

FCC Part 15C Compliance Test Report

Test Report no.:	Cph_FCC_0627_07.doc	Date of Report:	18-07-2006
Number of pages:	47	Customer's Contact person:	Jussi Visuri
Testing laboratory:	TCC Nokia Copenhagen Laboratory Frederikskaj 1790 COPENHAGEN V DENMARK Tel. +45 33 292929 Fax. +45 33 292934	Client:	Nokia Corporation Lise Meitner Strasse 10 89081 ULM GERMANY Tel. +49 731 1754 0 Fax. +49 731 1754 6800
FCC listing no.:	99059		
IC recognition no.:	4820 and 4820-1		
Tested devices/ accessories:	Phone; RM-174 (HW: 0312), Battery; BL-5B, AC-Charger; AC-3E, Headset; HS-47, Multi Media Card; MU-27		
FCC ID:	PPIRM-174	IC:	661U-RM174
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:			

Niels Christian Andersen, Engineer

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	03-07-2006
Testing completed	18-07-2006
The customer's contact person	Jussi Visuri
Test Plan referred to	\\EMC\\TESTPLAN\\
Notes	None
Document name	T:\\Projects\\RM-174\\EMC\\Results\\FCC\\Cph_FCC_0627_07.doc

1.1. EUT and Accessory Information

The EUT is a triple band (GSM900/1800/1900) mobile phone with GPRS, EGPRS and Bluetooth. Bluetooth is tested with maximum rated TX power.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-174	004400/91/160592/9	0312	-	ct3.07	27885
Phone	RM-174	004400/91/160596/0	0312	-	ct3.07	27884
AC Charger	AC-3E	4090496105171006659; 0675370	-	-	-	27898
AC-Charger	AC-3E	4090496105171007620;0675370	-	-	-	27893
Headset	HS-47	-	3.1	3.0	-	27895
Headset	HS-47	83	4.0	3.0	-	27888
Battery	BL-5B	0670455363807M081E20682678	-	-	-	27899
Battery	BL-5B	0670455363807M081E20682684	-	-	-	27887
Multi Media Card	MU-27	8524910000/5A992	-	-	-	27891

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.

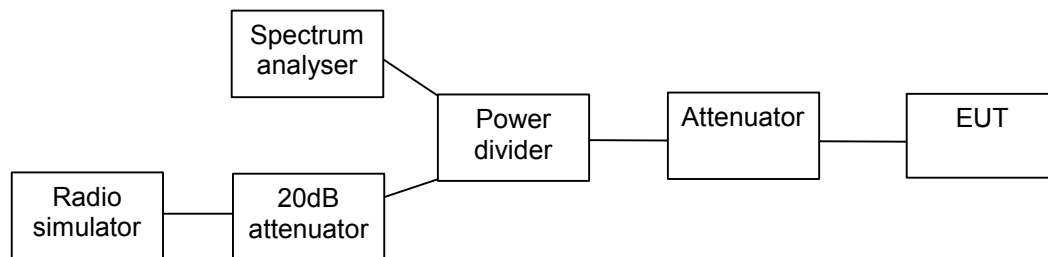
CONTENTS

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. Spurious radiated emissions test setup	5
3. 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
3.2.1 GFSK modulation, PRBS packet type.....	7
3.2.2 8DPSK modulation, PRBS packet type.....	8
4. Band edge compliance of RF emissions (FCC §15.247(c), RSS-210 A8.5)	10
4.1. Test method and limit.....	10
4.2. Bluetooth Test results	10
4.2.1 GFSK modulation, PRBS packet type.....	10
4.2.1.1 Phone slide open	10
4.2.1.2 Phone slide closed	12
4.2.2 8DPSK modulation, PRBS packet type.....	14
4.2.2.1 Phone slide open	14
4.2.2.2 Phone slide closed	15
5. Spurious RF conducted emissions (FCC §15.247(c), RSS-A8.5)	18
5.1. Test method and limit.....	18
5.2. Bluetooth Test results	19
5.2.1 GFSK modulation, PRBS packet type.....	19
5.2.2 8DPSK modulation, PRBS packet type.....	20
6. Spurious radiated emissions (FCC §15.247(c), §15.209, RSS-210 A8.5)	22
6.1. Test method and limit.....	22
6.2. Bluetooth Test results	23
6.2.1 GFSK modulation, PRBS packet type.....	23
6.2.1.1 Phone slide open	23
6.2.1.2 Phone slide closed	24
6.2.2 8DPSK modulation, PRBS packet type.....	26
6.2.2.1 Phone slide open	26
6.2.2.2 Phone slide closed	27
7. AC powerline conducted emissions (FCC §15.207, RSS-GEN 7.2.2).....	29
7.1. Test method and limit.....	29
7.2. Bluetooth Test results	30

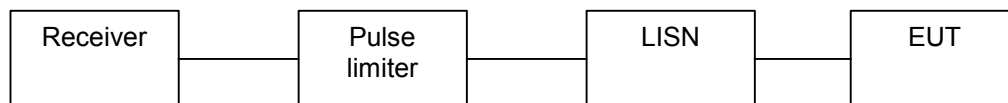
7.2.1	GFSK modulation, PRBS packet type.....	30
7.2.2	8DPSK modulation, PRBS packet type.....	30
8.	20 dB bandwidth (FCC §15.247(a)(1), RSS-210 A8.1 (1))	32
8.1.	Test method and limit.....	32
8.2.	Bluetooth Test results	33
8.2.1	GFSK modulation, PRBS packet type.....	33
8.2.2	8DPSK modulation, PRBS packet type.....	34
9.	Carrier frequency separation (FCC §15.247(a)(1), RSS-210 A8.1 (2))	37
9.1.	Test method and limit.....	37
9.2.	Bluetooth Test results	38
9.2.1	GFSK modulation, PRBS packet type.....	38
9.2.2	8DPSK modulation, PRBS packet type.....	38
10.	Number of hopping frequencies (FCC §15.247(a)(1)(iii), RSS-210 A8.1 (4)).....	40
10.1.	Test method and limit.....	40
10.2.	Bluetooth Test results	41
10.2.1	GFSK modulation, PRBS packet type.....	41
10.2.2	8DPSK modulation, PRBS packet type.....	41
11.	Time of occupancy (FCC §15.247(a)(1)(iii), RSS-210 A8.1 (4))	43
11.1.	Test method and limit.....	43
11.2.	Bluetooth test results.....	44
11.2.1	GFSK modulation, PRBS packet type.....	44
11.2.2	8DPSK modulation, PRBS packet type.....	45
12.	Test Equipment.....	46
12.1.	Conducted measurements	46
12.2.	Radiated measurements	46

2. Test setups

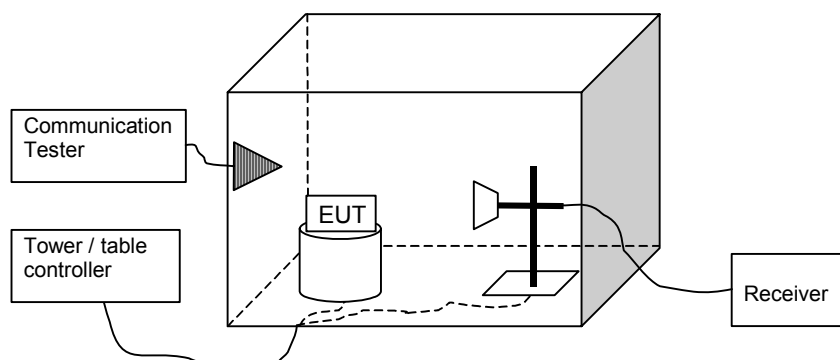
2.1. Conducted RF test setup



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-174 Dut # 27884
Accessories with DUT numbers	BL-5B Dut # 27899 + AC-3E Dut # 27893 + HS-47 Dut # 27895
Operation Voltage [V] / [Hz]	230/50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	24.1 / 47.0 1014.0
Date of measurements	13-07-2006
Measured by	Allan F. Henriksen

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

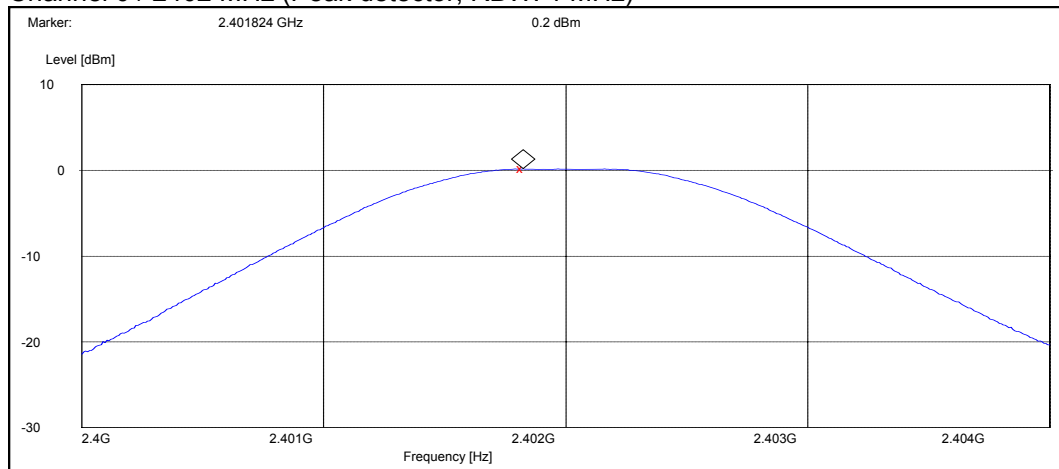
Frequency range [MHz]	Limit [W]	Limit [dBm]
2400 – 2483.5	≤ 1	≤ 30

3.2. Bluetooth Test results

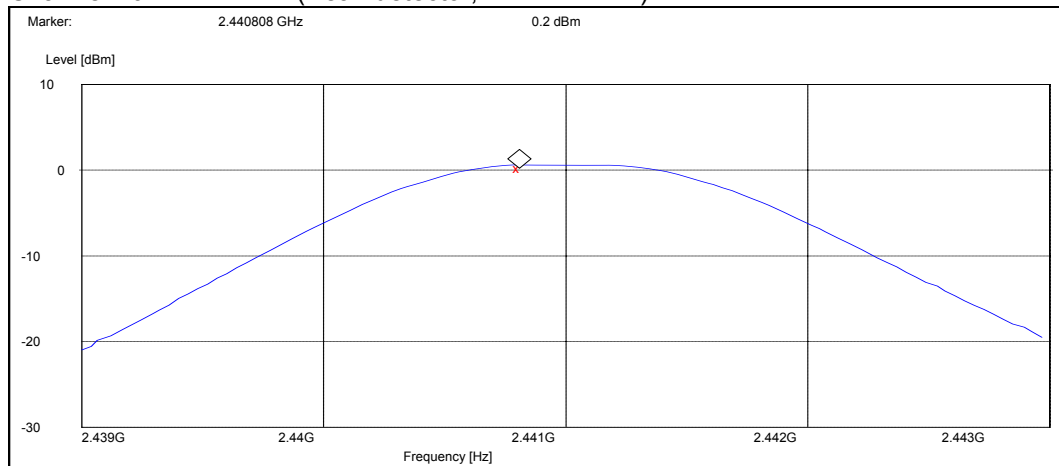
3.2.1 GSKF modulation, PRBS packet type

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
0 / 2402	0.20	1.047	Passed
40 / 2442	0.20	1.047	Passed
78 / 2480	0.20	1.047	Passed

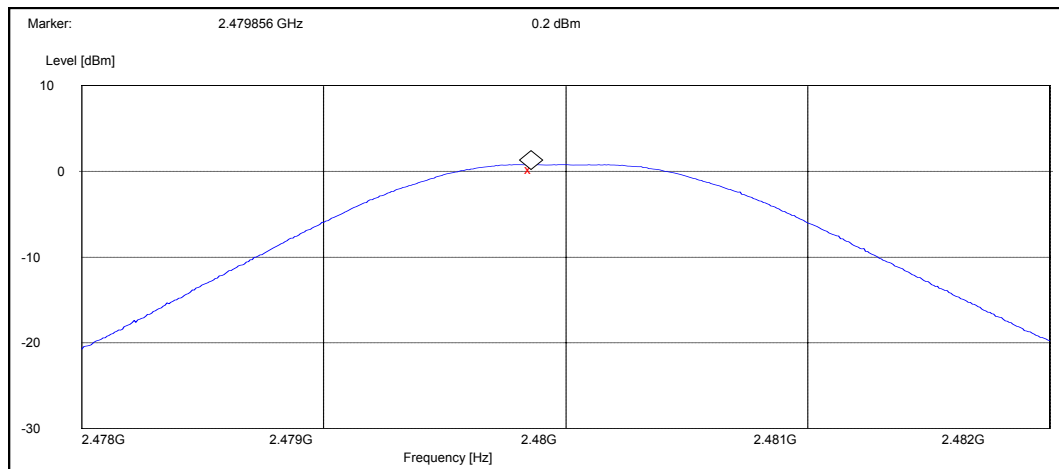
Channel 0 / 2402 MHz (Peak detector, RBW: 1 MHz)



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



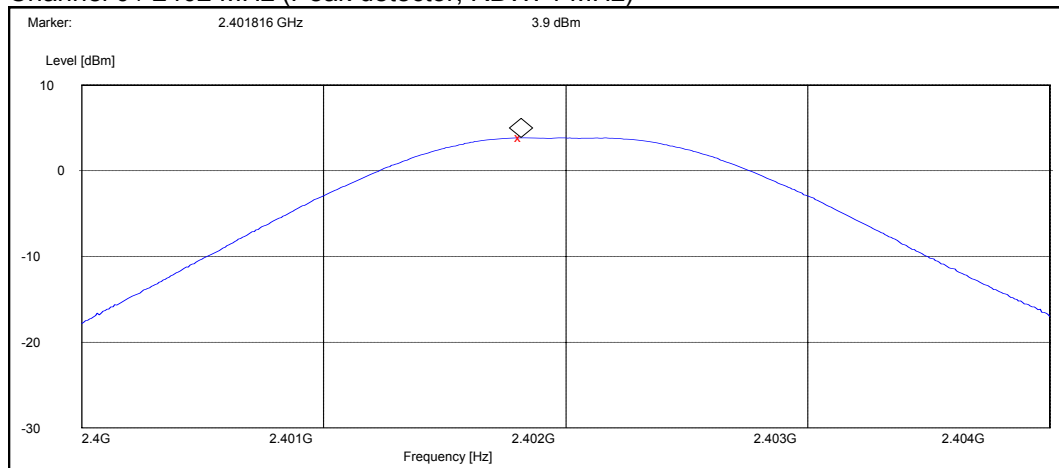
Channel 78 / 2480 MHz (Peak detector, RBW: 1 MHz)



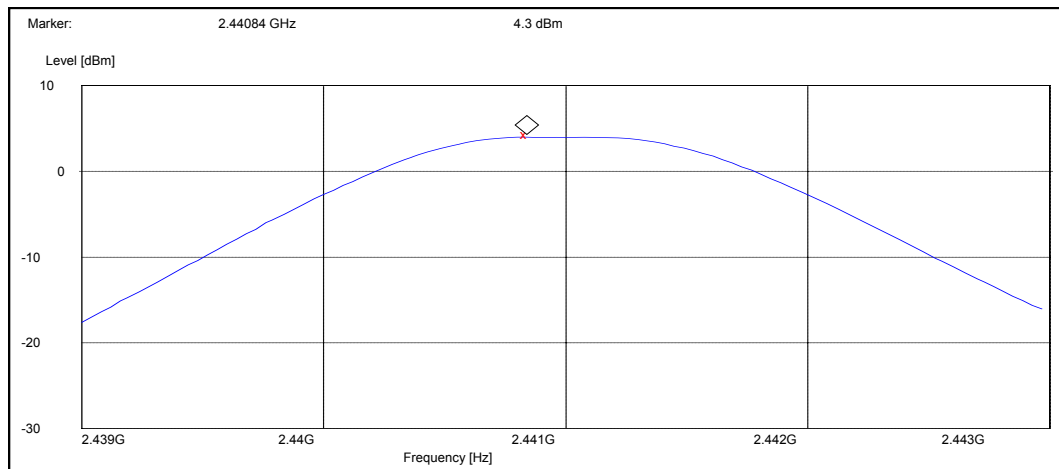
3.2.2 8DPSK modulation, PRBS packet type

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
0 / 2402	3.90	2.455	Passed
39 / 2441	4.30	2.692	Passed
78 / 2480	4.30	2.692	Passed

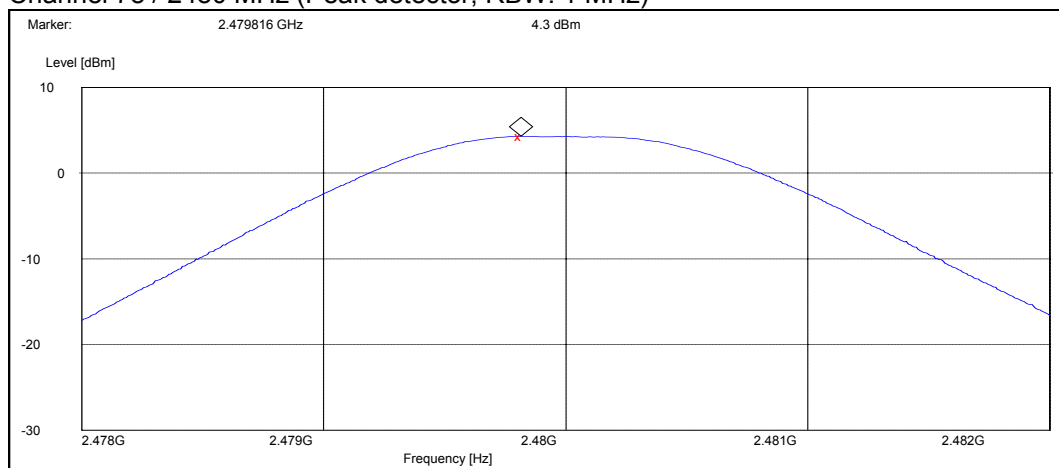
Channel 0 / 2402 MHz (Peak detector, RBW: 1 MHz)



Channel 38 / 2441 MHz (Peak detector, RBW: 1 MHz)



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



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

EUT with DUT number	RM-174 Dut#27885
Accessories with DUT numbers	BL-5B Dut#27905 + AC-3E Dut#27893 + HS-47 Dut#27895
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 48 / 1023
Date of measurements	14-07-2006
Measured by	Christian Andersen

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

4.2.1.1 Phone slide open

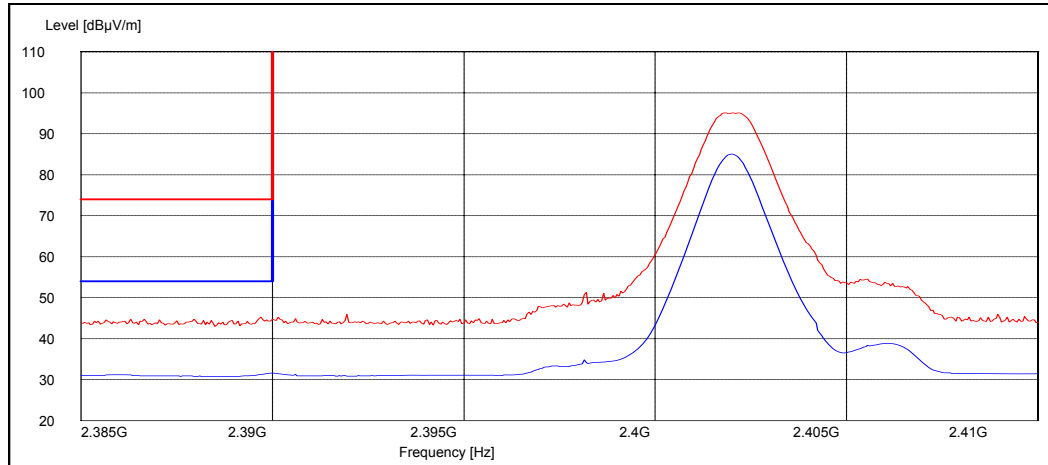
Average (RBW: 1 MHz)

Channel / f_c [MHz]	E [dBμV/m]	Result
0 / 2402	31.27	Passed
78 / 2480	40.59	Passed
Hopping on, low end	30.78	Passed
Hopping on, high end	32.28	Passed

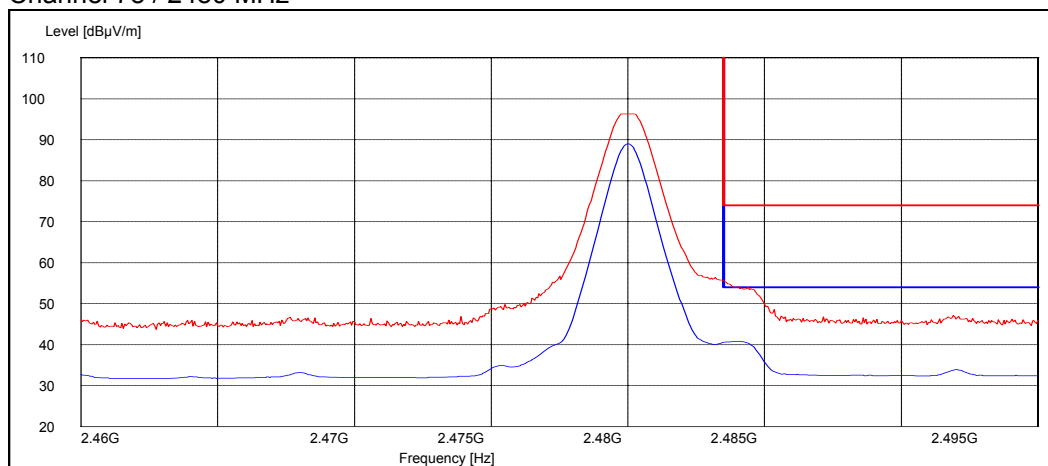
Peak (RBW: 1 MHz)

Channel / f_c [MHz]	E [dBμV/m]	Result
0 / 2402	45.28	Passed
78 / 2480	55.62	Passed
Hopping on, low end	43.78	Passed
Hopping on, high end	54.59	Passed

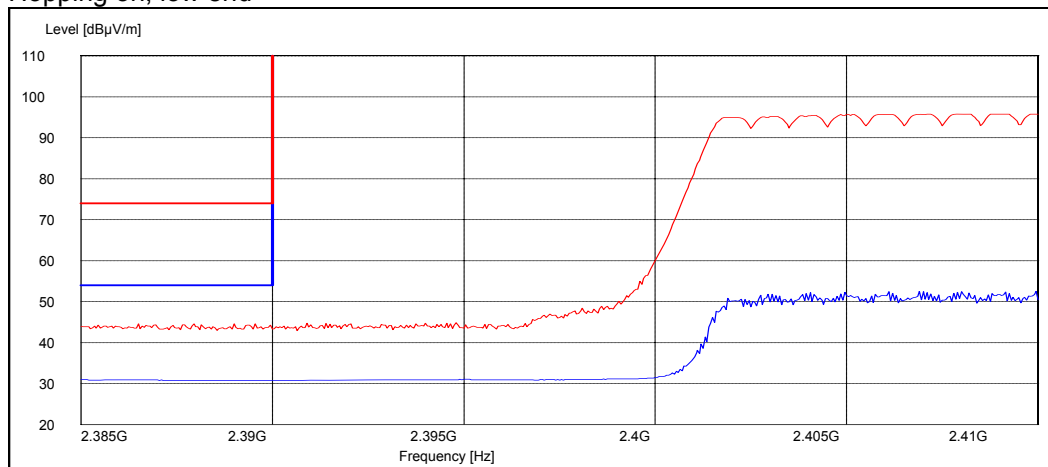
Channel 0 / 2402 MHz



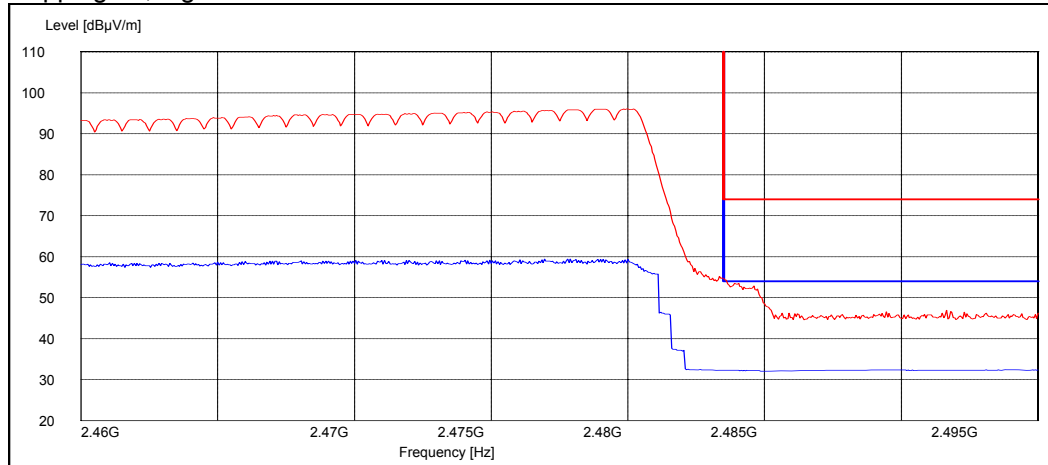
Channel 78 / 2480 MHz



Hopping on, low end



Hopping on, high end



4.2.1.2 Phone slide closed

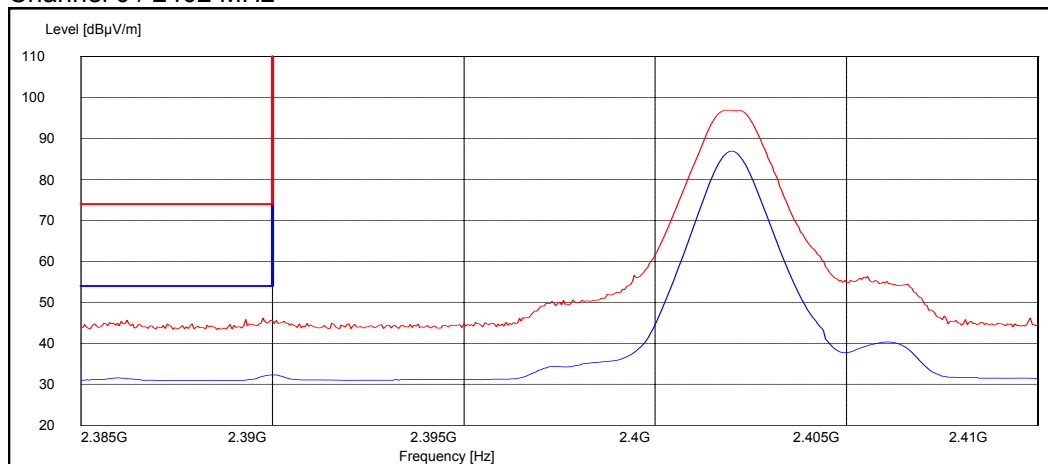
Average (RBW: 1 MHz)

Channel / f_c [MHz]	E [dBμV/m]	Result
0 / 2402	32.29	Passed
78 / 2480	41.66	Passed
Hopping on, low end	30.91	Passed
Hopping on, high end	32.40	Passed

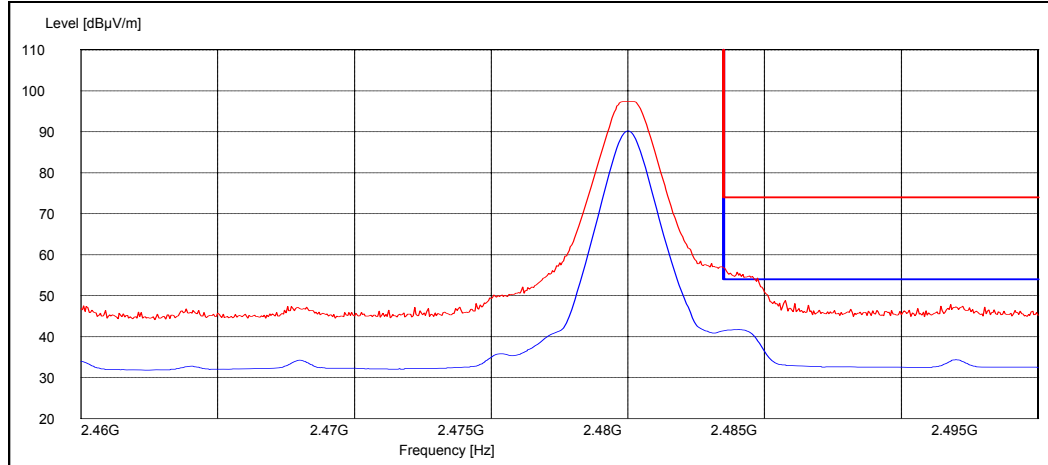
Peak (RBW: 1 MHz)

Channel / f_c [MHz]	E [dBμV/m]	Result
0 / 2402	46.21	Passed
78 / 2480	56.82	Passed
Hopping on, low end	45.29	Passed
Hopping on, high end	56.02	Passed

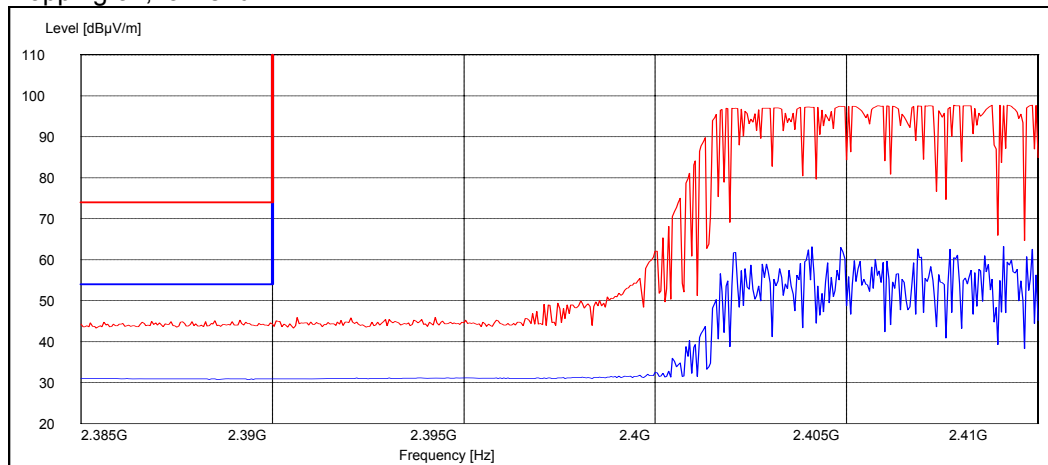
Channel 0 / 2402 MHz



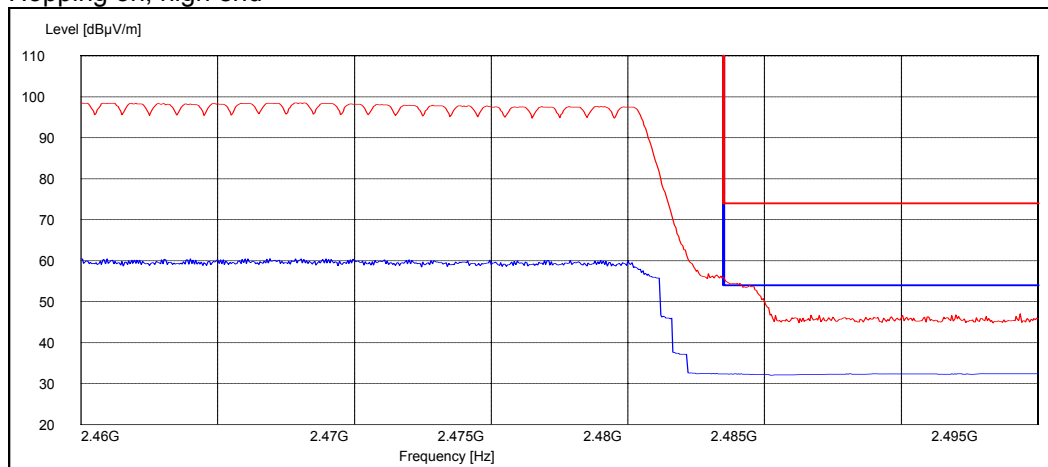
Channel 78 / 2480 MHz



Hopping on, low end



Hopping on, high end



4.2.2 8DPSK modulation, PRBS packet type

4.2.2.1 Phone slide open

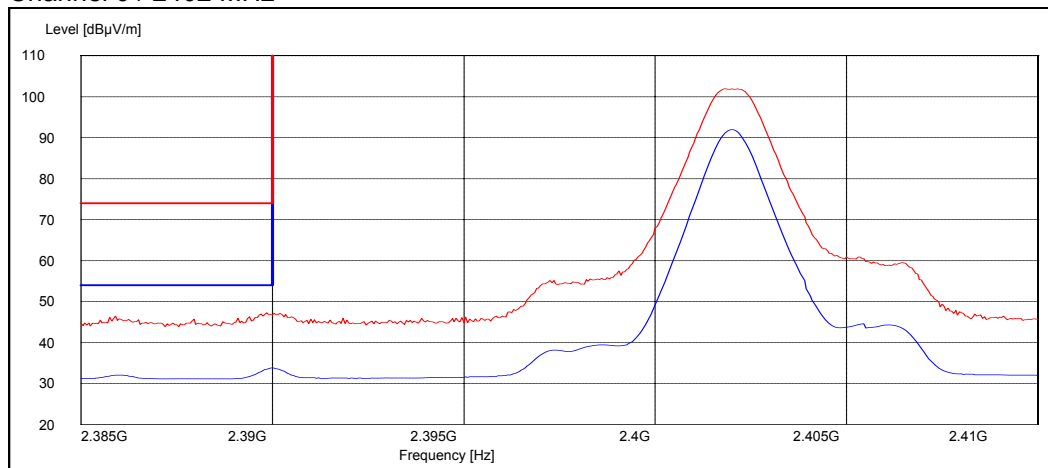
Average (RBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
0 / 2402	33.77	Passed
78 / 2480	44.81	Passed
Hopping on, low end	31.03	Passed
Hopping on, high end	32.75	Passed

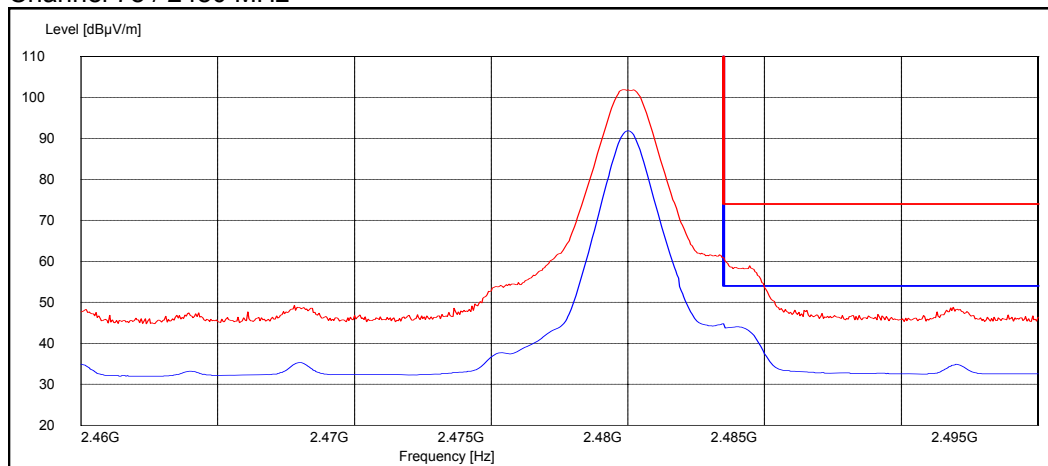
Peak (RBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
0 / 2402	47.02	Passed
78 / 2480	60.99	Passed
Hopping on, low end	46.21	Passed
Hopping on, high end	59.70	Passed

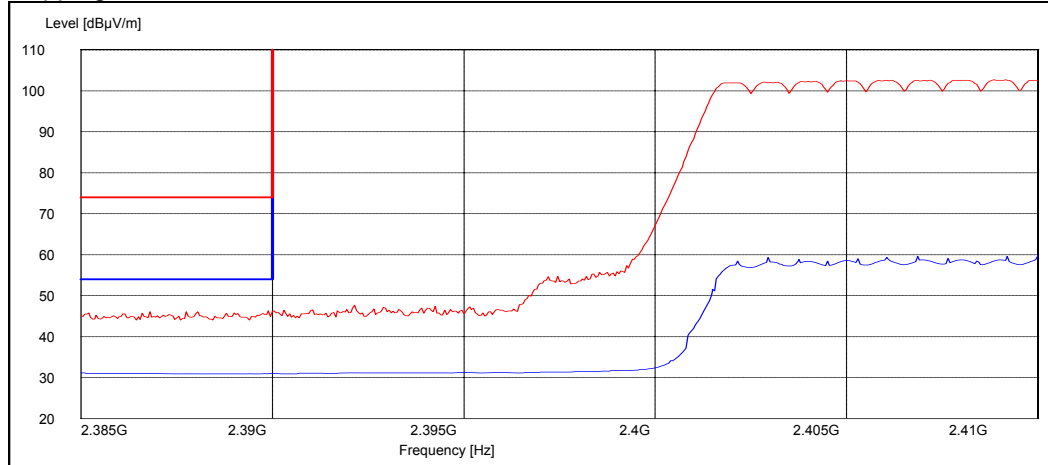
Channel 0 / 2402 MHz



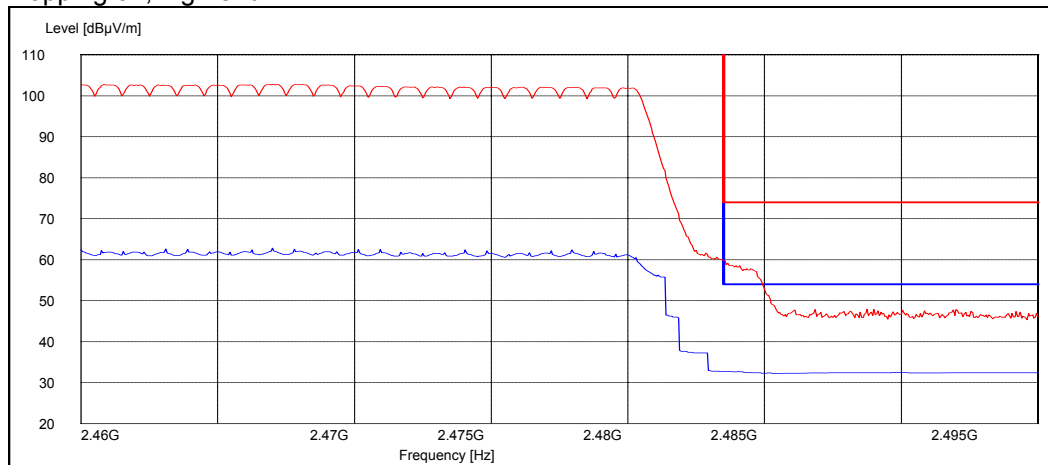
Channel 78 / 2480 MHz



Hopping on, low end



Hopping on, high end



4.2.2.2 Phone slide closed

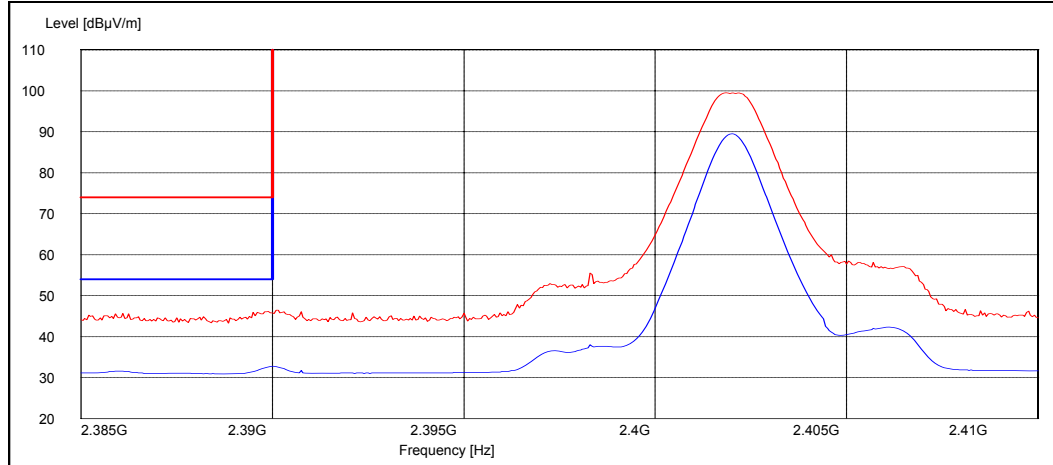
Average (RBW: 1 MHz)

Channel / f_c [MHz]	E [dBμV/m]	Result
0 / 2402	32.71	Passed
78 / 2480	43.02	Passed
Hopping on, low end	30.90	Passed
Hopping on, high end	32.52	Passed

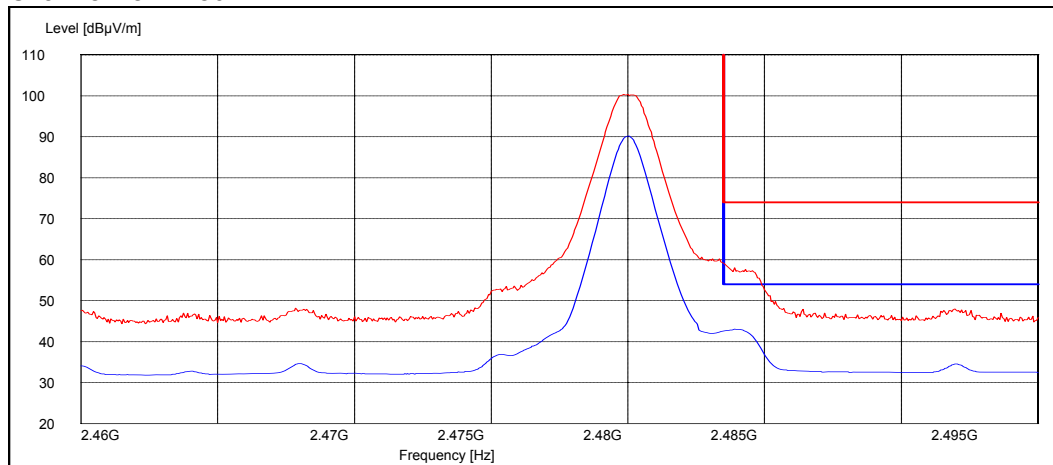
Peak (RBW: 1 MHz)

Channel / f_c [MHz]	E [dBμV/m]	Result
0 / 2402	45.95	Passed
78 / 2480	59.15	Passed
Hopping on, low end	45.67	Passed
Hopping on, high end	57.86	Passed

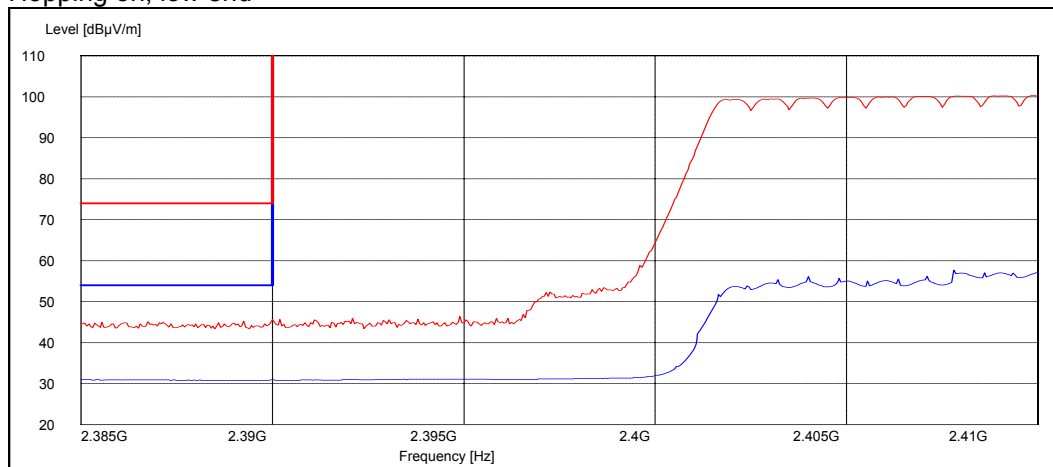
Channel 0 / 2402 MHz



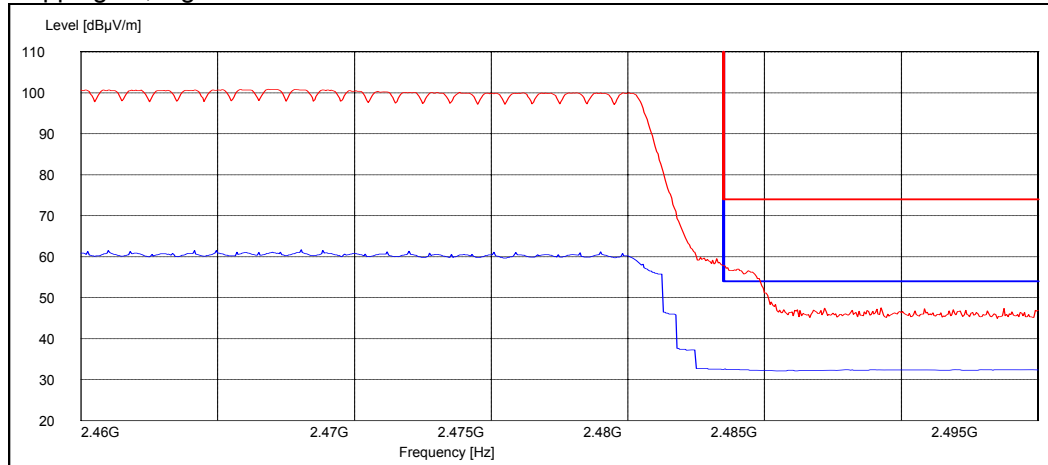
Channel 78 / 2480 MHz



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-174 Dut # 27884
Accessories with DUT numbers	BL-5B Dut # 27899 + AC-3E Dut # 27893 + HS-47 Dut # 27895
Operation Voltage [V] / [Hz]	230/50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24.1 / 47.0 1014.0
Date of measurements	13-07-2006
Measured by	Allan F. Henriksen

5.1. Test method and limit

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

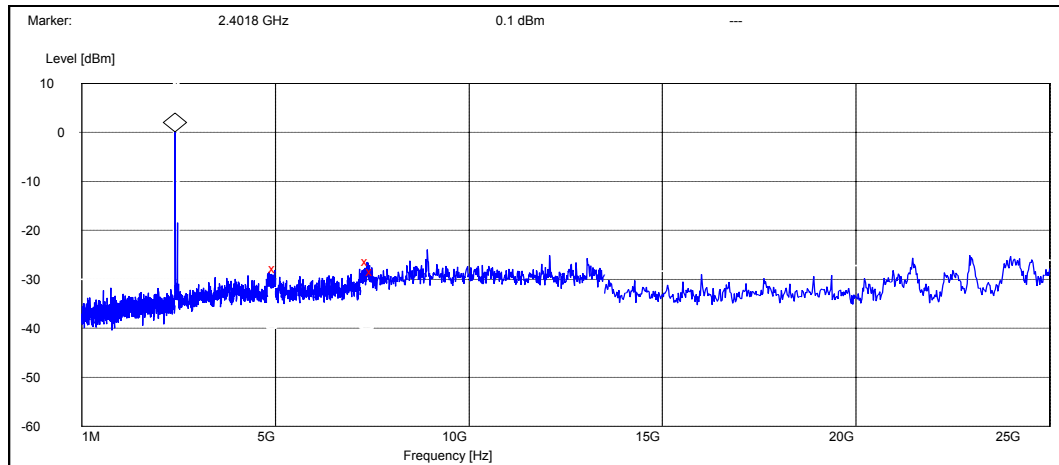
Limits for spurious RF conducted emissions measurements

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

5.2. Bluetooth Test results

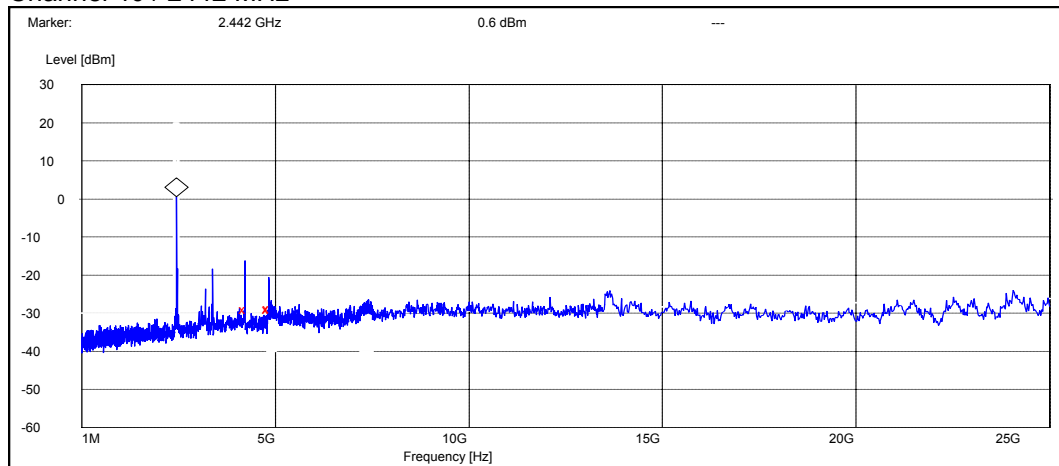
5.2.1 GFSK modulation, PRBS packet type

Channel 0 / 2402 MHz



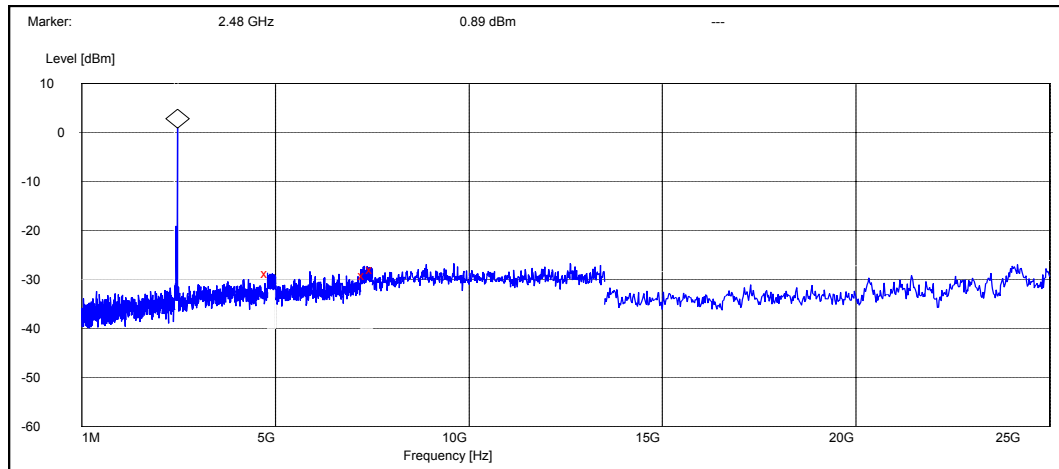
Frequency [MHz]	P [dBc]	Result
4993.200000	-27.903484	Passed
7380.600000	-26.503484	Passed
7500.000000	-28.403484	Passed

Channel 40 / 2442 MHz



Frequency [MHz]	P [dBc]	Result
4220.400000	-29.604721	Passed
4830.000000	-29.504721	Passed
4834.000000	-29.404721	Passed

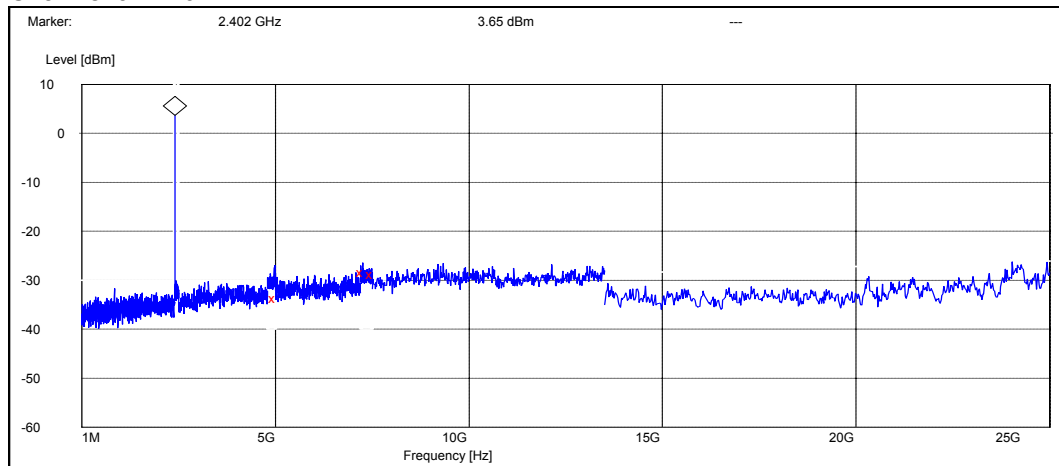
Channel 78 / 2480 MHz



Frequency [MHz]	P [dBc]	Result
4800.800000	-29.687047	Passed
7297.800000	-29.987047	Passed
7500.000000	-28.787047	Passed

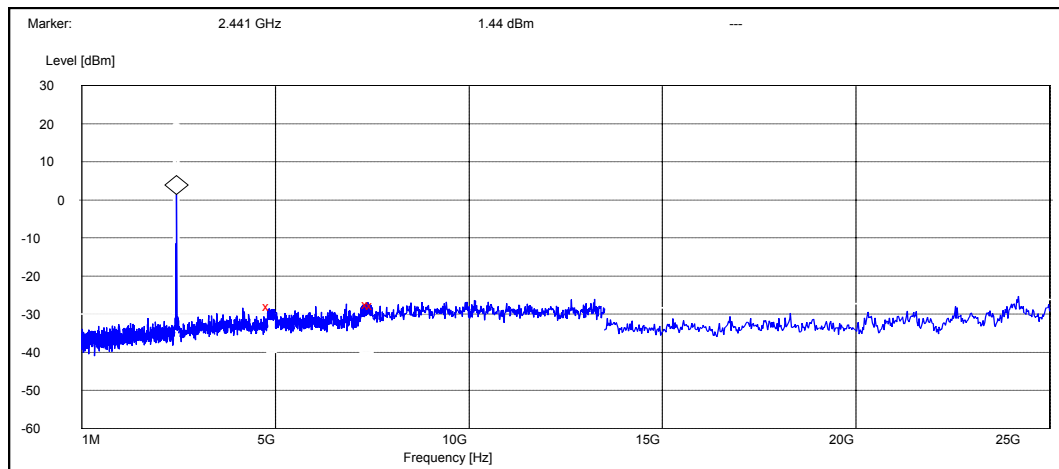
5.2.2 8DPSK modulation, PRBS packet type

Channel 0 / 2402 MHz



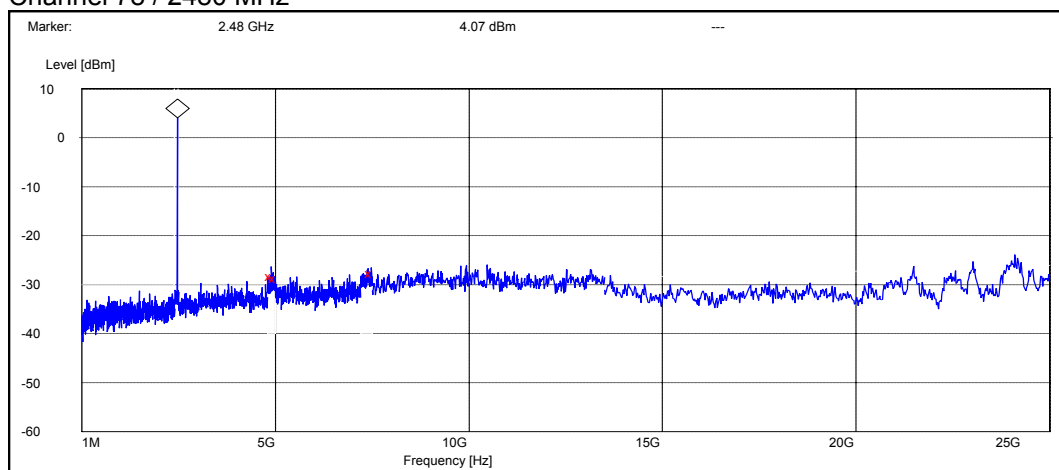
Frequency [MHz]	P [dBc]	Result
4989.200000	-37.347154	Passed
7264.200000	-31.947154	Passed
7500.000000	-32.547154	Passed

Channel 40 / 2442 MHz



Frequency [MHz]	P [dBc]	Result
4838.800000	-29.537750	Passed
7390.200000	-28.937750	Passed
7500.000000	-29.137750	Passed

Channel 78 / 2480 MHz



Frequency [MHz]	P [dBc]	Result
4898.400000	-32.371549	Passed
5000.000000	-32.771549	Passed
7473.600000	-31.771549	Passed

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

EUT with DUT number	RM-174 Dut#27885
Accessories with DUT numbers	BL-5B Dut # 27899 + AC-3E Dut # 27893 + HS-47 Dut # 27895
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 48 / 1023
Date of measurements	18-07-2006
Measured by	Christian Andersen

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 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

6.2.1.1 Phone slide open

Channel 0 / 2402 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	37.10	71.61	39.10	-2.00	HORIZONTAL	Passed
7206.000000	39.80	97.72	35.60	4.20	HORIZONTAL	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	24.50	16.79	26.50	-2.00	VERTICAL	Passed
7206.000000	27.00	22.39	22.80	4.20	VERTICAL	Passed

Channel 40 / 2442 MHz

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
37.876353	33.90	49.55	51.90	-18.00	VERTICAL	Passed

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
1947.895792	86.20	20,417.38	88.70	-2.50	VERTICAL	Passed
4920.837675	38.70	86.10	40.20	-1.50	VERTICAL	Passed
7363.735471	41.80	123.03	37.10	4.70	VERTICAL	Passed
7417.837675	42.50	133.35	37.50	5.00	VERTICAL	Passed
17877.759519	57.90	785.24	32.50	25.40	VERTICAL	Passed

*1947.8 MHz frequency is coming from communication tester and thus ignored.

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
1947.895792	85.60	19,054.61	88.10	-2.50	VERTICAL	Passed
4920.837675	25.00	17.78	26.50	-1.50	VERTICAL	Passed
7365.735471	28.90	27.86	24.20	4.70	VERTICAL	Passed
7420.337675	29.40	29.51	24.50	4.90	VERTICAL	Passed
17877.759519	45.00	177.83	19.60	25.40	VERTICAL	Passed

*1947.8 MHz frequency is coming from communication tester and thus ignored.

Channel 78 / 2480 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	38.20	81.28	39.80	-1.60	VERTICAL	Passed
7440.000000	41.10	113.50	36.20	4.90	HORIZONTAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	25.30	18.41	26.90	-1.60	VERTICAL	Passed
7440.000000	28.30	26.00	23.40	4.90	VERTICAL	Passed

6.2.1.2 Phone slide closed

Channel 0 / 2402 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	37.30	73.28	39.30	-2.00	VERTICAL	Passed
7206.000000	39.20	91.20	35.00	4.20	HORIZONTAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	24.20	16.22	26.20	-2.00	VERTICAL	Passed
7206.000000	26.80	21.88	22.60	4.20	VERTICAL	Passed

Channel 40 / 2442 MHz

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
38.135872	28.50	26.61	46.60	-18.10	VERTICAL	Passed

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
1947.895792	86.30	20,653.80	88.80	-2.50	VERTICAL	Passed
4916.329659	37.40	74.13	39.00	-1.60	VERTICAL	Passed
7332.667335	41.00	112.20	36.60	4.40	VERTICAL	Passed
7405.303607	41.50	118.85	36.20	5.30	VERTICAL	Passed
7420.333667	41.70	121.62	36.80	4.90	VERTICAL	Passed
17877.747495	57.60	758.58	32.20	25.40	HORIZONTAL	Passed

*1947.8 MHz frequency is coming from communication tester and thus ignored.

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
1947.895792	85.60	19,054.61	88.10	-2.50	VERTICAL	Passed
4915.329659	24.70	17.18	26.30	-1.60	VERTICAL	Passed
7329.667335	28.10	25.41	23.80	4.30	VERTICAL	Passed
7405.803607	28.60	26.92	23.30	5.30	VERTICAL	Passed
7417.833667	29.10	28.51	24.10	5.00	VERTICAL	Passed
17875.247495	44.90	175.79	19.40	25.50	HORIZONTAL	Passed

*1947.8 MHz frequency is coming from communication tester and thus ignored.

Channel 78 / 2480 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	38.20	81.28	39.80	-1.60	VERTICAL	Passed
7440.000000	40.90	110.92	36.00	4.90	HORIZONTAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	25.10	17.99	26.70	-1.60	VERTICAL	Passed
7440.000000	28.10	25.41	23.20	4.90	VERTICAL	Passed

6.2.2 8DPSK modulation, PRBS packet type

6.2.2.1 Phone slide open

Channel 0 / 2402 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	36.90	69.98	38.90	-2.00	VERTICAL	Passed
7206.000000	39.80	97.72	35.60	4.20	HORIZONTAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	24.10	16.03	26.10	-2.00	VERTICAL	Passed
7206.000000	26.90	22.13	22.70	4.20	VERTICAL	Passed

Channel 40 / 2442 MHz

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
38.135872	32.10	40.27	50.20	-18.10	VERTICAL	Passed

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
1947.895792	86.20	20,417.38	88.70	-2.50	VERTICAL	Passed
4848.693387	37.20	72.44	39.40	-2.20	VERTICAL	Passed
4918.333667	38.20	81.28	39.80	-1.60	VERTICAL	Passed
7421.339679	42.00	125.89	37.10	4.90	VERTICAL	Passed
7423.341683	41.80	123.03	37.00	4.80	HORIZONTAL	Passed
17842.693387	57.20	724.44	32.40	24.80	VERTICAL	Passed

*1947.8 MHz frequency is coming from communication tester and thus ignored.

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
1947.895792	85.40	18,620.87	87.90	-2.50	VERTICAL	Passed
4848.693387	24.10	16.03	26.30	-2.20	VERTICAL	Passed
4918.833667	24.90	17.58	26.40	-1.50	VERTICAL	Passed
7416.841683	28.90	27.86	23.90	5.00	HORIZONTAL	Passed
7418.839679	29.20	28.84	24.20	5.00	VERTICAL	Passed
17847.693387	44.30	164.06	19.50	24.80	VERTICAL	Passed

*1947.8 MHz frequency is coming from communication tester and thus ignored.

Channel 78 / 2480 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	37.90	78.52	39.50	-1.60	HORIZONTAL	Passed
7440.000000	40.70	108.39	35.80	4.90	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	25.30	18.41	26.90	-1.60	VERTICAL	Passed
7440.000000	28.20	25.70	23.30	4.90	VERTICAL	Passed

6.2.2.2 Phone slide closed

Channel 0 / 2402 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	37.50	74.99	39.50	-2.00	VERTICAL	Passed
7206.000000	40.40	104.71	36.20	4.20	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	25.40	18.62	27.40	-2.00	VERTICAL	Passed
7206.000000	27.00	22.39	22.80	4.20	VERTICAL	Passed

Channel 40 / 2442 MHz

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
38.035872	28.60	26.92	46.70	-18.10	VERTICAL	Passed

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
1947.895792	86.40	20,892.96	88.90	-2.50	VERTICAL	Passed
4920.341683	38.50	84.14	40.00	-1.50	VERTICAL	Passed
4959.423848	38.40	83.18	40.00	-1.60	VERTICAL	Passed
7327.651303	40.60	107.15	36.30	4.30	HORIZONTAL	Passed
7419.333667	42.60	134.90	37.70	4.90	VERTICAL	Passed
7420.341683	41.90	124.45	37.00	4.90	VERTICAL	Passed
17874.249499	57.60	758.58	32.10	25.50	HORIZONTAL	Passed

*1947.8 MHz frequency is coming from communication tester and thus ignored.

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
1947.895792	85.70	19,275.25	88.20	-2.50	VERTICAL	Passed
4917.841683	24.90	17.58	26.50	-1.60	VERTICAL	Passed
4963.923848	25.10	17.99	26.60	-1.50	VERTICAL	Passed
7321.651303	28.00	25.12	23.80	4.20	HORIZONTAL	Passed
7419.333667	29.20	28.84	24.30	4.90	VERTICAL	Passed
7419.341683	29.10	28.51	24.20	4.90	VERTICAL	Passed
17871.249499	45.00	177.83	19.60	25.40	HORIZONTAL	Passed

*1947.8 MHz frequency is coming from communication tester and thus ignored.

Channel 78 / 2480 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	38.80	87.10	40.40	-1.60	VERTICAL	Passed
7440.000000	41.10	113.50	36.20	4.90	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	25.90	19.72	27.50	-1.60	VERTICAL	Passed
7440.000000	28.30	26.00	23.40	4.90	VERTICAL	Passed

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

EUT with DUT number	RM-174 Dut # 27885
Accessories with DUT numbers	BL-5B Dut # 27887 + AC-3E Dut # 27893 + HS-47 Dut # 27985 + MU-27 Dut # 27891
Operation Voltage [V] / [Hz]	230/50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [mBar]	24.4 / 49.0 1024.0
Date of measurements	06-07-2006
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.

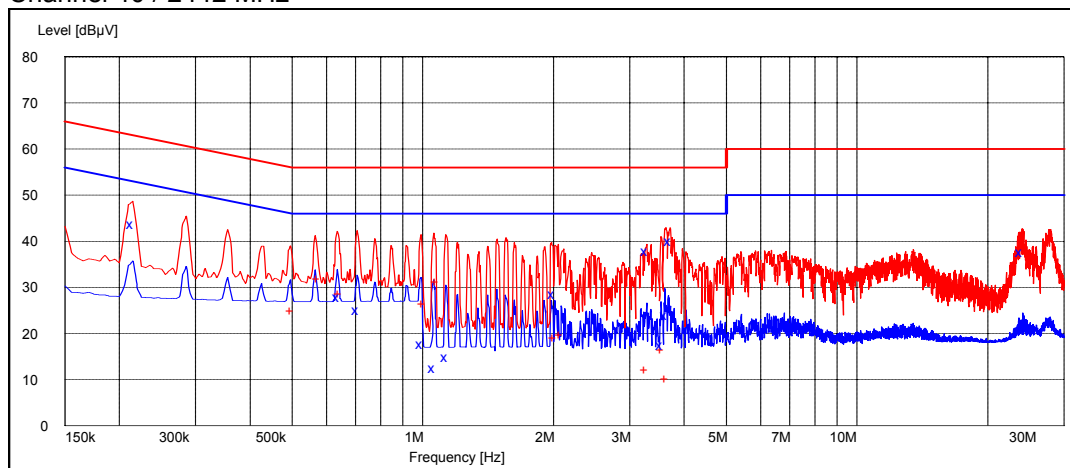
CISPR 22 Class B limits

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 / 2442 MHz



Quasi peak (RBW: 9 kHz)

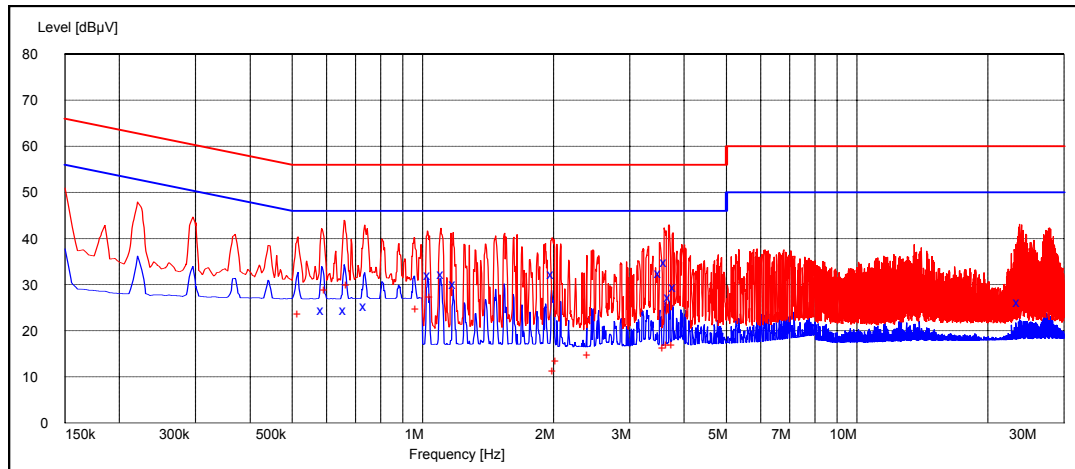
Frequency [MHz]	U [dBμV]	Line	Result
0.215000	43.70	L1	Passed
0.640000	27.90	L1	Passed
0.710000	25.00	N	Passed
0.995000	17.70	L1	Passed
1.065000	12.50	N	Passed
1.140000	14.80	N	Passed
2.005000	28.50	N	Passed
3.285000	37.80	N	Passed
3.560000	17.50	N	Passed
3.635000	24.10	N	Passed
3.725000	40.00	N	Passed
23.980000	37.60	N	Passed

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.500000	24.90	L1	Passed
0.575000	31.70	N	Passed
0.645000	28.60	N	Passed
1.005000	26.40	N	Passed
1.080000	31.10	N	Passed
2.010000	18.90	N	Passed
2.085000	19.60	N	Passed
3.275000	12.00	N	Passed
3.570000	16.50	N	Passed
3.645000	10.10	N	Passed

7.2.2 8DPSK modulation, PRBS packet type

Channel 39 / 2441 MHz



Quasi peak (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.590000	24.40	N	Passed
0.665000	24.50	N	Passed
0.740000	25.40	N	Passed
1.040000	32.00	N	Passed
1.115000	32.40	N	Passed
1.190000	30.10	L1	Passed
2.000000	32.20	N	Passed
3.535000	32.60	N	Passed
3.635000	34.80	N	Passed
3.720000	27.20	L1	Passed
3.820000	29.60	L1	Passed
23.700000	26.30	L1	Passed

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.520000	23.60	N	Passed
0.600000	28.90	N	Passed
0.675000	29.90	N	Passed
0.975000	24.60	L1	Passed
1.050000	27.30	N	Passed
2.010000	11.20	L1	Passed
2.050000	13.50	N	Passed
2.425000	14.70	N	Passed
3.605000	16.30	N	Passed
3.680000	16.90	N	Passed
3.785000	16.80	N	Passed

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

EUT with DUT number	RM-174 Dut # 27884
Accessories with DUT numbers	BL-5B Dut # 27899 + AC-3E Dut # 27893 + HS-47 Dut # 27895
Operation Voltage [V] / [Hz]	230/50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24.1 / 47.0 1014.0
Date of measurements	13-07-2006
Measured by	Allan F. Henriksen

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

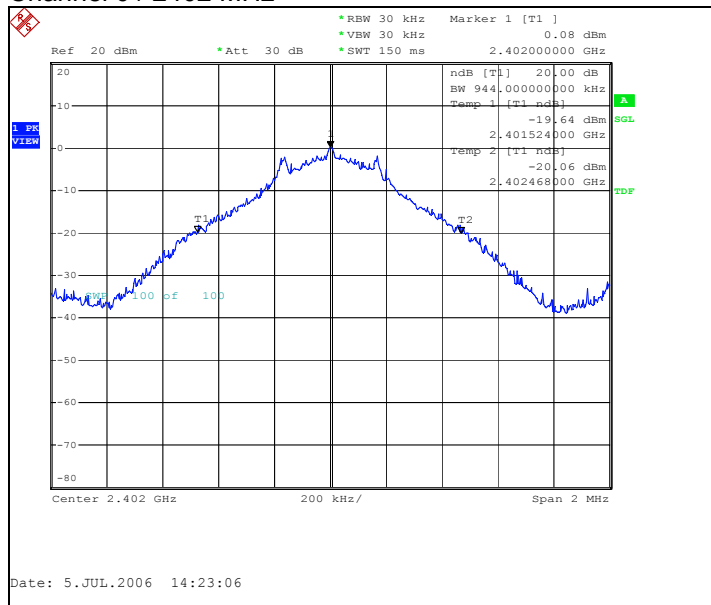
Limit [MHz]
N/A

8.2. Bluetooth Test results

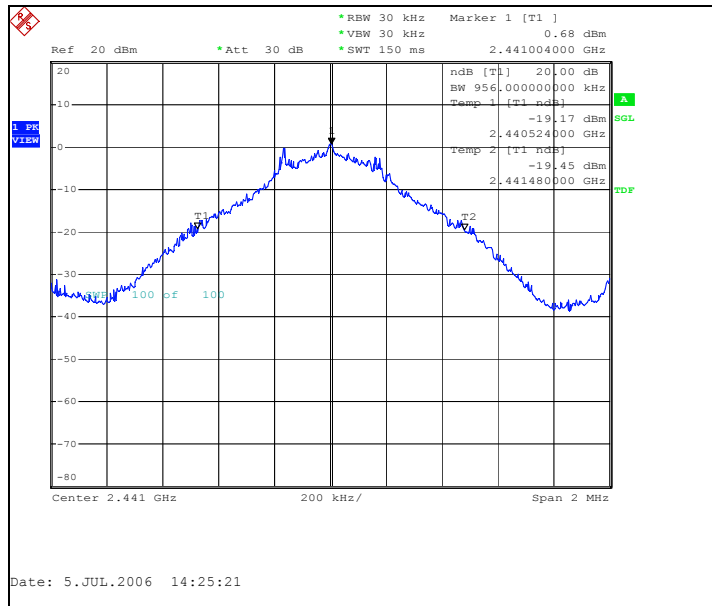
8.2.1 GFSK modulation, PRBS packet type

Channel / f_c [MHz]	20 dB bandwidth [kHz]	Result
0 / 2402	944.000	Passed
40 / 2442	956.000	Passed
78 / 2480	944.000	Passed

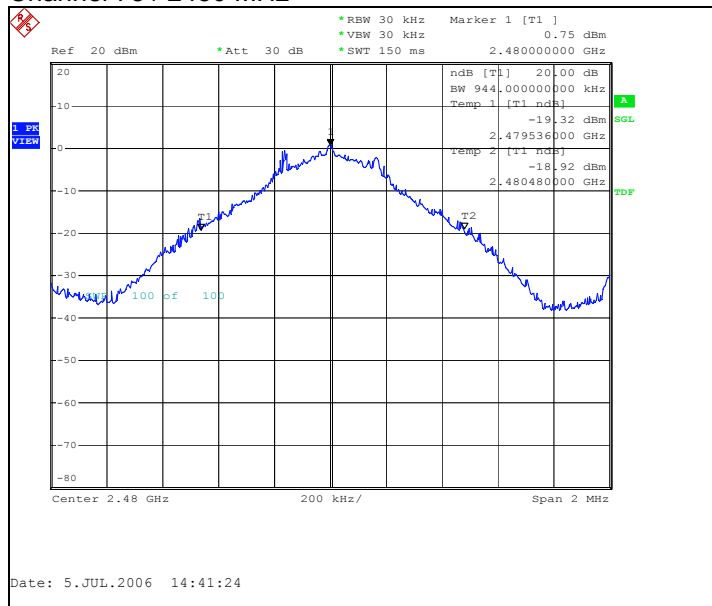
Channel 0 / 2402 MHz



Channel 40 / 2442 MHz



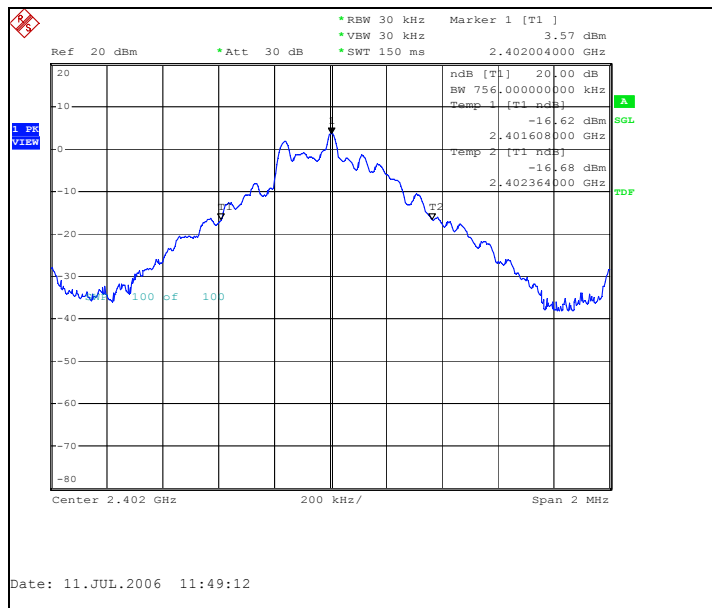
Channel 78 / 2480 MHz



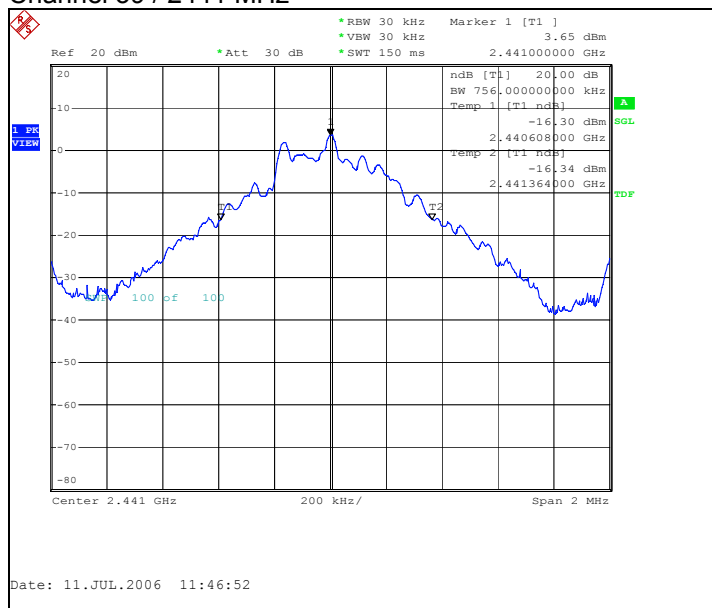
8.2.2 8DPSK modulation, PRBS packet type

Channel / f_c [MHz]	20 dB bandwidth [kHz]	Result
0 / 2402	756.000	Passed
40 / 2442	756.000	Passed
78 / 2480	752.000	Passed

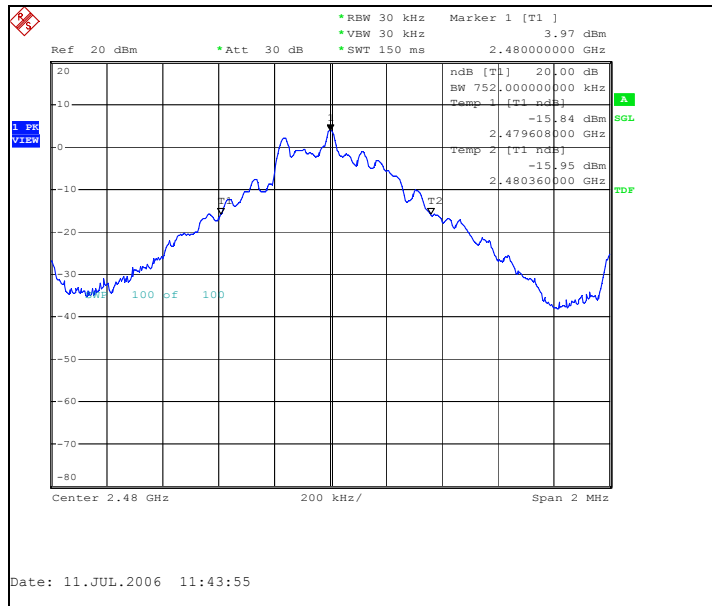
Channel 0 / 2402 MHz



Channel 39 / 2441 MHz



Channel 78 / 2480 MHz



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

EUT with DUT number	RM-174 Dut # 27884
Accessories with DUT numbers	BL-5B Dut # 27899 + AC-3E Dut # 27893 + HS-47 Dut # 27895
Operation Voltage [V] / [Hz]	230/50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24.1 / 47.0 1014.0
Date of measurements	13-07-2006
Measured by	Allan F. Henriksen

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

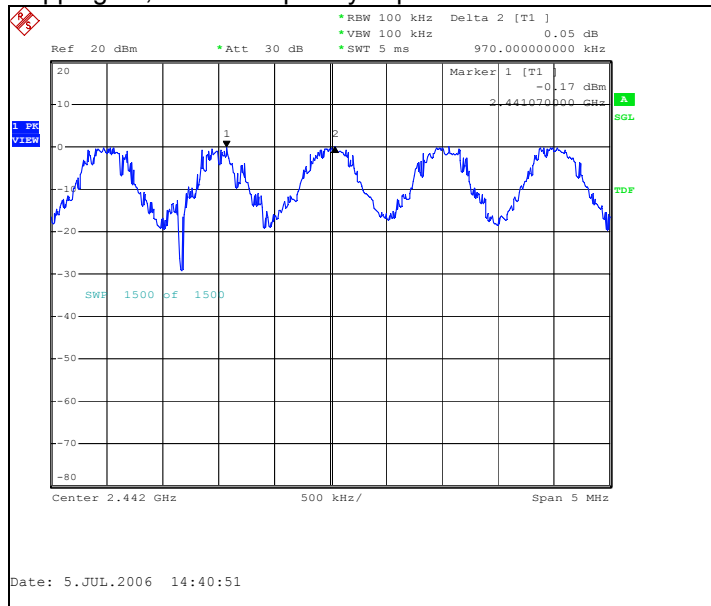
Limit [MHz]
≥ 0.025 or 2/3 of the 20 dB bandwidth

9.2. Bluetooth Test results

9.2.1 GFSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
970	Passed

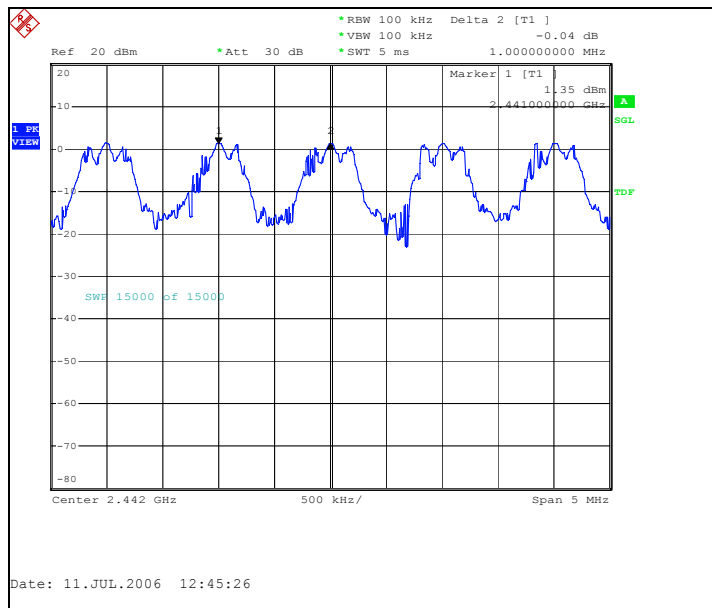
Hopping on, carrier frequency separation of channels 39 / 2441 MHz and 40 / 2442 MHz



9.2.2 8DPSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
1000	Passed

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



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

EUT with DUT number	RM-174 Dut # 27884
Accessories with DUT numbers	BL-5B Dut # 27899 + AC-3E Dut # 27893 + HS-47 Dut # 27895
Operation Voltage [V] / [Hz]	230/50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24.1 / 47.0 1014.0
Date of measurements	13-07-2006
Measured by	Allan F. Henriksen

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

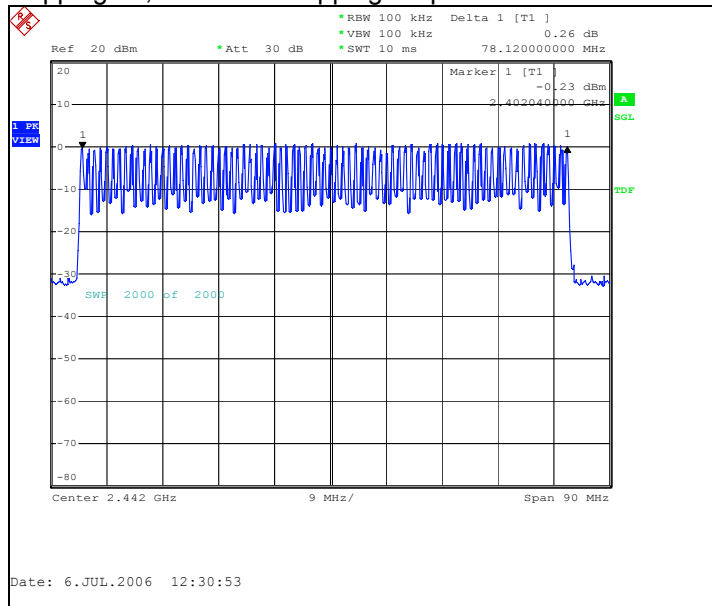
Limit [number]
≥ 15

10.2. Bluetooth Test results

10.2.1 GFSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
79	Passed

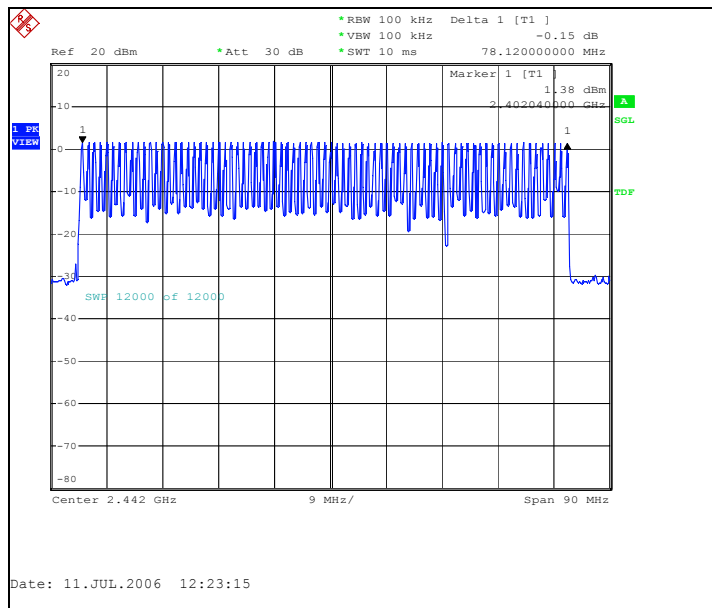
Hopping on, number of hopping frequencies



10.2.2 8DPSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
79	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-174 Dut # 27884
Accessories with DUT numbers	BL-5B Dut # 27899 + AC-3E Dut # 27893 + HS-47 Dut # 27895
Operation Voltage [V] / [Hz]	230/50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24.1 / 47.0 1014.0
Date of measurements	13-07-2006
Measured by	Allan F. Henriksen

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

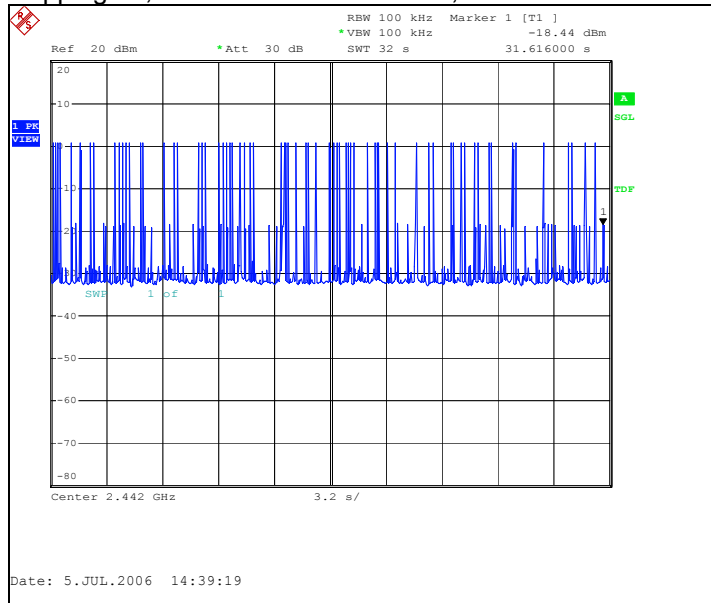
Limit [s]
≤ 0.4

11.2. Bluetooth test results

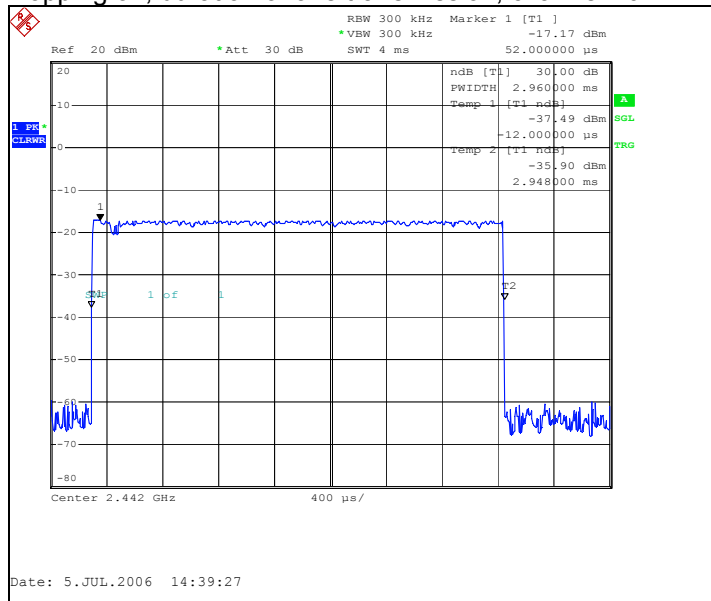
11.2.1 GFSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [μs]	Time of occupancy [s]	Result
68	2960.000	0.201280	Passed

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



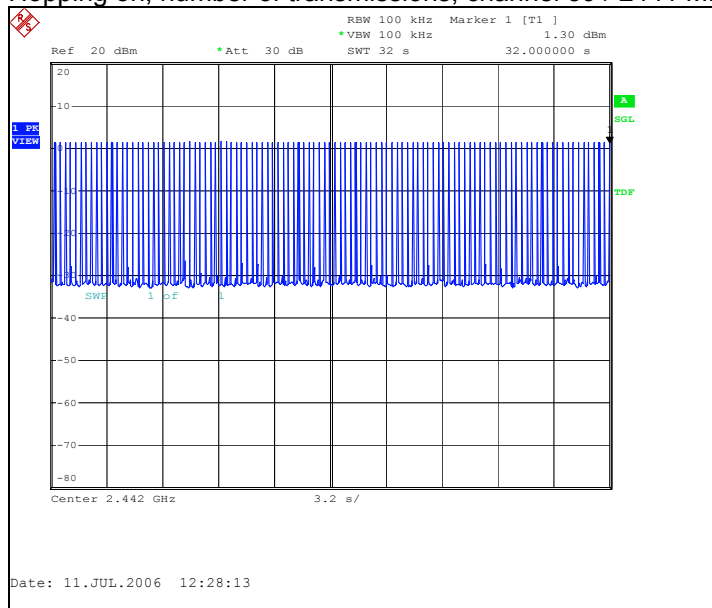
Hopping on, duration of one transmission, channel 40 / 2442 MHz



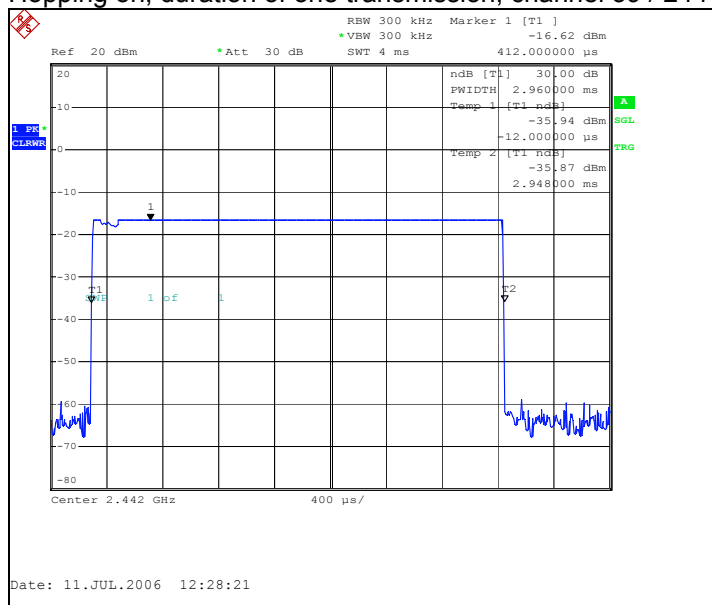
11.2.2 8DPSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [μ s]	Time of occupancy [s]	Result
109	2960.000	0.322640	Passed

Hopping on, number of transmissions, channel 39 / 2441 MHz



Hopping on, duration of one transmission, channel 39 / 2441 MHz



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