

FCC Part 15C Compliance Test Report

Test Report no.:	Tre_FCC_0913_03.doc	Date of Report:	23-Mar-2009
Number of pages:	42	Customer's Contact person:	Niina Upola
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FCC listing no.:	533467		
IC recognition no.:	661V-1		
Tested devices/ accessories:	Phone RM-564 / Battery BP-6MT / Headset for RM-424 HS-125 / Charger AC-8E		
FCC ID:	LJPRM-564	IC:	661E-RM564
Supplement reports:	-		
Testing has been carried out in accordance with:	CFR 47, FCC rules Part 15 Subpart C, ANSI C63.4 (2003), Public Notice DA 00-705, DTS procedures KDB 558074, IC standards RSS-GEN (Issue 2, June 2007) and RSS-210 (Issue 7, June 2007). Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit".		
Documentation:	The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory. The documentation of the testing performed on the tested devices is archived for 15 years at TCC Nokia.		
Test Results:	The EUT complies with the requirements in respect of all parameters subject to the test. The test results relate only to devices specified in this document.		
Date and signature for the contents:			

Jari Jantunen, Test System Manager

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	30-Jan-2009
Testing completed	25-Feb-2009
The customer's contact person	Niina Upola
Test Plan referred to	T:\Projects\RM-424\TestPlan_RS\RS_testplan_RM-424.xls
Notes	
Document name	T:\Projects\RM-424\EMC\Results\FCC\Salo_FCC_0906_08.doc

1.1. EUT and Accessory Information

The EUT is a 7-band (GSM850/900/1800/1900 and WCDMA Band I / II / V) mobile phone with GPRS, EGPRS and Bluetooth. Bluetooth is tested with maximum rated TX power.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-424	004401104093857	0901		v011.006.1	13472
Battery	BP-6MT	3932137385120273264;0670552				13488
Headset for RM-424	HS-125	06943238463I3100651				13471
Charger	AC-8E	3997917527070304545;0675387				13479
Phone	RM-424	004401104093485	0901		v011.006.1	13474
Battery	BP-6MT	3932138171120484405;0670551				13532
Charger	AC-8	1103338424070300783;0675389				13384
Headset	HS-125	06943238463I3100649				13482
Phone	RM-424	004401104093832	0901		v011.006.1	13464
Battery	BP-6MT	3932137385120273264;0670552				13488
Headset	HS-125	06943238463I3100651				13471
Charger	AC-8E	3997917527070304545;0675387				13479

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(d)	A8.5	Band edge compliance of RF emissions	PASSED
15.247(d)	A8.5	Spurious RF conducted emissions	PASSED
15.247(d), 15.209	A8.5	Spurious radiated emissions	PASSED
15.207	7.2.2	AC powerline conducted emissions	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

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 Salo Laboratory.

The test results of LJPRM-424 are re-used for certification of the LJPRM-564. The table above indicates the results, which will be re-used.

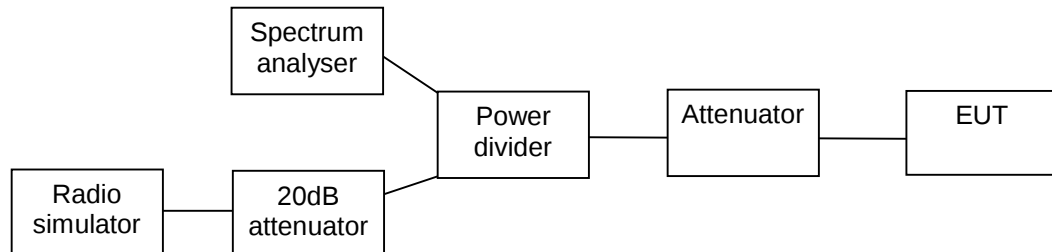
CONTENTS

1. Summary for FCC Part 15C Compliance Test Report.....	2
1.1. EUT and Accessory Information	2
1.2. Summary of Test Results	2
2. Test setups.....	5
2.1. Conducted RF test setup	5
2.2. AC powerline conducted emissions test setup.....	5
2.3. Radiated test setup	5
3. Conducted peak output power (FCC §15.247(b)(1), RSS-210 A8.4 (2))	6
3.1. Test method and limit.....	6
3.2. Bluetooth Test results	7
4. Band edge compliance of RF emissions (FCC §15.247(d), RSS-210 A8.5).....	10
4.1. Test method and limit.....	10
4.2. Bluetooth Test results	11
5. Spurious RF conducted emissions (FCC §15.247(d), RSS-A8.5).....	15
5.1. Test method and limit.....	15
5.2. Bluetooth Test results	15
6. Spurious radiated emissions (FCC §15.247(d), §15.209, RSS-210 A8.5).....	19
6.1. Test method and limit.....	19
6.2. Bluetooth Test results	20
7. AC powerline conducted emissions (FCC §15.207, RSS-GEN 7.2.2)	24
7.1. Test method and limit.....	24
7.2. Bluetooth Test results	25
8. 20 dB bandwidth (FCC §15.247(a)(1), RSS-210 A8.1 (1))	27
8.1. Test method and limit.....	27
8.2. Bluetooth Test results	28
9. Carrier frequency separation (FCC §15.247(a)(1), RSS-210 A8.1 (2))	32
9.1. Test method and limit.....	32
9.2. Bluetooth Test results	33
10. Number of hopping frequencies (FCC §15.247(a)(1)(iii), RSS-210 A8.1 (4)).....	35
10.1. Test method and limit.....	35
10.2. Bluetooth Test results	36
11. Time of occupancy (FCC §15.247(a)(1)(iii), RSS-210 A8.1 (4))	38
11.1. Test method and limit.....	38
11.2. Bluetooth test results.....	39

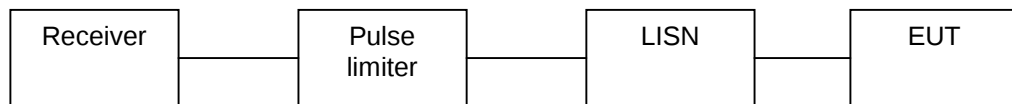
12.	Test Equipment	41
12.1.	Conducted measurements	41
12.2.	Radiated measurements	41

2. Test setups

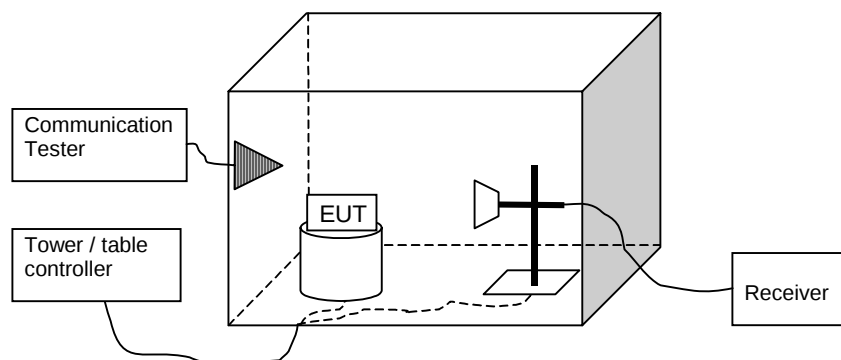
2.1. Conducted RF test setup



2.2. AC powerline conducted emissions test setup



2.3. Radiated test setup



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

EUT with DUT number	RM-424, DUT 13474
Accessories with DUT numbers	BP-6MT, DUT 13532; AC-8U, DUT 13384; HS-125, DUT 13482
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 45 / 100
Date of measurements	24-Feb-2009
Measured by	Anni Manninen

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

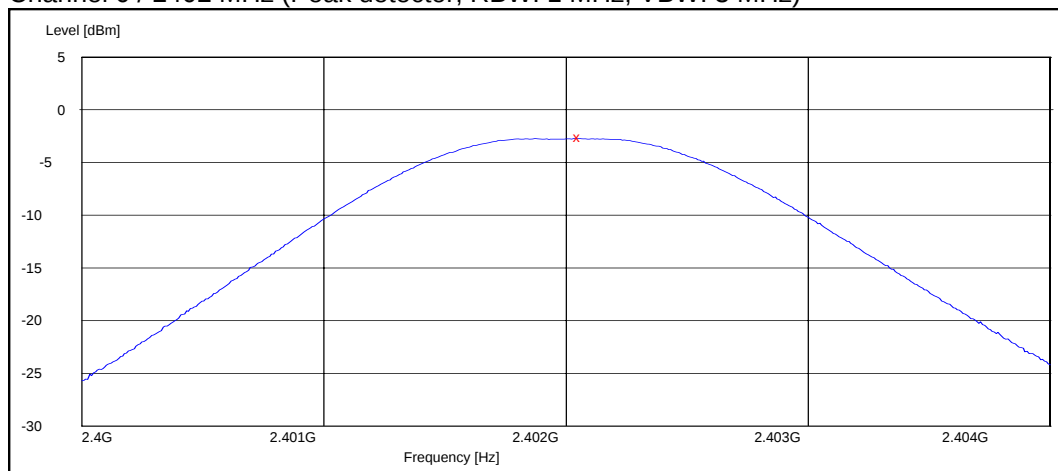
Frequency range [MHz]	Limit [W]	Limit [dBm]
2400 – 2483.5	≤ 1	≤ 30

3.2. Bluetooth Test results

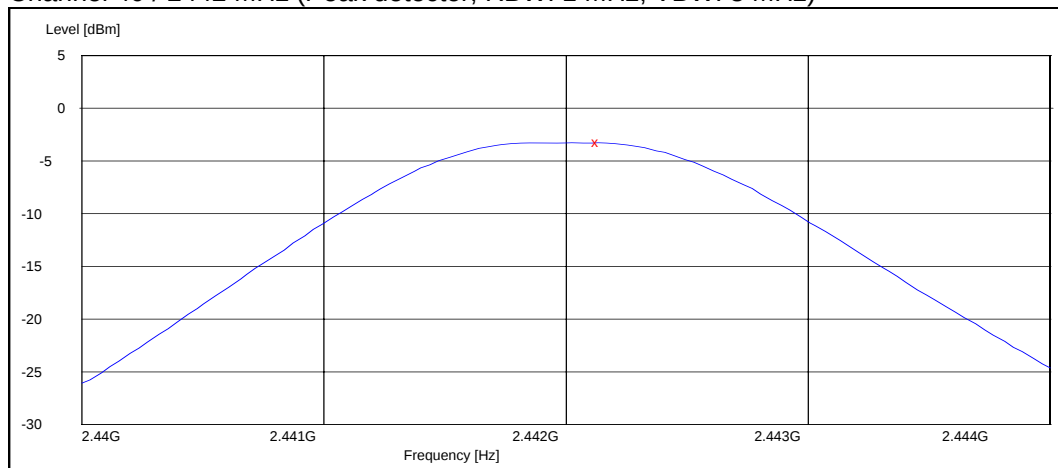
3.2.1 GFSK modulation, PRBS packet type

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
0 / 2402	-2.60	0.550	PASSED
40 / 2442	-3.20	0.479	PASSED
78 / 2480	-3.80	0.417	PASSED

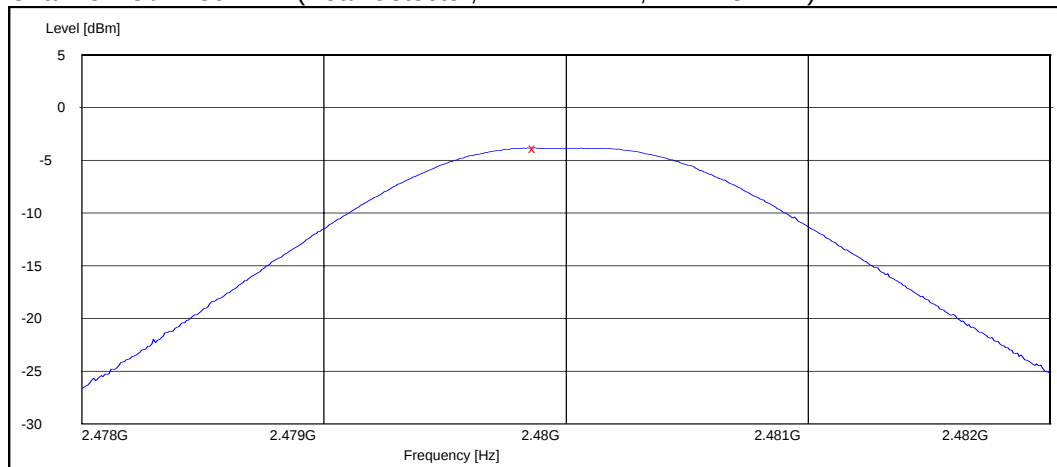
Channel 0 / 2402 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



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



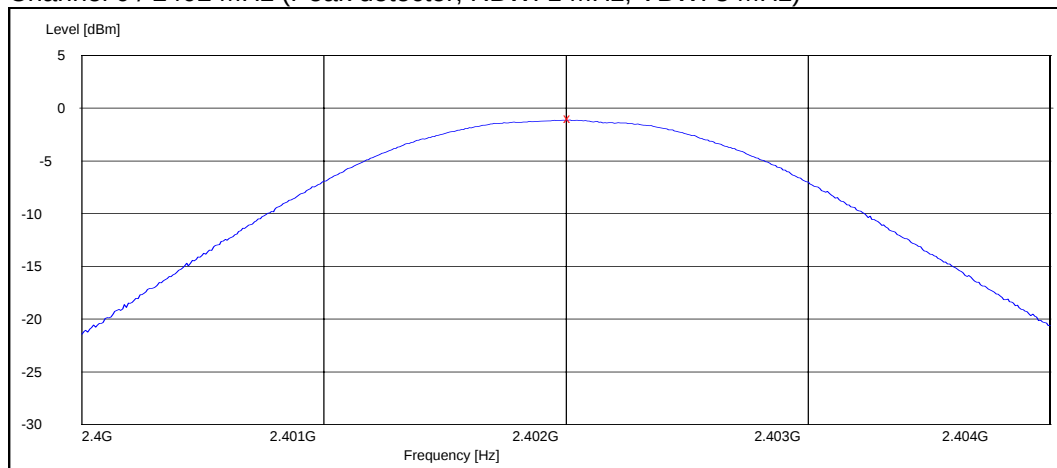
Channel 78 / 2480 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



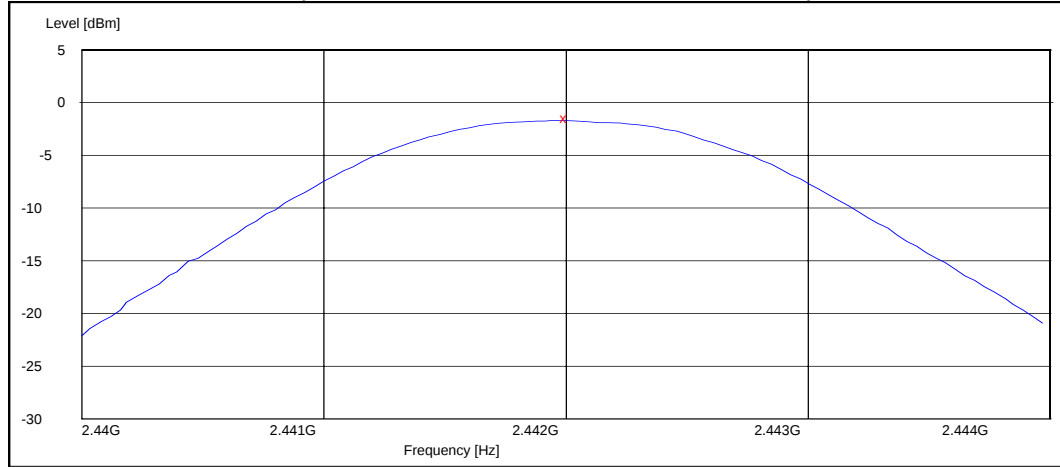
3.2.2 8DPSK modulation, PRBS packet type

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
0 / 2402	-0.90	0.813	PASSED
40 / 2442	-1.50	0.708	PASSED
78 / 2480	-1.90	0.646	PASSED

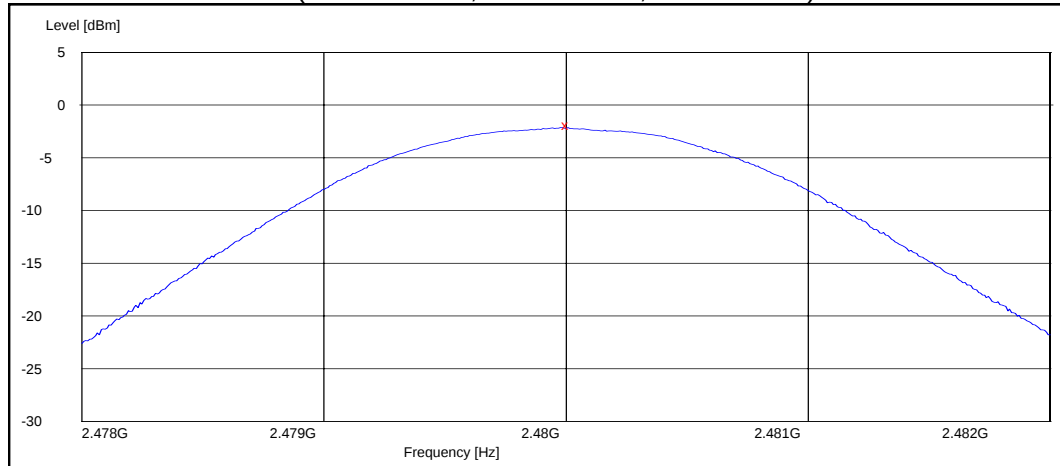
Channel 0 / 2402 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



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(d), RSS-210 A8.5)

EUT with DUT number	RM-424, DUT 13464
Accessories with DUT numbers	BP-6MT, DUT 13488; HS-125, DUT 13471; AC-8E, DUT 13479
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	19 / 42 / 102.1
Date of measurements	09-Feb-2009
Measured by	Sami Lehtonen / Janne Hirsimäki

4.1. Test method and limit

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

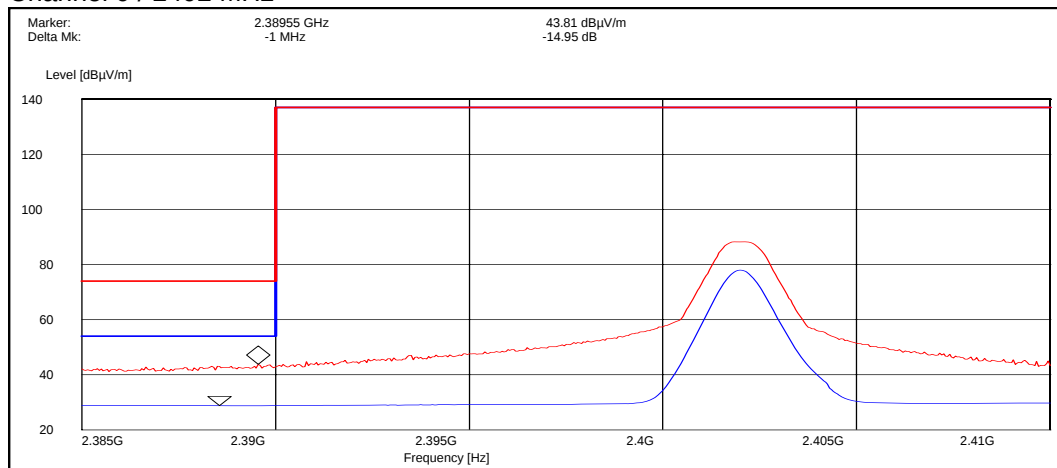
Limits for band edge compliance of RF emissions measurements (3 m measurement distance)

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

4.2. Bluetooth Test results

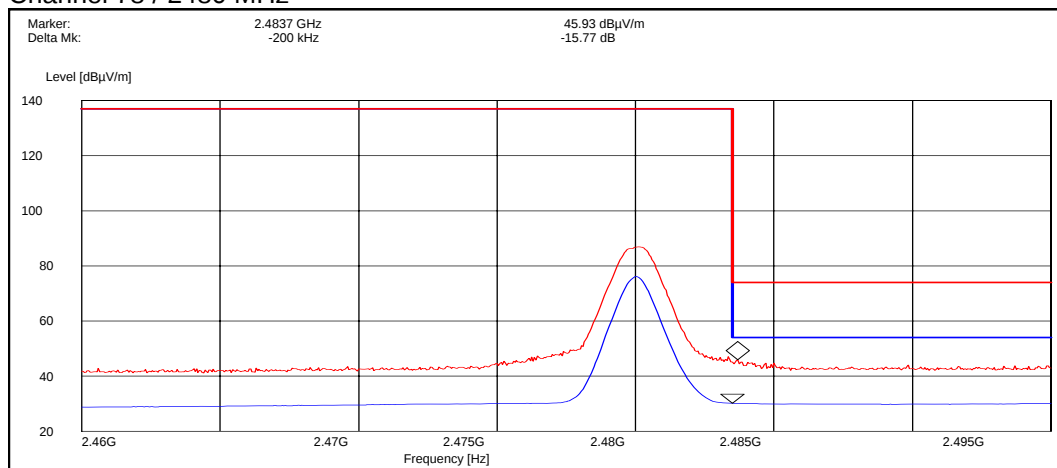
4.2.1 GFSK modulation, PRBS packet type

Channel 0 / 2402 MHz



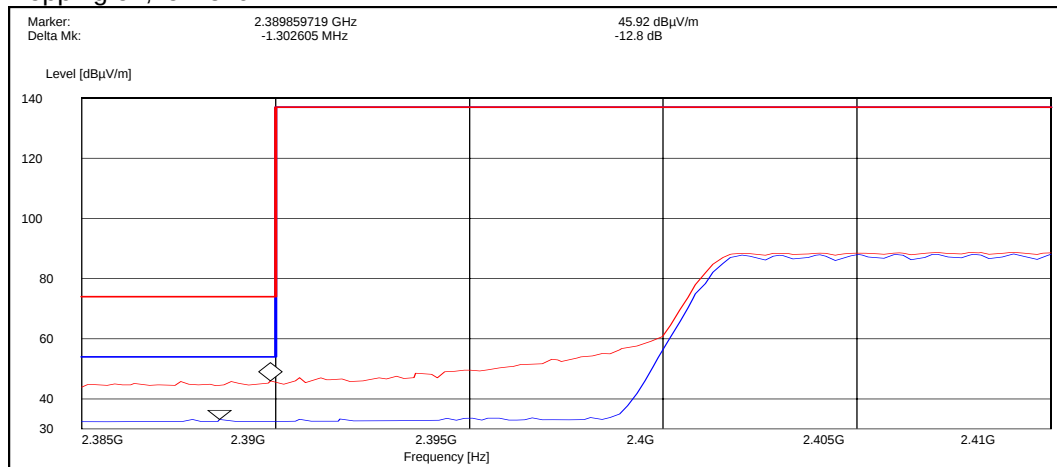
Detector (RBW: 1 MHz)	E [dBμV/m]	Result
Peak	43.80	PASSED
Average	28.90	PASSED

Channel 78 / 2480 MHz



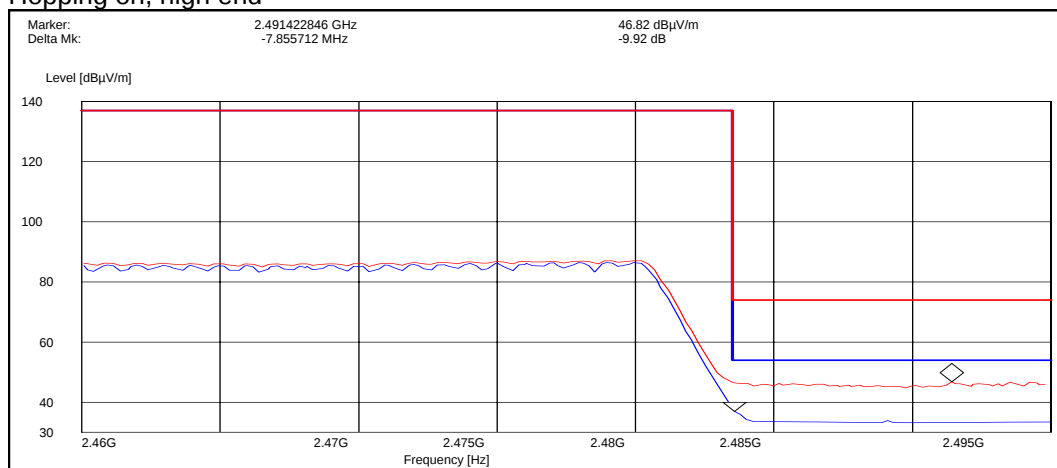
Detector (RBW: 1 MHz)	E [dBμV/m]	Result
Peak	45.90	PASSED
Average	30.20	PASSED

Hopping on, low end



Detector (RBW: 1 MHz)	E [dB μ V/m]	Result
Peak	45.90	PASSED
Average	33.10	PASSED

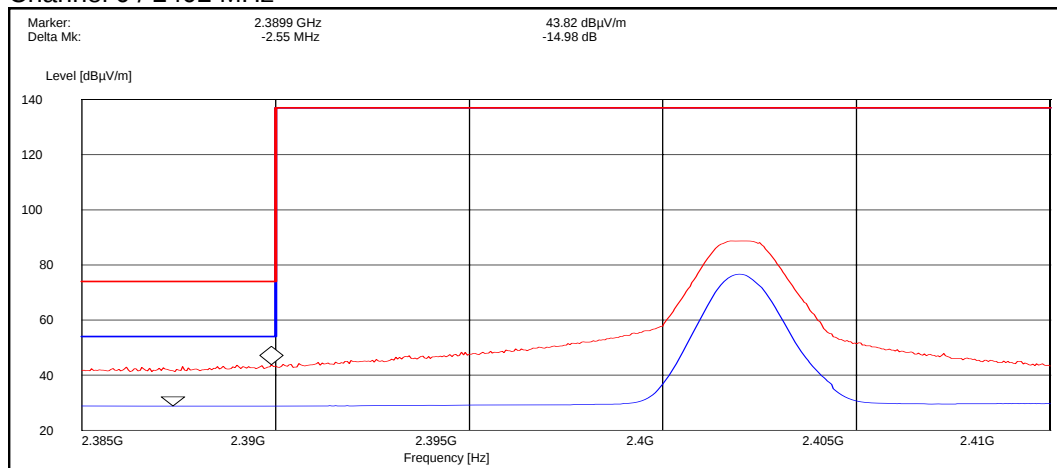
Hopping on, high end



Detector (RBW: 1 MHz)	E [dB μ V/m]	Result
Peak	46.80	PASSED
Average	36.90	PASSED

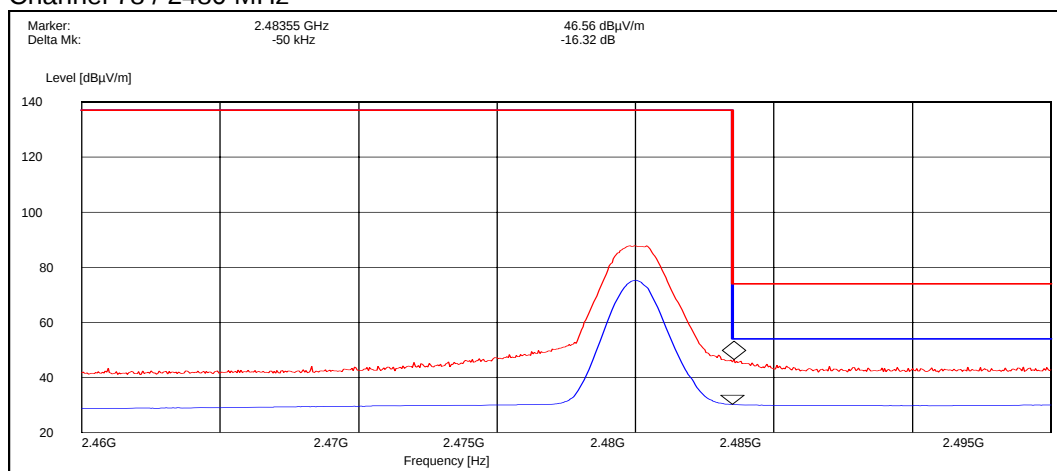
4.2.2 8DPSK modulation, PRBS packet type

Channel 0 / 2402 MHz



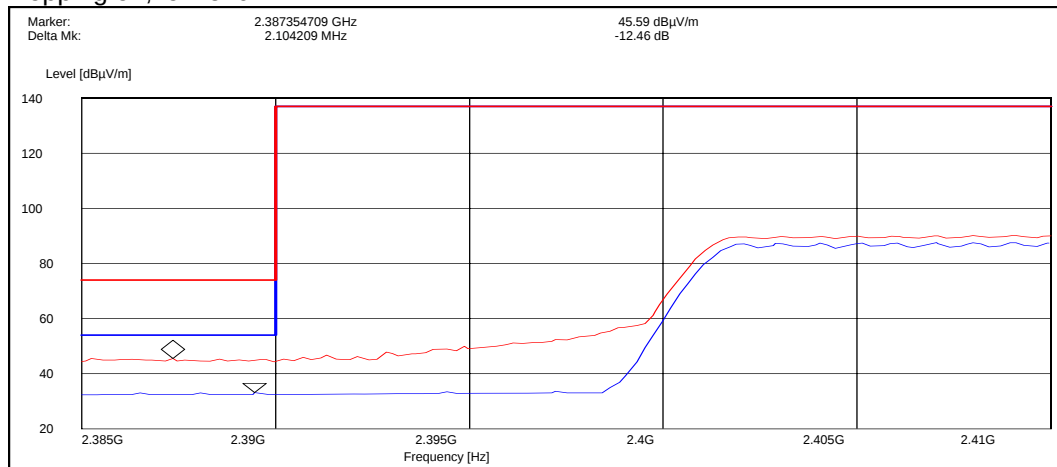
Detector (RBW: 1 MHz)	E [dB μ V/m]	Result
Peak	43.80	PASSED
Average	28.80	PASSED

Channel 78 / 2480 MHz



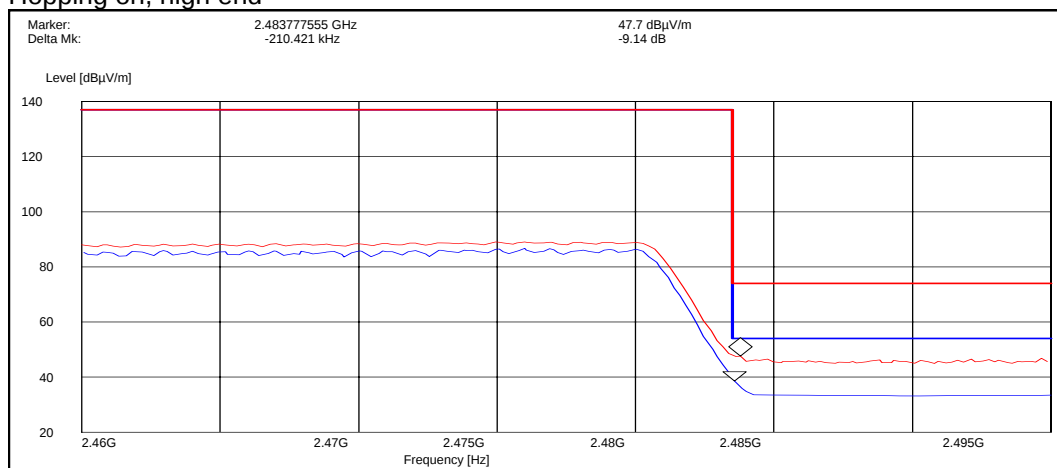
Detector (RBW: 1 MHz)	E [dB μ V/m]	Result
Peak	46.60	PASSED
Average	30.20	PASSED

Hopping on, low end



Detector (RBW: 1 MHz)	E [dB μ V/m]	Result
Peak	45.60	PASSED
Average	33.10	PASSED

Hopping on, high end



Detector (RBW: 1 MHz)	E [dB μ V/m]	Result
Peak	47.70	PASSED
Average	38.60	PASSED

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

EUT with DUT number	RM-424, DUT 13474
Accessories with DUT numbers	BP-6MT, DUT 13532; AC-8U, DUT 13384; HS-125, DUT 13482
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 45 / 100
Date of measurements	24-Feb-2009
Measured by	Anni Manninen

5.1. Test method and limit

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

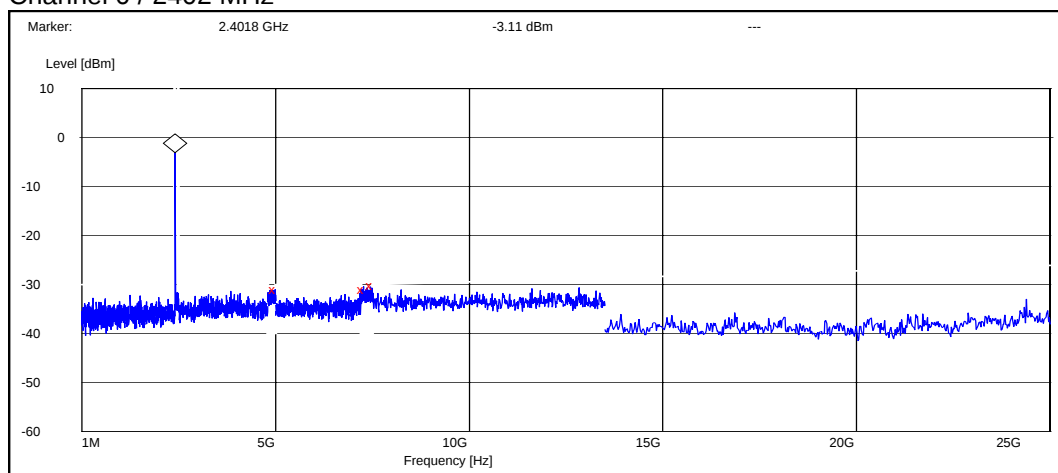
Limits for spurious RF conducted emissions measurements

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

5.2. Bluetooth Test results

5.2.1 GFSK modulation, PRBS packet type

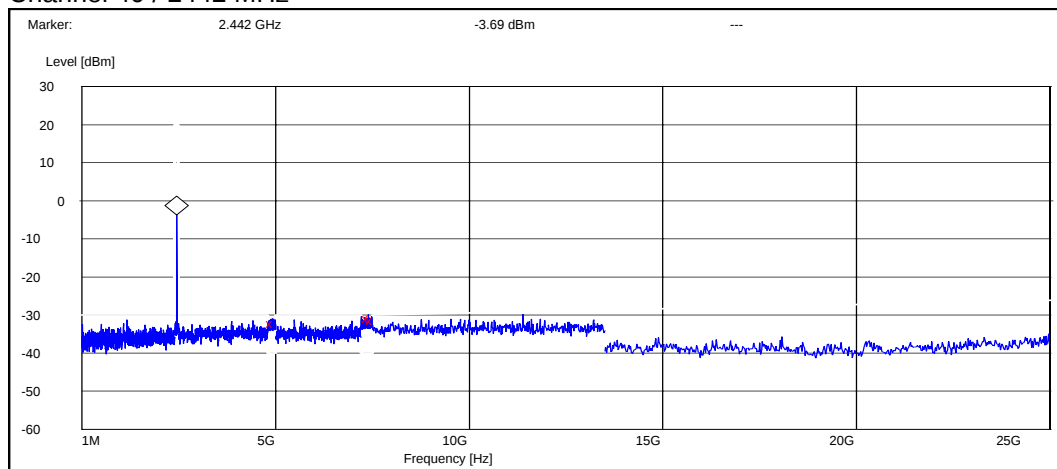
Channel 0 / 2402 MHz



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

Frequency [MHz]	P [dBc]	Result
4986.400000	-27.991973	PASSED
7272.600000	-27.891973	PASSED
7500.000000	-27.091973	PASSED

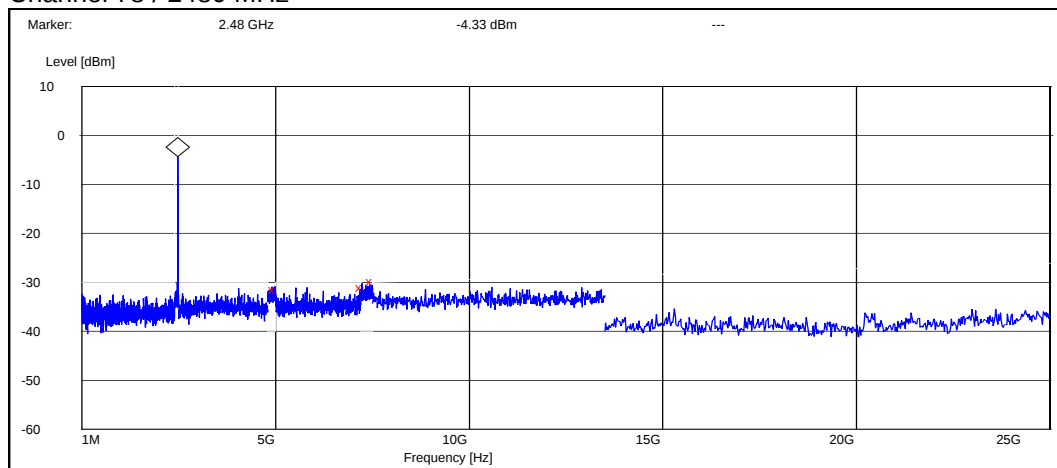
Channel 40 / 2442 MHz



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

Frequency [MHz]	P [dBc]	Result
4915.200000	-28.407031	PASSED
7394.400000	-27.207031	PASSED
7500.000000	-27.807031	PASSED

Channel 78 / 2480 MHz

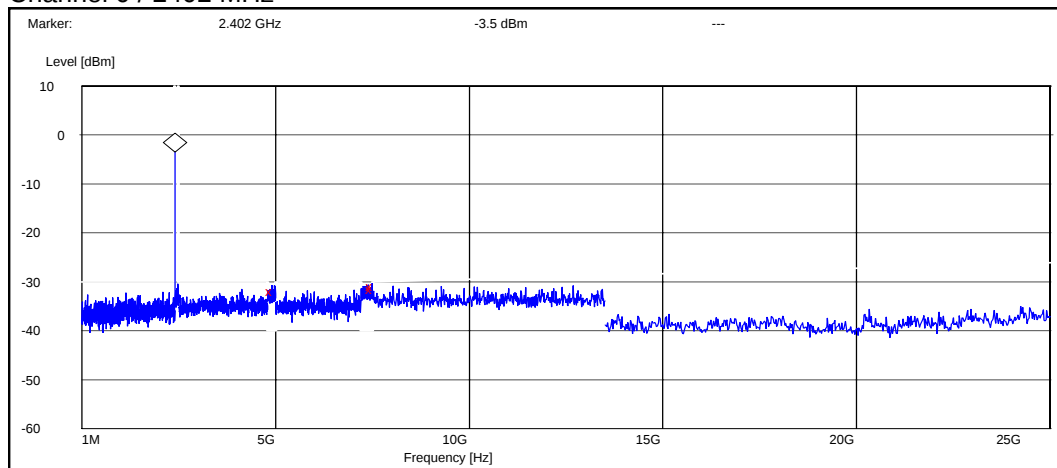


Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4979.200000	-27.173886	PASSED
7228.800000	-26.673886	PASSED
7500.000000	-25.473886	PASSED

5.2.2 8DPSK modulation, PRBS packet type

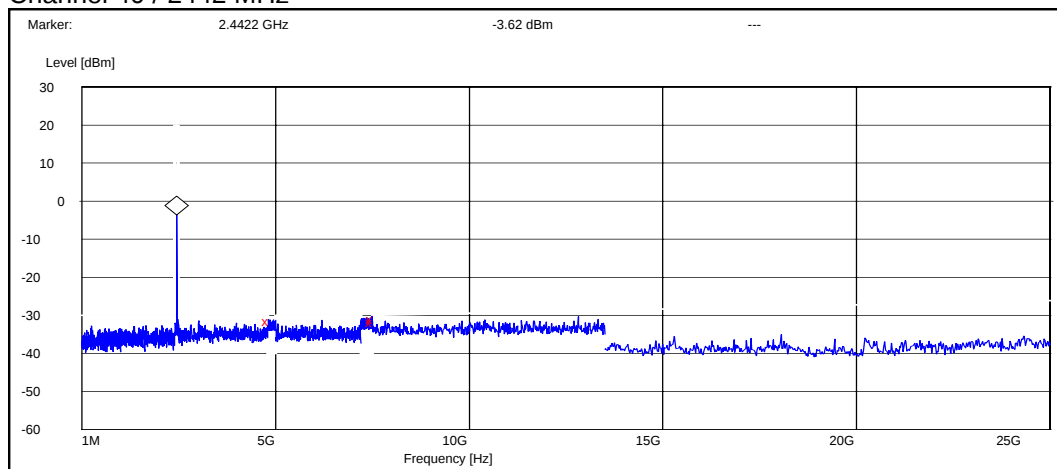
Channel 0 / 2402 MHz



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

Frequency [MHz]	P [dBc]	Result
4906.800000	-28.400238	PASSED
7492.200000	-28.000238	PASSED
7500.000000	-27.400238	PASSED

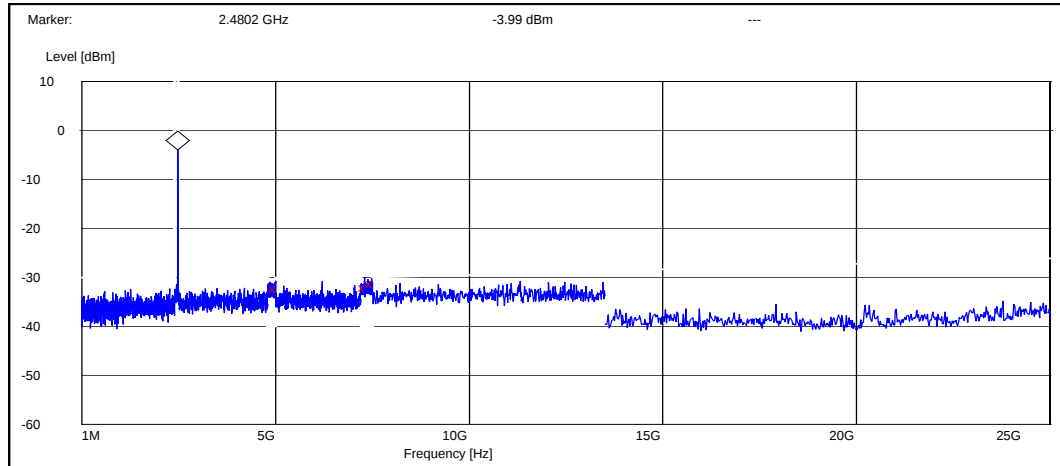
Channel 40 / 2442 MHz



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

Frequency [MHz]	P [dBc]	Result
4807.600000	-27.883807	PASSED
7487.400000	-28.083807	PASSED
7500.000000	-27.383807	PASSED

Channel 78 / 2480 MHz



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

Frequency [MHz]	P [dBc]	Result
4996.800000	-28.212805	PASSED
7299.600000	-28.012805	PASSED
7500.000000	-27.212805	PASSED

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

EUT with DUT number	RM-424, DUT 13464
Accessories with DUT numbers	BP-6MT, DUT 13488; HS-125, DUT 13471; AC-8E, DUT 13479
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	19 / 42 / 102.1
Date of measurements	09-Feb-2009
Measured by	Sami Lehtonen / Janne Hirsimäki

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:

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

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	44.20	162.18	43.20	1.0	VERTICAL	PASSED
7206.000000	46.70	216.27	43.80	2.9	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
4804.000000	31.60	38.02	30.60	1.0	VERTICAL	PASSED
7206.000000	33.70	48.42	30.80	2.9	VERTICAL	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
37.895391	18.70	8.61	37.40	-18.7	VERTICAL	PASSED
136.433066	21.80	12.30	50.60	-28.8	VERTICAL	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
4843.191383	45.50	188.36	44.00	1.5	VERTICAL	PASSED
12090.188377	53.20	457.09	41.00	12.2	VERTICAL	PASSED
14496.500000	53.40	467.74	38.50	14.9	HORIZONTAL	PASSED
15371.237475	56.50	668.34	38.30	18.2	VERTICAL	PASSED
15584.664329	55.60	602.56	38.10	17.5	HORIZONTAL	PASSED
16038.070140	57.80	776.25	37.40	20.4	VERTICAL	PASSED
17943.383768	57.20	724.44	37.40	19.8	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
4849.691383	32.30	41.21	30.70	1.6	VERTICAL	PASSED
12097.688377	40.20	102.33	28.00	12.2	VERTICAL	PASSED
14500.500000	40.70	108.39	25.70	15.0	HORIZONTAL	PASSED
15366.237475	43.00	141.25	25.10	17.9	VERTICAL	PASSED

15583.664329	42.50	133.35	25.00	17.5	HORIZONTAL	PASSED
16034.570140	44.20	162.18	23.90	20.3	VERTICAL	PASSED
17938.383768	44.40	165.96	24.60	19.8	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	43.50	149.62	43.30	0.2	VERTICAL	PASSED
7440.000000	47.90	248.31	43.50	4.4	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	30.90	35.08	30.70	0.2	VERTICAL	PASSED
7440.000000	34.90	55.59	30.50	4.4	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	44.50	167.88	43.50	1.0	VERTICAL	PASSED
7206.000000	46.80	218.78	43.90	2.9	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
4804.000000	31.60	38.02	30.60	1.0	VERTICAL	PASSED
7206.000000	33.70	48.42	30.80	2.9	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
37.595391	23.90	15.67	42.40	-18.5	VERTICAL	PASSED
136.533066	19.30	9.23	48.10	-28.8	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
4842.189379	45.50	188.36	44.00	1.5	VERTICAL	PASSED
12131.260521	53.00	446.68	40.80	12.2	VERTICAL	PASSED
13393.789579	54.20	512.86	40.70	13.5	VERTICAL	PASSED
15373.747495	56.10	638.26	37.70	18.4	HORIZONTAL	PASSED
15865.729459	55.90	623.73	38.30	17.6	VERTICAL	PASSED
16043.088176	57.60	758.58	37.00	20.6	VERTICAL	PASSED
17983.469940	57.00	707.95	36.80	20.2	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
4846.689379	32.30	41.21	30.70	1.6	VERTICAL	PASSED
12126.760521	40.10	101.16	27.80	12.3	VERTICAL	PASSED
13395.789579	41.00	112.20	27.50	13.5	VERTICAL	PASSED
15373.247495	43.40	147.91	25.10	18.3	HORIZONTAL	PASSED
15864.729459	42.80	138.04	25.20	17.6	VERTICAL	PASSED
16045.088176	44.40	165.96	23.80	20.6	VERTICAL	PASSED
17984.469940	44.20	162.18	24.00	20.2	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	43.60	151.36	43.40	0.2	HORIZONTAL	PASSED
7440.000000	47.60	239.88	43.20	4.4	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	30.80	34.67	30.60	0.2	VERTICAL	PASSED
7440.000000	35.00	56.23	30.60	4.4	VERTICAL	PASSED

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

EUT with DUT number	RM-424, DUT 13472
Accessories with DUT numbers	BP-6MT, DUT 13532; AC-8U, DUT 13384; HS-125, DUT 13482
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 45 / 100
Date of measurements	20-Feb-2009
Measured by	Anni Manninen

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.

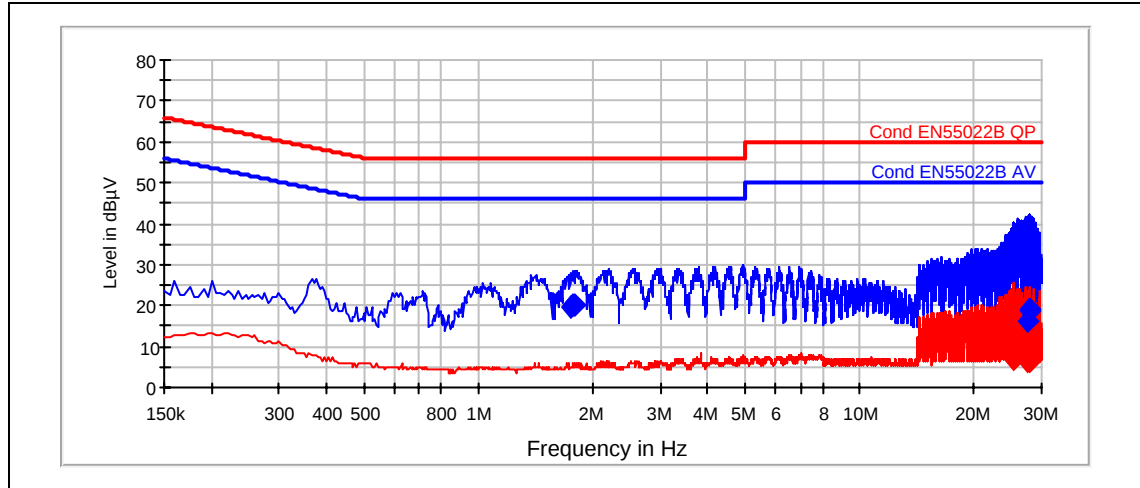
CISPR 22 Class B limits

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)

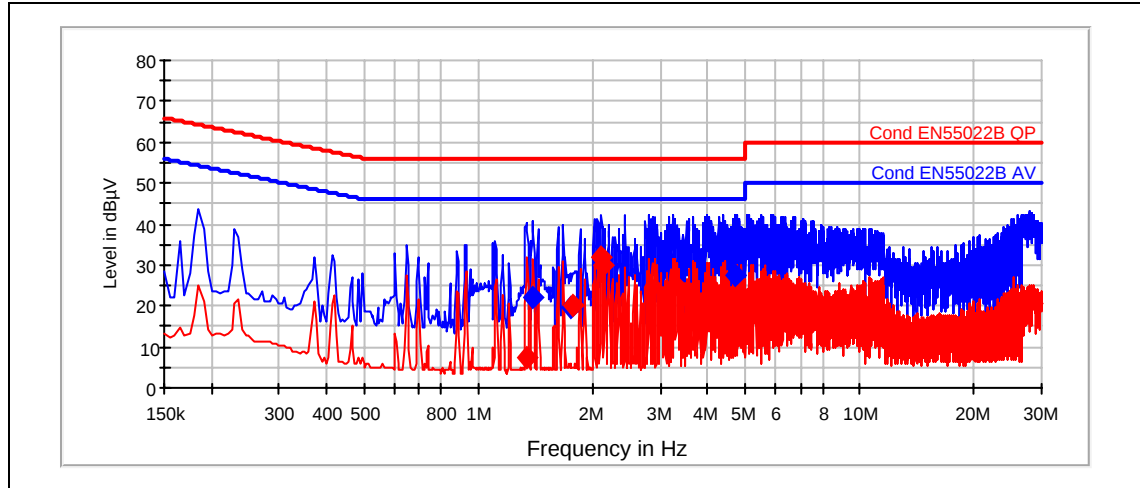
Freq. [MHz]	Quasi peak [dBμV]	BW [kHz]	PE	Line	Corr. [dB]	Margin [dB]	Limit [dBμV]	Result
1.750	19.86	9	GND	L1	9.86	36.10	56.0	PASSED
1.775	20.01	9	GND	L1	9.87	36.00	56.0	PASSED
1.800	20.15	9	GND	L1	9.87	35.80	56.0	PASSED
27.475	16.32	9	GND	N	10.29	43.70	60.0	PASSED
27.760	18.70	9	GND	L1	10.29	41.30	60.0	PASSED
27.780	19.04	9	GND	L1	10.29	41.00	60.0	PASSED

Average (RBW: 9 kHz)

Freq. [MHz]	Average [dBμV]	BW [kHz]	PE	Line	Corr. [dB]	Margin [dB]	Limit [dBμV]	Result
25.360	6.64	9	GND	L1	10.29	43.40	50.0	PASSED
27.430	6.16	9	GND	N	10.29	43.80	50.0	PASSED
27.885	6.21	9	GND	N	10.29	43.80	50.0	PASSED

7.2.2 8DPSK modulation, PRBS packet type

Channel 40 / 2442 MHz



Quasi peak (RBW: 9 kHz)

Freq. [MHz]	Quasi peak [dBμV]	BW [kHz]	PE	Line	Corr. [dB]	Margin [dB]	Limit [dBμV]	Result
1.385	22.11	9	GND	N	9.83	33.90	56.0	PASSED
1.755	19.72	9	GND	N	9.87	36.30	56.0	PASSED
4.335	33.37	9	GND	L1	9.99	22.60	56.0	PASSED
4.715	27.47	9	GND	N	9.99	28.50	56.0	PASSED

Average (RBW: 9 kHz)

Freq. [MHz]	Average [dBμV]	BW [kHz]	PE	Line	Corr. [dB]	Margin [dB]	Limit [dBμV]	Result
1.340	7.57	9	GND	N	9.82	38.40	46.0	PASSED
1.760	20.36	9	GND	L1	9.87	25.60	46.0	PASSED
2.085	32.10	9	GND	L1	9.89	13.90	46.0	PASSED
2.130	29.92	9	GND	L1	9.89	16.10	46.0	PASSED
3.265	25.02	9	GND	L1	9.92	21.00	46.0	PASSED

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

EUT with DUT number	RM-424, DUT 13474
Accessories with DUT numbers	BP-6MT, DUT 13532; AC-8U, DUT 13384; HS-125, DUT 13482
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 45 / 100
Date of measurements	24-Feb-2009
Measured by	Anni Manninen

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

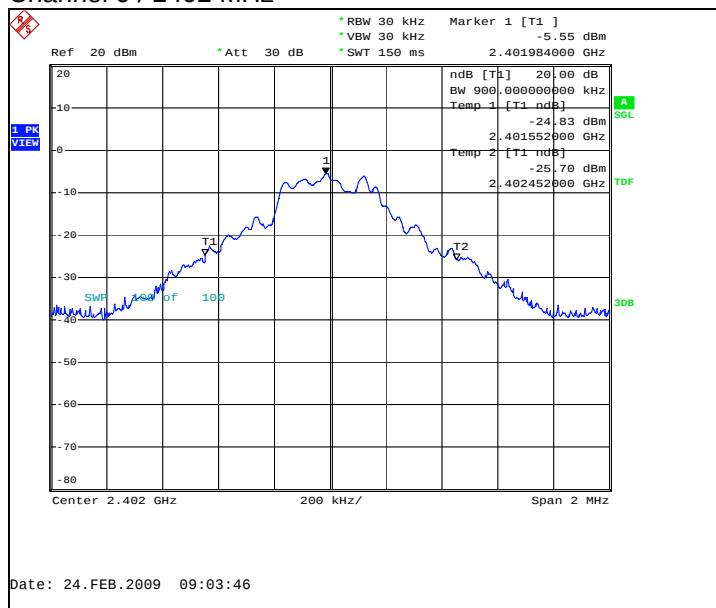
Limit [MHz]
N/A

8.2. Bluetooth Test results

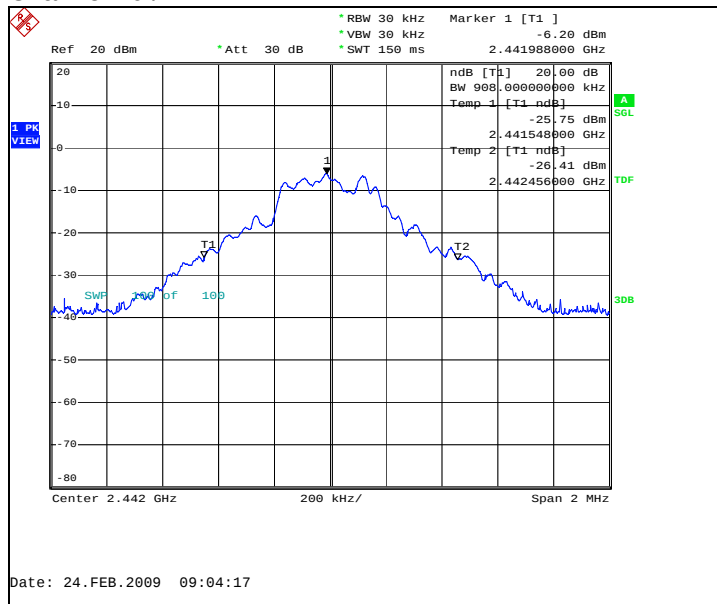
8.2.1 GFSK modulation, PRBS packet type

Channel / f_c [MHz]	20 dB bandwidth [kHz]	Result
0 / 2402	900.000	PASSED
40 / 2442	908.000	PASSED
78 / 2480	964.000	PASSED

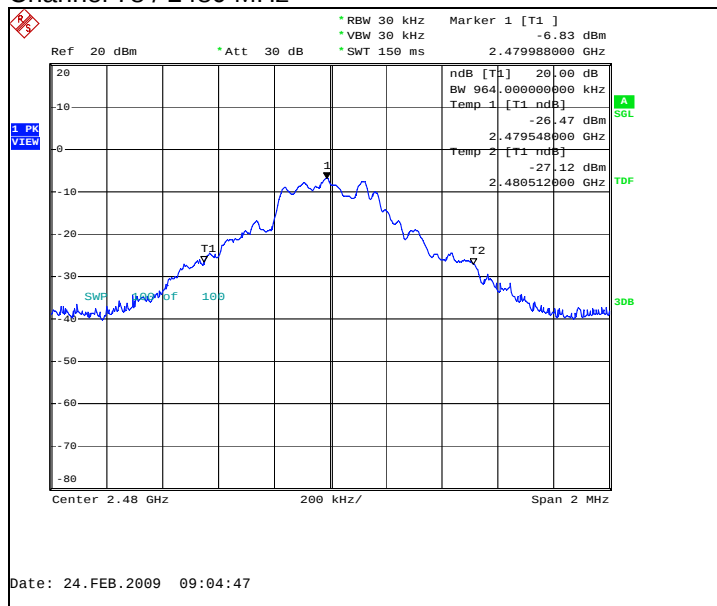
Channel 0 / 2402 MHz



Channel 40 / 2442 MHz



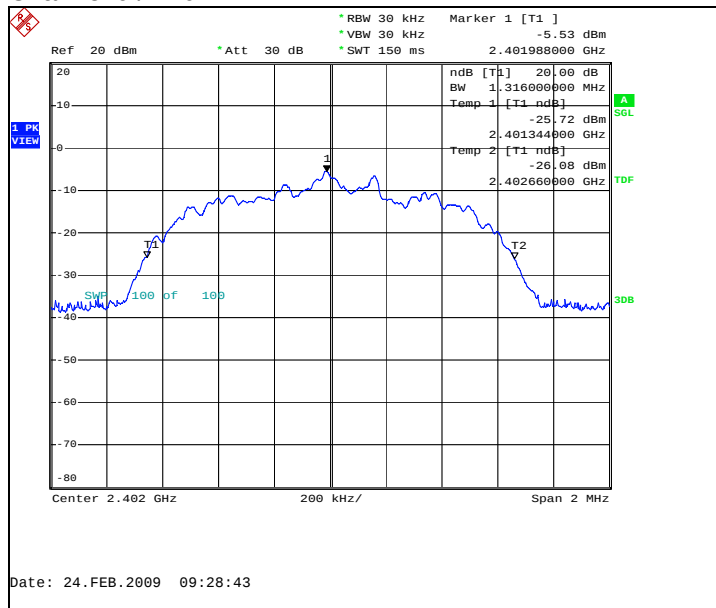
Channel 78 / 2480 MHz



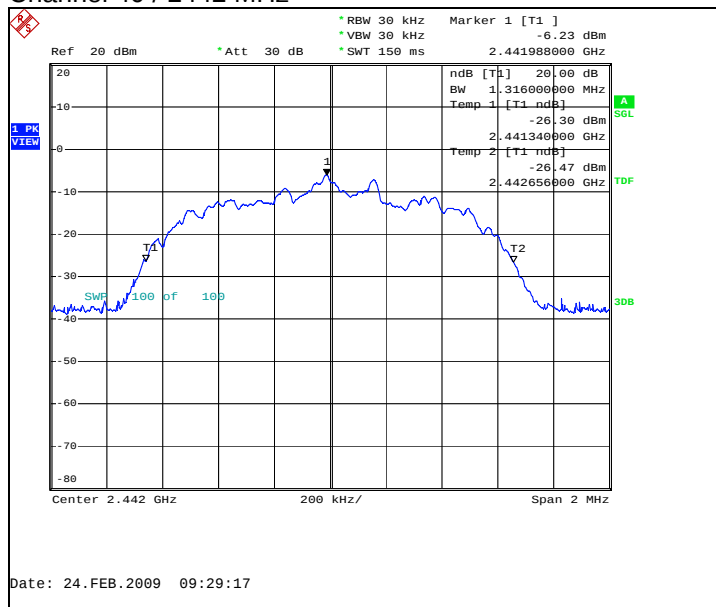
8.2.2 8DPSK modulation, PRBS packet type

Channel / f_c [MHz]	20 dB bandwidth [kHz]	Result
0 / 2402	1316.000	PASSED
40 / 2442	1316.000	PASSED
78 / 2480	1324.000	PASSED

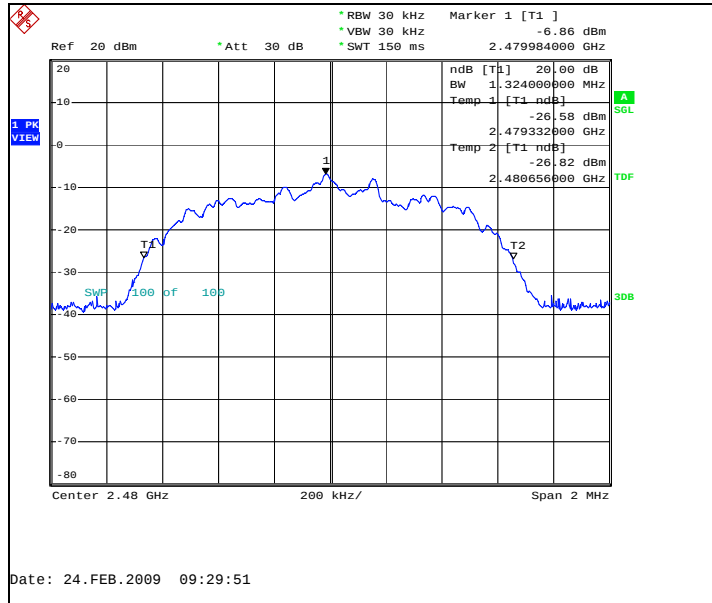
Channel 0 / 2402 MHz



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-424, DUT 13474
Accessories with DUT numbers	BP-6MT, DUT 13532; AC-8U, DUT 13384; HS-125, DUT 13482
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 45 / 100
Date of measurements	24-Feb-2009
Measured by	Anni Manninen

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

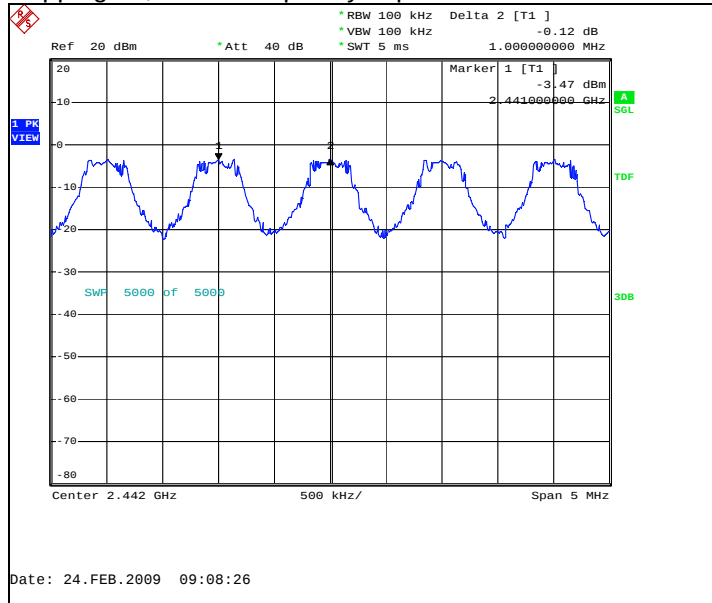
Limit [MHz]
≥ 0.025 or $2/3$ of the 20 dB bandwidth

9.2. Bluetooth Test results

9.2.1 GFSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
1000	PASSED

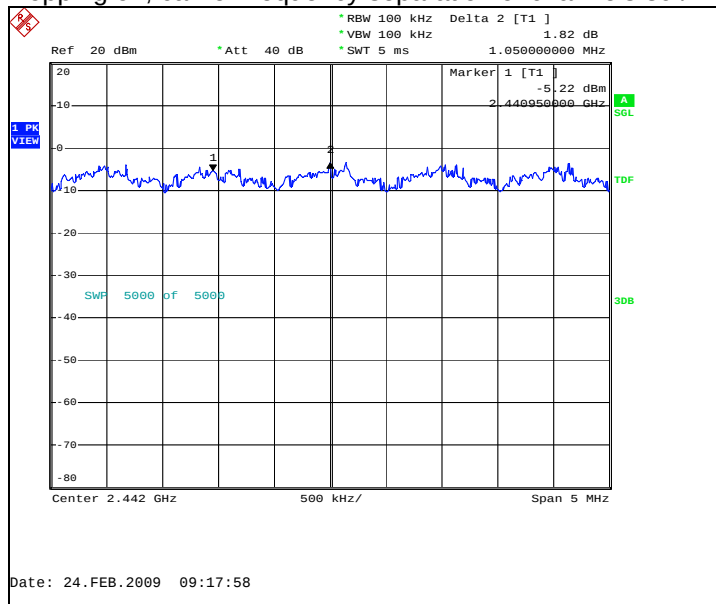
Hopping on, carrier frequency separation of channels 39 / 2441 MHz and 40 / 2442 MHz



9.2.2 8DPSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
1050	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-424, DUT 13474
Accessories with DUT numbers	BP-6MT, DUT 13532; AC-8U, DUT 13384; HS-125, DUT 13482
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 45 / 100
Date of measurements	24-Feb-2009
Measured by	Anni Manninen

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

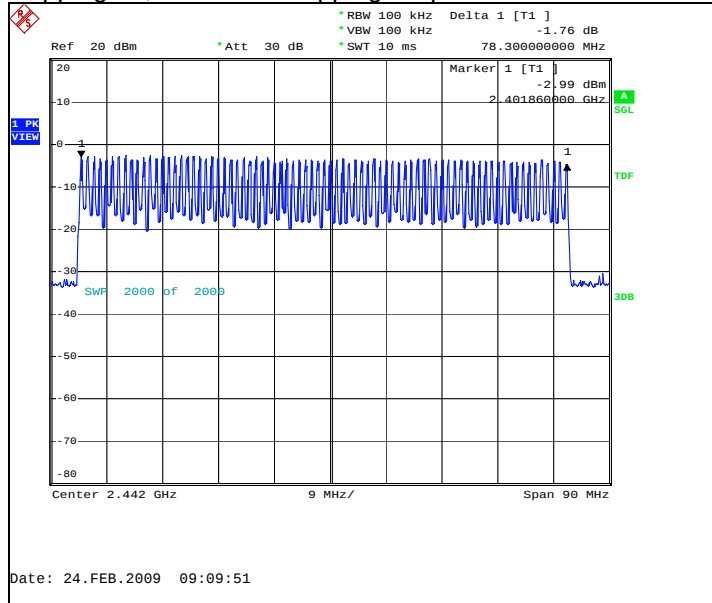
Limit [number]
≥ 15

10.2. Bluetooth Test results

10.2.1 GFSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
78	PASSED

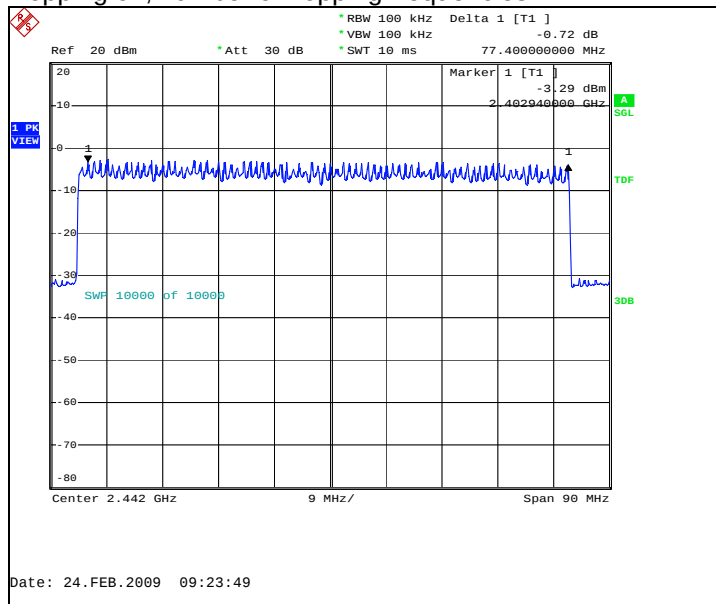
Hopping on, number of hopping frequencies



10.2.2 8DPSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
65	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-424, DUT 13474
Accessories with DUT numbers	BP-6MT, DUT 13532; AC-8U, DUT 13384; HS-125, DUT 13482
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 45 / 100
Date of measurements	24-Feb-2009
Measured by	Anni Manninen

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

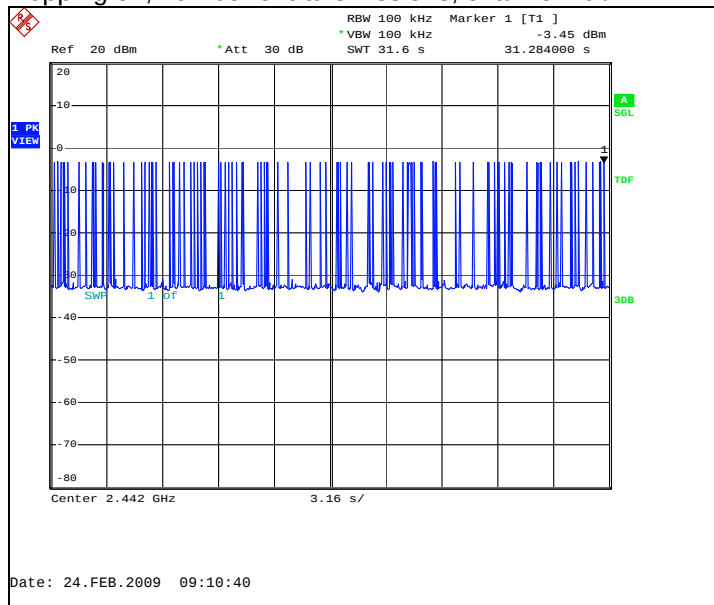
Limit [s]
≤ 0.4

11.2. Bluetooth test results

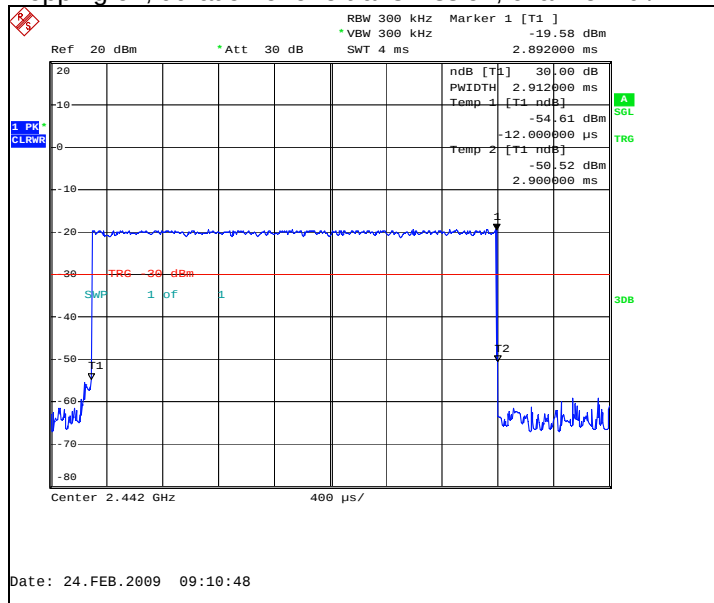
11.2.1 GFSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [μ s]	Time of occupancy [s]	Result
84	2 912	0.244608	PASSED

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



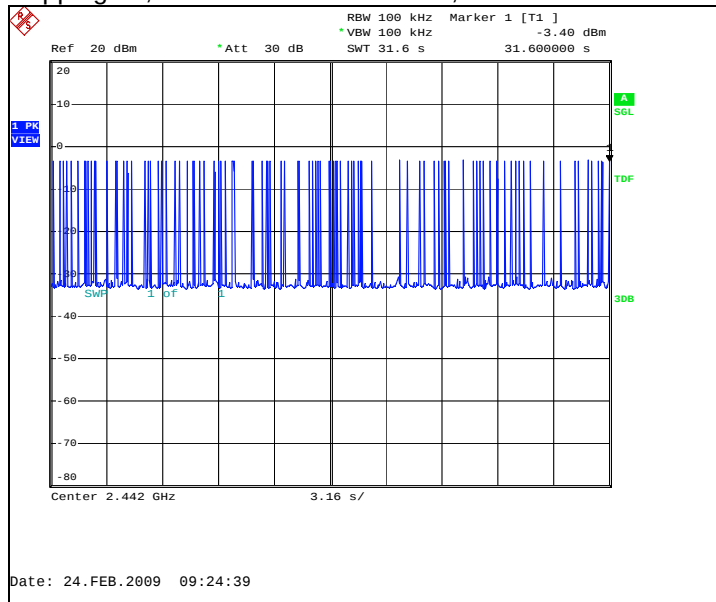
Hopping on, duration of one transmission, channel 40 / 2442 MHz



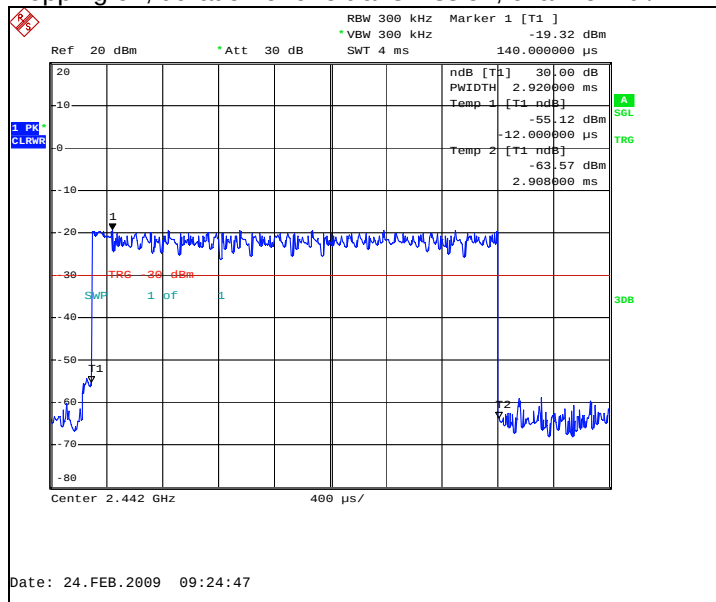
11.2.2 8DPSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [μ s]	Time of occupancy [s]	Result
85	2 920	0.248200	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
1742	EMI Test Receiver	ESMI	R&S	15C, 15B
1759	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
1872	Thermo- Hygrograph	00.02520.150700	Lambrecht	15C, 15B
1916	Radio Communication tester	CMTA84	R&S	15C, 15B
2039	Power Supply	PL330QMD	THURLBY	15C, 15B
2060	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
2068	CDN-Antenna line	S1	NMP	15C, 15B
2097	Pulse Limiter	ESH3-Z2	R&S	15C, 15B
2111	Multimeter	TX3	Tektronix	15C, 15B
2156	Digital Radio Communication Tester	CMU200	R&S	15C, 15B
2206	Signal generator	SMX	R&S	15C, 15B
2335	GPIB Switch 2 to 1	-	National Instruments	15C, 15B
2347	Digital Radio Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2352	Spectrum Analyzer	FSP	R&S	22/24/27, 15C
2359	Temperature Test system	VT4002	Vötsch Industrietechnik	22/24/27
2360	Serial Bus Converter	Serial 488A	IO Tech	22/24/27
2362	Power Supply	NGPX 70/5	R&S	22/24/27
2388	Bluetooth Tester	CBT	R&S	15C, 15B
-	RF Emission Software	ES-K1 v.1.71	R&S	22/24/27, 15C, 15B

12.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
1748	Log. per. Antenna	HL025	R&S	22/24/27, 15C
1749	Log. per. Antenna	HL025	R&S	22/24/27, 15C
1875	Thermo- Hygrograph	00.02520.150700	Lambrecht	22/24/27, 15C, 15B
1917	Radio Communication tester	CMTA84	R&S	22/24/27, 15C, 15B
1933	Precision half-wave dipole antennas	HZ-13	R&S	22/24/27, 15C
1938	Precision half-wave dipole antennas	HZ-12	R&S	22/24/27, 15C
2006	Radiation Reference Source	VSQ	MEB	22/24/27, 15C, 15B
2009	Signal generator	SMP 22	R&S	22/24/27, 15C, 15B
2019	Multimeter	34401A	HP	22/24/27, 15C, 15B
2027	Coupling and Decoupling Network	M2 (modified) DC1	MEB	22/24/27, 15C, 15B
2028	Coupling and Decoupling Network	M3 (modified) DC2	MEB	22/24/27, 15C, 15B
2029	Power Supply	PL330	THURLBY	22/24/27, 15C, 15B
2043	Band Reject Filter	WRCA824/849-0.2-6SS	Wainwright	22, 15C, 15B
2047	Band Reject Filter	WRCC1800/2000-0.2-10SS	Wainwright	24, 15C, 15B
2048	Band Reject Filter	WRCC1700/1800-0.2-10SS	Wainwright	27, 15C, 15B
2051	High Pass Filter	4HC1700-1-KK	R&S	22/24/27, 15C
2057	Log. per. Antenna	HL025	R&S	22/24/27, 15C
2109	Power Supply	PL330QMD	THURLBY	22/24/27, 15C, 15B
2110	Multimeter	34401A	HP	22/24/27, 15C, 15B
2112	Multimeter	TX3	Tektronix	22/24/27, 15C, 15B
2116	Controller	EMCO MODEL 2090	ETS	22/24/27, 15C, 15B
2133	Power Meter	NRVS	R&S	22/24/27, 15C
2134	Power Sensor	NRV-Z32	R&S	22/24/27, 15C
2135	Coupling and Decoupling Network	CDN 801-M3	LÜTHI	22/24/27, 15C, 15B

Eq. No	Equipment	Type	Manufacturer	Used in
2138	Ultra Broadband Antenna	HL562	R&S	22/24/27, 15C, 15B
2140	Biconical Antenna	EMCO93110B	EMCO	22/24/27, 15C
2142	Log.-per.-dipol Antenna	3146	EMCO	22/24/27, 15C
2144	Attenuator	6803.17B	Huber-Suhner	22/24/27, 15C, 15B
2150	High Pass Filter	F-15041	RLC ELECTRONICS	22/24/27, 15C
2176	Coupling and Decoupling Network	CDN 801-M3	LÜTHI	22/24/27, 15C, 15B
2180	Digital Radio Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2188	Preamplifier	AFS4-00100300-20-23P-6	MITEQ	22/24/27, 15C, 15B
2330	EMI Test receiver	ESIB26	R&S	22/24/27, 15C, 15B
2334	GPIB Switch 2 to 1	-	National Instruments	22/24/27, 15C, 15B
2348	Yaesu controller	G-1000DXC	YAESU	22/24/27, 15C, 15B
2349	Computer controller (Yaesu)	GS-232B	YAESU	22/24/27, 15C, 15B
2350	Preamplifier	AMF-6D-020180-29-20P	MITEQ	22/24/27, 15C
2361	Anechoic chamber	3 meter semi/full anechoic chamber	Euroshield	22/24/27, 15C, 15B
2398	Horn antenna	HF906	R&S	22/24/27, 15C
2363	Band Reject Filter	WRCG 832/838-825/845/5SS	Wainwright	22/24/27
2364	Band Reject Filter	WRCG1877/1883 - 1870/1890-40/6SS	Wainwright	22/24/27
2365	Relay Switch Unit	TS-RSP	R&S	22/24/27, 15C, 15B
2366	Relay Switch Unit	TS-RSP	R&S	22/24/27, 15C, 15B
2384	Band Reject Filter	WRCG832/838-825/845-40/5SS	Wainwright	22/24/27
2388	Bluetooth Tester	CBT	R&S	15C, 15B
-	RF Emission Software	ES-K1 v.1.71	R&S	22/24/27, 15C, 15B