

FCC Part 15C Compliance Test Report

Test Report no.:	Cph_FCC_0801_06.doc	Date of Report:	21-jan-2008
Number of pages:	40	Customer's Contact person:	Ole Soerensen
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FCC listing no.:	99059		
IC recognition no.:	661AD-1		
Tested devices/ accessories:	Phone: RM-359 (hw0119), Battery: BP-5M, Audio adapter: AD-56, Headset: HS-45, AC charger: AC-3E		
FCC ID:	QTKRM-359	IC:	661AD-RM359
Supplement reports:	This report is based on report: Tre_FCC_0734_04		
Testing has been carried out in accordance with:	CFR 47, FCC rules Part 15 Subpart C, ANSI C63.4 (2003), Public Notice DA 00-705, DTS procedures KDB 558074, IC standards RSS-GEN (Issue 2, June 2007) and RSS-210 (Issue 7, June 2007). Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit".		
Documentation:	The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory. The documentation of the testing performed on the tested devices is archived for 15 years at TCC Nokia.		
Test Results:	The EUT complies with the requirements in respect of all parameters subject to the test. The test results relate only to devices specified in this document.		
Date and signature for the contents:			

Jan Engelbrechtsen, Engineer

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	17-12-2007
Testing completed	03-01-2008
The customer's contact person	Ole Soerensen
Test Plan referred to	T:\Projects\RM-359\TestPlan_RS\RS_Test_Plan_RM-359.xls
Notes	Test results in this report is based on measurements results from report Tre_FCC_FCC_0734_04.doc
Document name	T:\Projects\RM-359\EMC\Results\FCC\Cph_FCC_0801_06.doc

1.1. EUT and Accessory Information

The EUT is a 6-band (GSM850/900/1800/1900 and WCDMA Band I/V(850)) mobile phone with GPRS, EGPRS and Bluetooth. Bluetooth is tested with maximum rated TX power.

Product	Type	SN	HW	MV	SW	DUT
GSM phone	RM-242	004401015292382	0210	-	Vp tk3.10	41223
Phone	RM-242	004401015293117	0210	-	-	41224
Battery	BP-5M	-	-	-	-	41227
Charger	AC-3E	-	-	-	-	40843
Audio adapter	AD-56	1272	0.5	1.0	-	41230
Headset	HS-45	-	-	-	-	41232

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 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 Tampere Laboratory.

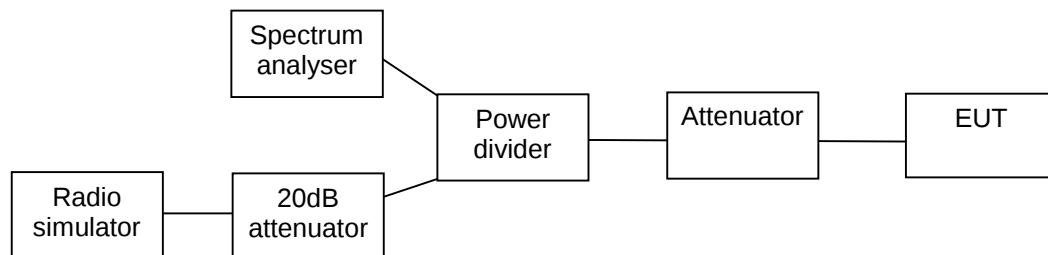
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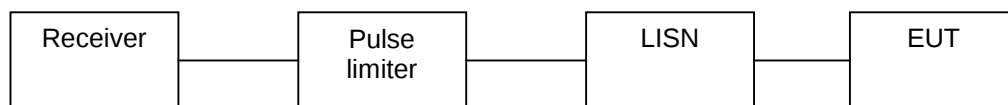
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2. Test setups

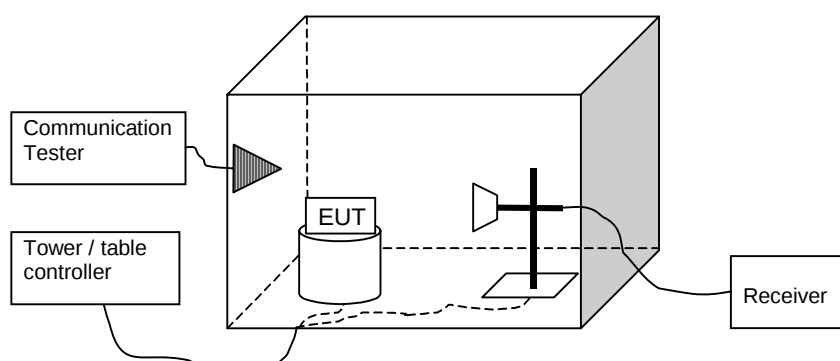
2.1. Conducted RF test setup



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-242 DUT 41224
Accessories with DUT numbers	BP-5M DUT 41227
Operation Voltage [V] / [Hz]	Nominal
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	20 / 47 / 101.2
Date of measurements	24.08.2007
Measured by	Timo Raiskio

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

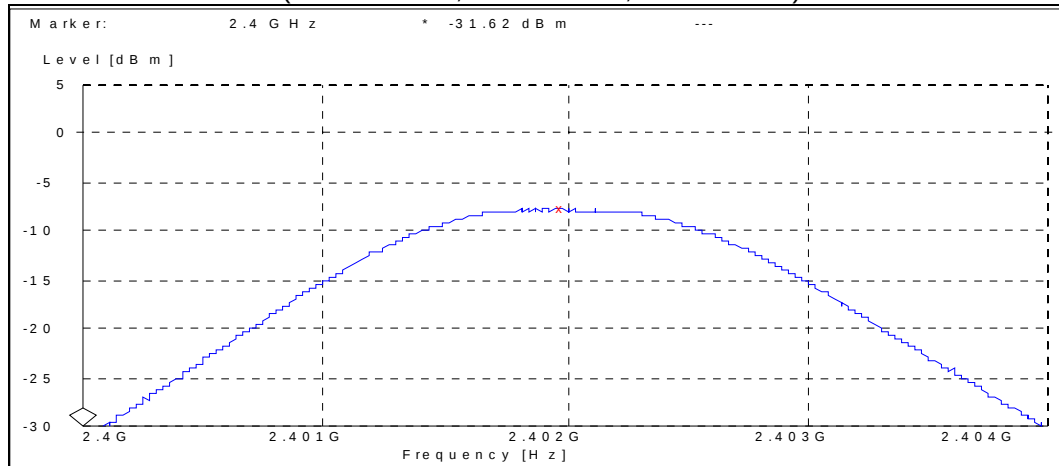
Frequency range [MHz]	Limit [W]	Limit [dBm]
2400 – 2483.5	≤ 1	≤ 30

3.2. Bluetooth Test results

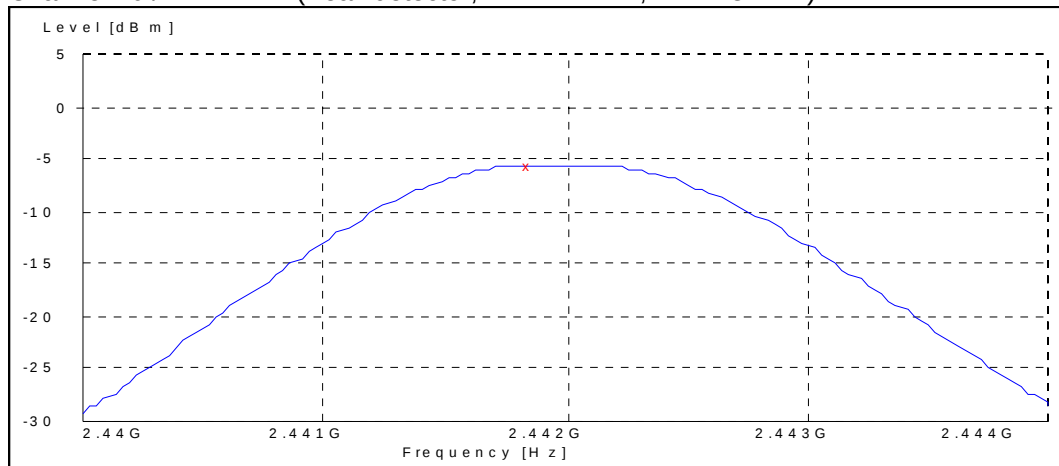
3.2.1 GFSK modulation, PRBS packet type

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
0 / 2402	-7.70	0.170	PASSED
40 / 2442	-5.60	0.275	PASSED
78 / 2480	-3.60	0.437	PASSED

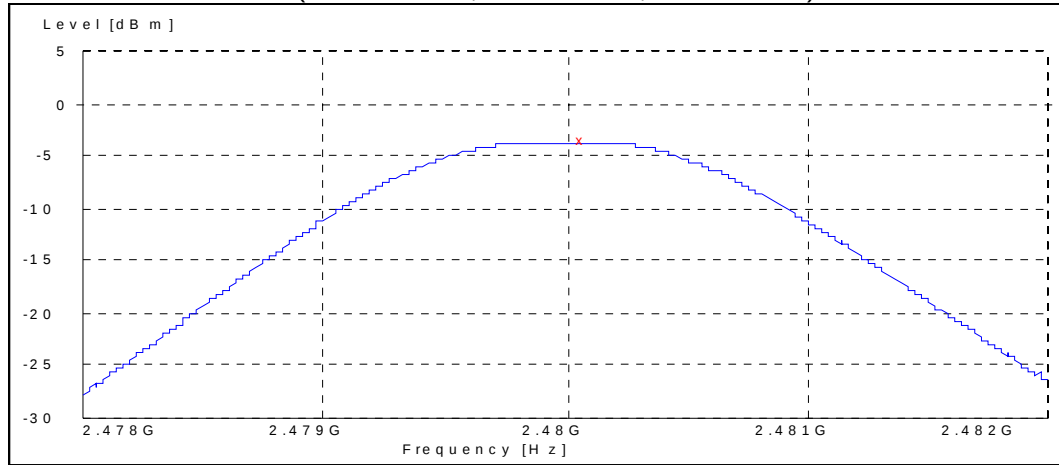
Channel 0 / 2402 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



Channel 40 / 2442 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



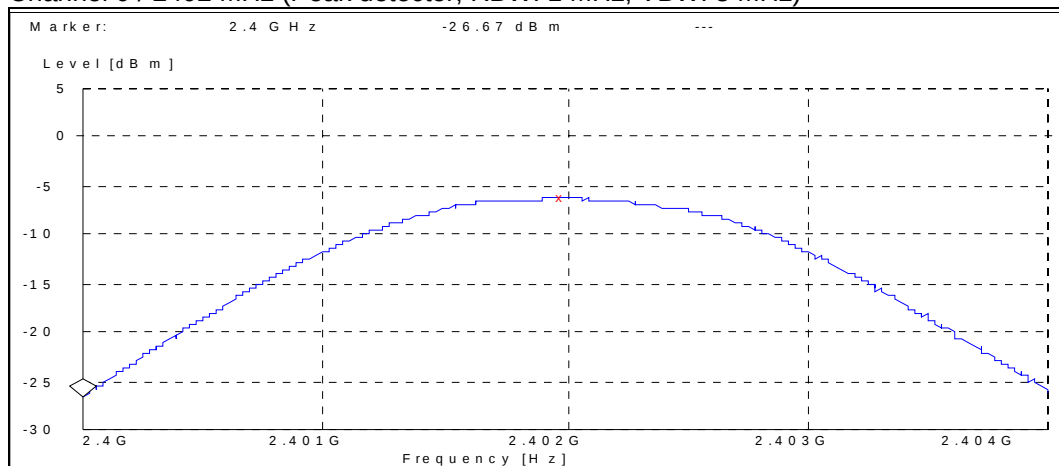
Channel 78 / 2480 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



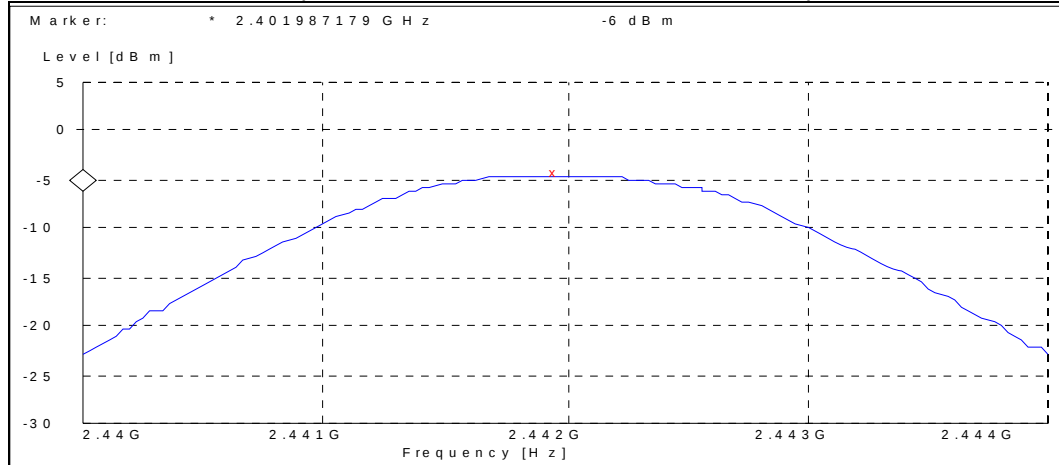
3.2.2 8DPSK modulation, PRBS packet type

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
0 / 2402	-6.00	0.251	PASSED
40 / 2442	-4.40	0.363	PASSED
78 / 2480	-2.40	0.575	PASSED

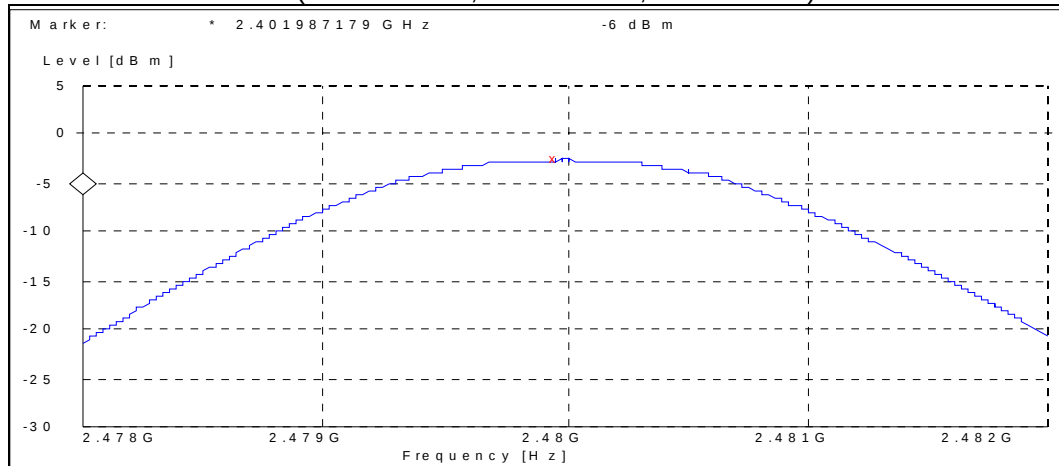
Channel 0 / 2402 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



Channel 40 / 2442 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



Channel 78 / 2480 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



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

EUT with DUT number	RM-242 DUT 41223
Accessories with DUT numbers	AC-3E DUT 40843, BP-5M DUT 41228, AD-56 DUT 41230, HS-45 DUT 41232
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	Slide open
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 52 / 100.2
Date of measurements	31.8.2007
Measured by	Jari Jantunen

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

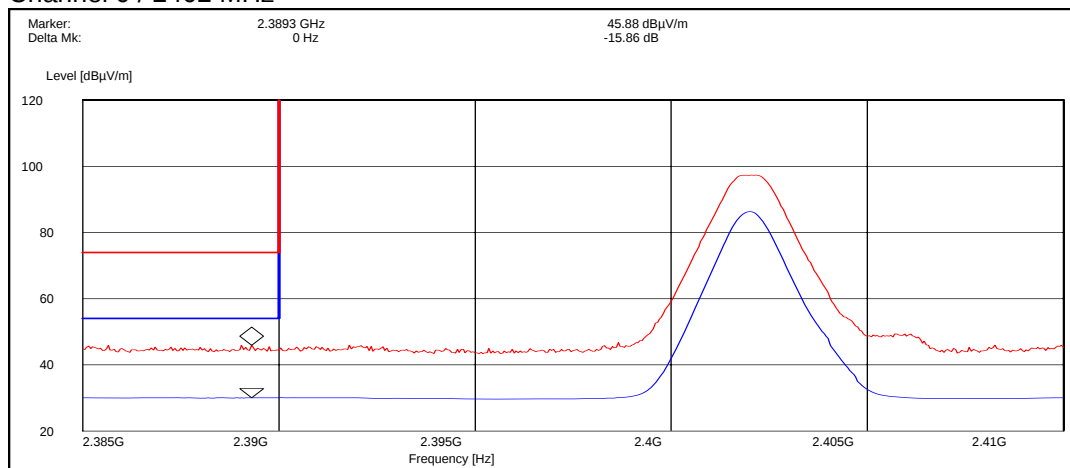
Average (RBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
0 / 2402	30.02	PASSED
78 / 2480	31.06	PASSED
Hopping on, low end	35.51	PASSED
Hopping on, high end	46.67	PASSED

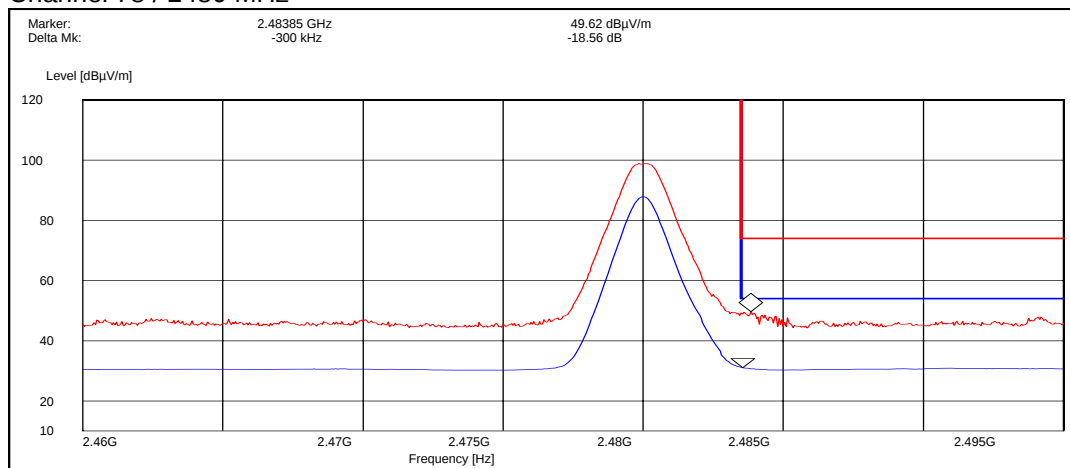
Peak (RBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
0 / 2402	45.88	PASSED
78 / 2480	49.62	PASSED
Hopping on, low end	47.60	PASSED
Hopping on, high end	50.71	PASSED

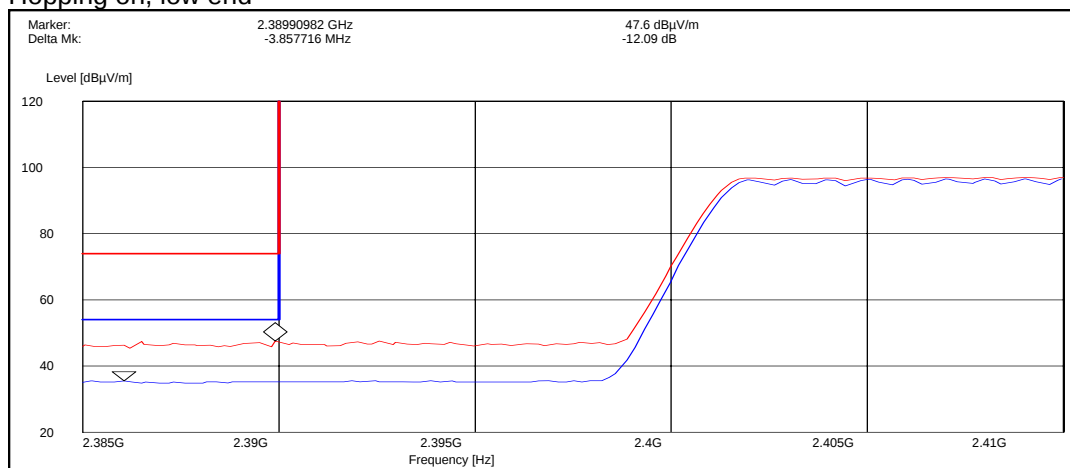
Channel 0 / 2402 MHz



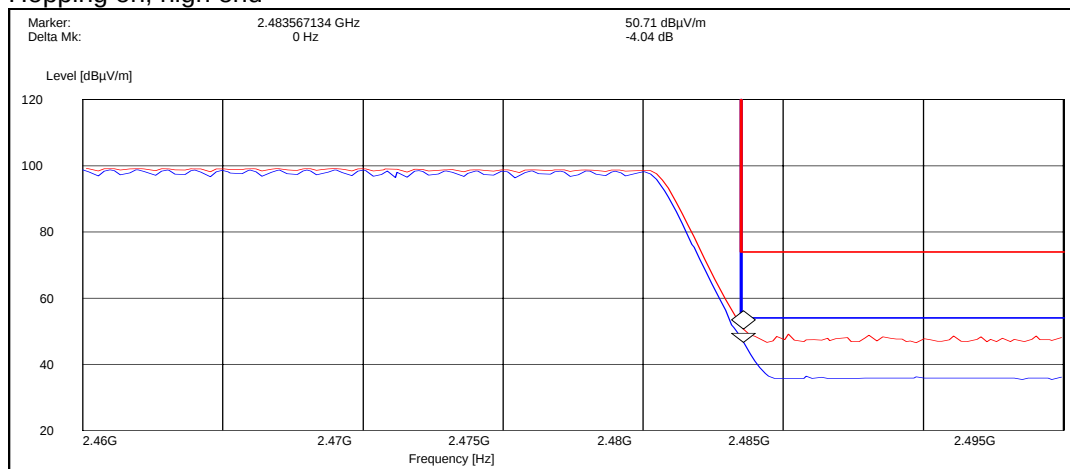
Channel 78 / 2480 MHz



Hopping on, low end



Hopping on, high end



4.2.2 8DPSK modulation, PRBS packet type

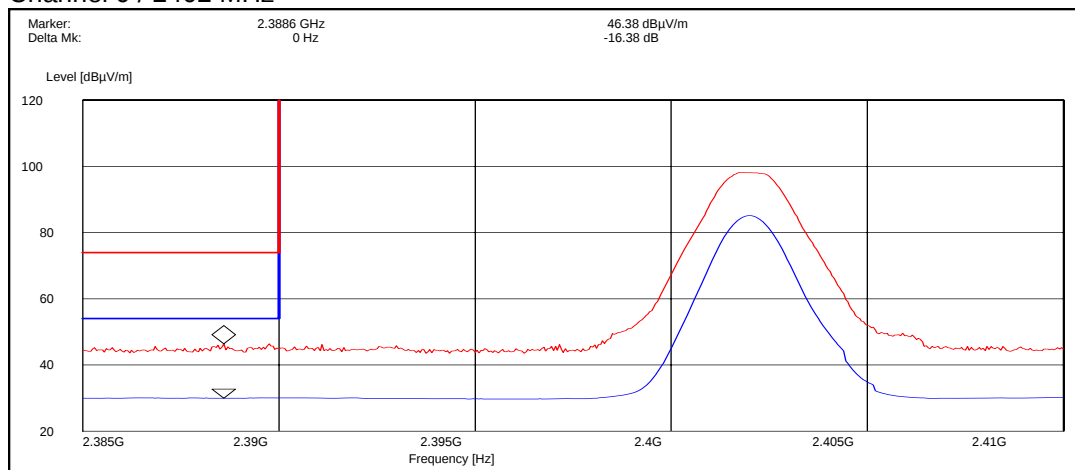
Average (RBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
0 / 2402	30.00	PASSED
78 / 2480	30.69	PASSED
Hopping on, low end	35.55	PASSED
Hopping on, high end	48.24	PASSED

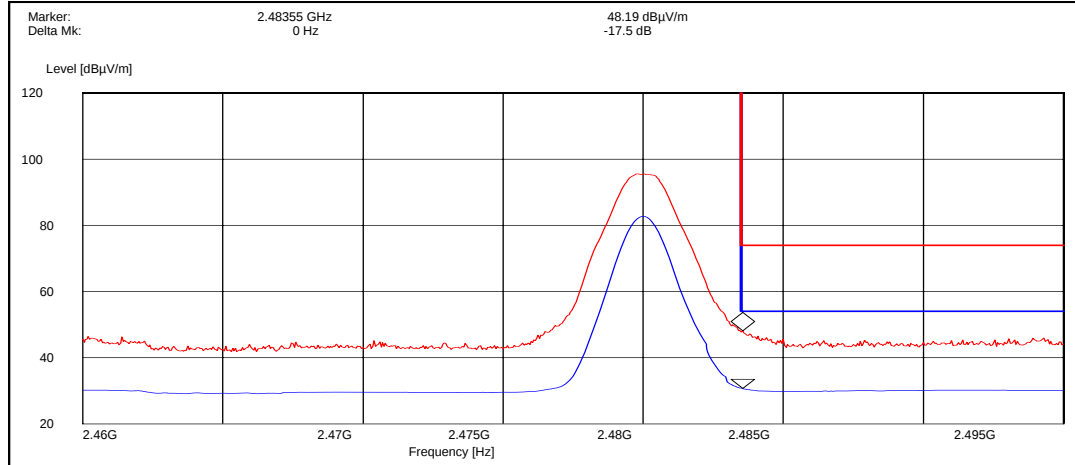
Peak (RBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
0 / 2402	46.38	PASSED
78 / 2480	48.19	PASSED
Hopping on, low end	48.00	PASSED
Hopping on, high end	55.85	PASSED

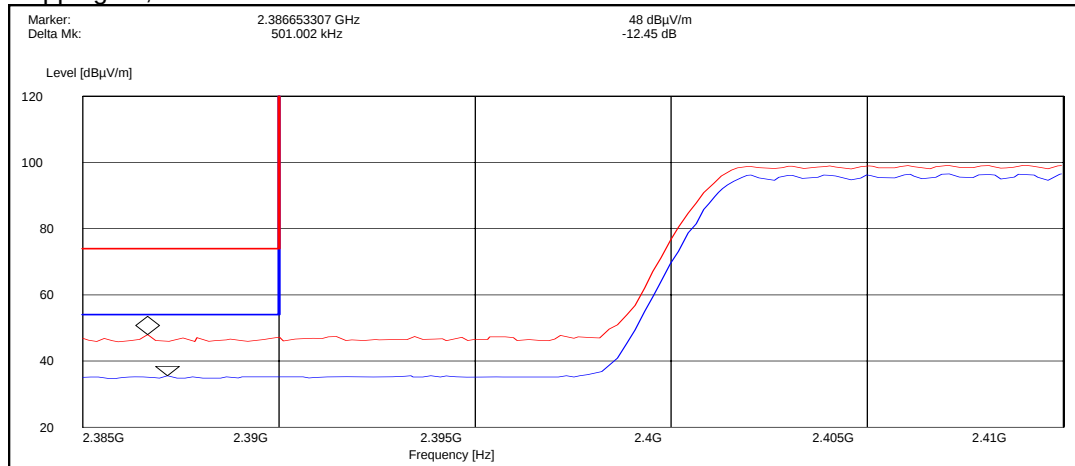
Channel 0 / 2402 MHz



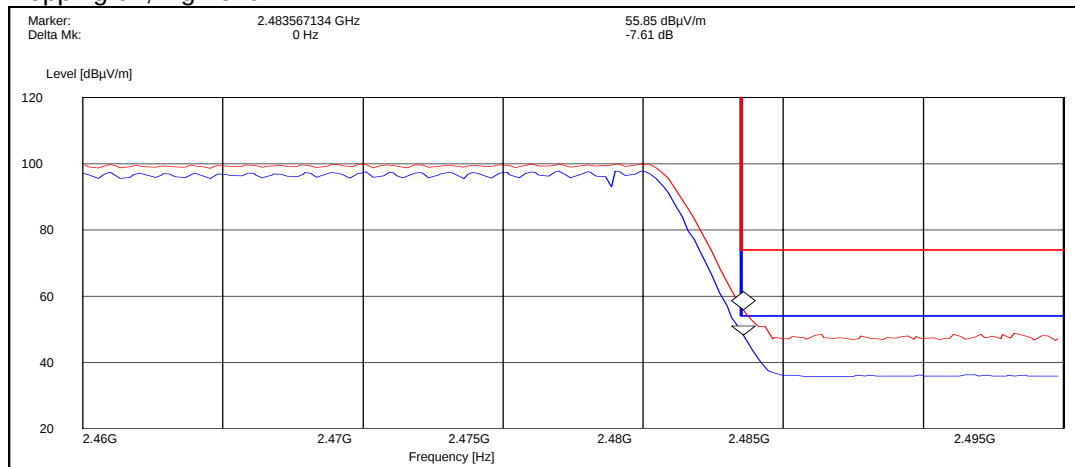
Channel 78 / 2480 MHz



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-242 DUT 41224
Accessories with DUT numbers	BP-5M DUT 41227
Operation Voltage [V] / [Hz]	Nominal
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	20 / 47 / 101.2
Date of measurements	24.08.2007
Measured by	Timo Raiskio

5.1. Test method and limit

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

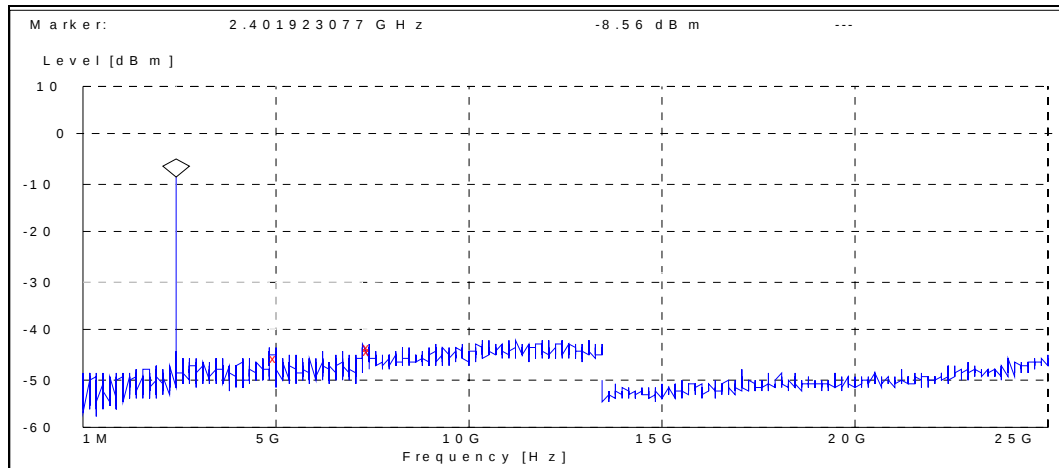
Limits for spurious RF conducted emissions measurements

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

5.2. Bluetooth Test results

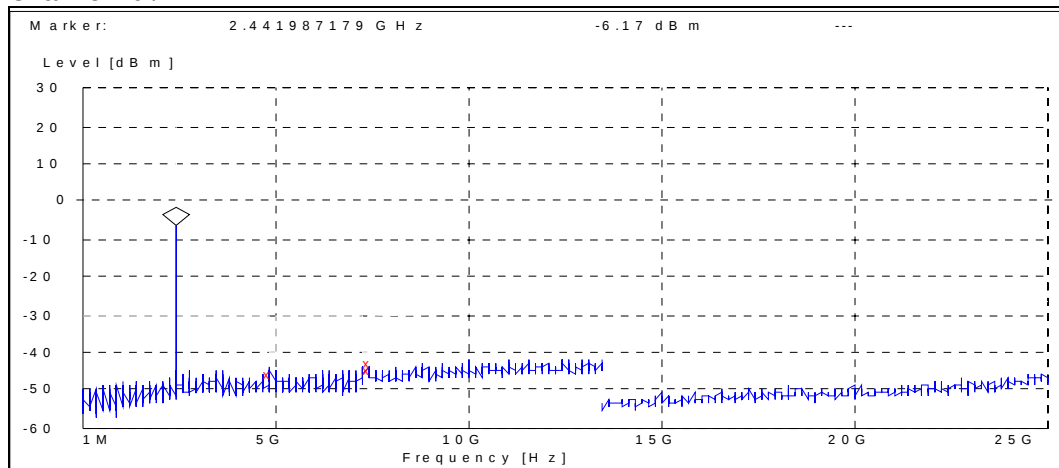
5.2.1 GFSK modulation, PRBS packet type

Channel 0 / 2402 MHz



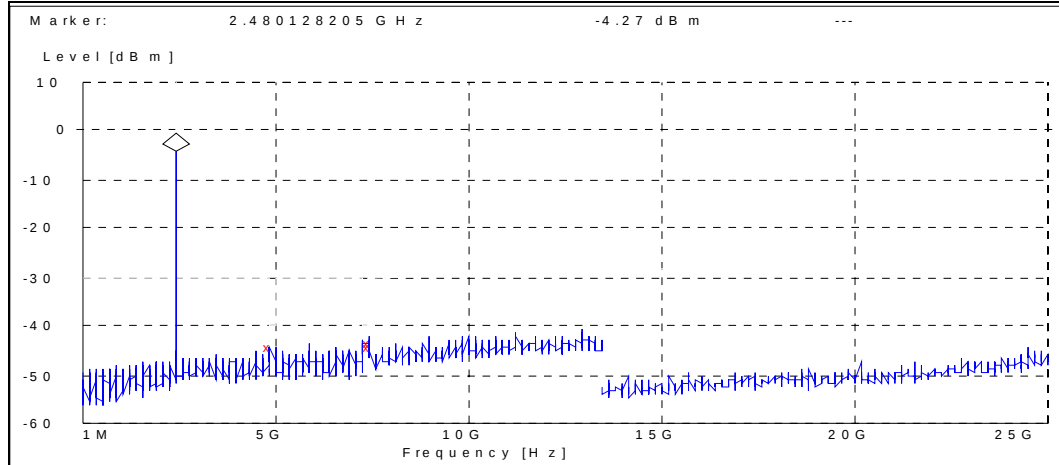
Frequency [MHz]	P [dBc]	Result
4946.153846	-36.944778	PASSED
7468.750000	-35.444778	PASSED
7500.000000	-36.044778	PASSED

Channel 40 / 2442 MHz



Frequency [MHz]	P [dBc]	Result
4899.679487	-39.127709	PASSED
7381.730769	-38.127709	PASSED
7500.000000	-37.027709	PASSED

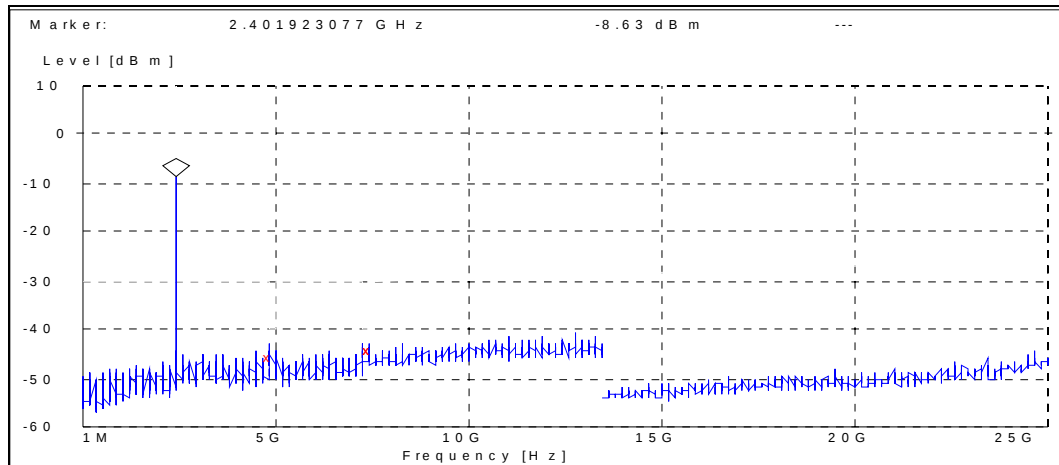
Channel 78 / 2480 MHz



Frequency [MHz]	P [dBc]	Result
4872.756410	-40.033060	PASSED
7348.557692	-39.933060	PASSED
7500.000000	-39.533060	PASSED

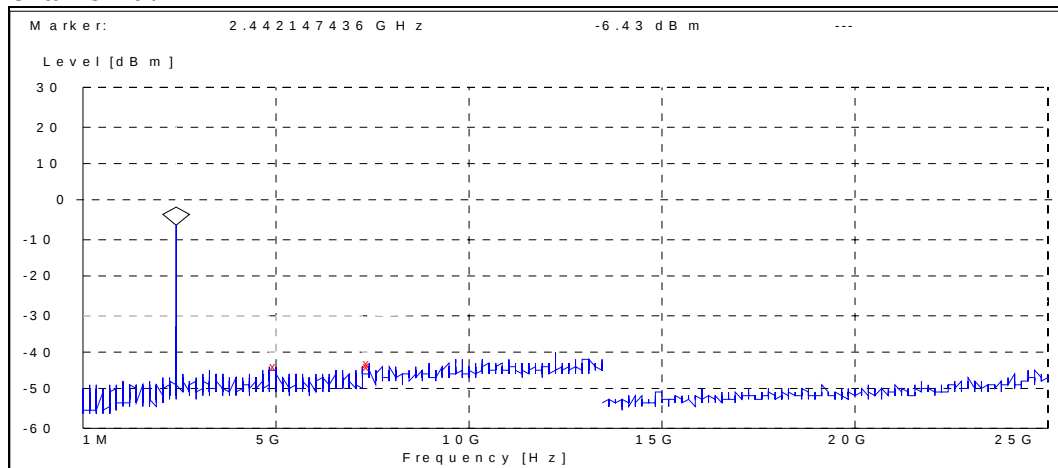
5.2.2 8DPSK modulation, PRBS packet type

Channel 0 / 2402 MHz



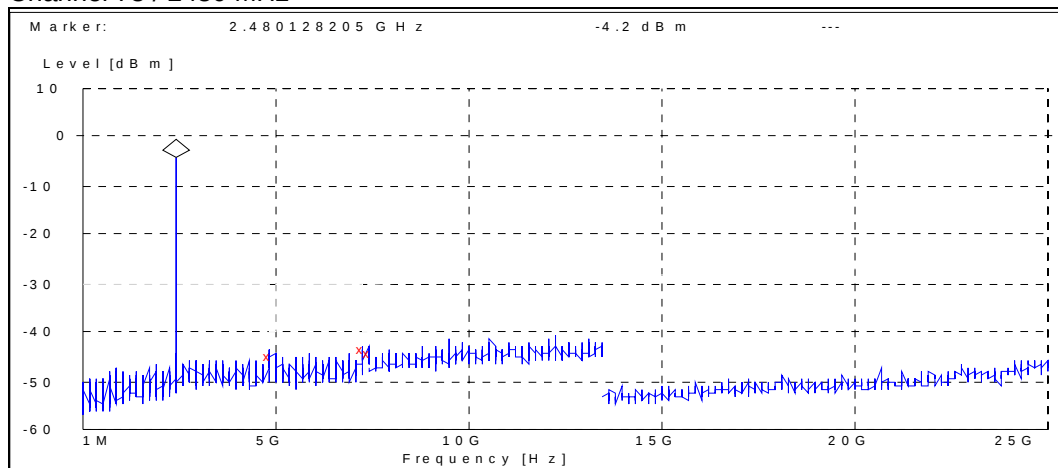
Frequency [MHz]	P [dBc]	Result
4815.064103	-36.874328	PASSED
7475.000000	-35.674328	PASSED
7500.000000	-35.874328	PASSED

Channel 40 / 2442 MHz



Frequency [MHz]	P [dBc]	Result
4969.871795	-37.574310	PASSED
7420.192308	-36.774310	PASSED
7500.000000	-37.474310	PASSED

Channel 78 / 2480 MHz



Frequency [MHz]	P [dBc]	Result
4821.794872	-40.902511	PASSED
7335.576923	-39.802511	PASSED
7500.000000	-39.902511	PASSED

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

EUT with DUT number	RM-242 DUT 41223
Accessories with DUT numbers	AC-3E DUT 40843, BP-5M DUT 41228, AD-56 DUT 41230, HS-45 DUT 41232
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	Slide open
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 52 / 100.2
Date of measurements	31.8.2007
Measured by	Jari Jantunen

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, VBW: 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	41.70	121.62	43.50	-1.8	VERTICAL	PASSED
7206.000000	42.40	131.83	40.00	2.4	VERTICAL	PASSED

Average (RBW: 1 MHz, VBW: 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	29.10	28.51	30.90	-1.8	VERTICAL	PASSED
7206.000000	29.20	28.84	26.80	2.4	HORIZONTAL	PASSED

Channel 40 / 2442 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
38.235872	20.10	10.12	35.40	-15.3	VERTICAL	PASSED
74.808016	25.60	19.05	51.40	-25.8	HORIZONTAL	PASSED
75.169940	24.00	15.85	49.80	-25.8	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
4884.267535	44.00	158.49	45.70	-1.7	HORIZONTAL	PASSED
7281.563126	43.30	146.22	40.30	3.0	HORIZONTAL	PASSED
7348.189379	43.80	154.88	40.60	3.2	VERTICAL	PASSED
7405.813627	44.10	160.32	40.40	3.7	HORIZONTAL	PASSED
7417.837675	44.00	158.49	40.30	3.7	HORIZONTAL	PASSED
17993.981964	56.00	630.96	34.50	21.5	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
4883.767535	29.70	30.55	31.40	-1.7	HORIZONTAL	PASSED

7285.563126	30.40	33.11	27.40	3.0	HORIZONTAL	PASSED
7340.689379	30.10	31.99	27.00	3.1	VERTICAL	PASSED
7408.813627	30.70	34.28	27.00	3.7	HORIZONTAL	PASSED
7421.837675	30.70	34.28	27.00	3.7	HORIZONTAL	PASSED
17988.981964	42.60	134.90	21.10	21.5	HORIZONTAL	PASSED

Channel 78 / 2480 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	44.40	165.96	45.50	-1.1	VERTICAL	PASSED
7440.000000	43.30	146.22	39.80	3.5	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	31.70	38.46	32.80	-1.1	VERTICAL	PASSED
7440.000000	30.30	32.73	26.80	3.5	HORIZONTAL	PASSED

6.2.2 8DPSK modulation, PRBS packet type

Channel 0 / 2402 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	46.20	204.17	48.00	-1.8	VERTICAL	PASSED
7206.000000	41.70	121.62	39.30	2.4	VERTICAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	34.60	53.70	36.40	-1.8	VERTICAL	PASSED
7206.000000	29.00	28.18	26.60	2.4	HORIZONTAL	PASSED

Channel 40 / 2442 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
38.235872	22.60	13.49	37.90	-15.3	VERTICAL	PASSED
75.069940	21.00	11.22	46.80	-25.8	HORIZONTAL	PASSED
75.088978	20.80	10.96	46.60	-25.8	HORIZONTAL	PASSED
119.318437	14.70	5.43	37.30	-22.6	VERTICAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4883.269539	43.40	147.91	45.10	-1.7	VERTICAL	PASSED
4883.767535	44.80	173.78	46.50	-1.7	VERTICAL	PASSED
7284.065130	43.30	146.22	40.30	3.0	HORIZONTAL	PASSED
7301.101202	42.80	138.04	39.70	3.1	VERTICAL	PASSED
7372.243487	43.30	146.22	40.00	3.3	HORIZONTAL	PASSED
7409.311623	43.10	142.89	39.40	3.7	HORIZONTAL	PASSED
17455.411824	51.20	363.08	33.30	17.9	VERTICAL	PASSED
17976.457916	55.60	602.56	34.10	21.5	VERTICAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4883.767535	32.70	43.15	34.40	-1.7	VERTICAL	PASSED
4884.269539	32.30	41.21	34.00	-1.7	VERTICAL	PASSED
7286.065130	30.20	32.36	27.20	3.0	HORIZONTAL	PASSED
7302.101202	29.80	30.90	26.70	3.1	VERTICAL	PASSED
7372.243487	30.30	32.73	27.00	3.3	HORIZONTAL	PASSED
7407.811623	30.30	32.73	26.60	3.7	HORIZONTAL	PASSED
17452.411824	38.40	83.18	20.50	17.9	VERTICAL	PASSED
17980.457916	42.40	131.83	20.90	21.5	VERTICAL	PASSED

Channel 78 / 2480 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	45.90	197.24	47.00	-1.1	VERTICAL	PASSED
7440.000000	43.40	147.91	39.90	3.5	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	32.60	42.66	33.70	-1.1	VERTICAL	PASSED
7440.000000	30.20	32.36	26.70	3.5	HORIZONTAL	PASSED

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

EUT with DUT number	RM-242 DUT 41223
Accessories with DUT numbers	AC-3E DUT 40843, BP-5M DUT 41228, AD-56 DUT 41230, HS-45 DUT 41232
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	19 / 52 / 99.2
Date of measurements	3.9.2007
Measured by	Jari Jantunen

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.

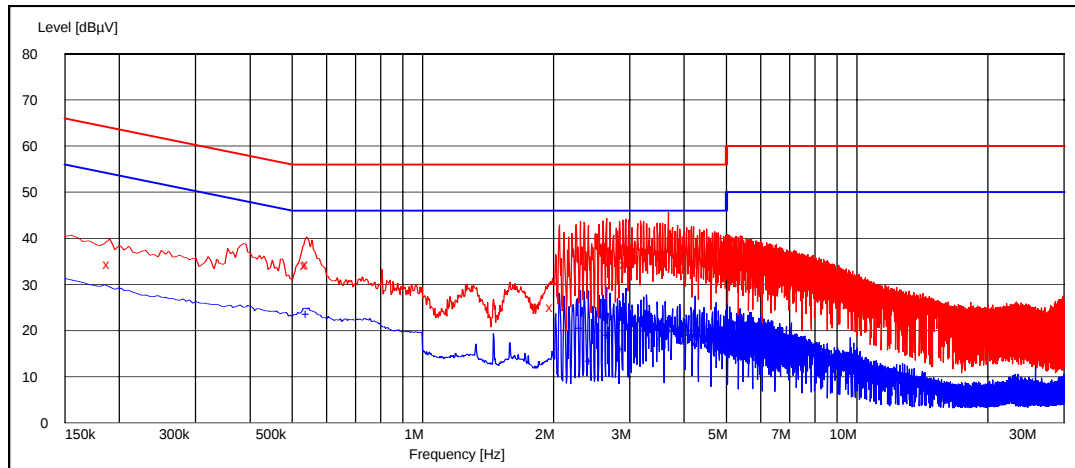
CISPR 22 Class B limits

Frequency range [MHz]	Quasi peak limit [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 / 2442 MHz



Quasi peak (RBW: 9 kHz)

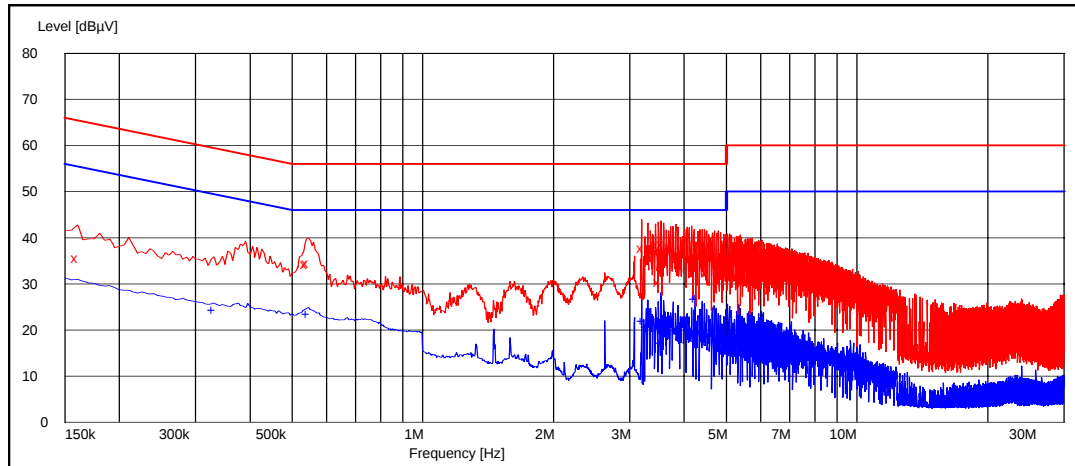
Frequency [MHz]	U [dBμV]	Line	Result
0.190000	34.40	L1	PASSED
0.540000	34.30	L1	PASSED
0.545000	34.50	L1	PASSED
1.990000	25.00	L1	PASSED
2.645000	37.10	L1	PASSED
2.930000	38.60	L1	PASSED
2.940000	34.40	L1	PASSED
3.665000	34.20	L1	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.545000	23.50	L1	PASSED
2.320000	20.50	N	PASSED
2.450000	13.40	N	PASSED
2.700000	18.90	L1	PASSED
2.885000	16.00	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
0.160000	35.50	L1	PASSED
0.540000	34.20	L1	PASSED
0.545000	34.40	L1	PASSED
3.220000	37.80	L1	PASSED
3.470000	38.40	L1	PASSED
3.515000	30.30	L1	PASSED
3.575000	38.60	L1	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.330000	24.30	N	PASSED
0.545000	23.40	L1	PASSED
3.220000	22.00	L1	PASSED
3.280000	20.50	L1	PASSED
3.560000	17.20	L1	PASSED
4.240000	26.70	L1	PASSED

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

EUT with DUT number	RM-242 DUT 41224
Accessories with DUT numbers	BP-5M DUT 41227
Operation Voltage [V] / [Hz]	Nominal
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	20 / 47 / 101.2
Date of measurements	24.08.2007
Measured by	Timo Raiskio

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

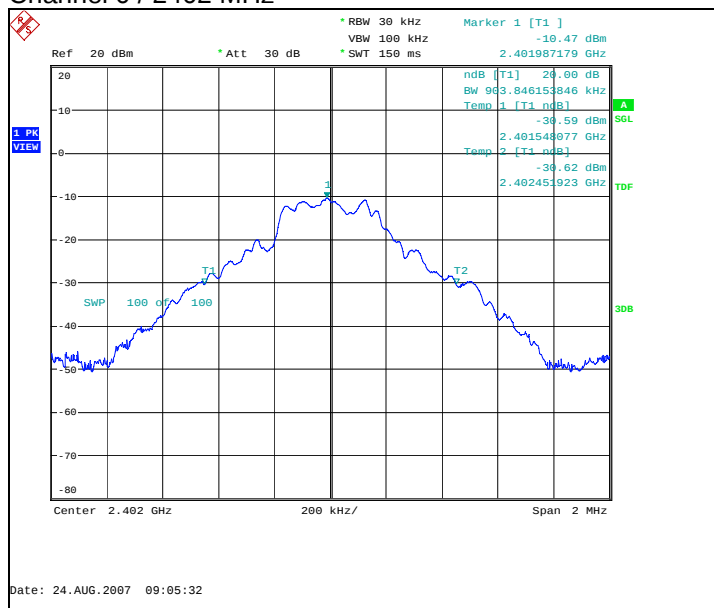
Limit [MHz]
N/A

8.2. Bluetooth Test results

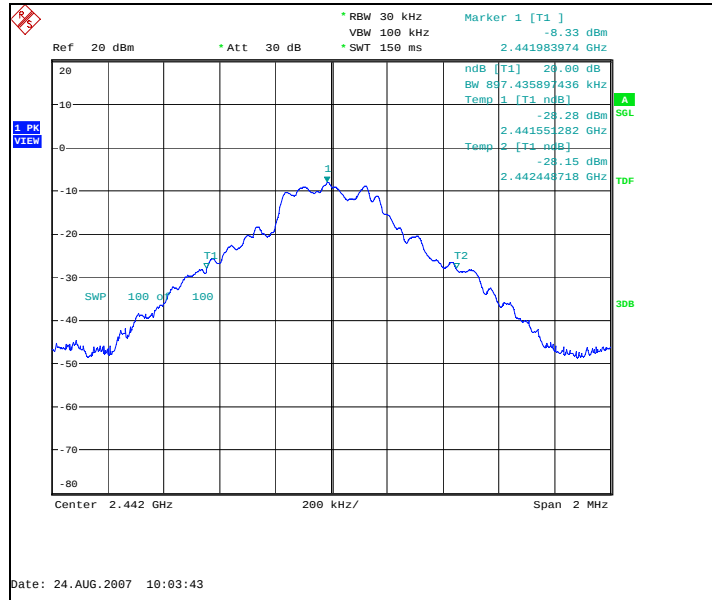
8.2.1 GFSK modulation, PRBS packet type

Channel / f_c [MHz]	20 dB bandwidth [kHz]	Result
0 / 2402	900.641	PASSED
40 / 2442	897.436	PASSED
78 / 2480	900.641	PASSED

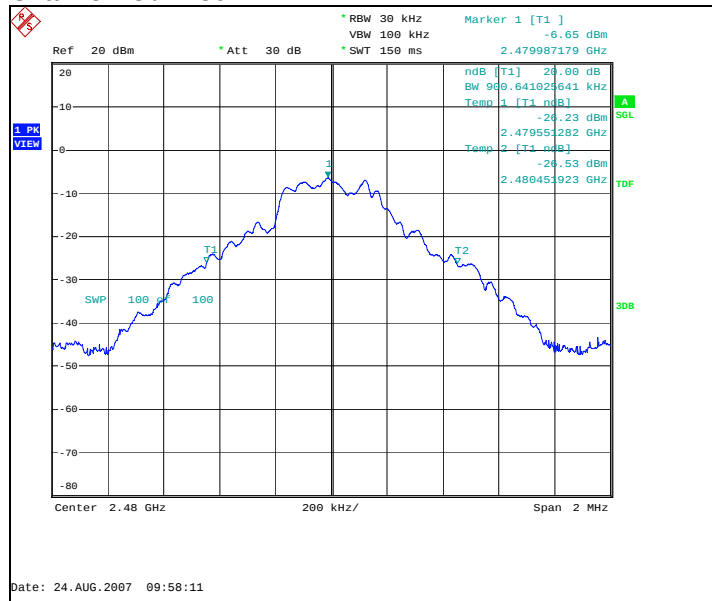
Channel 0 / 2402 MHz



Channel 40 / 2442 MHz



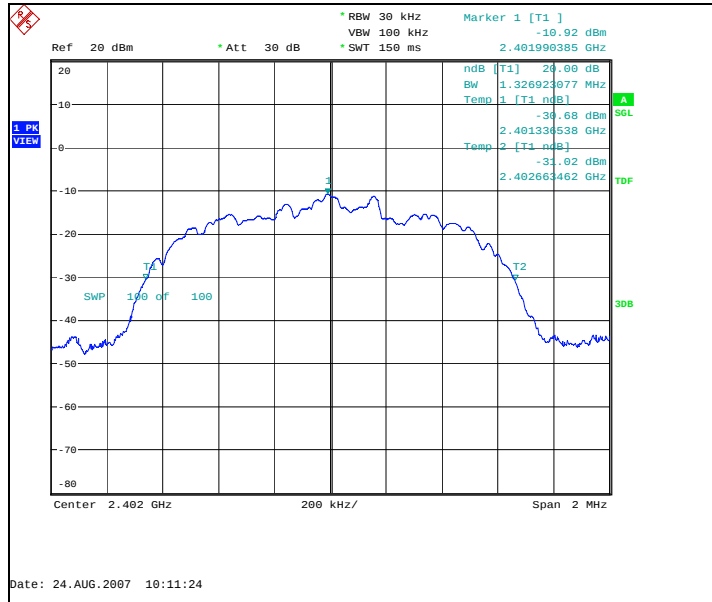
Channel 78 / 2480 MHz



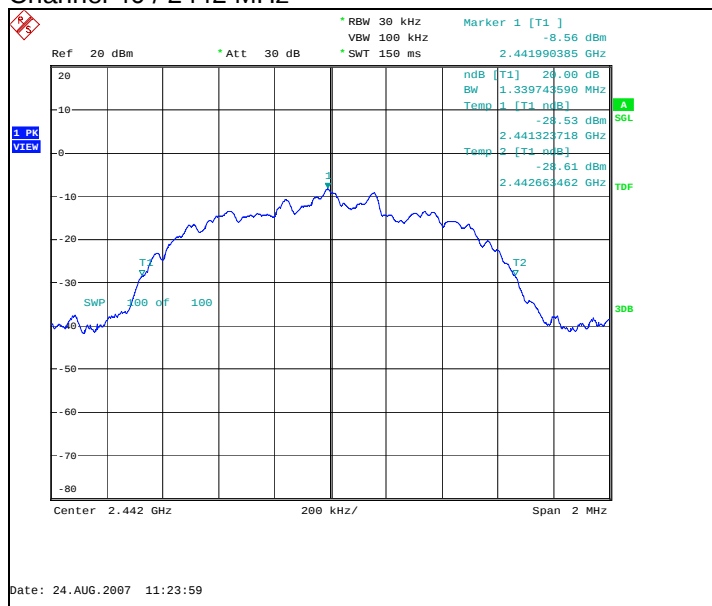
8.2.2 8DPSK modulation, PRBS packet type

Channel / f_c [MHz]	20 dB bandwidth [kHz]	Result
0 / 2402	1326.923	PASSED
40 / 2442	1339.744	PASSED
78 / 2480	1333.333	PASSED

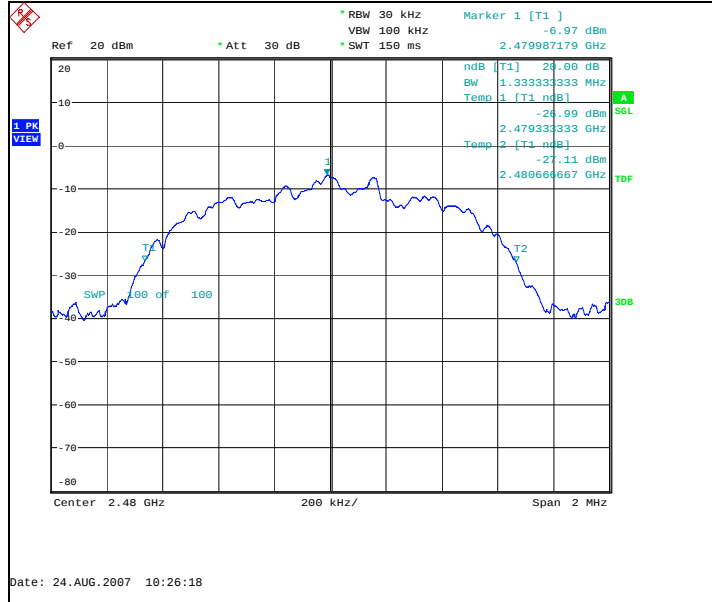
Channel 0 / 2402 MHz



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-242 DUT 41224
Accessories with DUT numbers	BP-5M DUT 41227
Operation Voltage [V] / [Hz]	Nominal
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	20 / 47 / 101.2
Date of measurements	24.08.2007
Measured by	Timo Raiskio

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

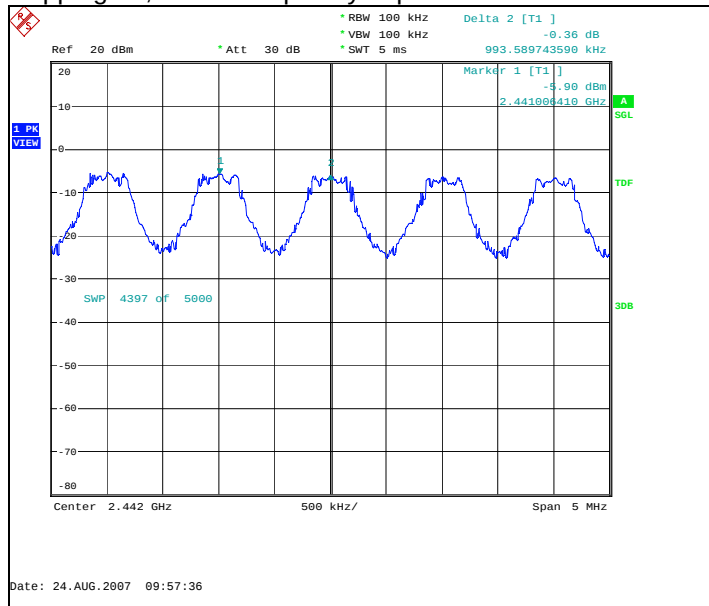
Limit [MHz]
≥ 0.025 or $2/3$ of the 20 dB bandwidth

9.2. Bluetooth Test results

9.2.1 GFSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
993.59	PASSED

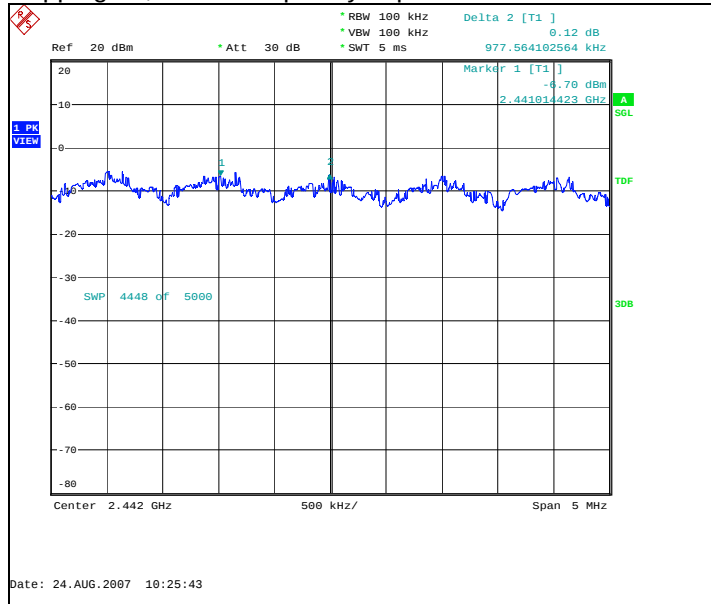
Hopping on, carrier frequency separation of channels 39 / 2441 MHz and 40 / 2442 MHz



9.2.2 8DPSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
977.564	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-242 DUT 41224
Accessories with DUT numbers	BP-5M DUT 41227
Operation Voltage [V] / [Hz]	Nominal
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	20 / 47 / 101.2
Date of measurements	24.08.2007
Measured by	Timo Raisio

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

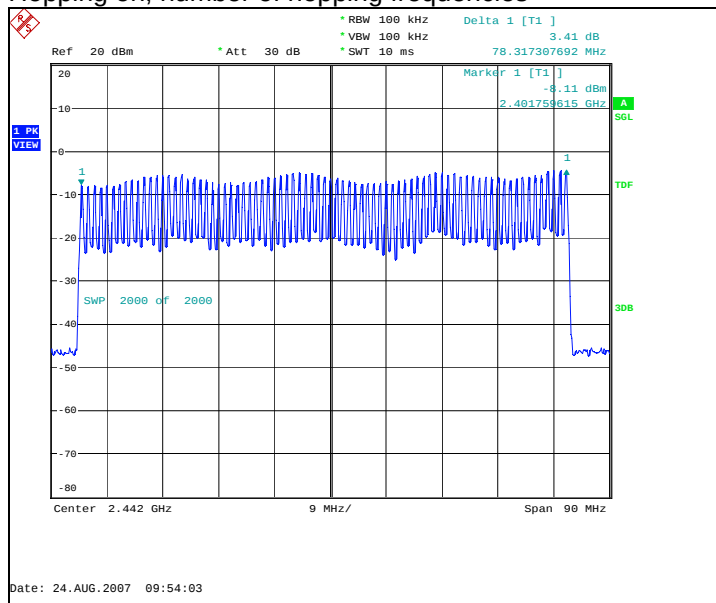
Limit [number]
≥ 15

10.2. Bluetooth Test results

10.2.1 GFSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
79	PASSED

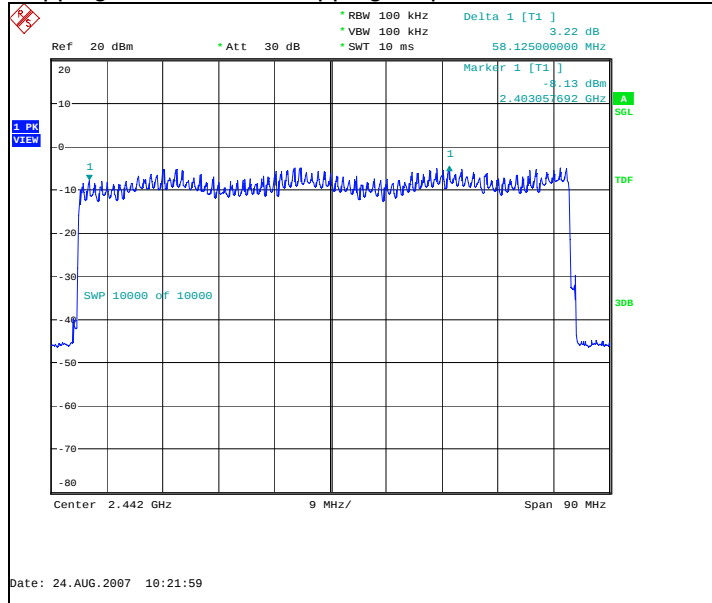
Hopping on, number of hopping frequencies



10.2.2 8DPSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
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-242 DUT 41224
Accessories with DUT numbers	BP-5M DUT 41227
Operation Voltage [V] / [Hz]	Nominal
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	20 / 47 / 101.2
Date of measurements	24.08.2007
Measured by	Timo Raiskio

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

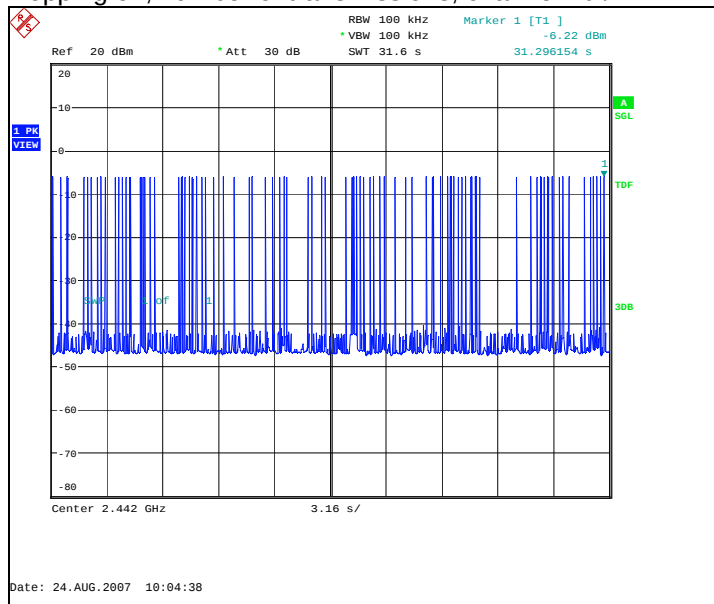
Limit [s]
≤ 0.4

11.2. Bluetooth test results

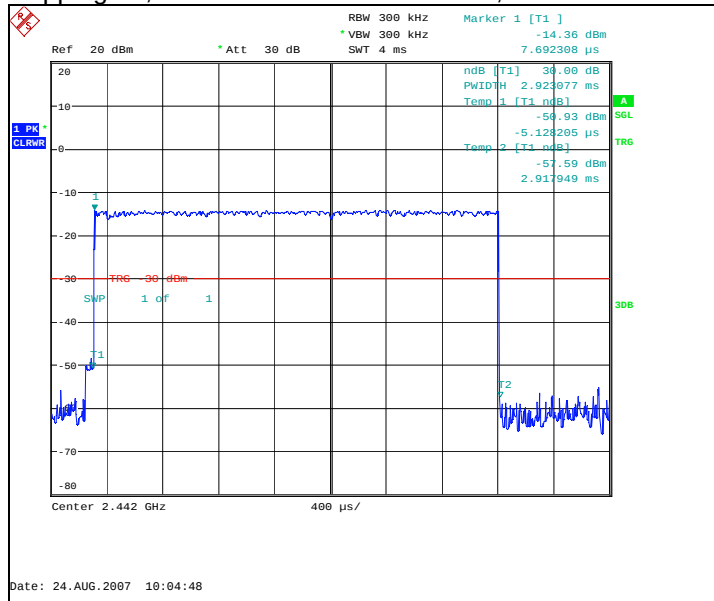
11.2.1 GFSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [μ s]	Time of occupancy [s]	Result
79	2,923	0.239692	PASSED

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



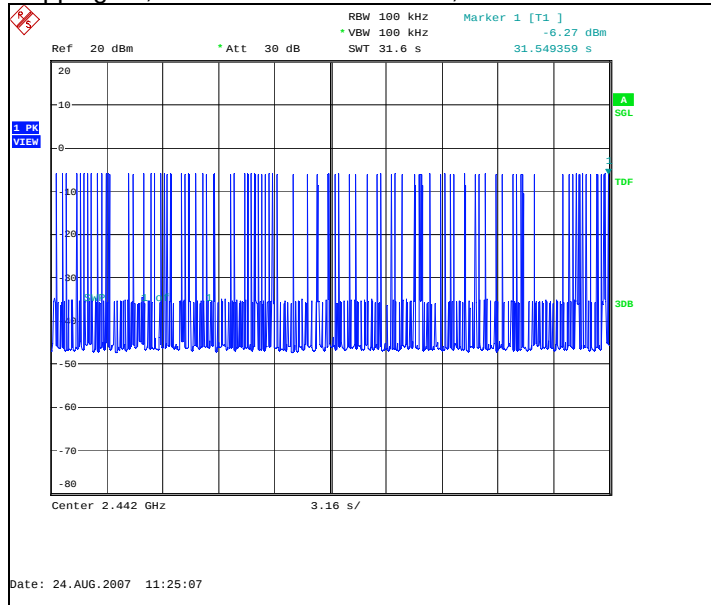
Hopping on, duration of one transmission, channel 40 / 2442 MHz



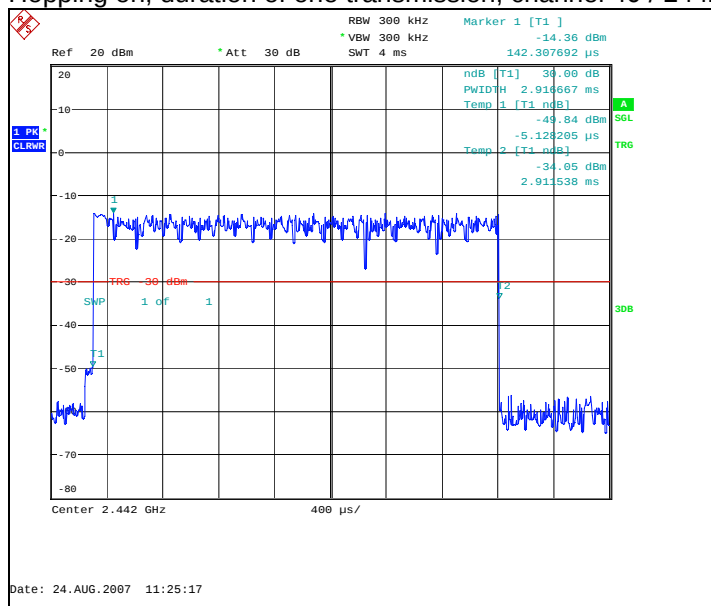
11.2.2 8DPSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [μ s]	Time of occupancy [s]	Result
77	2,917	0.253750	PASSED

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



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



12. Test Equipment

12.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
TM37610	Spectrum analyzer	FSU	R&S	22/24, 15C
TM37678	Radio communication tester	CMU-200	R&S	22/24, 15C
	Attenuator 10 dB	6251.17.A	Huber+Suhner AG	22/24, 15C
TM37499	Power splitter	11667A	Agilent	22/24, 15C
	Temperature chamber	VT4002	Vötsch	22/24, 15C
TM38112	DC power supply	6632A	Agilent	22/24, 15C
TM38111	Multimeter	34401A	Agilent	22/24, 15C
	EMI Test receiver	ESPC	R&S	15C, 15B
TM37773	Radio communication tester	CMU-200	R&S	15C, 15B
TM38631	Signal generator	83640L	Agilent	15C, 15B
TM38114	DC power supply	6632A	Agilent	15C, 15B
TM22835	Multimeter	87	Fluke	15C, 15B
TM30600	Pulse Limiter	ESH3-Z2	R&S	15C, 15B
TM26490	LISN 50 µH	ESH3-Z5/	R&S	15C, 15B
TM30636	LISN 50 µH	L2-16/	PMM	15C, 15B

12.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
TM30599	3m semi-anechoic chamber		TDK	22/24, 15C, 15B
TM38845	EMI receiver	ESI 40	R&S	22/24, 15C, 15B
TM37498	Preamplifier	AMF-5D-020180-26-10P	MITEQ	22/24, 15C, 15B
TM37523	Preamplifier	AMF-4D-10M-3G-25-20P	MITEQ	22/24, 15C, 15B
TM37516	Biconilog antenna	HL562	R&S	22/24, 15C, 15B
TM26496	Double ridged waveguide antenna	3115	EMCO	22/24, 15C, 15B
TM39158	Horn antenna	3116	EMCO	22/24, 15C, 15B
TM26492	Reference dipole set	UHAP/VHAP	Schwarzbeck	22/24, 15C, 15B
TM37501	Dipole antenna	3125-870	EMCO	22/24
TM37502	Dipole antenna	3125-1880	EMCO	22/24
TM37773	Radio communication tester	CMU-200	R&S	22/24, 15C, 15B
TM38631	Signal generator	83640L	Agilent	22/24, 15C, 15B
TM38066	High pass filter	4HC3000/18000-3-KK	Trilithic	22/24, 15C, 15B
	High pass filter	WHK2010-10SS	Trilithic	22/24, 15C, 15B
	Low pass filter	WLK1750-10SS	Trilithic	22/24, 15C, 15B
TM26511	Tunable notch filter	WRCA870	Wainwright	22/24
TM38215	Tunable notch filter	WRCD1850/1910-0.2/40	Wainwright	22/24
TM38214	Band reject filter	WRCT 2402/2480-2400/2483.5-30	Wainwright	15C
TM30642	Turntable controller	HD-100	Deisel	22/24, 15C, 15B
TM26500	Turntable	DS412	Deisel	22/24, 15C, 15B
TM38842	Antenna mast controller	2090	EMCO	22/24, 15C, 15B
TM38843	Antenna mast	2075	EMCO	22/24, 15C, 15B
TM38114	DC power supply	6632A	Agilent	22/24, 15C, 15B
TM22835	Multimeter	87	Fluke	22/24, 15C, 15B