

FCC Part 15C Compliance Test Report

Test Report no.:	Cph_FCC_0608_11.doc	Date of Report:	19-04-2006
Number of pages:	41	Customer's Contact person:	Jukka Pekkala
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FCC listing no.:	99059		
IC recognition no.:	4820 and 4820-1		
Tested devices/ accessories:	Phone; RM-126 (HW: 0505), Battery; BL-4C, AC-Charger; AC-3E, Headset; HS-23		
FCC ID:	PPIRM-126	IC:	661U-RM126
Supplement reports:			
Testing has been carried out in accordance with:	CFR 47, FCC rules Part 15 Subpart C, ANSI C63.4 (2003), IC standards RSS-GEN and RSS-210. Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit".		
Documentation:	The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory. The documentation of the testing performed on the tested devices is archived for 15 years at TCC Nokia.		
Test Results:	The EUT complies with the requirements in respect of all parameters subject to the test. The test results relate only to devices specified in this document.		
Date and signature for the contents:			

Allan F. Henriksen, Engineer

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	13-02-2006
Testing completed	19-04-2006
The customer's contact person	Jukka Pekkala
Test Plan referred to	T:\Projects\RM-126\TestPlan_RS\RM-126_RS_test_plan.xls
Notes	None
Document name	T:\Projects\RM-126\EMC\Results\FCC\Cph_FCC_0608_11.doc

1.1. EUT and Accessory Information

The EUT is a quadri band (GSM850/900/1800/1900) mobile phone with GPRS, EGPRS and Bluetooth. Bluetooth is tested with maximum rated TX power.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-126	004400/85/172440/9	0505	-	3.08.1	28088
Phone	RM-126	004400/85/172478/9	0505	-	3.08.1	28084
Battery	BL-4C	067038610717244111	-	-	-	28107
Battery	BL-4C	067038610717244111	-	-	-	28106
AC-Charger	AC-3E	3997915413051200037;0675370	-	-	-	28103
Ac-Charger	AC-3E	3997915413051200036;0675370	-	-	-	28105
Headset	HS-23	FM2550741Q	-	-	-	28102
Headset	HS-23	FM2550741Q	-	-	-	28104

1.2. Summary of Test Results

Bluetooth:

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

PASSED

FAILED

NP

The EUT complies with the essential requirements in the standard.

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

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

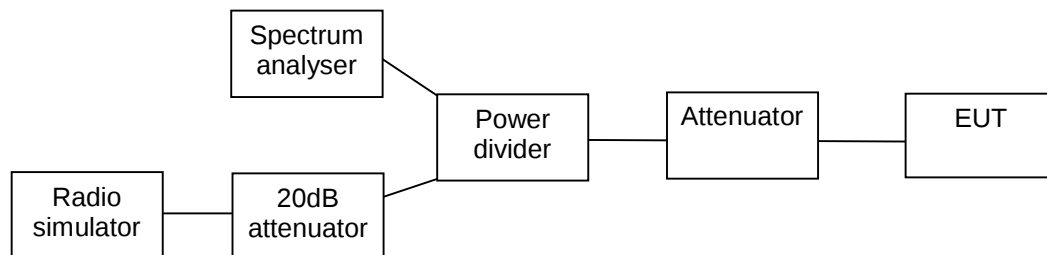
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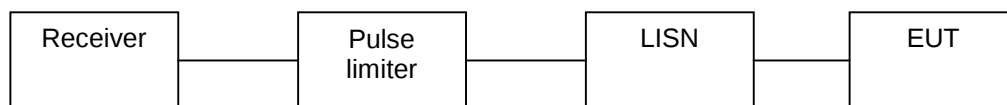
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2. Test setups

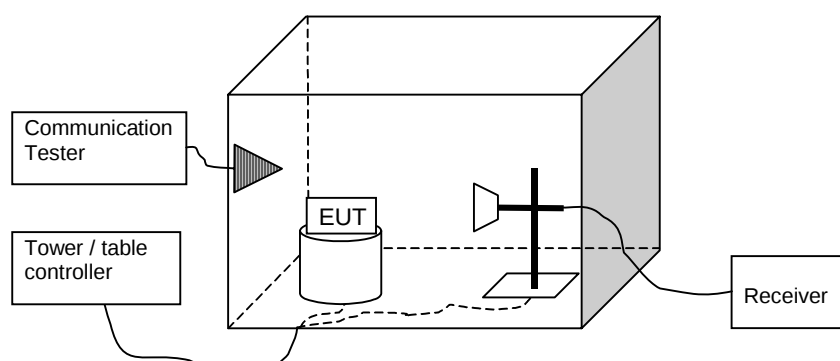
2.1. Conducted RF test setup



2.2. AC powerline conducted emissions test setup



2.3. Spurious radiated emissions test setup



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

EUT with DUT number	RM-126 dut 28084, BL-4C dut 28106
Accessories with DUT numbers	AC-3E dut 28105, HS-23 dut 28104
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	23.1 / 43.0 1017.2
Date of measurements	23-03-2006
Measured by	Jan Engelbrechtsen

3.1. Test method and limit

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

Limits for peak output power measurements

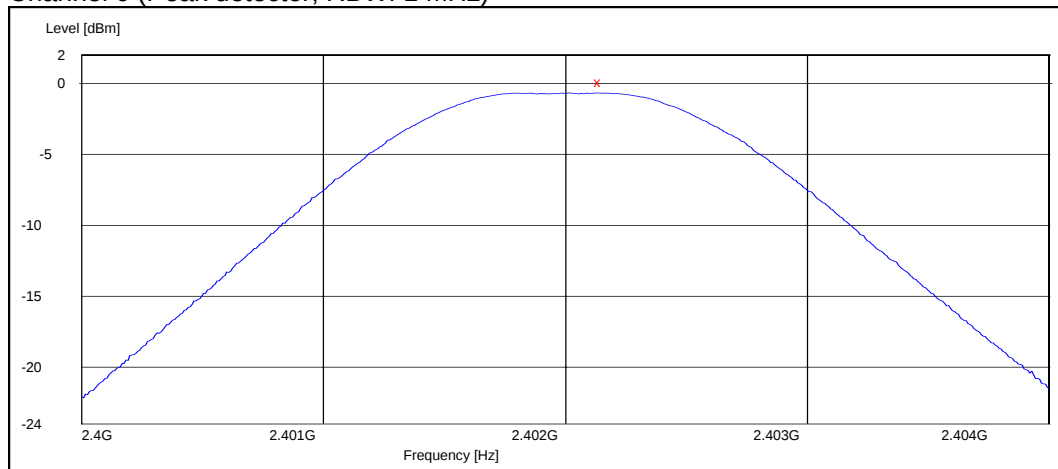
Frequency range [MHz]	Limit [W]	Limit [dBm]
2400 – 2483.5	≤ 1	≤ 30

3.2. Bluetooth Test results

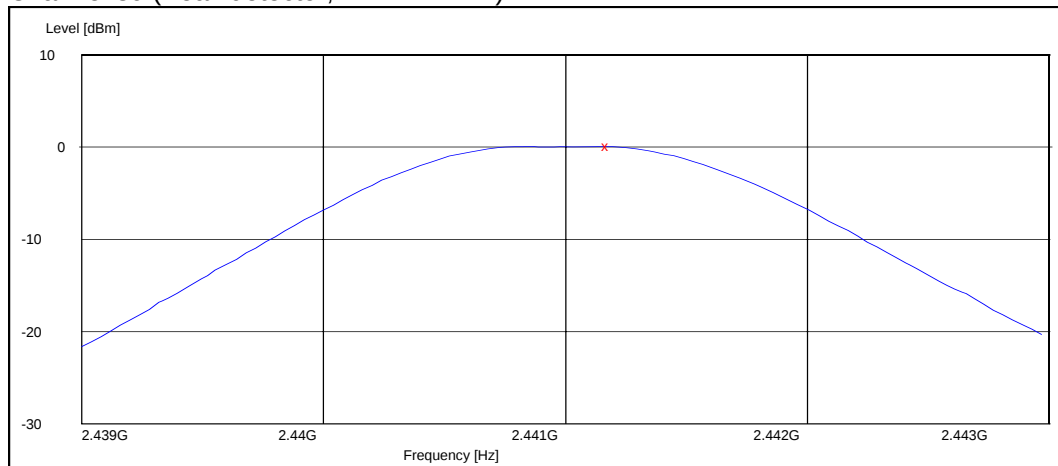
3.2.1 GSKF modulation, PRBS packet type

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
0 / 2402	0.10	1.023	Pass
39 / 2441	0.10	1.023	Pass
78 / 2480	0.10	1.023	Pass

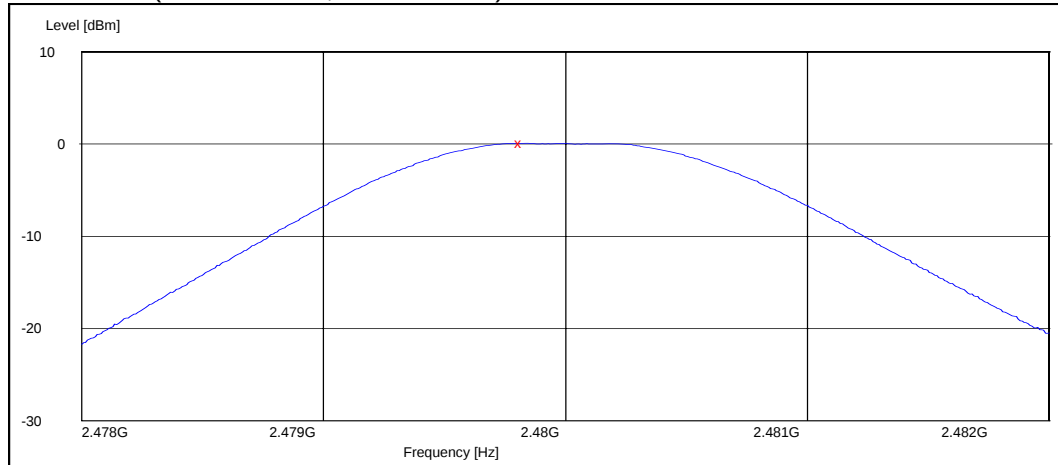
Channel 0 (Peak detector, RBW: 1 MHz)



Channel 39 (Peak detector, RBW: 1 MHz)



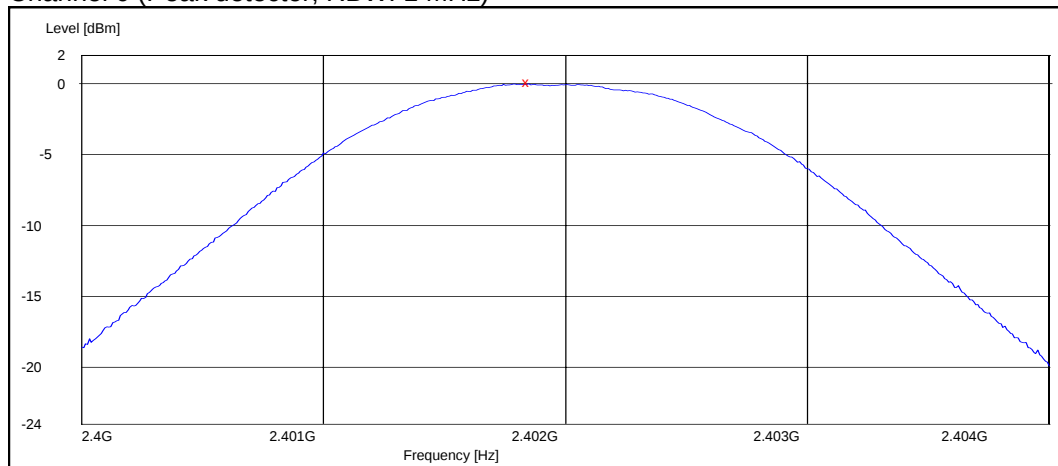
Channel 78 (Peak detector, RBW: 1 MHz)



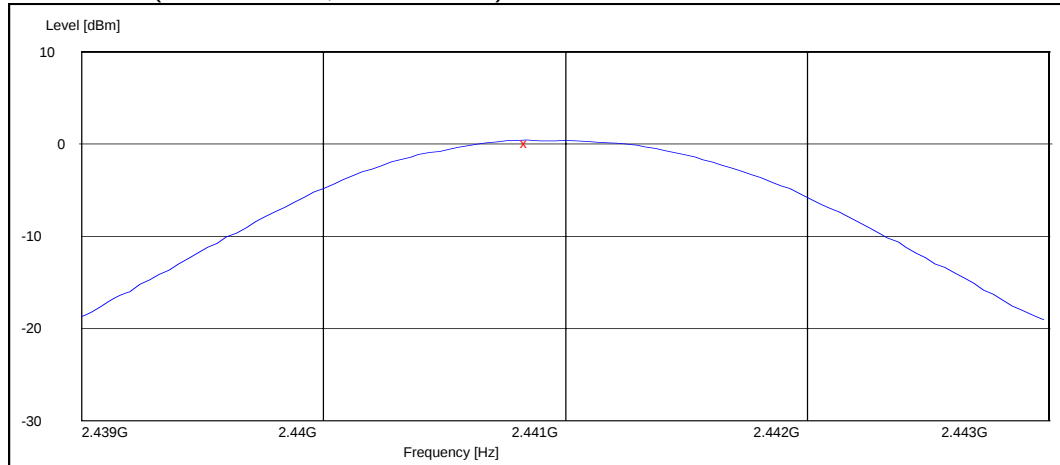
3.2.2 8DPSK modulation, PRBS packet type

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
0 / 2402	0.10	1.023	Pass
39 / 2441	0.10	1.023	Pass
78 / 2480	0.10	1.023	Pass

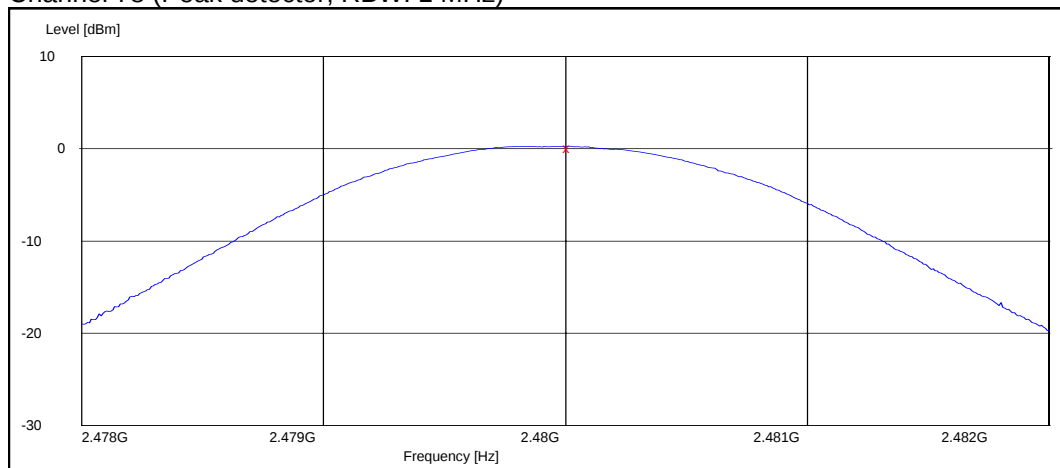
Channel 0 (Peak detector, RBW: 1 MHz)



Channel 39 (Peak detector, RBW: 1 MHz)



Channel 78 (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-126 #28088
Accessories with DUT numbers	BL-4C #28107, AC-3E #28103, HS-23 #28102
Operation Voltage [V] / [Hz]	230/ 50
Result	Passed
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	22.1 / 38.5 / 1007.2
Date of measurements	06.03.2006
Measured by	Juho Tuohino

4.1. Test method and limit

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

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

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

4.2. Bluetooth Test results

4.2.1 GFSK modulation, PRBS packet type

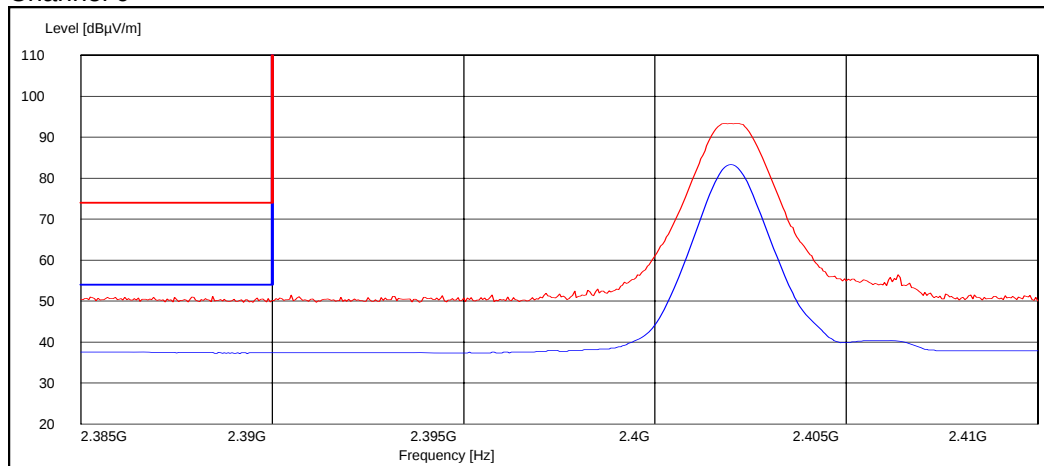
Average (RBW: 1 MHz)

Channel	E [dB μ V/m]	Result
0	37.58	Passed
78	40.89	Passed
Hopping on, low end	37.58	Passed
Hopping on, high end	38.75	Passed

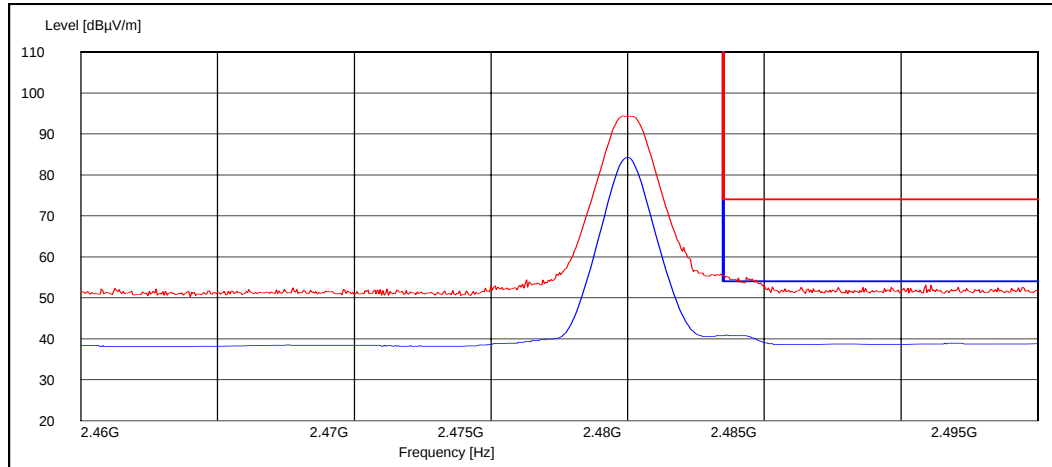
Peak (RBW: 1 MHz)

Channel	E [dB μ V/m]	Result
0	51.12	Passed
78	55.33	Passed
Hopping on, low end	51.34	Passed
Hopping on, high end	53.90	Passed

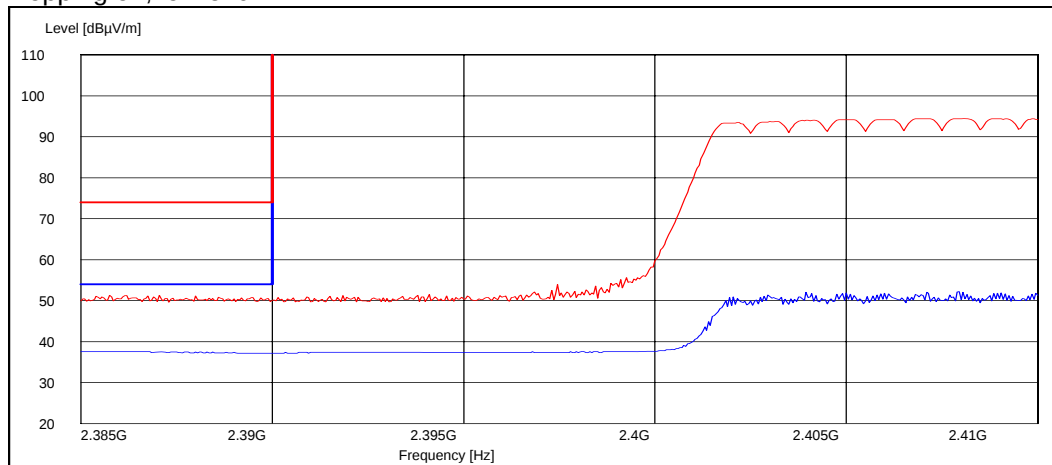
Channel 0



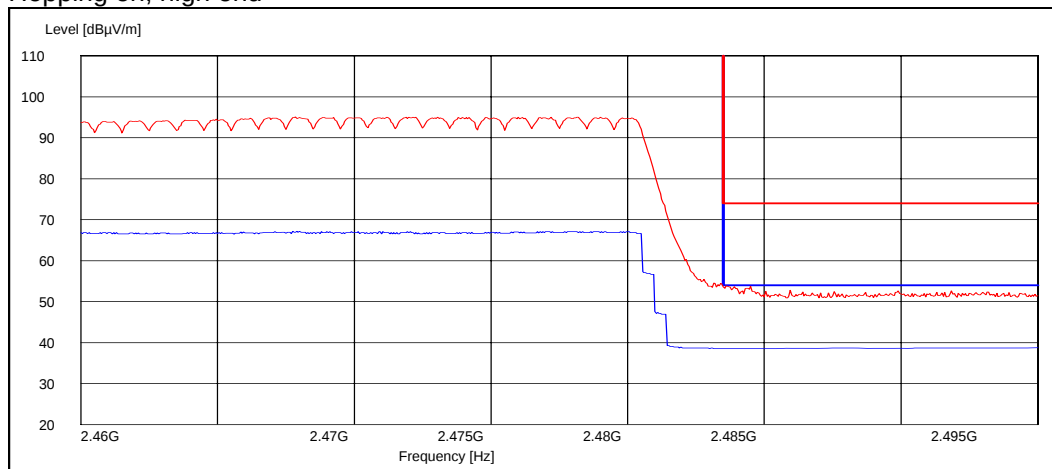
Channel 78



Hopping on, low end



Hopping on, high end



4.2.2 8DPSK modulation, PRBS packet type

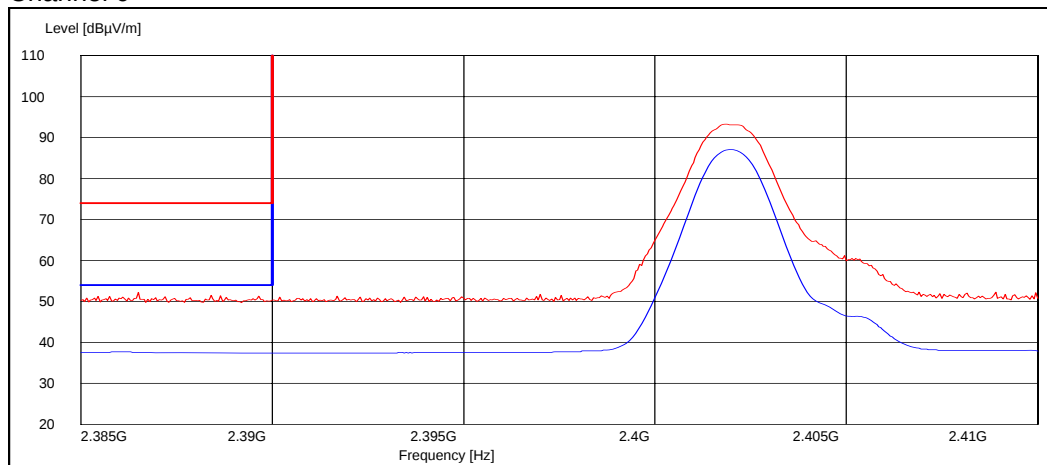
Average (RBW: 1 MHz)

Channel	E [dBμV/m]	Result
0	37.76	Passed
78	45.82	Passed
Hopping on, low end	37.58	Passed
Hopping on, high end	38.88	Passed

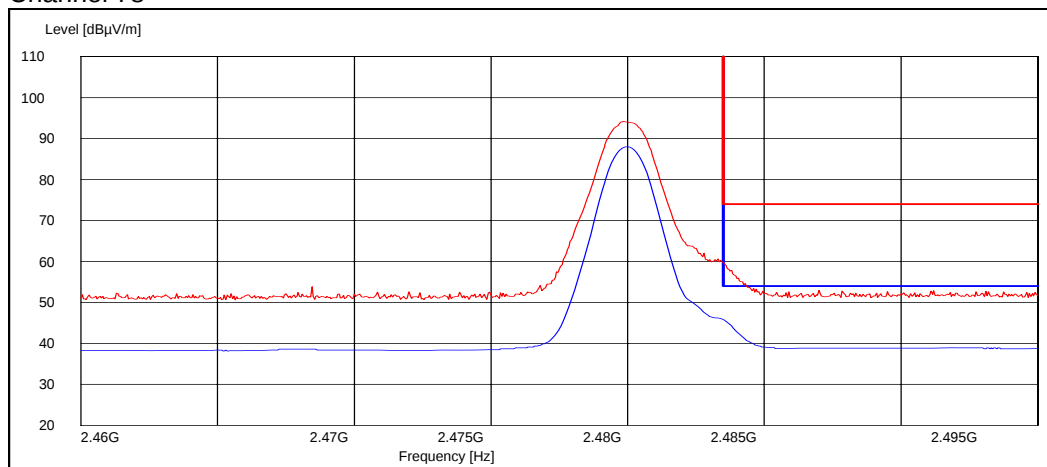
Peak (RBW: 1 MHz)

Channel	E [dBμV/m]	Result
0	52.19	Passed
78	59.76	Passed
Hopping on, low end	52.01	Passed
Hopping on, high end	58.27	Passed

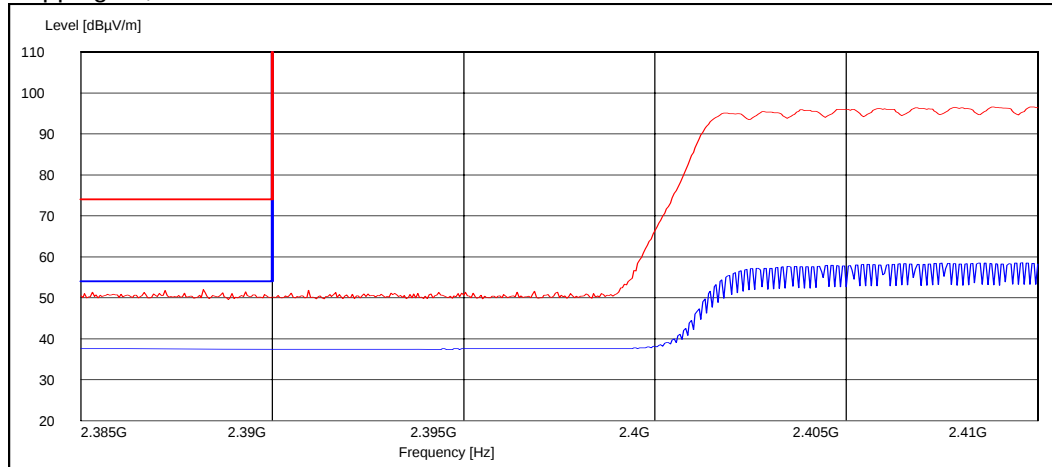
Channel 0



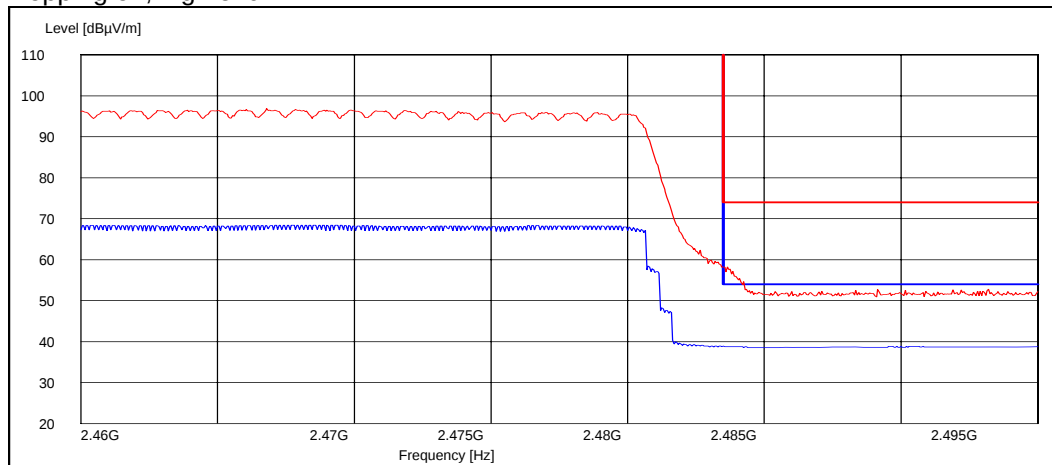
Channel 78



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-126 dut 28084, BL-4C dut 28106
Accessories with DUT numbers	AC-3E dut 28105, HS-23 dut 28104
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	23.2 / 43.0 1017.2
Date of measurements	27-02-2006
Measured by	Jan Engelbrechtsen

5.1. Test method and limit

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

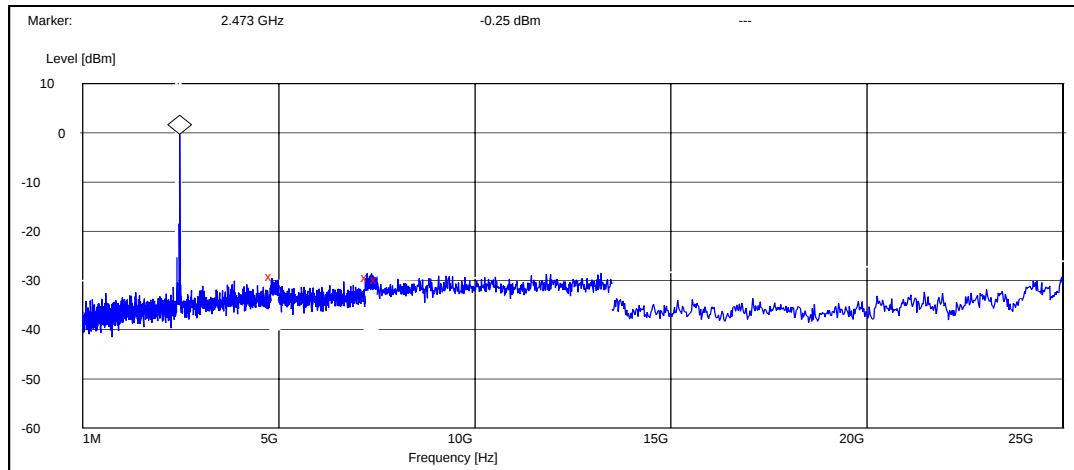
Limits for spurious RF conducted emissions measurements

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

5.2. Bluetooth Test results

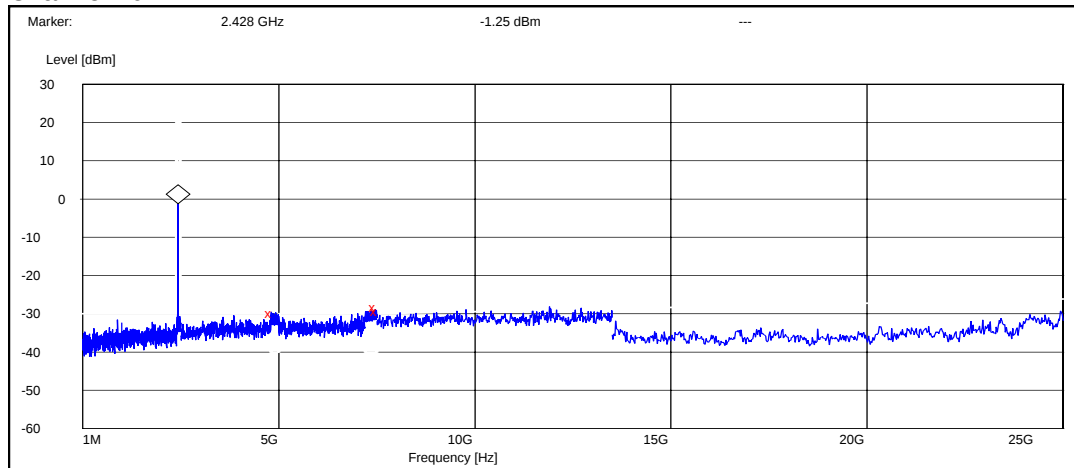
5.2.1 GFSK modulation, PRBS packet type

Channel 0



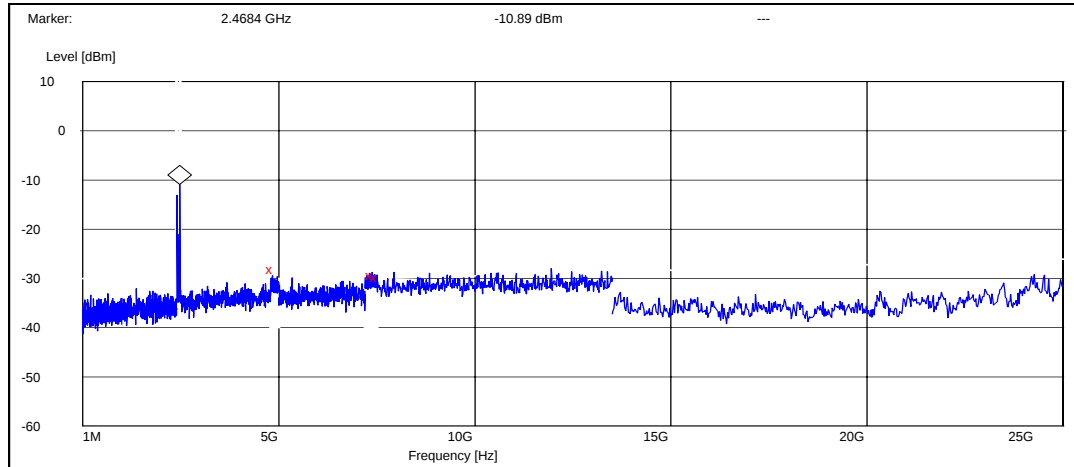
Frequency [MHz]	P [dBc]	Result
4826.400000	-28.951977	Passed
7262.400000	-29.151977	Passed
7500.000000	-29.451977	Passed

Channel 40



Frequency [MHz]	P [dBc]	Result
4812.000000	-28.551844	Passed
7468.800000	-27.151844	Passed
7500.000000	-28.151844	Passed

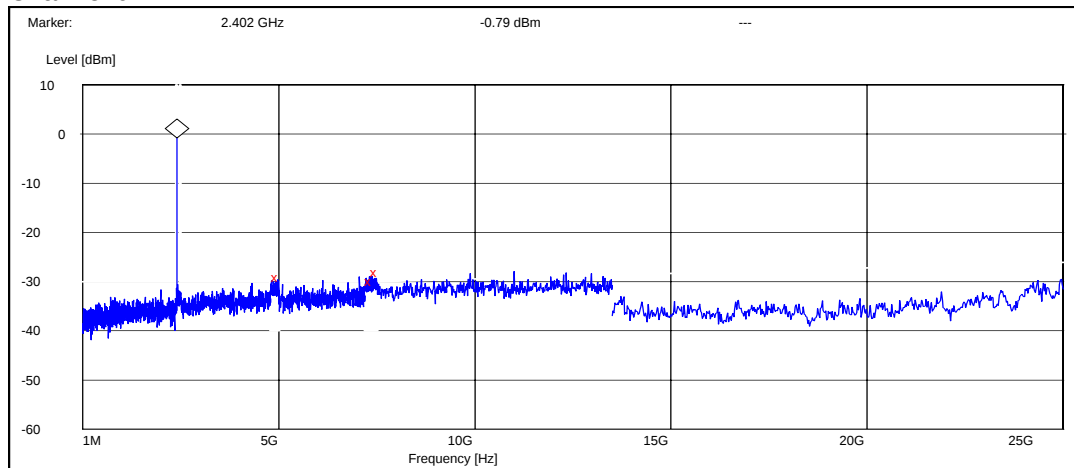
Channel 78



Frequency [MHz]	P [dBc]	Result
4822.000000	-28.877740	Passed
7443.600000	-29.277740	Passed
7500.000000	-28.677740	Passed

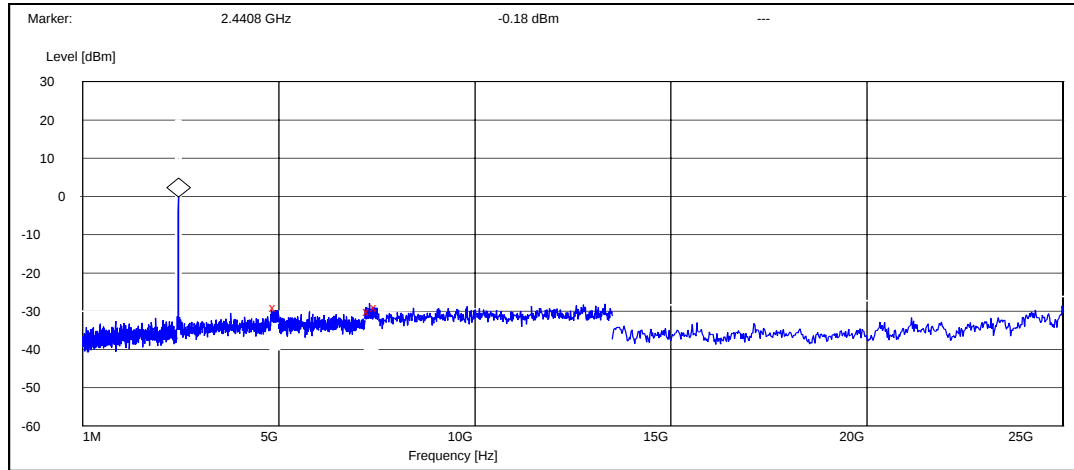
5.2.2 8DPSK modulation, PRBS packet type

Channel 0



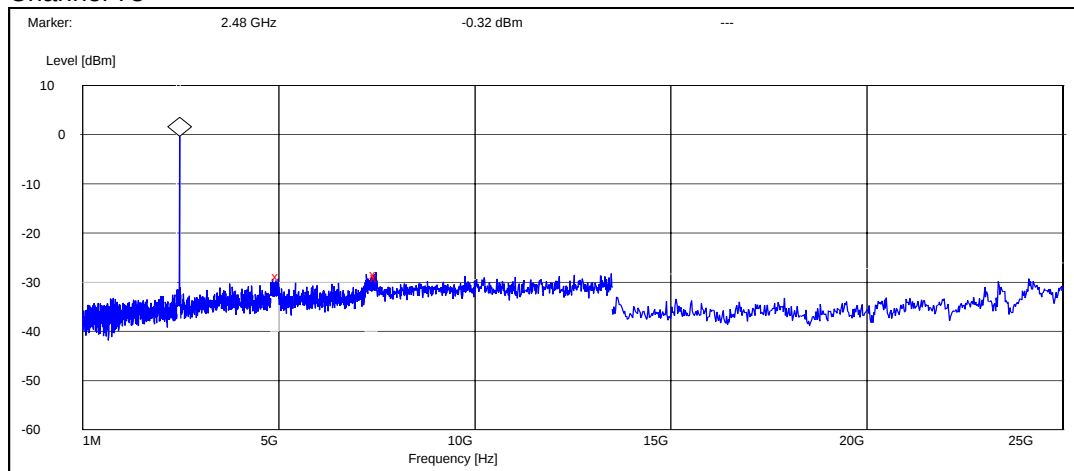
Frequency [MHz]	P [dBc]	Result
4975.200000	-28.313094	Passed
7348.800000	-29.113094	Passed
7500.000000	-27.413094	Passed

Channel 39



Frequency [MHz]	P [dBc]	Result
4915.200000	-28.818200	Passed
7307.400000	-29.718200	Passed
7500.000000	-28.918200	Passed

Channel 78



Frequency [MHz]	P [dBc]	Result
4985.200000	-28.483952	Passed
7473.000000	-28.183952	Passed
7500.000000	-28.683952	Passed

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

EUT with DUT number	RM-126 #28088
Accessories with DUT numbers	BL-4C #28107, AC-3E #28103, HS-23 #28102
Operation Voltage [V] / [Hz]	230/ 50
Result	Passed
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	22.1 / 38.5 / 1007.2
Date of measurements	06.03.2006
Measured by	Juho Tuohino

6.1. Test method and limit

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

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

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

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

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

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

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	40.30	103.51	38.30	2.00	VERTICAL	Passed
7206.000000	42.80	138.04	34.20	8.60	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	27.10	22.65	25.10	2.00	HORIZONTAL	Passed
7206.000000	29.40	29.51	20.80	8.60	VERTICAL	Passed

Channel 40

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
30.300000	19.10	9.02	30.40	-11.30	VERTICAL	Passed
37.595391	17.30	7.33	32.50	-15.20	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
2386.872745	52.00	398.11	40.50	11.50	VERTICAL	Passed
2892.633267	54.60	537.03	39.40	15.20	VERTICAL	Passed
4900.295591	40.70	108.39	38.30	2.40	HORIZONTAL	Passed
4917.833667	40.40	104.71	37.70	2.70	HORIZONTAL	Passed
7292.579158	43.40	147.91	34.50	8.90	HORIZONTAL	Passed
7419.835671	44.20	162.18	35.20	9.00	HORIZONTAL	Passed
14475.447896	52.50	421.70	31.80	20.70	HORIZONTAL	Passed
14498.000000	53.70	484.17	32.80	20.90	VERTICAL	Passed
17431.863727	54.20	512.86	30.40	23.80	VERTICAL	Passed
17808.121242	61.80	1,230.27	31.20	30.60	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2390.372745	39.10	90.16	27.00	12.10	VERTICAL	Passed
2889.633267	41.60	120.23	26.40	15.20	VERTICAL	Passed
4895.795591	27.50	23.71	25.10	2.40	HORIZONTAL	Passed
4916.833667	27.90	24.83	25.20	2.70	HORIZONTAL	Passed
7293.079158	30.50	33.50	21.60	8.90	HORIZONTAL	Passed
7413.835671	31.40	37.15	22.20	9.20	HORIZONTAL	Passed
14471.447896	39.80	97.72	19.10	20.70	HORIZONTAL	Passed
14500.000000	40.10	101.16	19.20	20.90	VERTICAL	Passed
17432.863727	41.40	117.49	17.60	23.80	VERTICAL	Passed
17806.621242	48.70	272.27	18.10	30.60	VERTICAL	Passed

Channel 78

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	40.50	105.93	38.10	2.40	VERTICAL	Passed
7440.000000	43.40	147.91	34.20	9.20	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	28.20	25.70	25.80	2.40	HORIZONTAL	Passed
7440.000000	30.60	33.88	21.40	9.20	VERTICAL	Passed

6.2.2 8DPSK modulation, PRBS packet type

Channel 0

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4824.000000	40.00	100.00	38.00	2.00	VERTICAL	Passed
7236.000000	44.00	158.49	35.60	8.40	HORIZONTAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4824.000000	27.20	22.91	25.20	2.00	VERTICAL	Passed
7236.000000	30.40	33.11	22.00	8.40	VERTICAL	Passed

Channel 40

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
30.200000	17.70	7.67	28.90	-11.20	VERTICAL	Passed
37.695391	14.70	5.43	30.00	-15.30	VERTICAL	Passed

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2896.697395	54.70	543.25	39.50	15.20	VERTICAL	Passed
4918.337675	40.70	108.39	38.00	2.70	HORIZONTAL	Passed
7417.329659	44.50	167.88	35.40	9.10	VERTICAL	Passed
14485.963928	52.60	426.58	31.80	20.80	HORIZONTAL	Passed
16877.753507	52.20	407.38	30.90	21.30	HORIZONTAL	Passed
17473.945892	55.30	582.10	30.60	24.70	HORIZONTAL	Passed
17802.605210	61.90	1,244.51	31.40	30.50	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2890.197395	41.70	121.62	26.50	15.20	VERTICAL	Passed
4915.837675	27.90	24.83	25.30	2.60	HORIZONTAL	Passed
7411.329659	31.40	37.15	22.20	9.20	VERTICAL	Passed
14483.463928	39.80	97.72	19.00	20.80	HORIZONTAL	Passed
16874.753507	39.70	96.61	18.30	21.40	HORIZONTAL	Passed
17473.445892	42.20	128.82	17.50	24.70	HORIZONTAL	Passed
17801.105210	48.70	272.27	18.20	30.50	VERTICAL	Passed

Channel 78

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	40.40	104.71	37.60	2.80	HORIZONTAL	Passed
7386.000000	44.10	160.32	34.90	9.20	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	27.90	24.83	25.10	2.80	VERTICAL	Passed
7386.000000	30.50	33.50	21.30	9.20	VERTICAL	Passed

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

EUT with DUT number	RM-126 Dut # 28088
Accessories with DUT numbers	BL-4C Dut # 28107 + AC-3E Dut # 28103 + HS-23 Dut # 28102
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	22.2 / 38.5 1038.2
Date of measurements	24-02-2006
Measured by	Allan F. Henriksen

7.1. Test method and limit

The measurement is made according to FCC rules part 15.247 and IC standard RSS-GEN as follows:

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

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

The measurement results are obtained as described below:

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

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

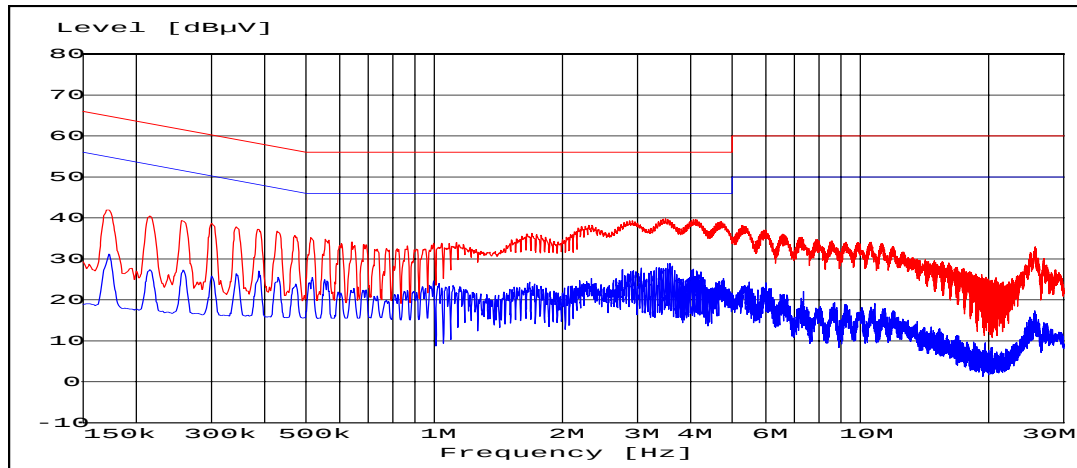
CISPR 22 Class B limits

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

7.2. Bluetooth Test results

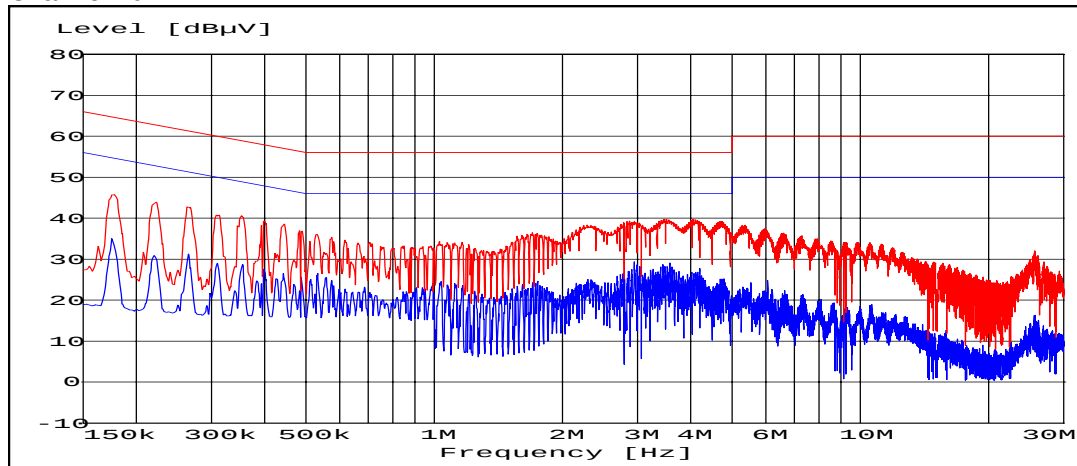
7.2.1 GFSK modulation, PRBS packet type

Channel 40



7.2.2 8DPSK modulation, PRBS packet type

Channel 40



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

EUT with DUT number	RM-126 dut 28084, BL-4C dut 28106
Accessories with DUT numbers	AC-3E dut 28105, HS-23 dut 28104
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	23.3 / 43.0 1017.2
Date of measurements	27-02-2006
Measured by	Jan Engelbrechtsen

8.1. Test method and limit

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

Limits for 20 dB bandwidth measurements

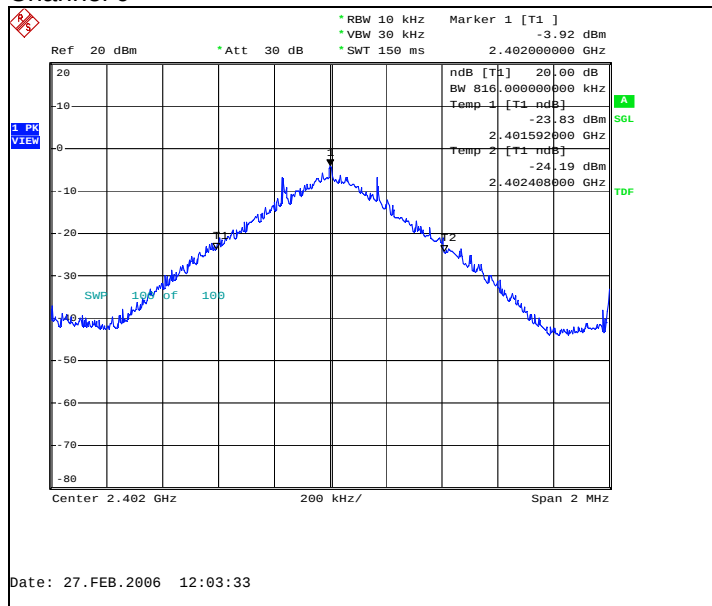
Limit [MHz]
N/A

8.2. Bluetooth Test results

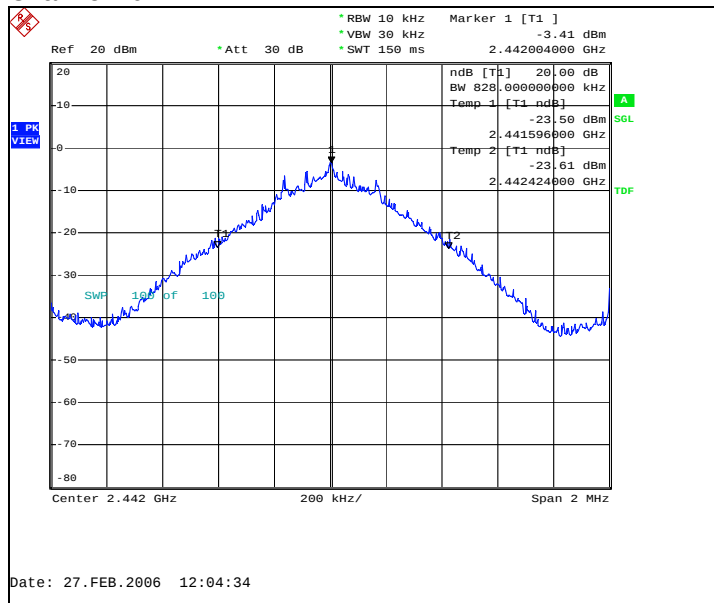
8.2.1 GFSK modulation, PRBS packet type

Channel / f_c [MHz]	20 dB bandwidth [kHz]	Result
0 / 2402	816.000	Passed
40 / 2442	828.000	Passed
78 / 2480	832.000	Passed

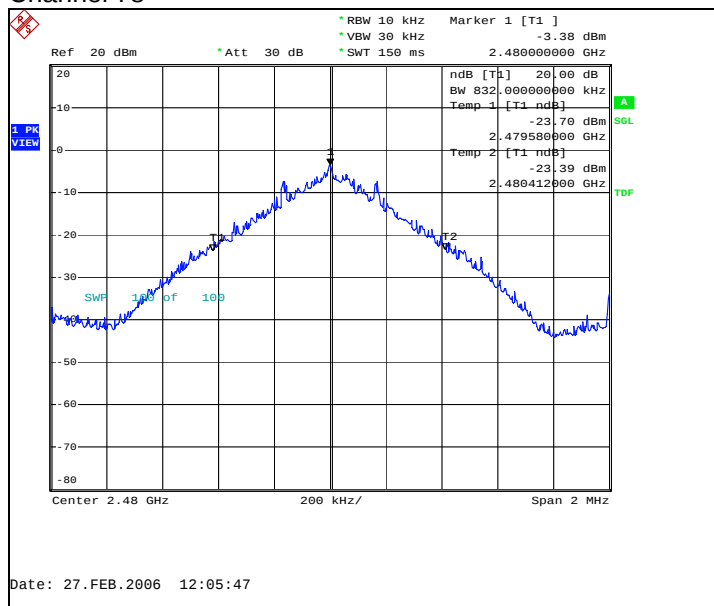
Channel 0



Channel 40



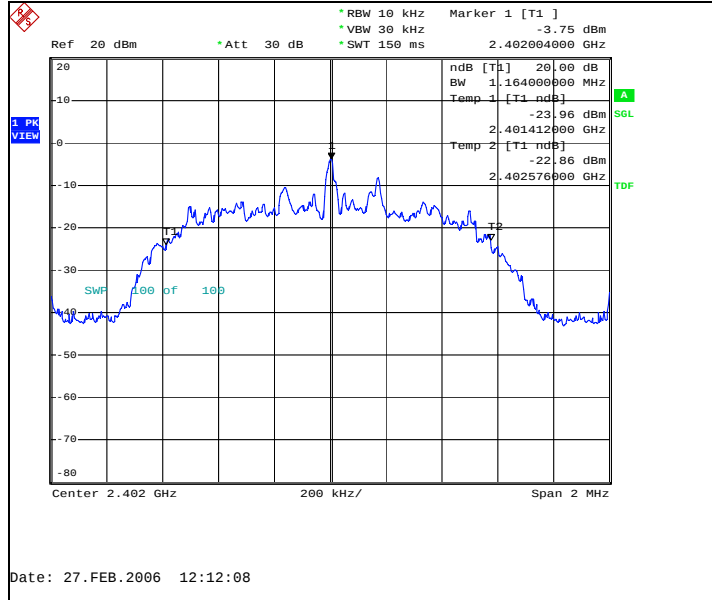
Channel 78



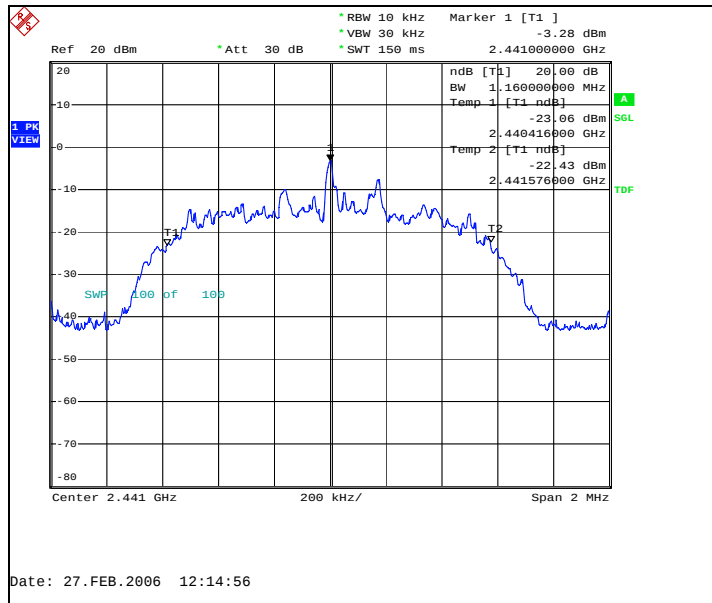
8.2.2 8DPSK modulation, PRBS packet type

Channel / f_c [MHz]	20 dB bandwidth [kHz]	Result
0 / 2402	1164.000	Passed
39 / 2441	1160.000	Passed
78 / 2480	1168.000	Passed

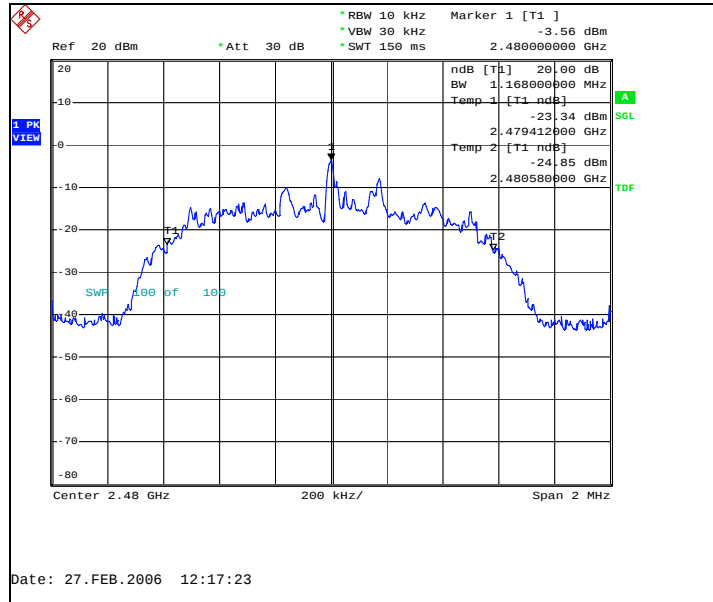
Channel 0



Channel 39



Channel 78



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

EUT with DUT number	RM-126 dut 28084, BL-4C dut 28106
Accessories with DUT numbers	AC-3E dut 28105, HS-23 dut 28104
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	23.4 / 43.0 1017.2
Date of measurements	27-02-2006
Measured by	Jan Engelbrechtsen

9.1. Test method and limit

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

Limits for carrier frequency separation measurements

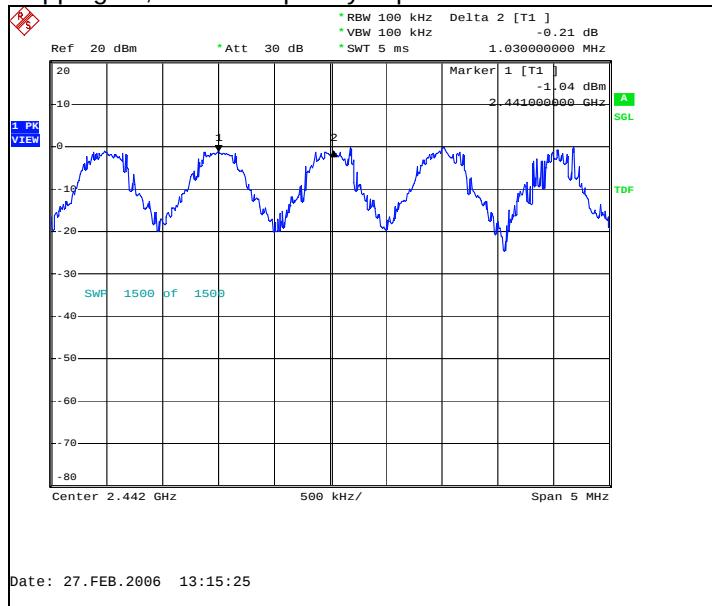
Limit [MHz]
≥ 0.025 or 2/3 of the 20 dB bandwidth

9.2. Bluetooth Test results

9.2.1 GFSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
1030	Passed

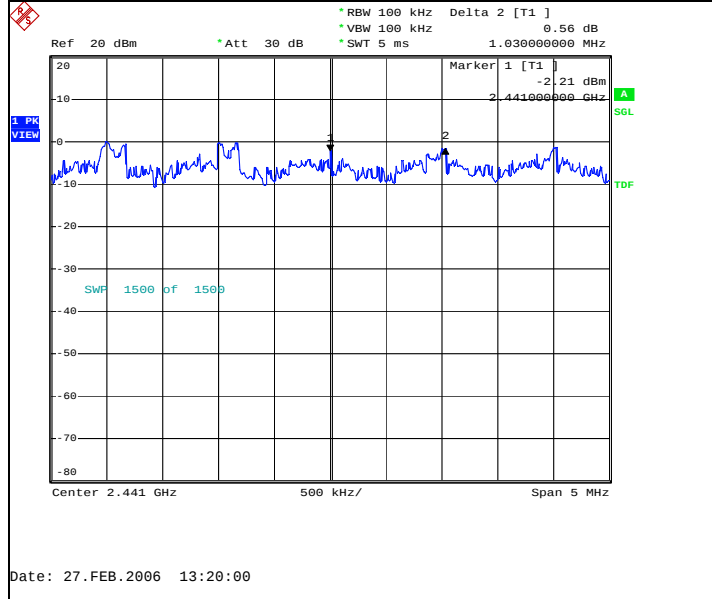
Hopping on, carrier frequency separation of channels 39 and 40



9.2.2 8DPSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
1030	Passed

Hopping on, carrier frequency separation of channels 39 and 40



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

EUT with DUT number	RM-126 dut 28084, BL-4C dut 28106
Accessories with DUT numbers	AC-3E dut 28105, HS-23 dut 28104
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	23.5 / 43.0 1017.2
Date of measurements	27-02-2006, 19-04-2006
Measured by	Jan Engelbrechtsen

10.1. Test method and limit

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

Limits for number of hopping frequencies measurements

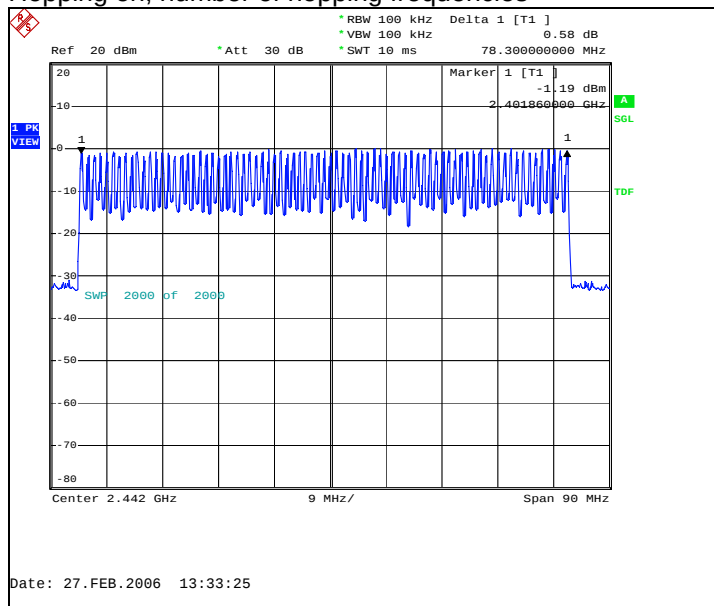
Limit [number]
≥ 15

10.2. Bluetooth Test results

10.2.1 GFSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
79	Passed

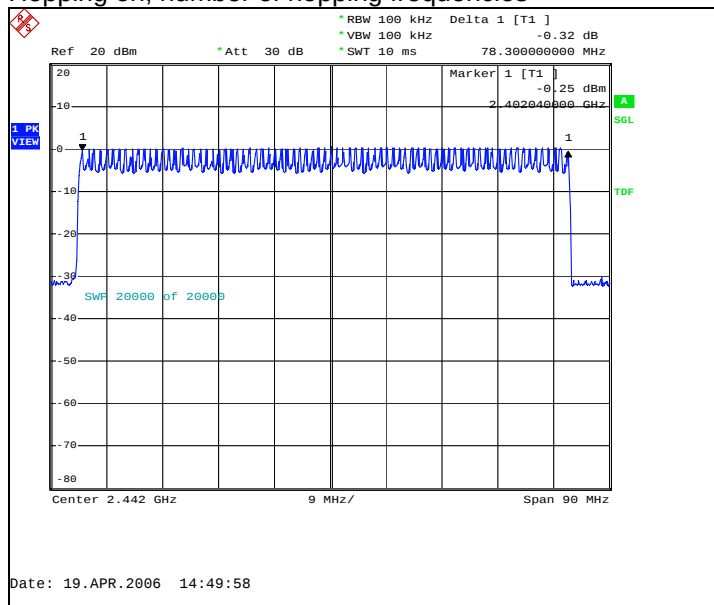
Hopping on, number of hopping frequencies



10.2.2 8DPSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
78	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-126 dut 28084, BL-4C dut 28106
Accessories with DUT numbers	AC-3E dut 28105, HS-23 dut 28104
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	23.6 / 43.0 1017.2
Date of measurements	27-02-2006
Measured by	Jan Engelbrechtsen

11.1. Test method and limit

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

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

Limits for time of occupancy measurements

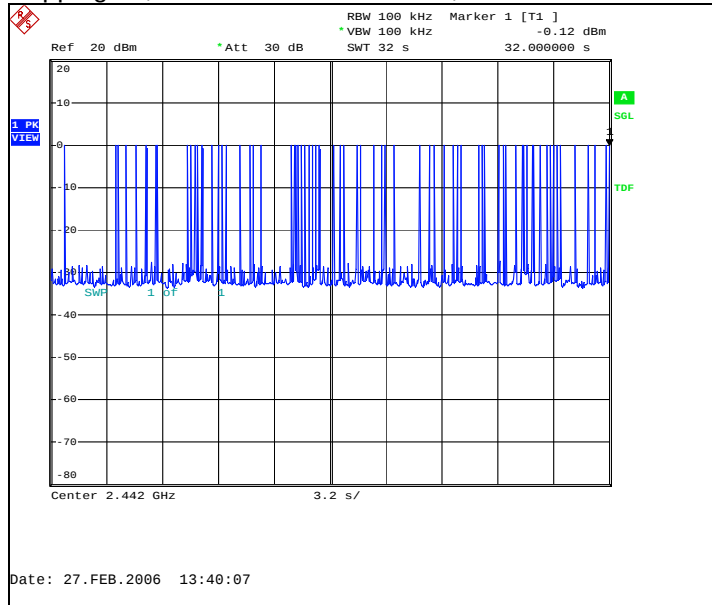
Limit [s]
≤ 0.4

11.2. Bluetooth test results

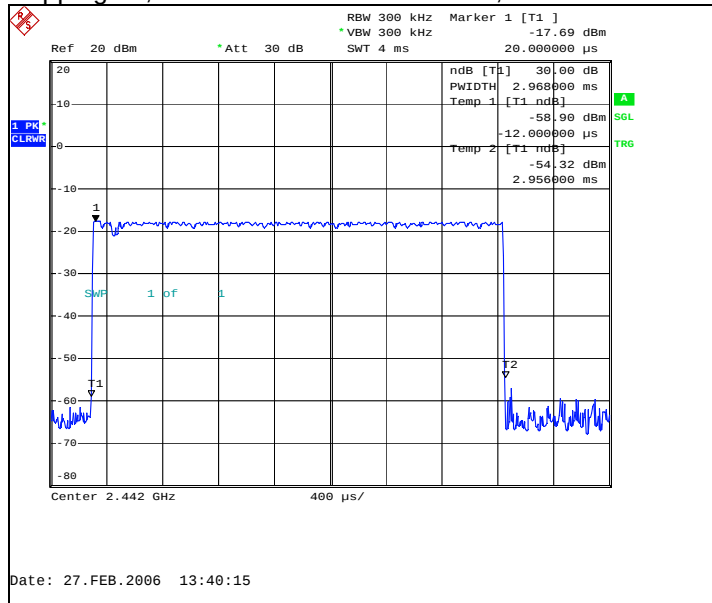
11.2.1 GFSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [μ s]	Time of occupancy [s]	Result
67	2968.000	0.198856	Passed

Hopping on, number of transmissions, channel 40



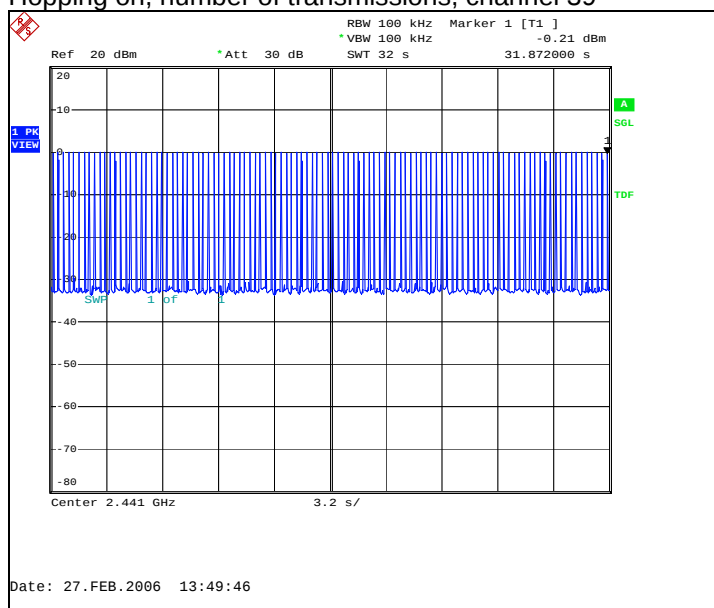
Hopping on, duration of one transmission, channel 40



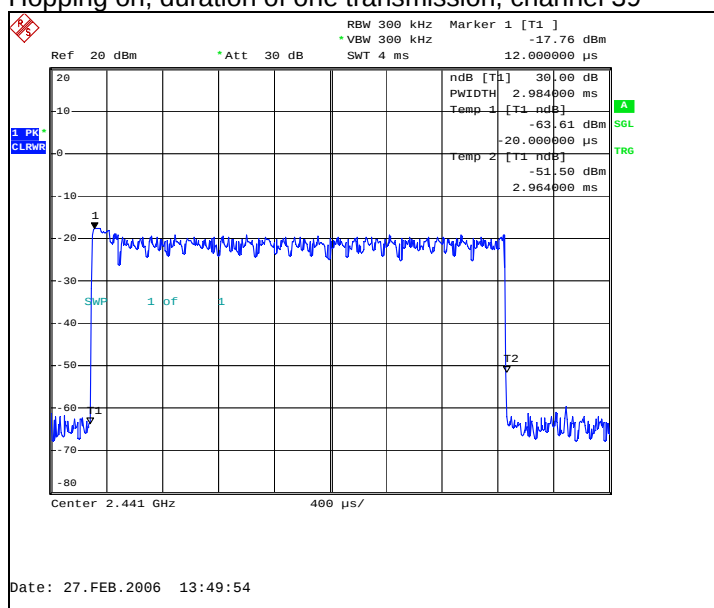
11.2.2 8DPSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [μ s]	Time of occupancy [s]	Result
109	2984.000	0.325256	Passed

Hopping on, number of transmissions, channel 39



Hopping on, duration of one transmission, channel 39



12. Test Equipment

12.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
13037	Power Supply 0-15V 10A	EA3012	LP Instruments	15B,15C
13513	Pulse Limiter 9KHz-30MHz	ESH3Z2	Rohde&Schwarz	15B,15C
13666	EMI Test Reciever 9KHz-2,5GHz	ESPC	Rohde&Schwarz	15B,15C
13935	Two Lines Artificial Mains Network	ESH3-Z5	Rohde&Schwarz	15B,15C
16995	Directional Coupler 20dB 0,5-2,0 GHz SMA Conn.	1538RA-20	Weinschel	15B,15C
18772	Shielded Chamber	RFD-100	ETS-Lindgren	15B,15C
19171	Universal Radio Communication Tester	CMU200	Rohde&Schwarz	15B,15C
11386	System DC Power Supply	HP6632A	Hewlett Packard	22.24
11487	Network analyzer 300KHz-3,0GHz	HP8753A	Hewlett Packard	22.24
11584	Spectrum analyzer 50Hz-6,5GHz	HP8561B	Hewlett Packard	22.24
13134	Tracking generator	HP85645A	Hewlett Packard	22.24
13302	Spectrum Analyzer 9KHz-12.8GHz	HP8596E	Hewlett Packard	22.24
13371	Temperature Chamber	S-1,2C	Thermotron	22.24
13524	Digital Radiocomm. Tester	CMD55	Rohde&Schwarz	22.24
14807	S - Parameter Test Set 300KHz-6GHz	HP85047A	Hewlett Packard	22.24
15859	Digital Radio Communication Test Set	4201S	Wavetek	22.24
17277	Multimeter Digital 6 1/2 Digit	AT34401A	Agilent Technologies	22.24
17796	Radio Communication Test Set	4400M	Wavetek	22.24
19374	Resonant Dipole Antenna 850MHz SMA m Conn.	-	NMP Cph	22.24
19375	Resonant Dipole Antenna 1900MHz SMA m Conn.	-	NMP Cph	22.24
13037	Power Supply 0-15V 10A	EA3012	LP Instruments	15B,15C

12.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
14020	Programmable Relay Switching System	-	Pickering	15B,15C,22,24
18792	Multi Device Controller	2090	ETS-EMCO	15B,15C,22,24
13829	Turntable Controller	4630-100	Comtest	15B,15C,22,24
14963	RF Preamplifier 100MHz-4GHz (Metal Chassis)	AFS3-00100400	Miteq/NMP Cph	15B,15C,22,24
13668	BiLog Antenna 30-2000MHz	BiLog-CBL6112A	Chase	15B,15C,22,24
18861	EMI Test Receiver 20Hz-26,5GHz	ESI	Rohde&Schwarz	15B,15C,22,24
12679	Dual Log Periodic Antenna 1-18 GHz	HL025	Rohde&Schwarz	15B,15C,22,24
18860	Ultra Broadband Antenna	HL562	Rohde&Schwarz	15B,15C,22,24

Eq. No	Equipment	Type	Manufacturer	Used in
	Ultralog 30-3000MHz			
18773	Shielded Chamber	RFD-100	ETS-Lindgren	15B,15C,22,24
18774	Shielded Chamber	RFSD-F/A-100	ETS-Lindgren	15B,15C,22,24
18324	High Pass Filter 3GHz SMA f Conn	WHJS3000-10SS	Wainwright	15B,15C,22,24
14114	Highpass Filter 1000MHz-4500MHz	WHK1000-12SS	Wainwright	15B,15C,22,24
13918	Highpass Filter 2000-4000MHz 50OHM SMA Conn	WHKS2000-10SS	Wainwright Instruments	15B,15C,22,24
13937	Ultra Stable Notch Filter 902,4MHz	WRCA902.4-0.2/40-6SS	Wainwright Instruments	15B,15C,22,24
13936	Ultra Stable Notch Filter 1747,5MHz	WRCD1747.5-0.2/40-10SS	Wainwright Instruments	15B,15C,22,24
13917	Highpass Filter 1000-3000MHz 50OHM SMA Conn	WHKS1000-10SS	Wainwright Instruments	15B,15C,22,24
14188	Ultra Stable Notch Filter 902,4MHz	WRCA902.4-0.2/40-6SS	Wainwright	15B,15C,22,24
14187	Ultra Stable Notch Filter 1747,5MHz	WRCD1747.5-0.2/40-10SS	Wainwright	15B,15C,22,24
16633	Ultra Stable Notch Filter 1880,0MHz	WRCD1880.0-0.2/40-10SS	Wainwright	15B,15C,22,24
18323	Band reject filter 1947-1953MHz 40dB	WRCG1947/1953-1940/1960-40/6SS	Wainwright	15B,15C,22,24
15190	Infra Red Remote Control Unit	4630	Emco	22,24,15B,15C
14993	EMI Test Receiver 9KHz-2750MHz	ESCS30	Rohde&Schwarz	22,24,15B,15C
15191	Turntable Contoller Unit	G-800SDX	YAESU	22,24,15B,15C
14900	Antenna Controller	HD100	HD GmbH	22,24,15B,15C