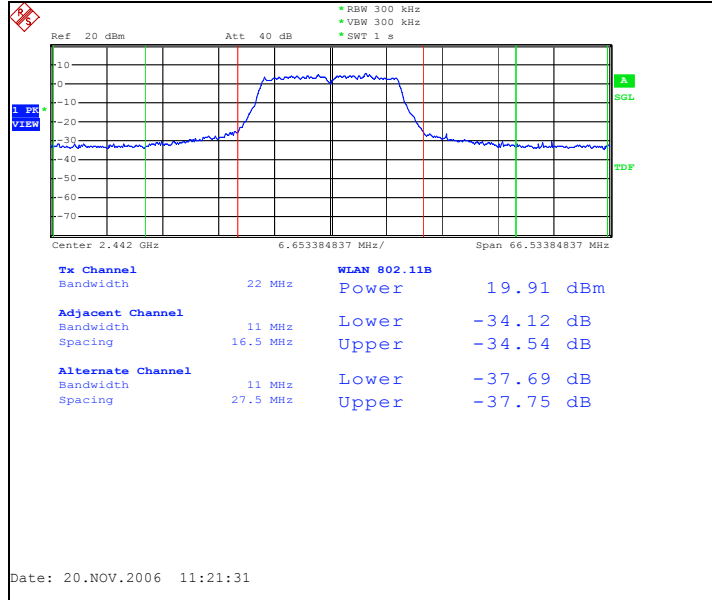
12.2.5 OFDM mode, BPSK modulation, 6 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [W]	Result
1 / 2412	20.11	0.103	Passed
7 / 2442	19.91	0.098	Passed
11 / 2462	20.04	0.101	passed

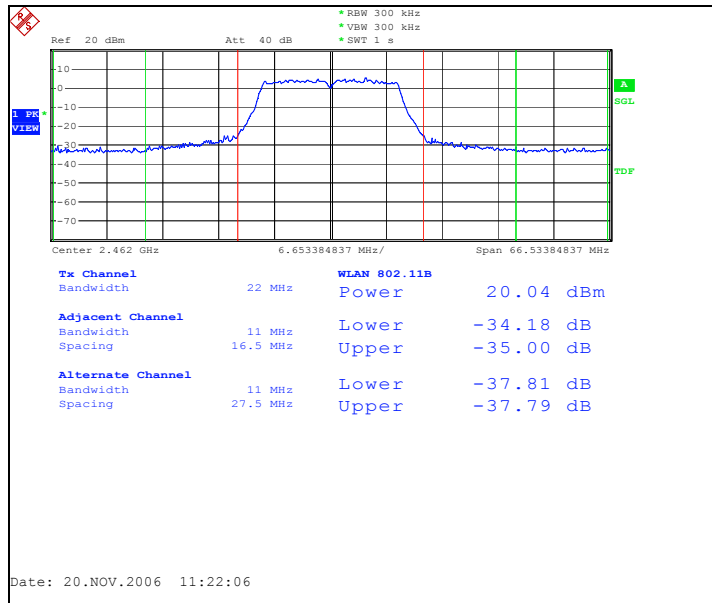
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



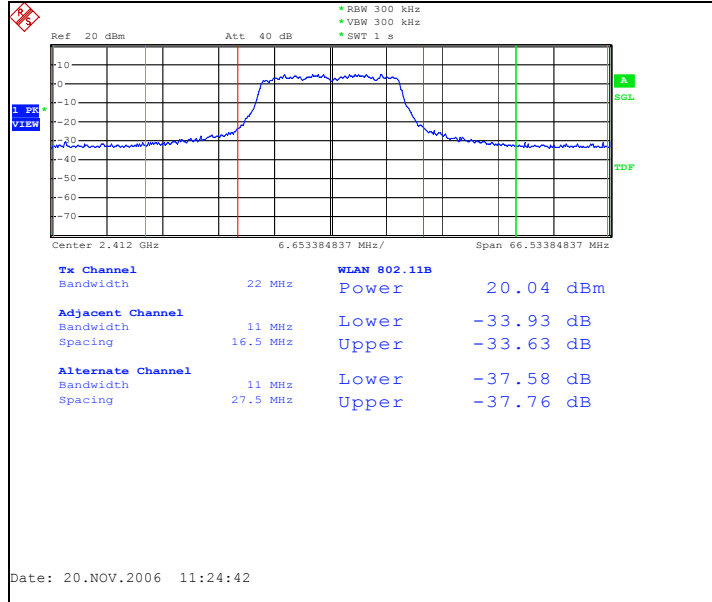
Channel 11 / 2462 MHz



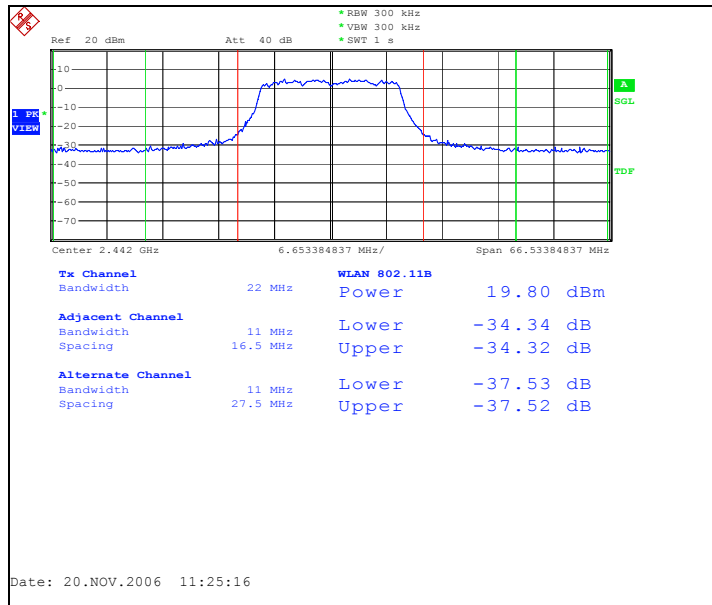
12.2.6 OFDM mode, BPSK modulation, 9 Mbps data rate

Channel / f_c [MHz]	P [dBm]	P [W]	Result
1 / 2412	20.04	0.101	Passed
7 / 2442	19.80	0.095	Passed
11 / 2462	19.94	0.099	passed

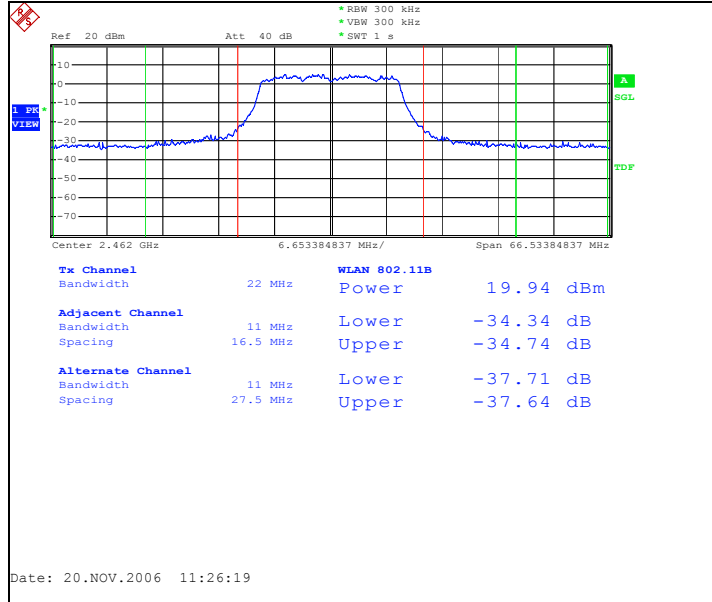
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



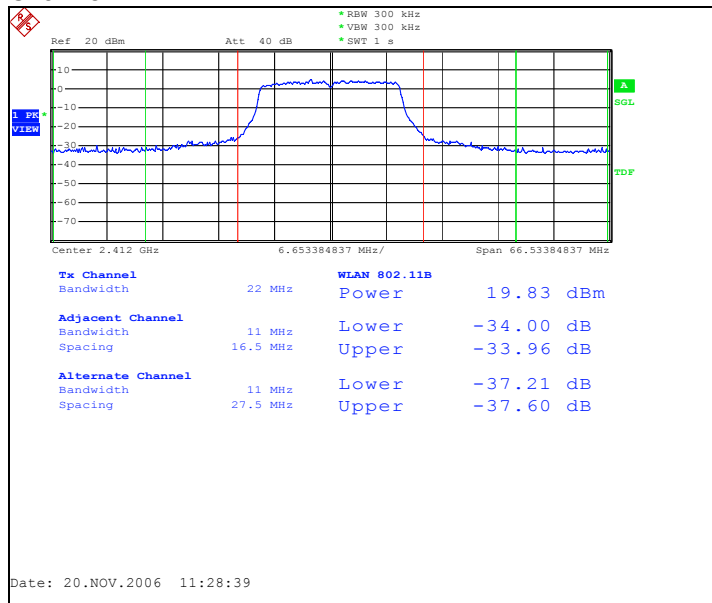
Channel 11 / 2462 MHz



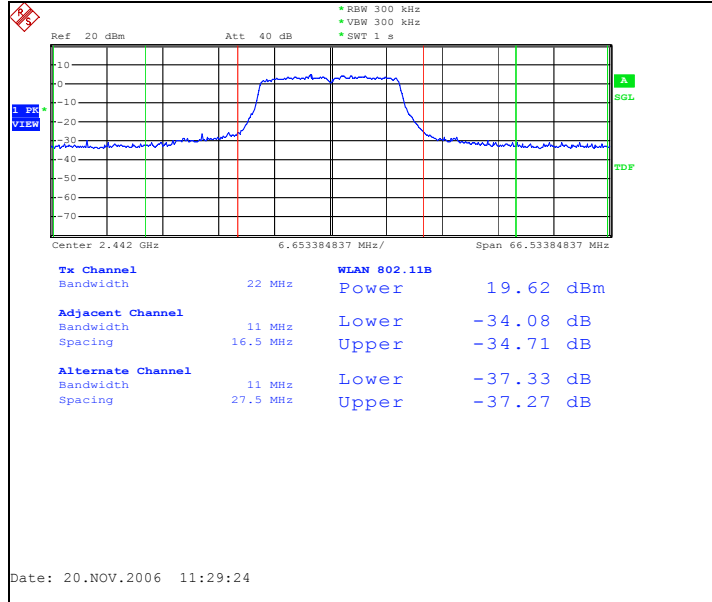
12.2.7 OFDM mode, QPSK modulation, 12 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [W]	Result
1 / 2412	19.83	0.096	Passed
7 / 2442	19.62	0.092	Passed
11 / 2462	19.75	0.094	passed

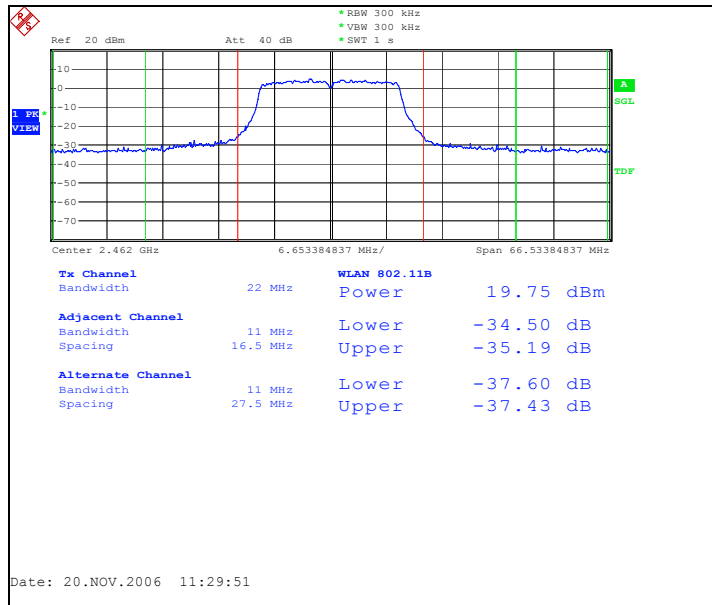
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



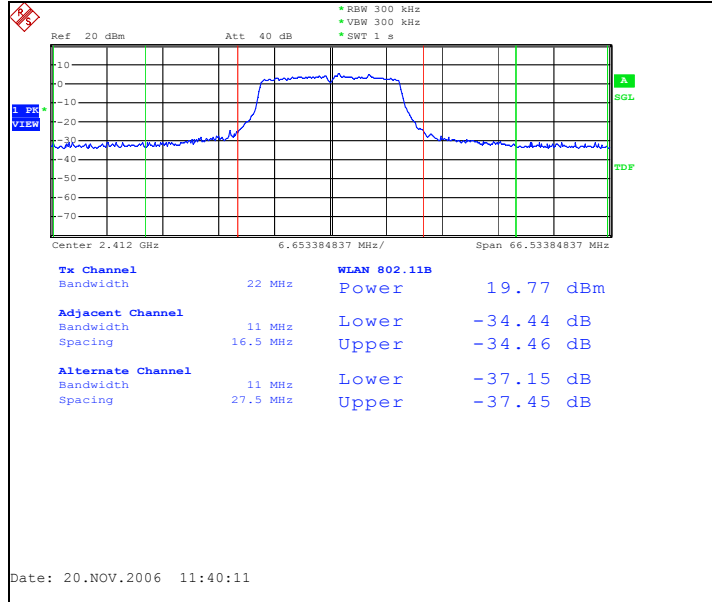
Channel 11 / 2462 MHz



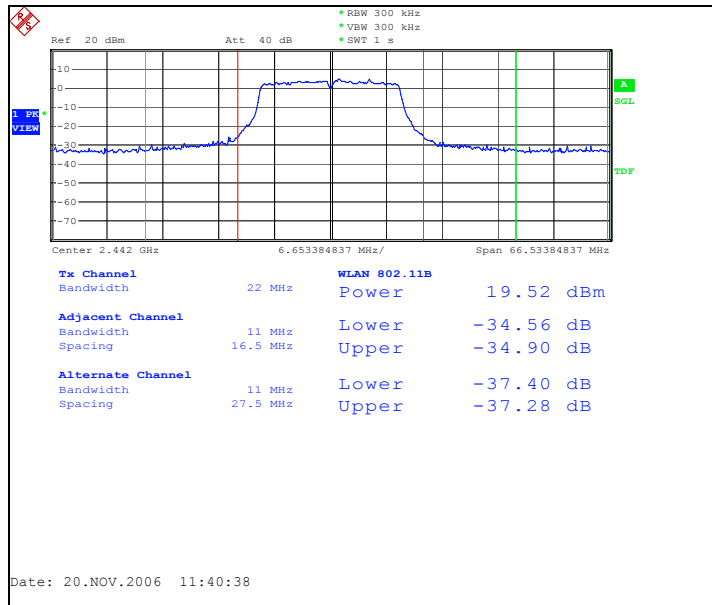
12.2.8 OFDM mode, QPSK modulation, 18 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [W]	Result
1 / 2412	19.77	0.095	Passed
7 / 2442	19.52	0.090	Passed
11 / 2462	19.68	0.093	passed

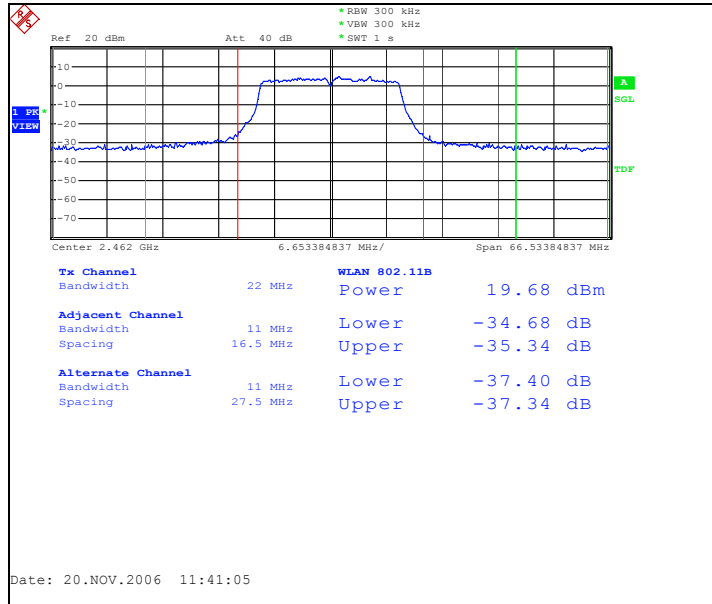
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



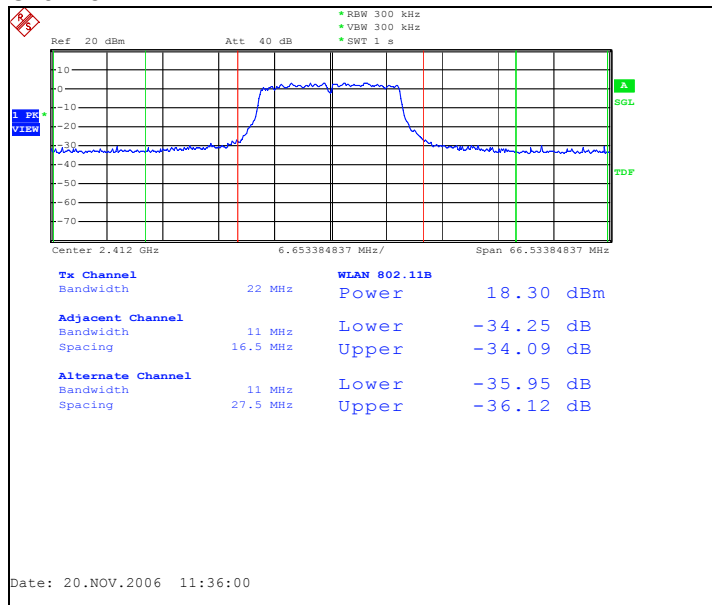
Channel 11 / 2462 MHz



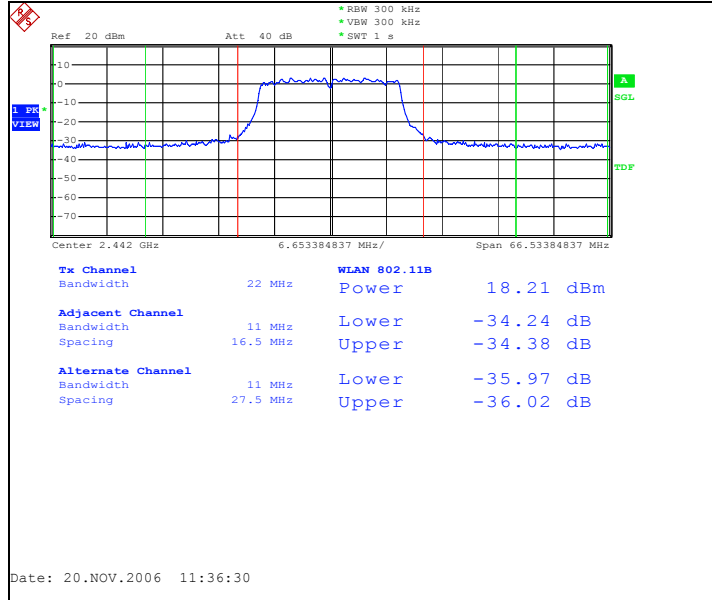
12.2.9 OFDM mode, 16QAM modulation, 24 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [W]	Result
1 / 2412	18.30	0.068	Passed
7 / 2442	18.21	0.066	Passed
11 / 2462	18.34	0.068	passed

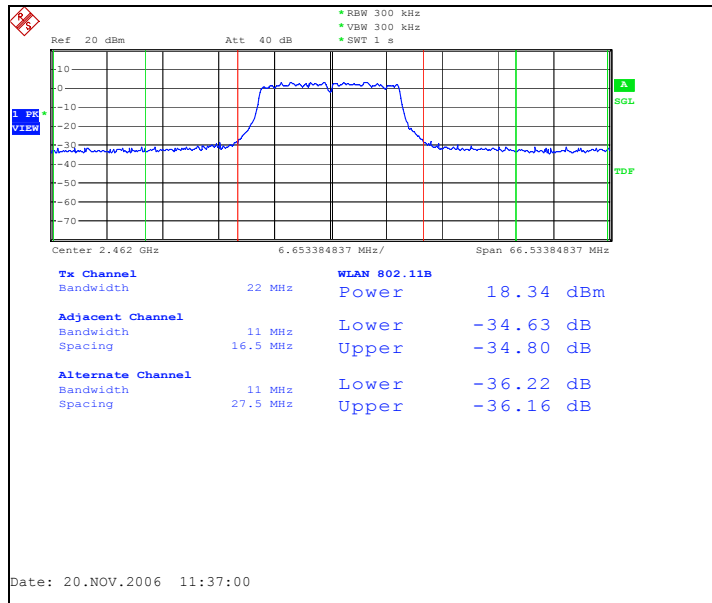
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



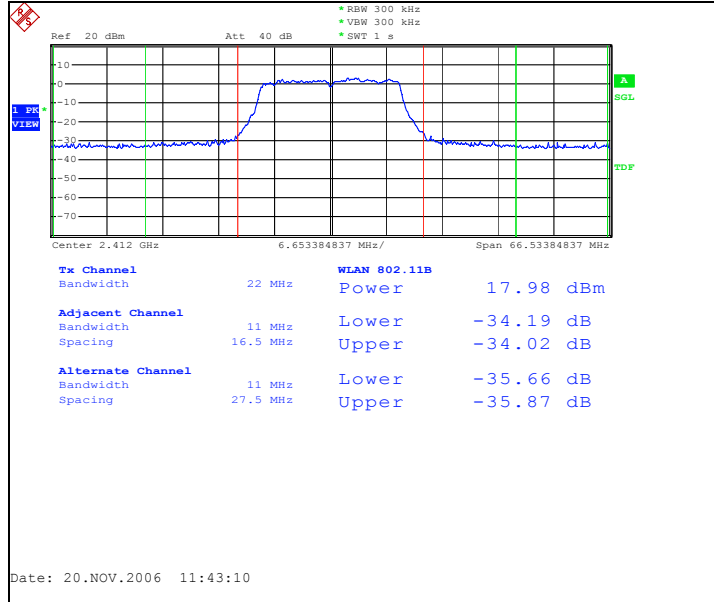
Channel 11 / 2462 MHz



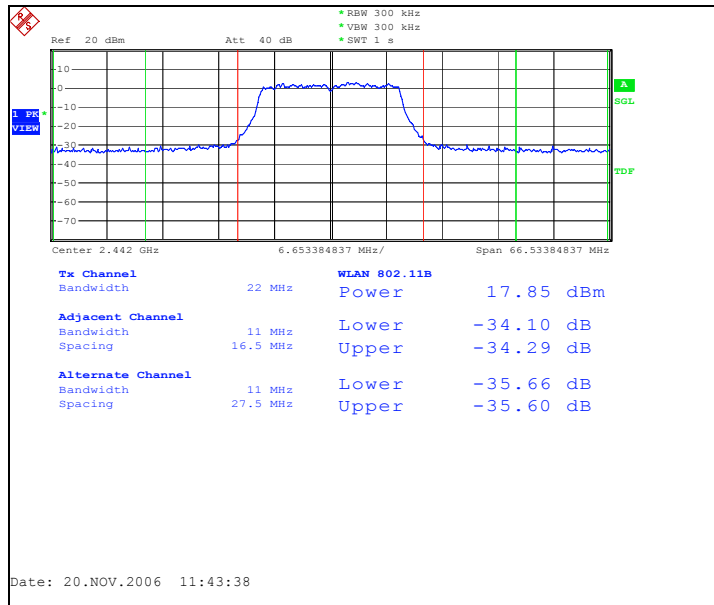
12.2.10 OFDM mode, 16QAM modulation, 36 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [W]	Result
1 / 2412	17.98	0.063	Passed
7 / 2442	17.85	0.061	Passed
11 / 2462	17.97	0.063	passed

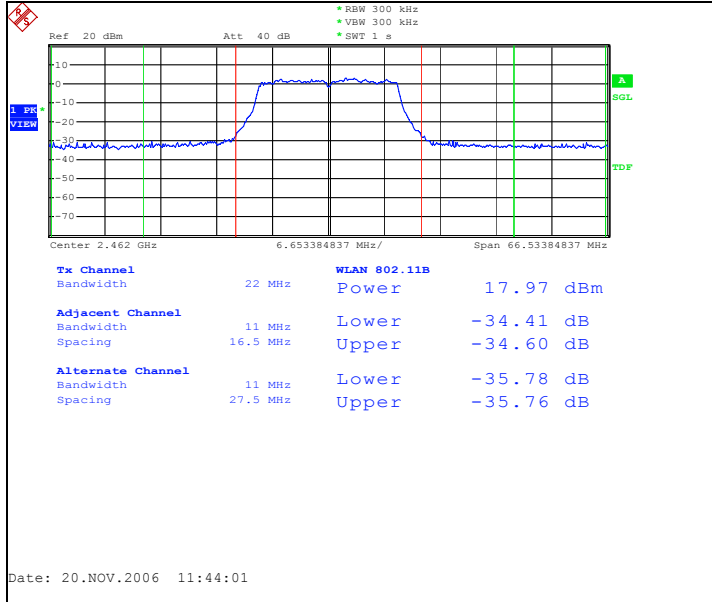
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



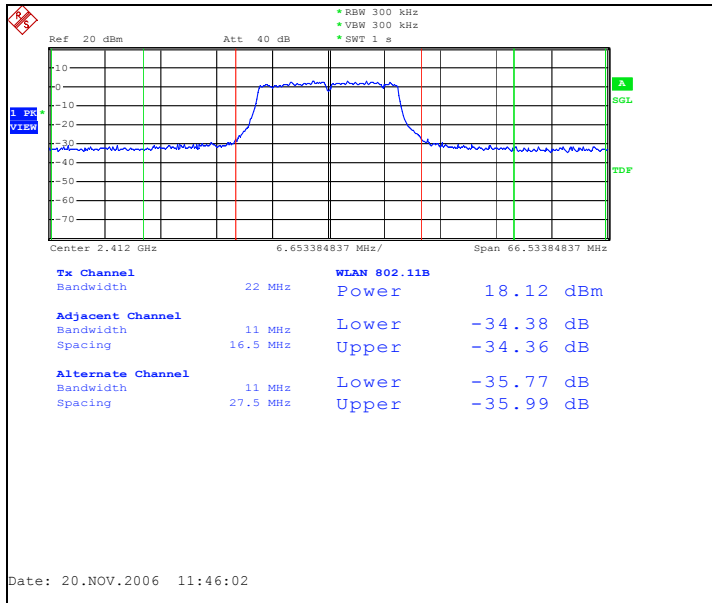
Channel 11 / 2462 MHz



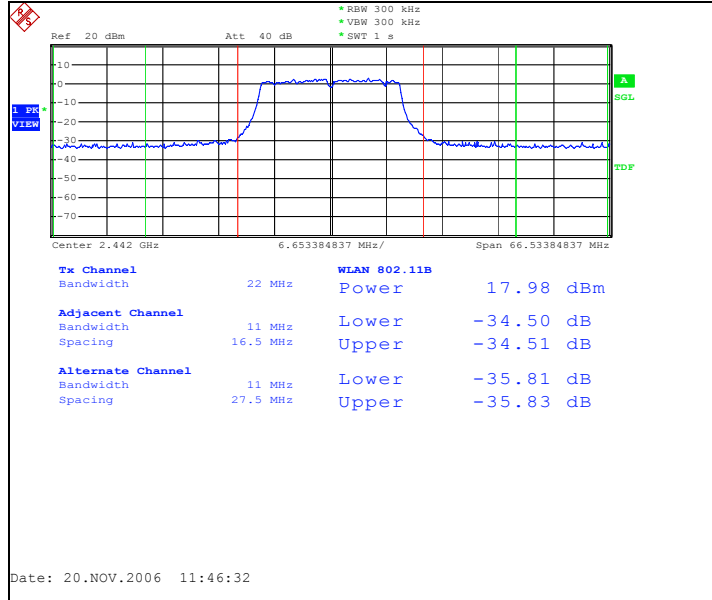
12.2.11 OFDM mode, 64QAM modulation, 48 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [W]	Result
1 / 2412	18.12	0.065	Passed
7 / 2442	17.98	0.063	Passed
11 / 2462	18.15	0.065	passed

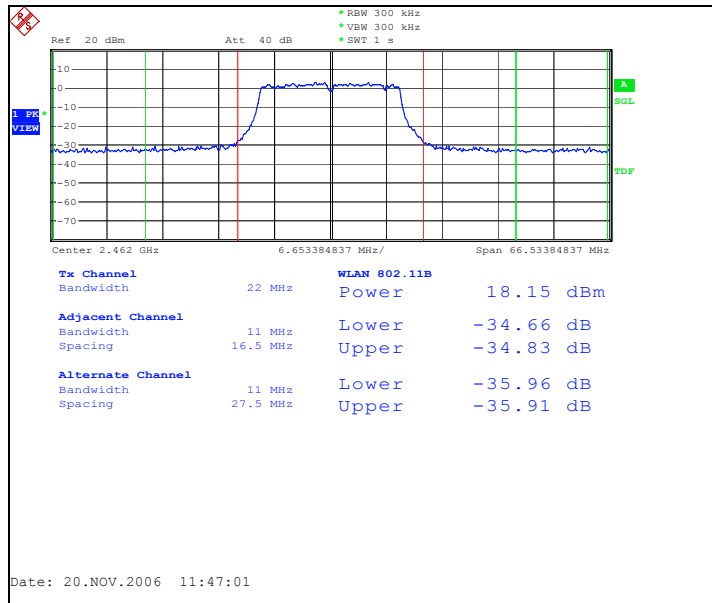
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



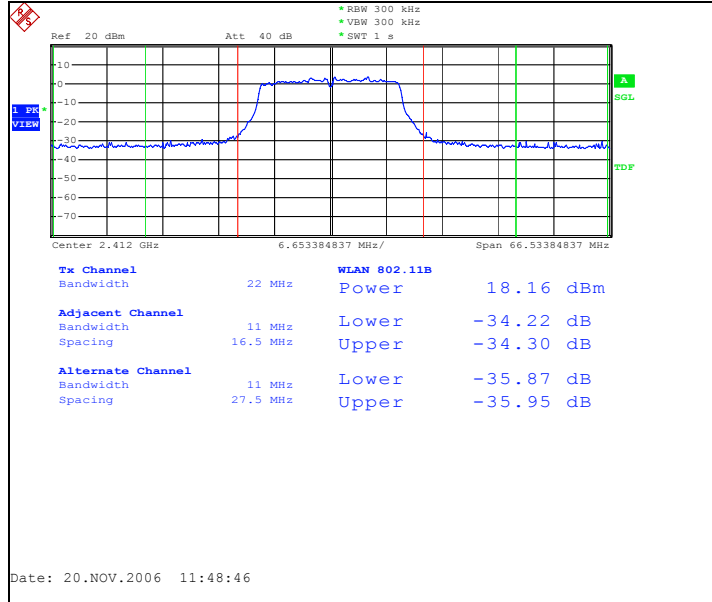
Channel 11 / 2462 MHz



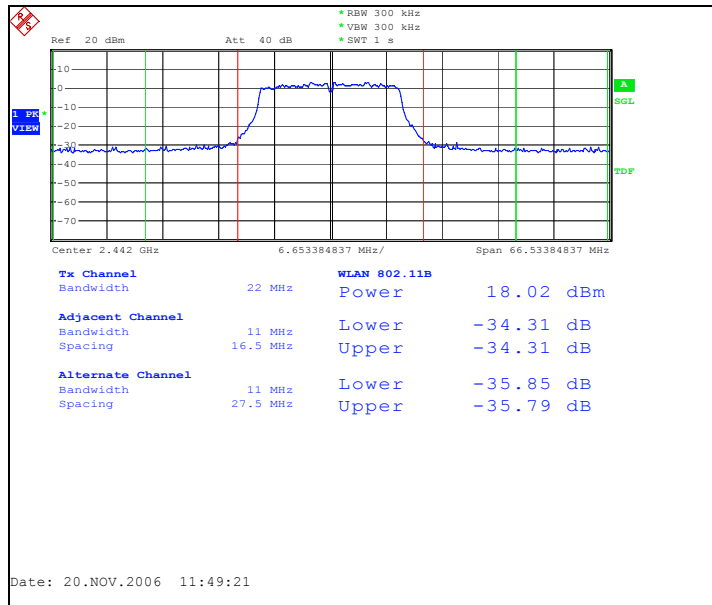
12.2.12 OFDM mode, 64QAM modulation, 54 Mbps data rate

Channel / f _c [MHz]	P [dBm]	P [W]	Result
1 / 2412	18.16	0.065	Passed
7 / 2442	18.02	0.063	Passed
11 / 2462	18.15	0.065	passed

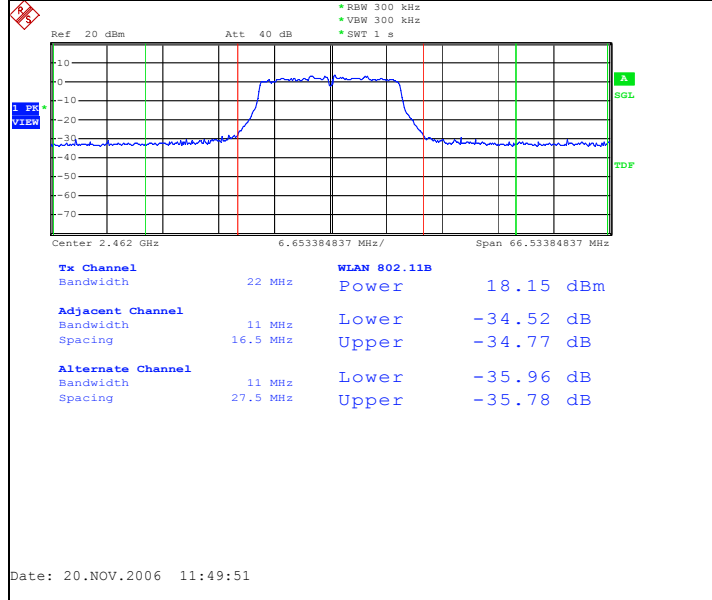
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



Channel 11 / 2462 MHz



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

EUT with DUT number	RM-159 Dut # 28540
Accessories with DUT numbers	BL-5F Dut#29105, AC-5E Dut#29104, HS-45 Dut#27787
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	23 / 48 / 1012
Date of measurements	28-11-2006
Measured by	Christian Andersen

13.1. 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

13.2. WLAN Test results

13.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

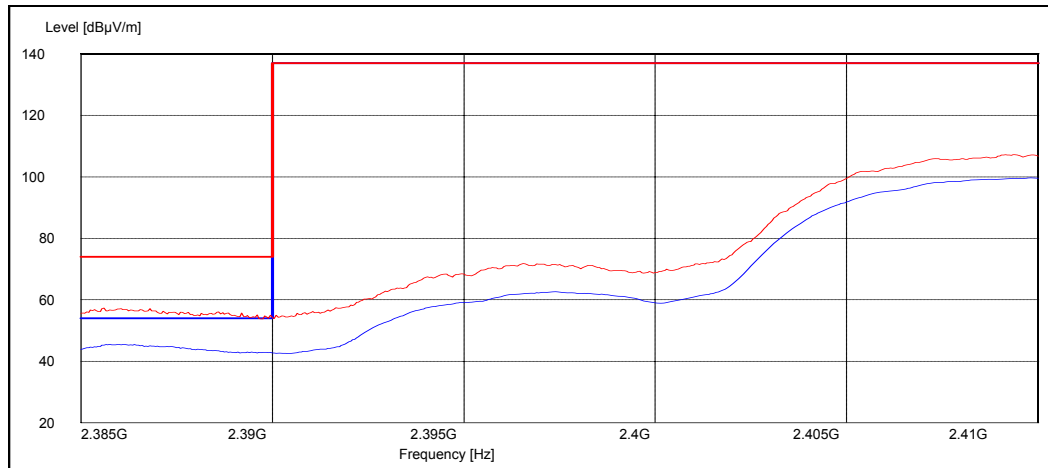
Average (RBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
1 / 2412	45.42	Passed
11 / 2462	38.56	Passed

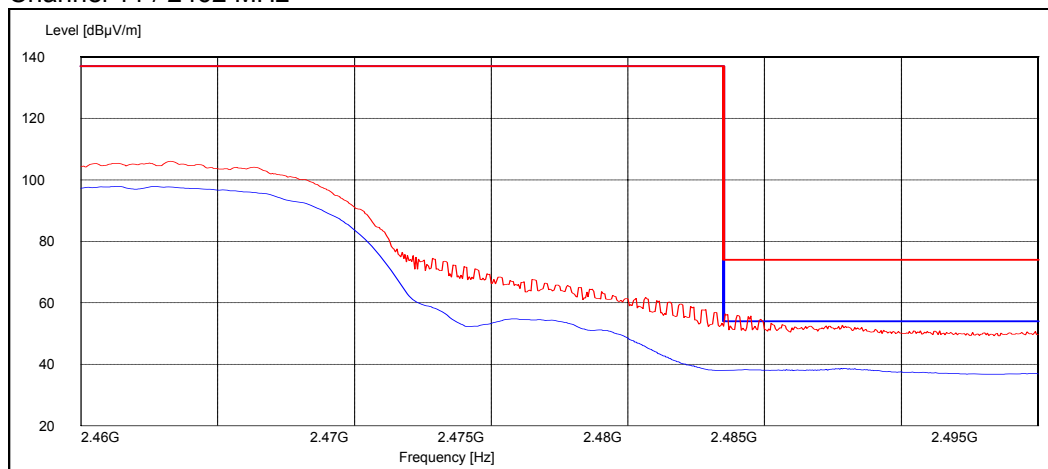
Peak (RBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
1 / 2412	57.07	Passed
11 / 2462	56.44	Passed

Channel 1 / 2412 MHz



Channel 11 / 2462 MHz



13.2.2 OFDM mode, BPSK modulation, 6 Mbps data rate

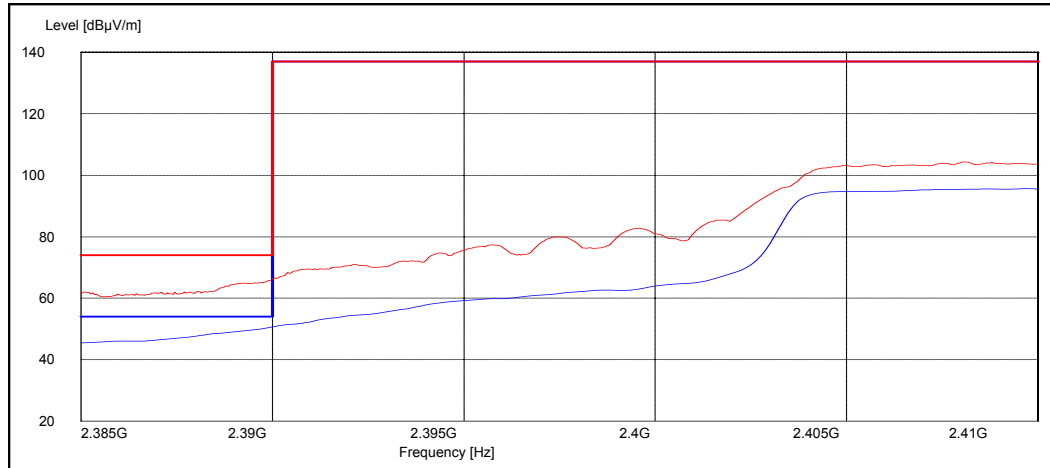
Average (RBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
1 / 2412	50.69	Passed
11 / 2462	41.01	Passed

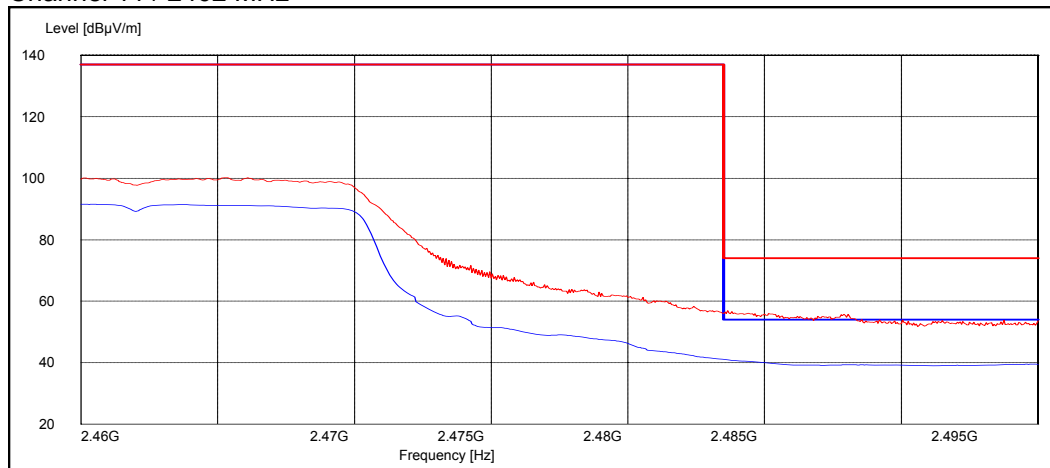
Peak (RBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
1 / 2412	66.03	Passed
11 / 2462	56.96	Passed

Channel 1 / 2412 MHz



Channel 11 / 2462 MHz



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

EUT with DUT number	RM-159 dut 27779, BL-5F dut 27780
Accessories with DUT numbers	HS-45 dut 27782, AC-5E dut 27781
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	24.1 / 38.0 1000.8
Date of measurements	22-11-2006
Measured by	Jan Engelbrechtsen

14.1. Test method and limit

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

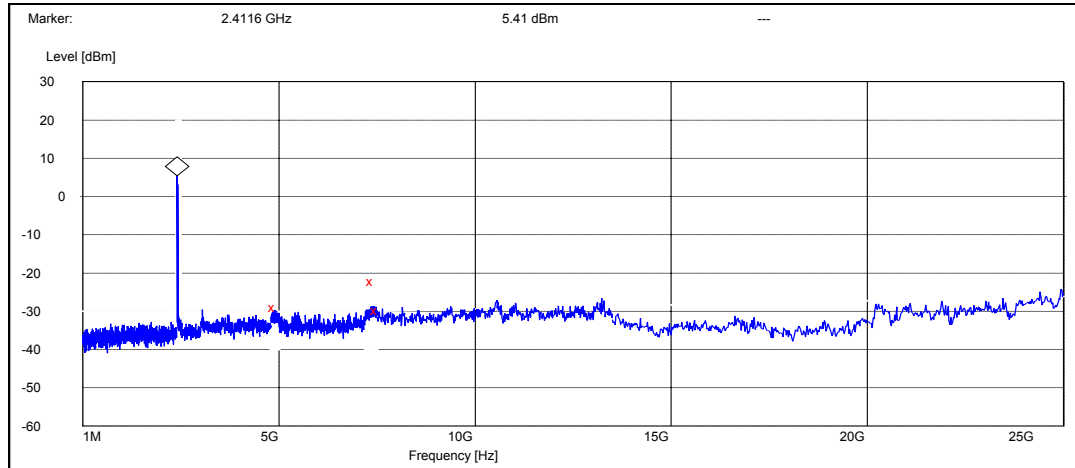
Limits for spurious RF conducted emissions measurements

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

14.2. WLAN Test results

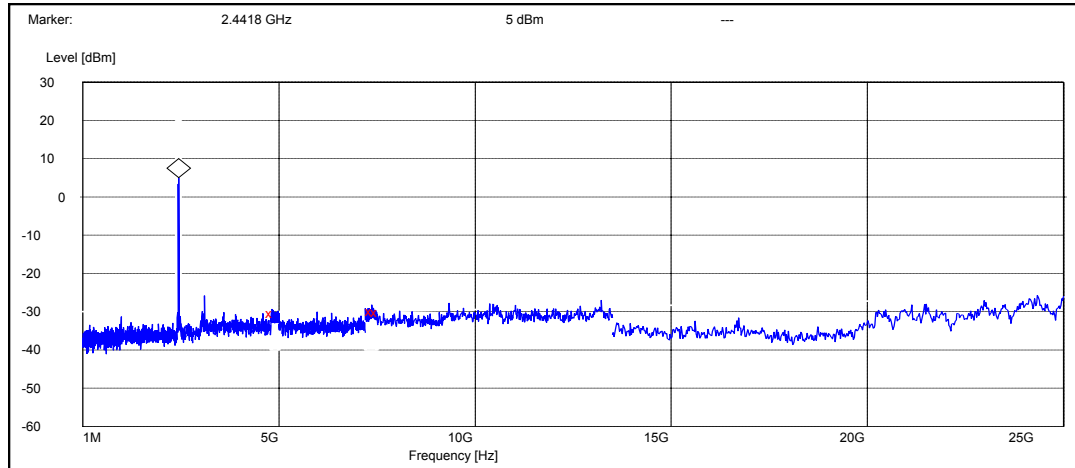
14.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

Channel 1 / 2412 MHz



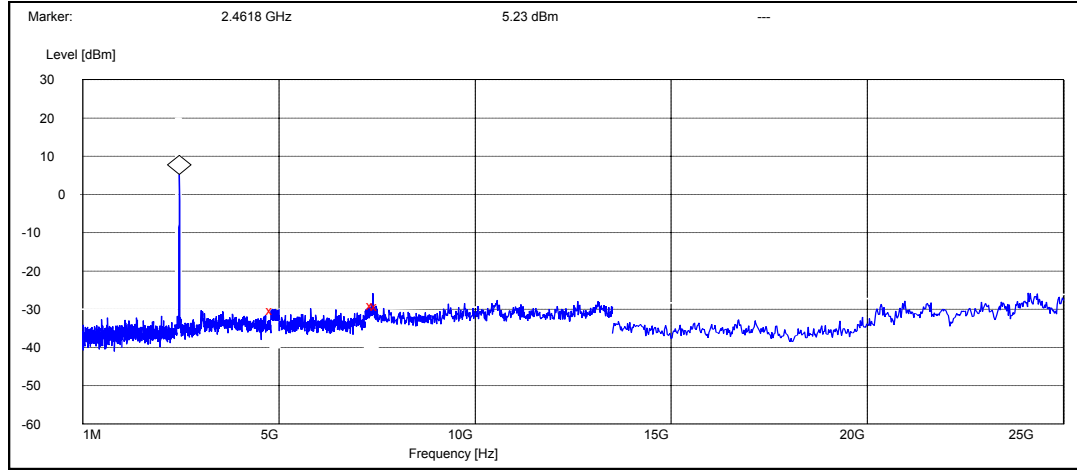
Frequency [MHz]	P [dBc]	Result
4888.400000	-34.406472	Passed
7389.600000	-27.506472	Passed
7500.000000	-35.106472	Passed

Channel 7 / 2442 MHz



Frequency [MHz]	P [dBc]	Result
4829.200000	-35.403626	Passed
7371.000000	-34.803626	Passed
7500.000000	-35.303626	Passed

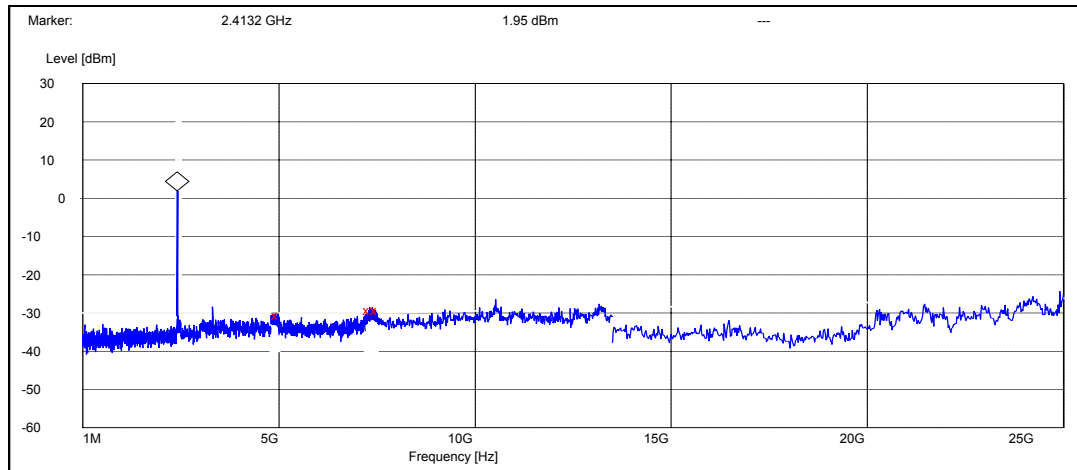
Channel 11 / 2462 MHz



Frequency [MHz]	P [dBc]	Result
4839.200000	-35.525800	Passed
7394.400000	-34.325800	Passed
7500.000000	-34.625800	Passed

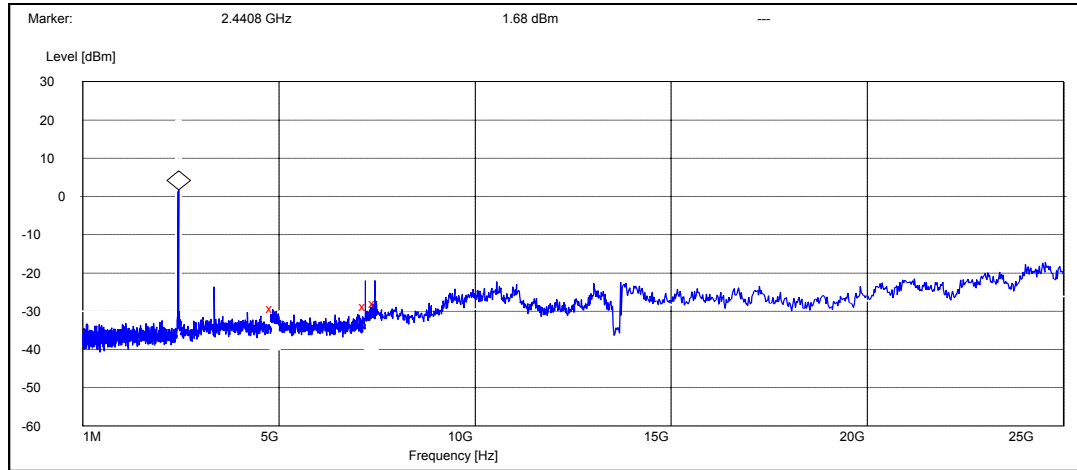
14.2.2 OFDM mode, BPSK modulation, 6 Mbps data rate

Channel 1 / 2412 MHz



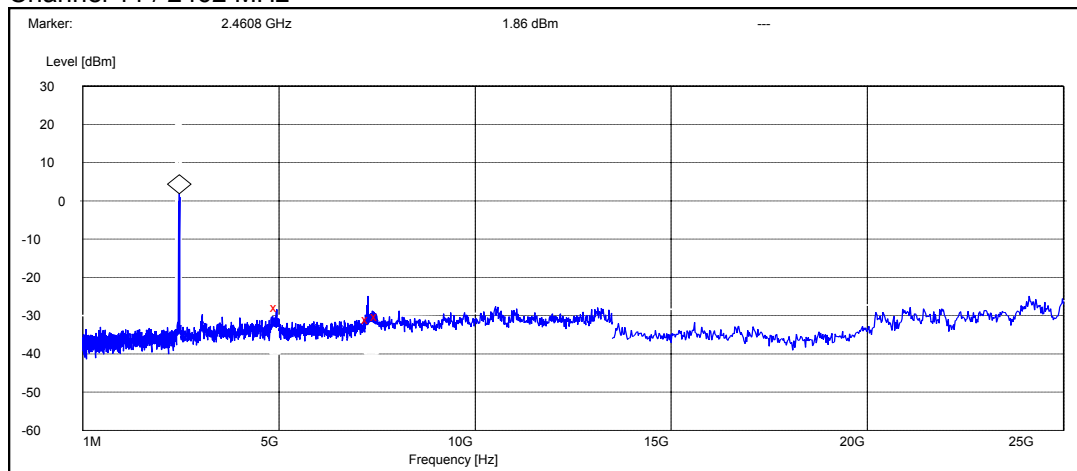
Frequency [MHz]	P [dBc]	Result
4973.200000	-32.452547	Passed
7315.200000	-31.352547	Passed
7500.000000	-31.252547	Passed

Channel 7 / 2442 MHz



Frequency [MHz]	P [dBc]	Result
4837.600000	-30.980088	Passed
7205.400000	-30.480088	Passed
7448.400000	-29.580088	Passed

Channel 11 / 2462 MHz



Frequency [MHz]	P [dBc]	Result
4946.800000	-29.759617	Passed
7268.400000	-32.859617	Passed
7500.000000	-32.059617	Passed

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

EUT with DUT number	RM-159 Dut#29107
Accessories with DUT numbers	BL-5F Dut#29105, AC-5E Dut#29104, HS-45 Dut#27787
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22.1 / 42.1 1026
Date of measurements	24-11-2006
Measured by	Christian Andersen

15.1. 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

15.2. WLAN Test results

15.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

Channel 1 / 2412 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
4824.000000	42.30	130.32	44.50	-2.20	VERTICAL	Passed
7236.000000	42.00	125.89	38.00	4.00	VERTICAL	Passed

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
4824.000000	29.90	31.26	32.10	-2.20	VERTICAL	Passed
7236.000000	30.70	34.28	26.70	4.00	VERTICAL	Passed

Channel 7 / 2442 MHz

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
30.800000	27.80	24.55	41.20	-13.40	VERTICAL	Passed
37.595391	23.50	14.96	41.20	-17.70	VERTICAL	Passed
74.086573	19.50	9.44	46.60	-27.10	HORIZONTAL	Passed
74.169940	19.90	9.89	47.00	-27.10	HORIZONTAL	Passed
86.732064	27.10	22.65	53.30	-26.20	HORIZONTAL	Passed

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U _{RX} [dBµV]	A _{TOT} [dB]	Polarisation	Result
4884.269539	41.50	118.85	43.40	-1.90	VERTICAL	Passed
7322.647295	40.70	108.39	36.50	4.20	HORIZONTAL	Passed
7326.149299	40.80	109.65	36.60	4.20	HORIZONTAL	Passed
17878.253507	57.70	767.36	32.30	25.40	HORIZONTAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U _{RX} [dBµV]	A _{TOT} [dB]	Polarisation	Result
4883.769539	29.40	29.51	31.30	-1.90	VERTICAL	Passed
7320.649299	27.90	24.83	23.70	4.20	HORIZONTAL	Passed
7321.647295	27.90	24.83	23.70	4.20	HORIZONTAL	Passed
17875.753507	44.80	173.78	19.30	25.50	HORIZONTAL	Passed

Channel 11 / 2462 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U _{RX} [dBµV]	A _{TOT} [dB]	Polarisation	Result
4924.000000	43.60	151.36	45.00	-1.40	VERTICAL	Passed
7386.000000	42.70	136.46	37.70	5.00	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U _{RX} [dBµV]	A _{TOT} [dB]	Polarisation	Result
4924.000000	30.60	33.88	32.00	-1.40	VERTICAL	Passed
7386.000000	29.80	30.90	24.80	5.00	VERTICAL	Passed

15.2.2 OFDM mode, BPSK modulation, 6 Mbps data rate

Channel 1 / 2412 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U _{RX} [dBµV]	A _{TOT} [dB]	Polarisation	Result
4824.000000	37.70	76.74	39.90	-2.20	HORIZONTAL	Passed
7236.000000	44.60	169.82	40.60	4.00	HORIZONTAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U _{RX} [dBµV]	A _{TOT} [dB]	Polarisation	Result
4824.000000	25.90	19.72	28.10	-2.20	VERTICAL	Passed
7236.000000	31.30	36.73	27.30	4.00	HORIZONTAL	Passed

Channel 7 / 2442 MHz

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
37.895391	20.90	11.09	38.80	-17.90	VERTICAL	Passed
47.133667	27.80	24.55	52.00	-24.20	VERTICAL	Passed
74.148497	16.50	6.68	43.60	-27.10	HORIZONTAL	Passed
75.069940	17.90	7.85	44.80	-26.90	HORIZONTAL	Passed

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
2367.711423	51.50	375.84	50.80	0.70	HORIZONTAL	Passed
4822.641283	37.30	73.28	39.50	-2.20	HORIZONTAL	Passed
4887.769539	38.20	81.28	40.10	-1.90	VERTICAL	Passed
7325.153307	43.80	154.88	39.60	4.20	HORIZONTAL	Passed
7326.151303	42.40	131.83	38.20	4.20	HORIZONTAL	Passed
7367.235471	41.70	121.62	37.00	4.70	VERTICAL	Passed
17870.241483	57.60	758.58	32.20	25.40	HORIZONTAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
2366.711423	39.10	90.16	38.40	0.70	HORIZONTAL	Passed
4820.141283	24.40	16.60	26.60	-2.20	HORIZONTAL	Passed
4885.769539	25.70	19.28	27.60	-1.90	VERTICAL	Passed
7322.653307	28.30	26.00	24.10	4.20	HORIZONTAL	Passed
7329.151303	29.30	29.17	25.00	4.30	HORIZONTAL	Passed
7371.235471	28.40	26.30	23.80	4.60	VERTICAL	Passed
17870.241483	44.70	171.79	19.30	25.40	HORIZONTAL	Passed

Channel 11 / 2462 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4924.000000	40.10	101.16	41.50	-1.40	VERTICAL	Passed
7386.000000	44.00	158.49	39.00	5.00	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4924.000000	27.40	23.44	28.80	-1.40	VERTICAL	Passed
7386.000000	30.40	33.11	25.40	5.00	VERTICAL	Passed

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

EUT with DUT number	RM-159 Dut # 27783
Accessories with DUT numbers	BL-5F Dut # 27794 + AC-5E Dut # 27792 + HS-45 Dut # 27788
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	Test cases selected from worst case Conducted Output Power.
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	21.8 / 41.0 1000.2
Date of measurements	21-11-2006
Measured by	Allan F. Henriksen

16.1. Test method and limit

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

The EUT is placed on a wooden table 80 cm above the reference groundplane.

The EUT is connected via LISN to a test power supply.

The measurement results are obtained as described below:

$$U [dB\mu V] = U_{RX} + A_{TOT}$$

Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable and pulse limiter attenuations.

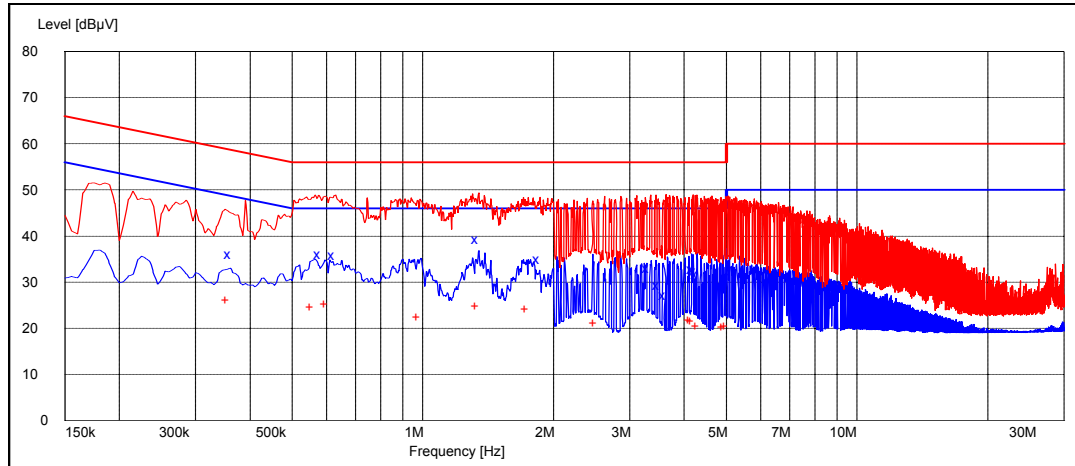
CISPR 22 Class B limits

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

16.2. WLAN Test results

16.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

Channel 7 / 2442 MHz



Quasi peak (RBW: 9 kHz)

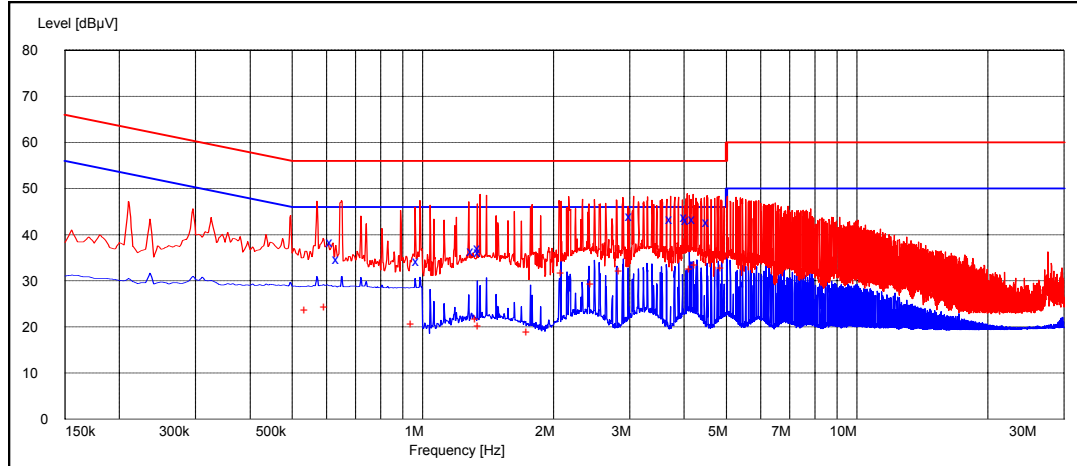
Frequency [MHz]	U [dBµV]	Line	Result
0.360000	36.00	L1	Passed
0.580000	36.10	L1	Passed
0.625000	35.90	L1	Passed
1.340000	39.20	L1	Passed
1.855000	35.10	N	Passed
3.315000	33.10	L1	Passed
3.495000	29.40	N	Passed
3.620000	27.20	L1	Passed
4.200000	32.70	L1	Passed
4.245000	32.40	L1	Passed
4.295000	31.80	L1	Passed

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.355000	26.00	N	Passed
0.555000	24.70	L1	Passed
0.600000	25.30	L1	Passed
0.980000	22.40	L1	Passed
1.335000	24.90	N	Passed
1.740000	24.10	N	Passed
2.500000	21.10	N	Passed
4.130000	21.70	N	Passed
4.185000	21.60	N	Passed
4.300000	20.50	N	Passed
4.930000	20.20	N	Passed
5.000000	20.40	N	Passed

16.2.2 OFDM mode, BPSK modulation, 6 Mbps data rate

Channel 7 / 2442 MHz



Quasi peak (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.620000	38.40	N	Passed
0.640000	34.70	N	Passed
0.980000	34.30	L1	Passed
1.310000	36.50	L1	Passed
1.355000	37.10	L1	Passed
1.360000	36.30	L1	Passed
3.030000	44.00	N	Passed
3.755000	43.40	N	Passed
4.050000	43.70	L1	Passed
4.090000	43.10	L1	Passed
4.225000	43.30	L1	Passed
4.560000	42.70	N	Passed

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.540000	23.70	L1	Passed
0.600000	24.40	L1	Passed
0.950000	20.60	N	Passed
1.335000	21.70	N	Passed
1.355000	20.20	L1	Passed
1.755000	18.90	N	Passed
2.105000	31.70	N	Passed
2.460000	29.40	N	Passed
2.865000	32.20	N	Passed
4.155000	32.60	N	Passed
4.285000	33.40	N	Passed
4.910000	32.70	N	Passed

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

EUT with DUT number	RM-159 dut 27779, BL-5F dut 27780
Accessories with DUT numbers	HS-45 dut 27782, AC-5E dut 27781
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	23.9 / 28.0 1017.7
Date of measurements	20-11-2006
Measured by	Jan Engelbrechtsen

17.1. Test method and limit

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

Limits for 6 dB bandwidth measurements

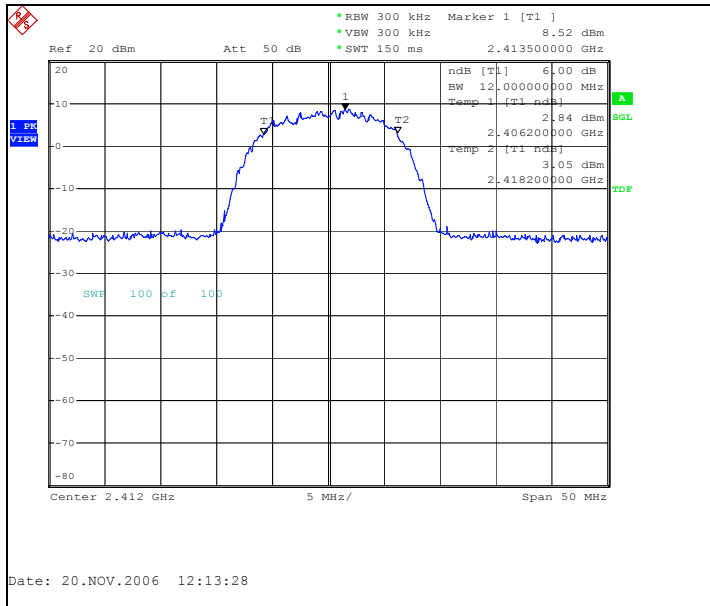
Limit [kHz]
≥ 500

17.2. WLAN test results

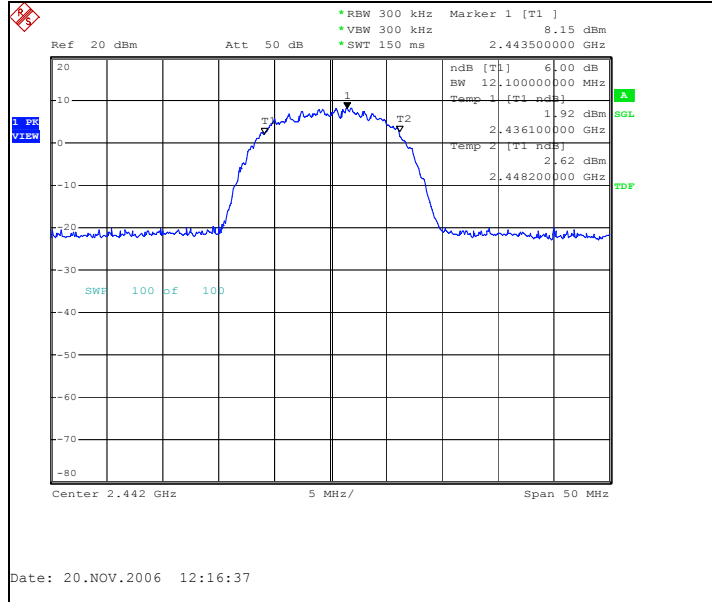
17.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

Channel / f _c [MHz]	6 dB bandwidth [kHz]	Result
1	12000.000	Passed
7	12100.000	Passed
11	12200.000	Passed

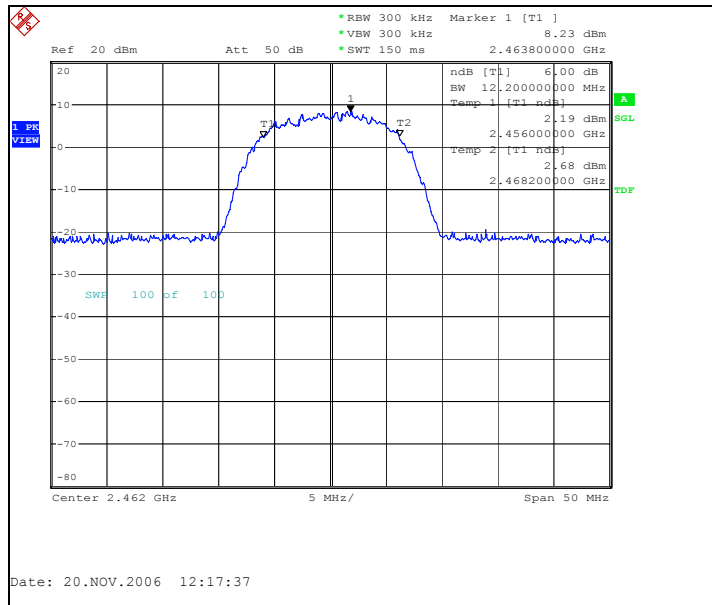
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



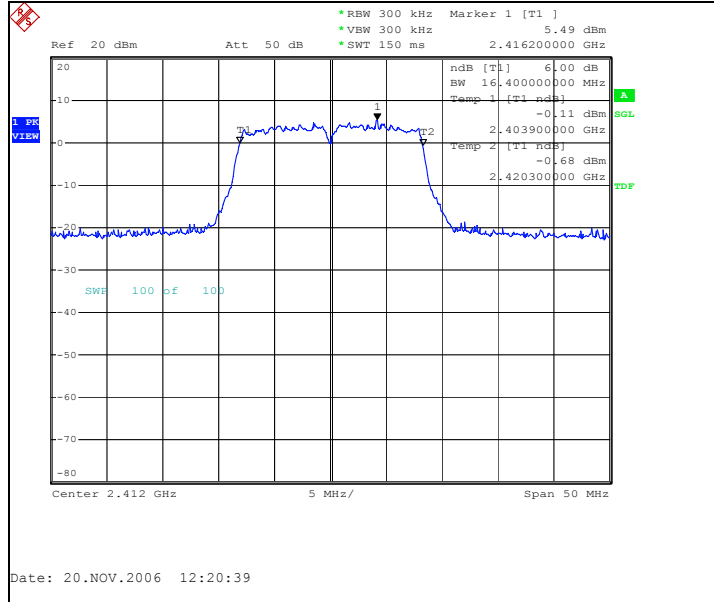
Channel 11 / 2462 MHz



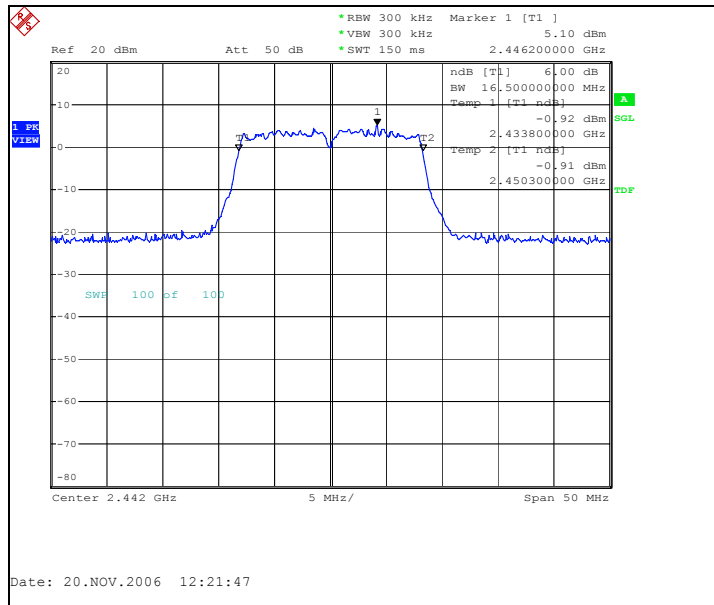
17.2.2 OFDM mode, BPSK modulation, 6 Mbps data rate

Channel / f_c [MHz]	6 dB bandwidth [kHz]	Result
1	16400.000	Passed
7	16500.000	Passed
11	16500.000	Passed

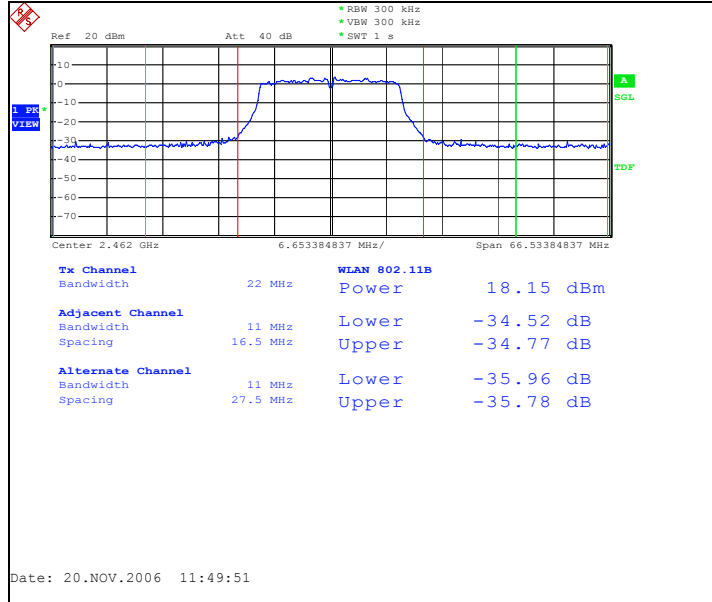
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



Channel 11 / 2462 MHz



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

EUT with DUT number	RM-159 dut 27779, BL-5F dut 27780
Accessories with DUT numbers	HS-45 dut 27782, AC-5E dut 27781
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	23.9 / 28.0 1017.7
Date of measurements	20-11-2006
Measured by	Jan Engelbrechtsen

18.1. 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

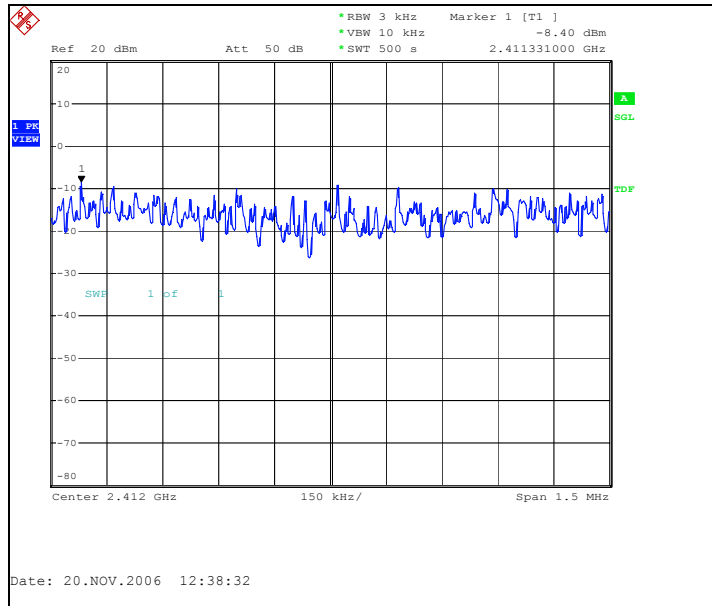
Limit [dBm] @ 3 kHz
≤ 8

18.2. WLAN test results

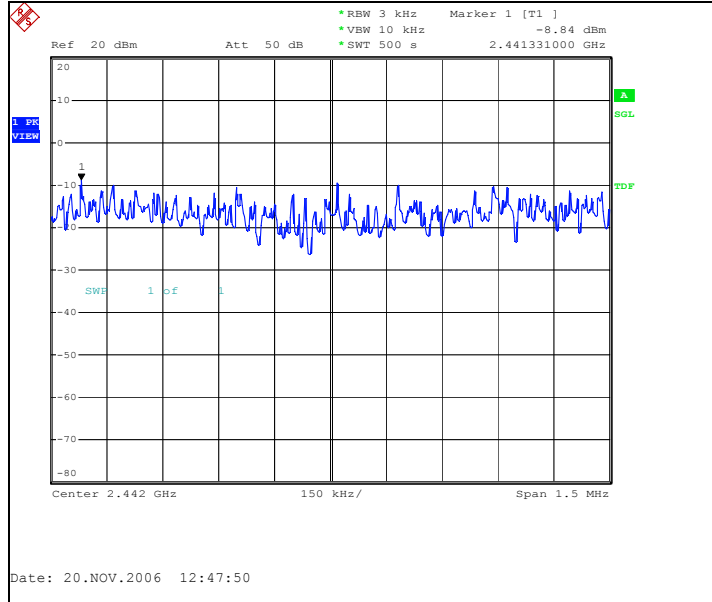
18.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

Channel / f _c [MHz]	P [dBm]	Result
1 / 2412	-8.40	Passed
7 / 2442	-8.84	Passed
11 / 2462	-8.69	Passed

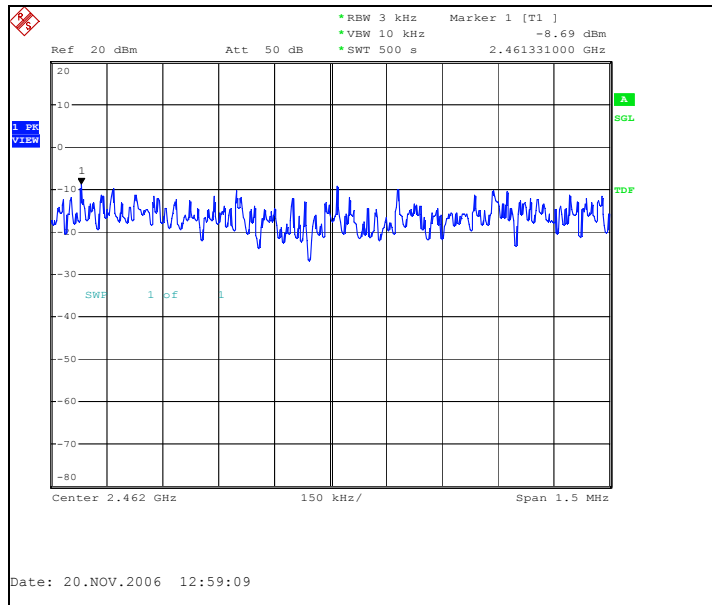
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



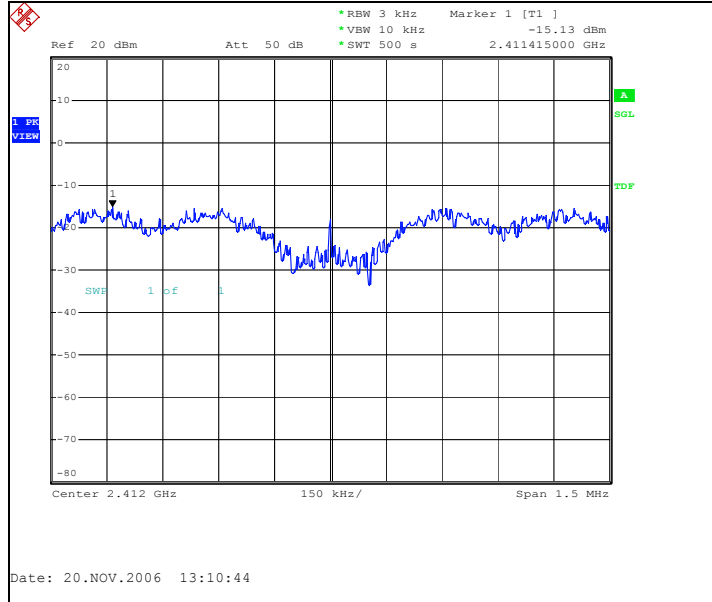
Channel 11 / 2462 MHz



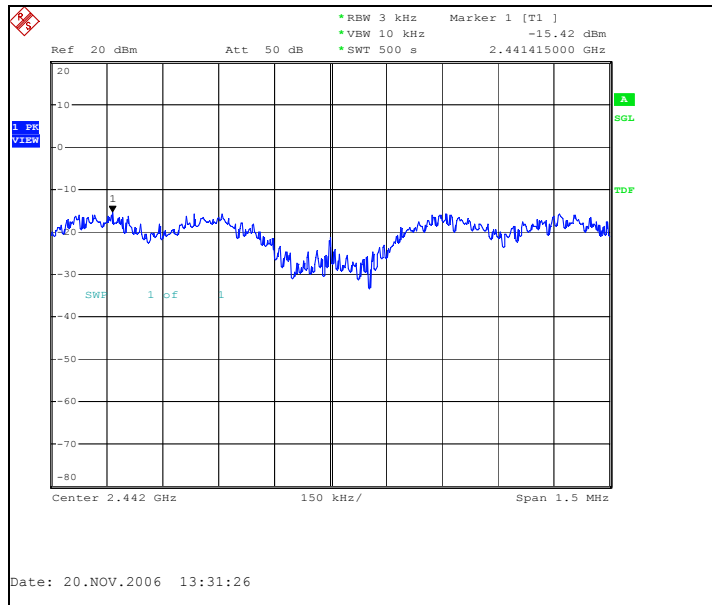
18.2.2 OFDM mode, BPSK modulation, 6 Mbps data rate

Channel / f_c [MHz]	P [dBm]	Result
1 / 2412	-15.13	Passed
7 / 2442	-15.42	Passed
11 / 2462	-15.21	Passed

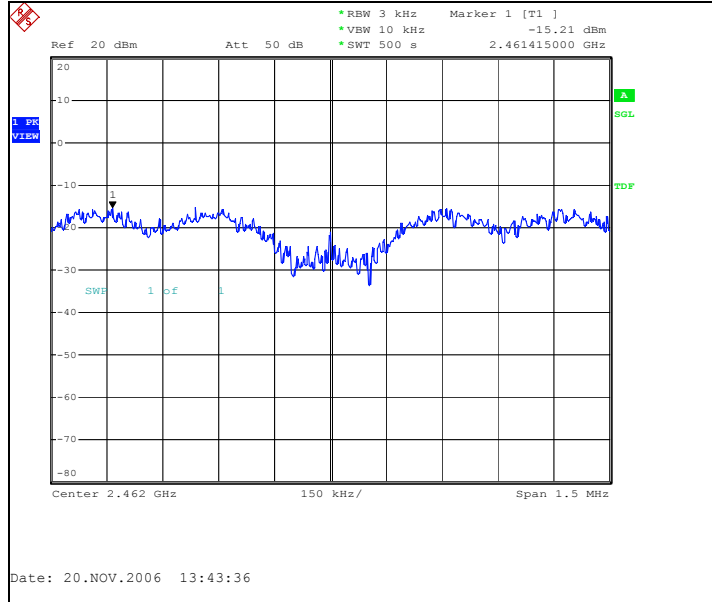
Channel 1 / 2412 MHz



Channel 7 / 2442 MHz



Channel 11 / 2462 MHz



19. Test Equipment

19.1. Conducted measurements

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

19.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
18416	Universal Radio Communication Tester	CMU200	Rohde&Schwarz	22/24, 15C, 15B
	Programmable Relay Switching System	-----	Pickering	22/24, 15C, 15B
15742	Programmable Relay Switching System	-----	Pickering	22/24, 15C, 15B
14020	Power Supply Module Relay Switching System 45W	10-910-002	Pickering	22/24, 15C, 15B
15743	Power Supply Module Relay Switching System 50W	10-910L-001	Pickering	22/24, 15C, 15B
16490	RS-232/IEEE-488.2 Interface	10-921-001	Pickering	22/24, 15C, 15B
	RS-232/IEEE-488.2 Interface	10-921-001	Pickering	22/24, 15C, 15B
20078	Relay 2x6 Chnl μ Wave Mux	10-785B-522	Pickering	22/24, 15C, 15B
14021	Relay Dual 6 Chnl μ Wave Mux	10-785-522		22/24, 15C, 15B
	Relay Dual 6 Chnl μ Wave Mux	10-785-522		22/24, 15C, 15B
17644	Dual 6 Channel MUX Microwave Relay SMA 50 Ohm	10-785-522	Pickering	22/24, 15C, 15B
16948	Dual 6 Channel MUX Microwave Relay SMA 50 Ohm	10-785-522	Pickering	22/24, 15C, 15B
16949	Dual 6 Channel MUX Microwave Relay SMA 50 Ohm	10-785-522	Pickering	22/24, 15C, 15B
18792	Multi Device Controller	2090	ETS-EMCO	22/24, 15C, 15B
14963	RF Preampifier 100MHz-4GHz (Metal Chassis)	AFS3-00100400	Miteq/NMP Cph	22/24, 15C, 15B
18861	EMI Test Receiver 20Hz-26,5GHz	ESI	Rohde&Schwarz	22/24, 15C, 15B

Eq. No	Equipment	Type	Manufacturer	Used in
18860	Ultra Broadband Antenna Ultralog 30-3000MHz	HL562	Rohde&Schwarz	22/24, 15C, 15B
19830	Ultra Broadband Antenna Ultralog 30-3000MHz	HL562	Rohde&Schwarz	22/24, 15C, 15B
18773	Shielded Chamber	RFD-100	ETS-Lindgren	22/24, 15C, 15B
18774	Shielded Chamber	RFSD-F/A-100	ETS-Lindgren	22/24, 15C, 15B
19151	High Pass Filter 3GHz WHK3.0/18G-10ss	WHJS3000-10SS	Wainwright	22/24, 15C, 15B
13937	Ultra Stable Notch Filter 850MHz	WRCA902.4-0.2/40-6SS	Wainwright Instruments	22/24, 15C, 15B
13936	Ultra Stable Notch Filter 1747,5MHz	WRCD1747.5-0.2/40- 10SS	Wainwright Instruments	22/24, 15C, 15B
13917	Highpass Filter 1000-3000MHz 50OHM SMA Conn	WHKS1000-10SS	Wainwright Instruments	22/24, 15C, 15B
14188	Ultra Stable Notch Filter 902,4MHz	WRCA902.4-0.2/40-6SS	Wainwright	22/24, 15C, 15B
14187	Ultra Stable Notch Filter 1747,5MHz	WRCD1747.5-0.2/40- 10SS	Wainwright	22/24, 15C, 15B
16633	Ultra Stable Notch Filter 1880,0MHz	WRCD1880.0-0.2/40- 10SS	Wainwright	22/24, 15C, 15B
19587	BT/WLAN Band Reject Filter	WRCG2400/2483- 2390/2493-35/10SS	Wainwright	22/24, 15C, 15B
	WDCMA Band 4 filter	WRCG1737/1743- 1733/1747-40/6SS	Wainwright	22/24, 15C, 15B
	WDCMA Band 5&6 filter	WRCG832/83/-825/845- 40/5SS	Wainwright	22/24, 15C, 15B
	WDCMA Band 8 filter	WRCG894.6/900.6- 890.6/904.6-40/80SS	Wainwright	22/24, 15C, 15B
18323	Band reject filter 1947-1953MHz 40dB	WRCG1947/1953- 1940/1960-40/6SS	Wainwright	22/24, 15C, 15B
20031	Double Ridged Broadband Horn	BBHA 9120 D	SCHWARZBECK	22/24, 15C, 15B
15190	Infra Red Remote Control Unit	4630	Emco	22/24, 15C, 15B
14993	EMI Test Receiver 9KHz- 2750MHz	ESCS30	Rohde&Schwarz	22/24, 15C, 15B
15191	Turntable Contoller Unit	G-800SDX	YAESU	22/24, 15C, 15B
14900	Antenna Controller	HD100	HD GmbH	22/24, 15C, 15B
15105	Attenuator 30dB DC-1000MHz 50 Ohm Nf - Nm	NAT-30	Mini-Circuits	22/24, 15C, 15B
13302	Spectrum Analyzer 9KHz- 12.8GHz	HP8596E	Hewlett Packard	22/24, 15C, 15B
11584	Spectrum analyzer 50Hz- 6,5GHz	HP8561B	Hewlett Packard	22/24, 15C, 15B
13134	Tracking generator	HP85645A	Hewlett Packard	22/24, 15C, 15B
19374	Resonant Dipole Antenna 850MHz SMA m Conn.	-----	NMP Cph	22/24, 15C, 15B
19375	Resonant Dipole Antenna 1900MHz SMA m Conn.	-----	NMP Cph	22/24, 15C, 15B
11487	Network analyzer 300KHz- 3,0GHz	HP8753A	Hewlett Packard	22/24, 15C, 15B
14807	S - Parameter Test Set 300KHz- 6GHz	HP85047A	Hewlett Packard	22/24, 15C, 15B
17277	Multimeter Digital 6 1/2 Digit	AT34401A	Agilent Technologies	22/24, 15C, 15B