

FCC Part 15C Compliance Test Report

Test Report no.:	Tre_FCC_0713_09.doc	Date of Report:	10.4.2007
Number of pages:	39	Customer's Contact person:	Helen Hu
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FCC listing no.:	94436		
IC recognition no.:	3608		
Tested devices/ accessories:	GSM phone RM-293 / Battery BL-4B , AC charger AC-3, Headset HS-47		
FCC ID:	QTLRM-293	IC:	661AB-RM293
Supplement reports:	-		
Testing has been carried out in accordance with:	CFR 47, FCC rules Part 15 Subpart C, ANSI C63.4 (2003), Public Notice DA 00-705, DTS procedures KDB 558074, IC standards RSS-GEN and RSS-210. Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit".		
Documentation:	The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory. The documentation of the testing performed on the tested devices is archived for 15 years at TCC Nokia.		
Test Results:	The EUT complies with the requirements in respect of all parameters subject to the test. The test results relate only to devices specified in this document.		
Date and signature for the contents:			

Jari Jantunen, System Manager

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	28.3.2007
Testing completed	4.4.2007
The customer's contact person	Helen Hu
Test Plan referred to	\\EMC\\TESTPLAN\\
Notes	-
Document name	T:\\Projects\\RM-293\\EMC\\Results\\FCC\\Tre_FCC_0713_09.doc

1.1. EUT and Accessory Information

The EUT is a 2-band (GSM850/1900) 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-293	001004002348499	0302	-	ti06w47-07w12	41013
GSM phone	RM-293	001004002348713	0302	-	ti06w47-07w12	41014
Battery	BL-4B	-	-	-	-	41010
AC-Charger	AC-3E	-	-	-	-	41012
Headset	HS-47	-	-	-	-	40979

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.

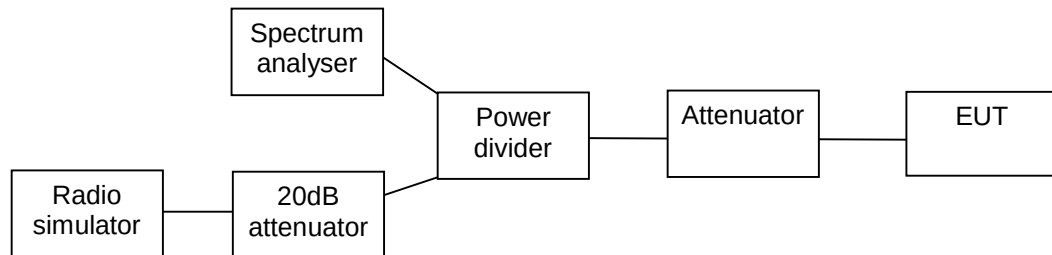
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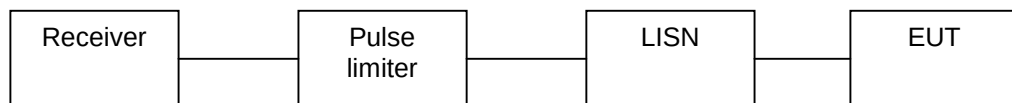
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2. Test setups

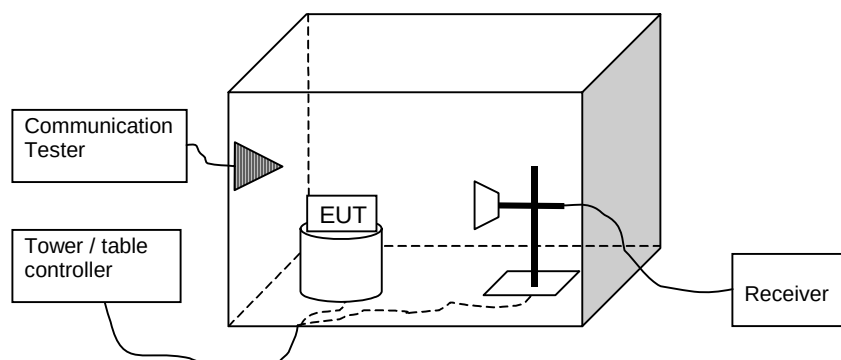
2.1. Conducted RF test setup



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-293 DUT 41014
Accessories with DUT numbers	BL-4B DUT 41010
Operation Voltage [V] / [Hz]	Nominal
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 43 / 102.2
Date of measurements	30.3.2007
Measured by	Jari Jantunen

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

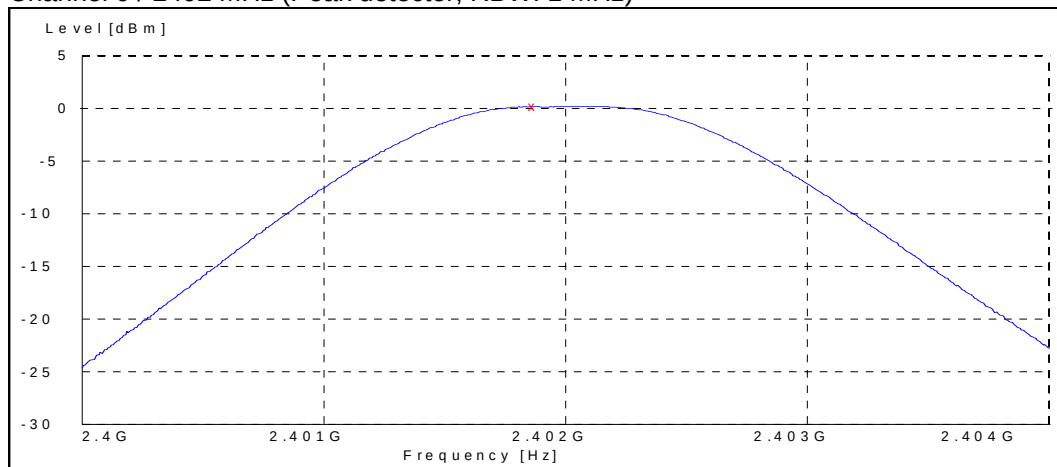
Frequency range [MHz]	Limit [W]	Limit [dBm]
2400 – 2483.5	≤ 1	≤ 30

3.2. Bluetooth Test results

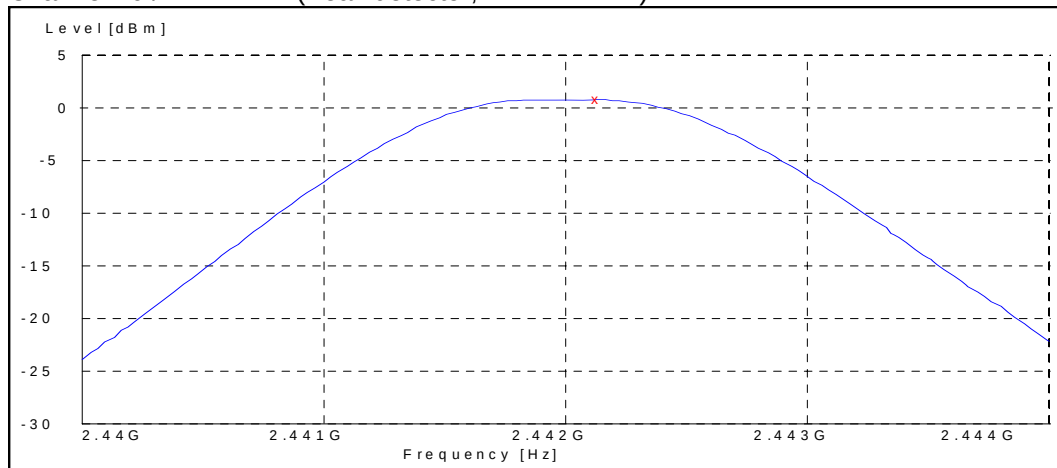
3.2.1 GFSK modulation, PRBS packet type

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
0 / 2402	0.20	1.047	PASSED
40 / 2442	0.80	1.202	PASSED
78 / 2480	1.00	1.259	PASSED

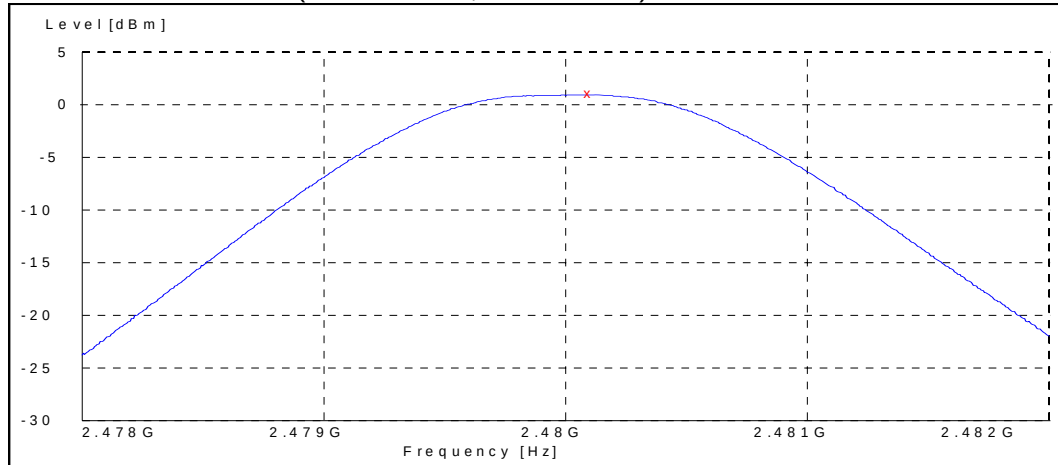
Channel 0 / 2402 MHz (Peak detector, RBW: 1 MHz)



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



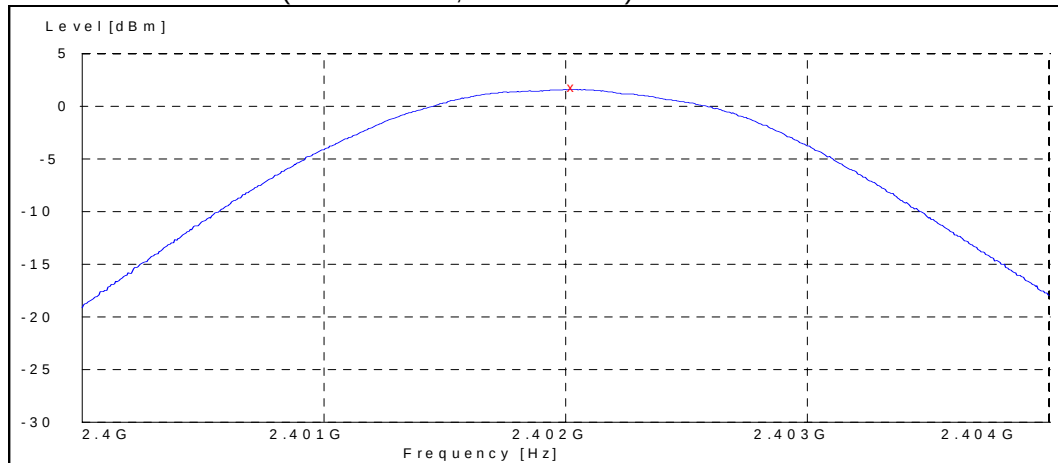
Channel 78 / 2480 MHz (Peak detector, RBW: 1 MHz)



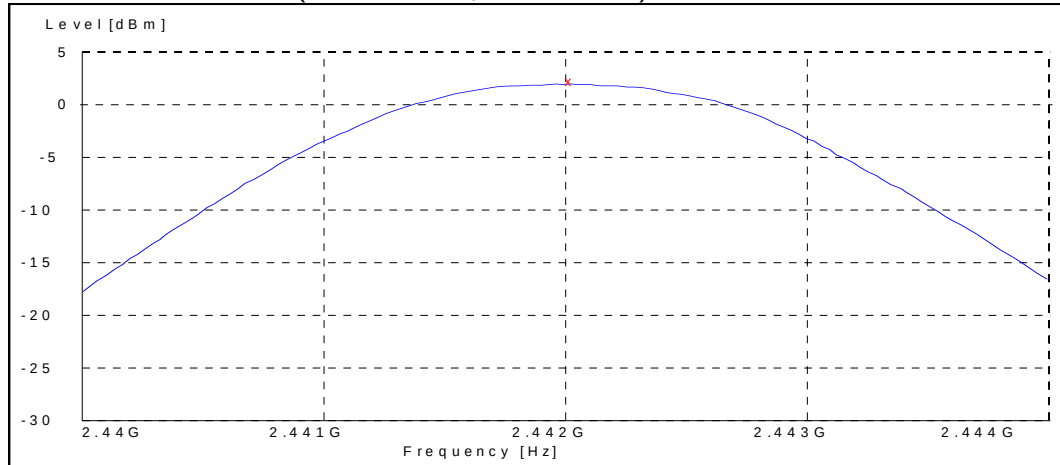
3.2.2 8DPSK modulation, PRBS packet type

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
0 / 2402	1.80	1.514	PASSED
40 / 2442	2.20	1.660	PASSED
78 / 2480	2.20	1.660	PASSED

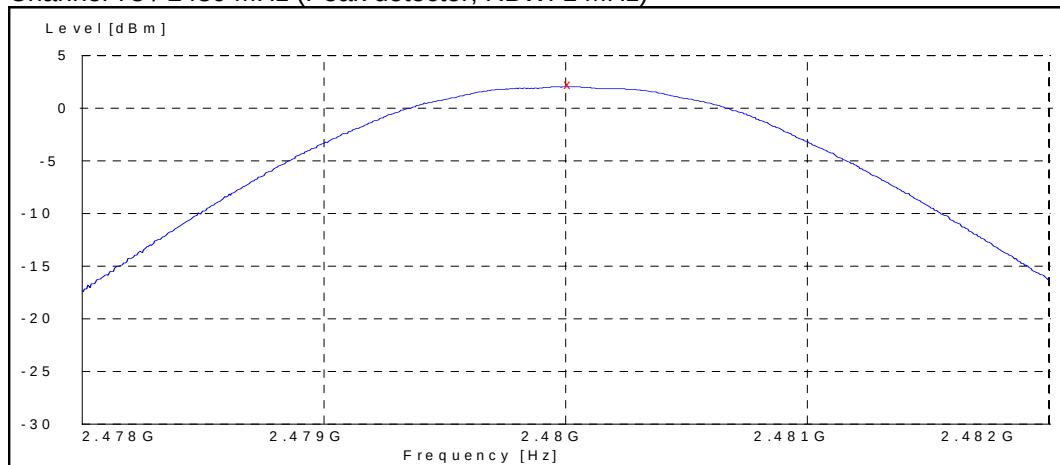
Channel 0 / 2402 MHz (Peak detector, RBW: 1 MHz)



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



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



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

EUT with DUT number	RM-293 DUT 41013
Accessories with DUT numbers	BL-4B DUT 41010, AC-3 DUT 41012, HS-47 DUT 40979
Operation Voltage [V] / [Hz]	Nominal
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 43 / 102.2
Date of measurements	30.3.2007
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

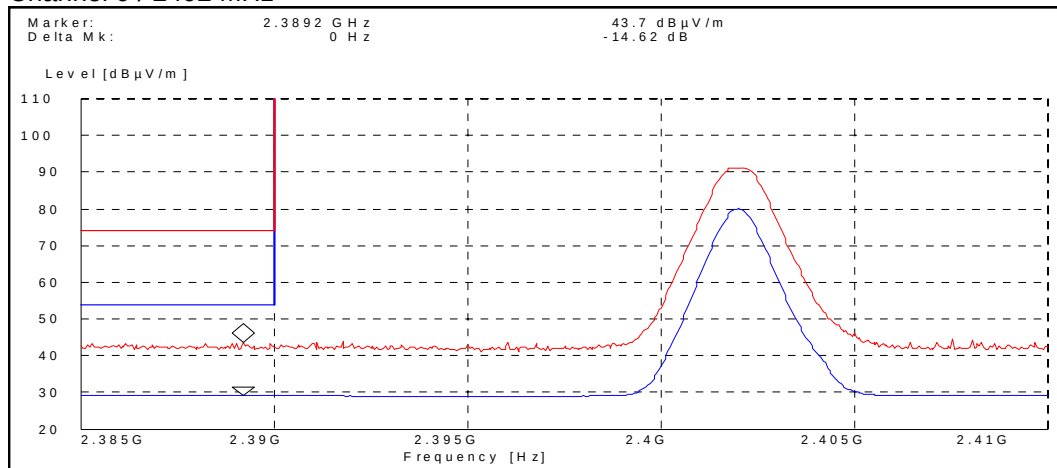
Average (RBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
0 / 2402	29.08	PASSED
78 / 2480	30.11	PASSED
Hopping on, low end	33.94	PASSED
Hopping on, high end	42.27	PASSED

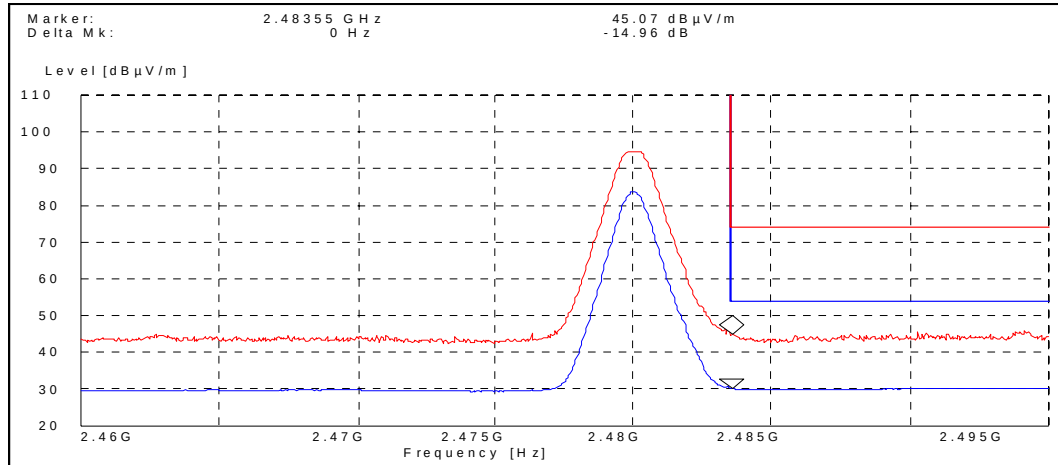
Peak (RBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
0 / 2402	43.70	PASSED
78 / 2480	45.07	PASSED
Hopping on, low end	46.30	PASSED
Hopping on, high end	47.93	PASSED

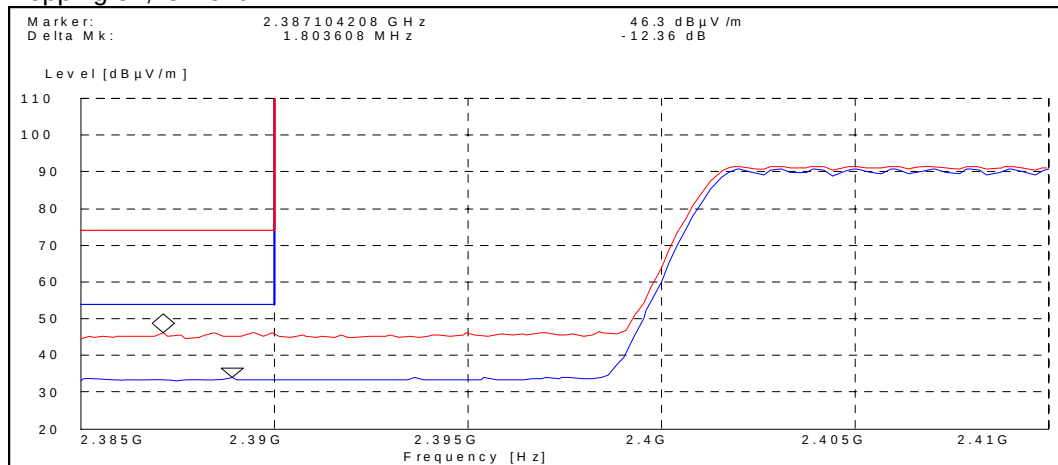
Channel 0 / 2402 MHz



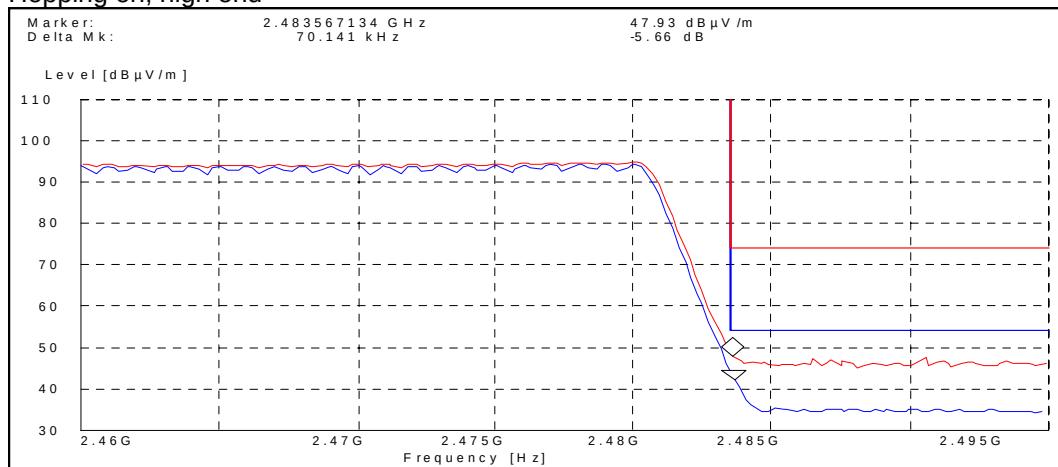
Channel 78 / 2480 MHz



Hopping on, low end



Hopping on, high end



4.2.2 8DPSK modulation, PRBS packet type

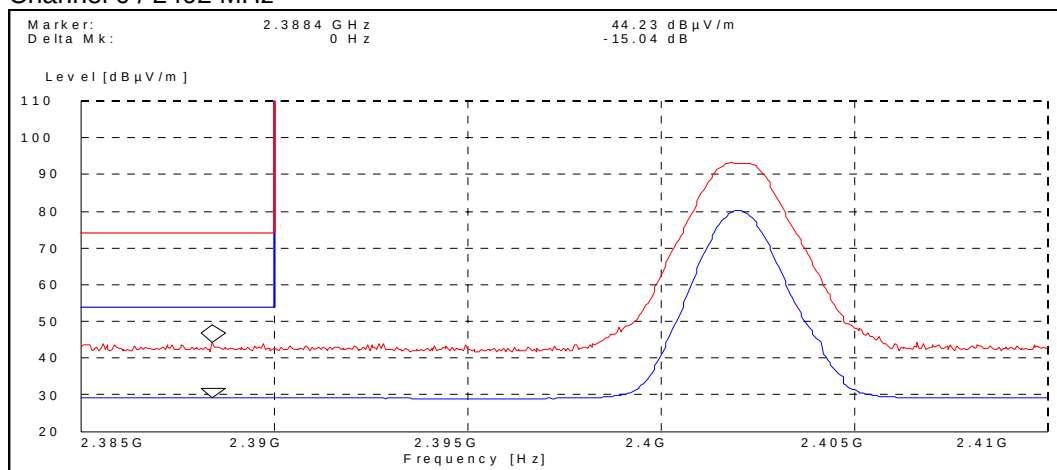
Average (RBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
0 / 2402	29.19	PASSED
78 / 2480	30.56	PASSED
Hopping on, low end	34.36	PASSED
Hopping on, high end	45.0	PASSED

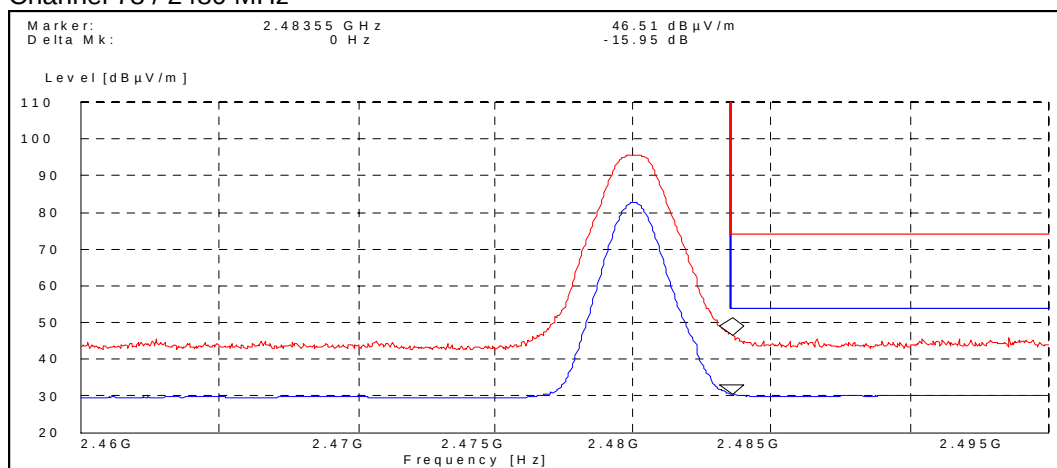
Peak (RBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	Result
0 / 2402	44.23	PASSED
78 / 2480	46.51	PASSED
Hopping on, low end	46.40	PASSED
Hopping on, high end	51.94	PASSED

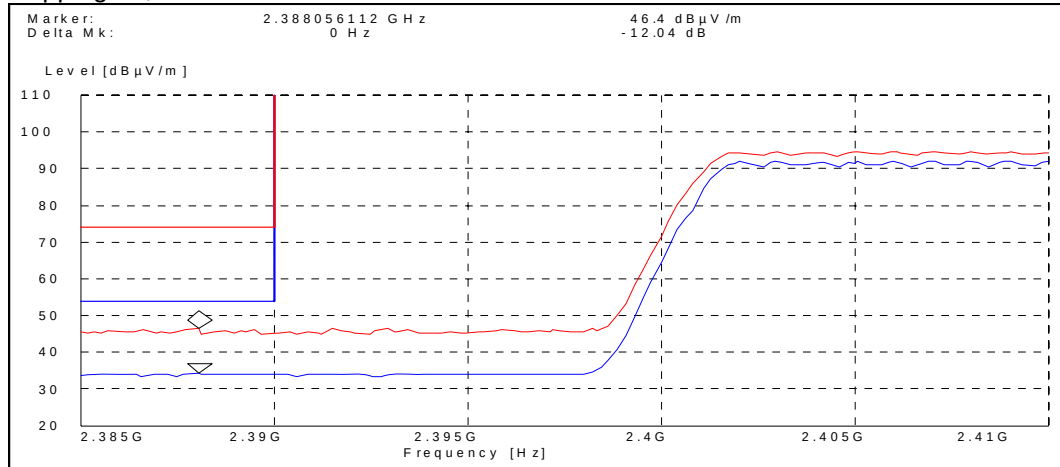
Channel 0 / 2402 MHz



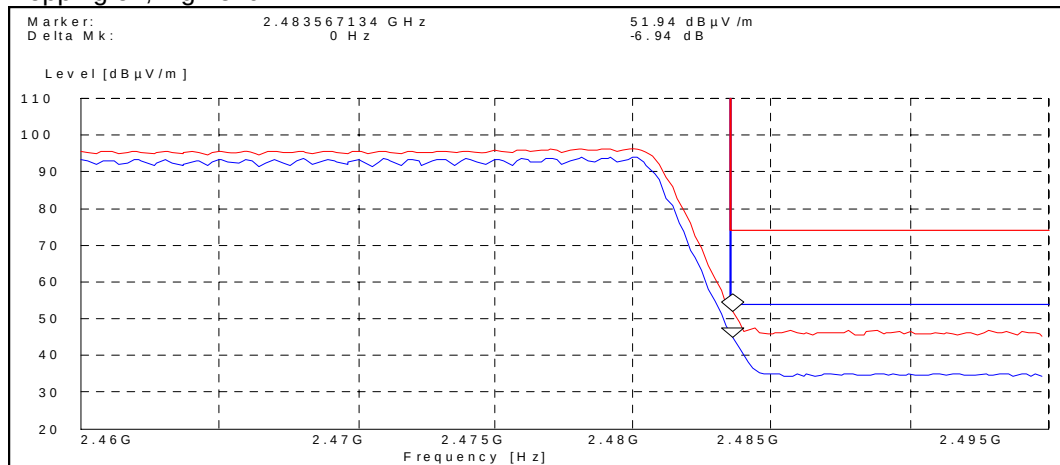
Channel 78 / 2480 MHz



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-293 DUT 41014
Accessories with DUT numbers	BL-4B DUT 41010
Operation Voltage [V] / [Hz]	Nominal
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 43 / 102.2
Date of measurements	30.3.2007
Measured by	Jari Jantunen

5.1. Test method and limit

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

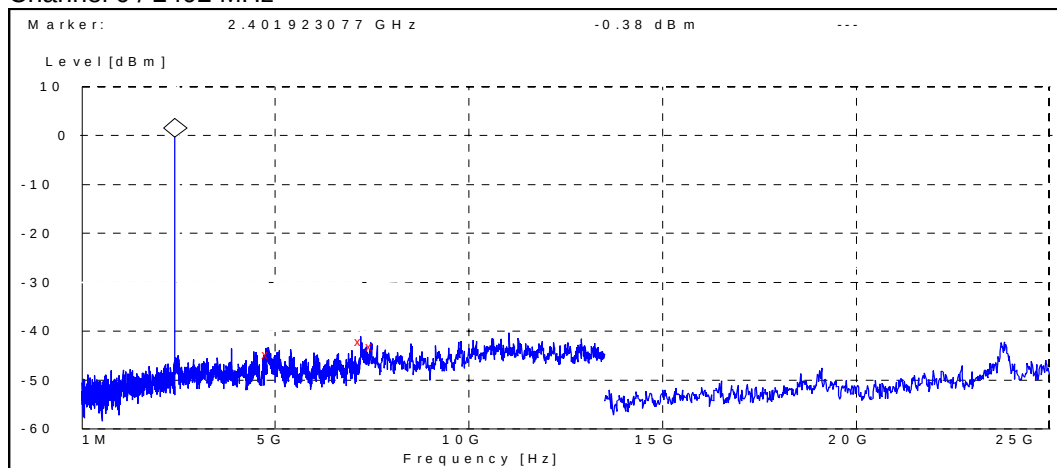
Limits for spurious RF conducted emissions measurements

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

5.2. Bluetooth Test results

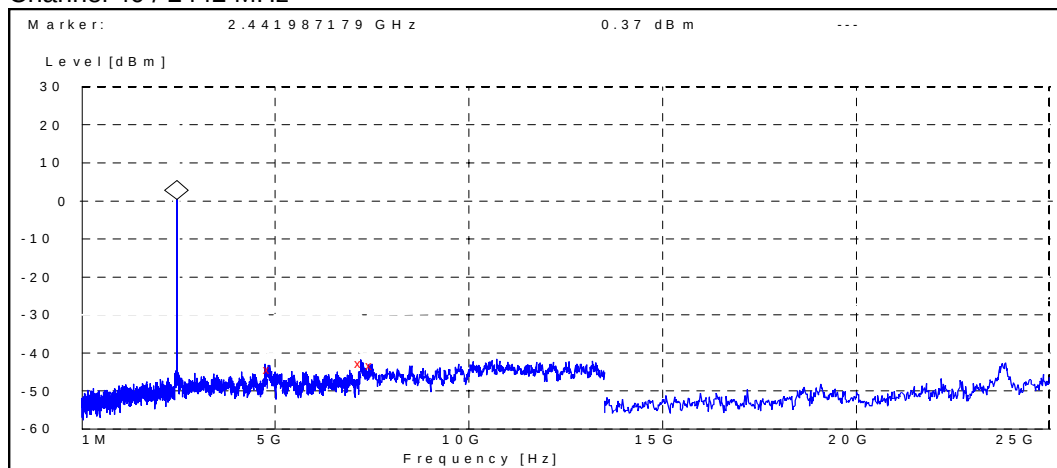
5.2.1 GFSK modulation, PRBS packet type

Channel 0 / 2402 MHz



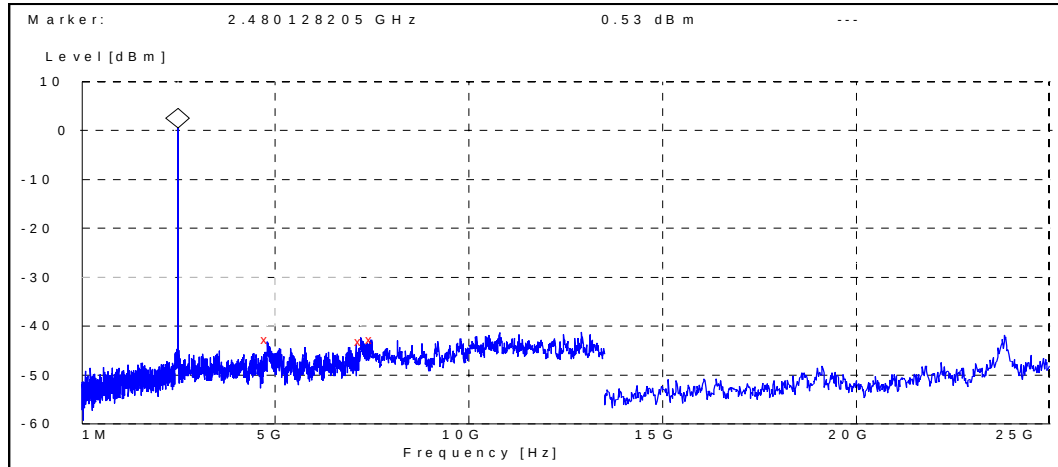
Frequency [MHz]	P [dBc]	Result
4819.871795	-44.321315	PASSED
7201.442308	-41.821315	PASSED
7500.000000	-42.821315	PASSED

Channel 40 / 2442 MHz



Frequency [MHz]	P [dBc]	Result
4848.397436	-44.673782	PASSED
7222.596154	-43.173782	PASSED
7500.000000	-43.573782	PASSED

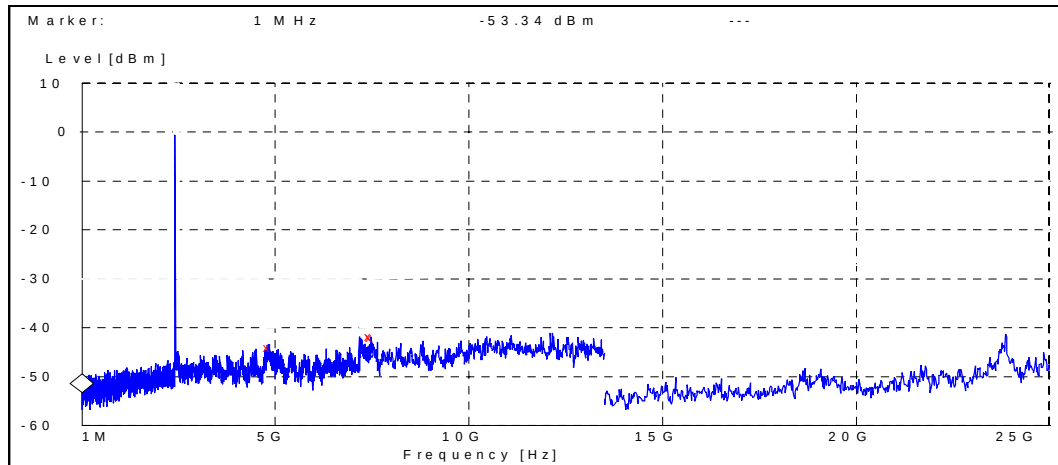
Channel 78 / 2480 MHz



Frequency [MHz]	P [dBc]	Result
4800.320513	-43.231982	PASSED
7220.192308	-43.731982	PASSED
7500.000000	-43.231982	PASSED

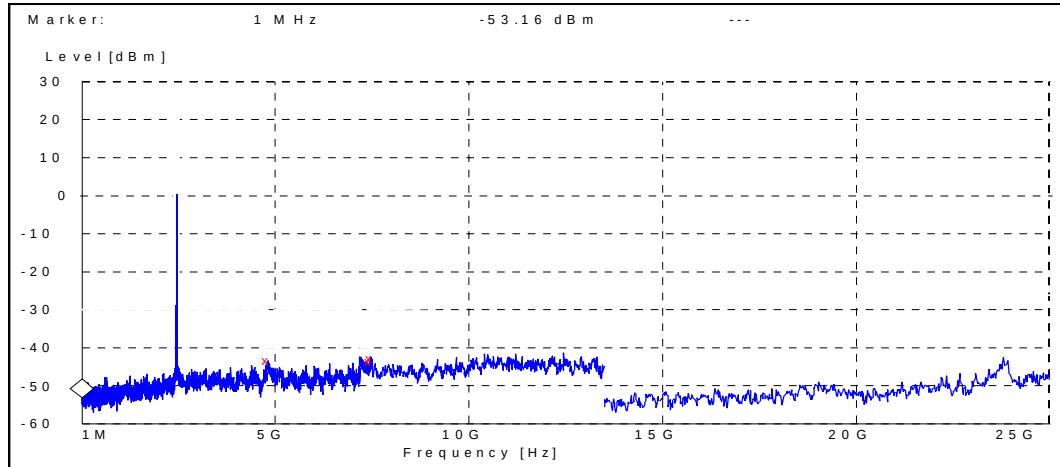
5.2.2 8DPSK modulation, PRBS packet type

Channel 0 / 2402 MHz



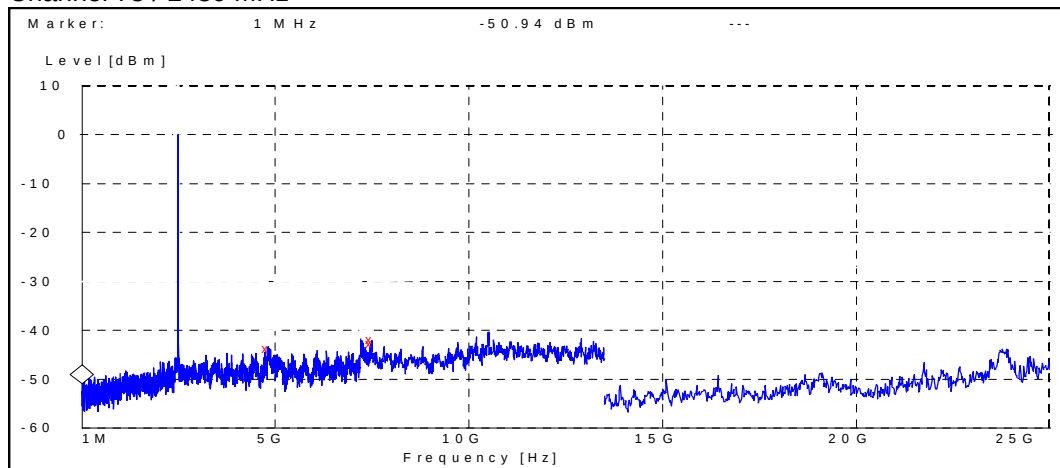
Frequency [MHz]	P [dBc]	Result
4835.897436	44.235355	PASSED
7483.653846	42.535355	PASSED
7500.000000	42.235355	PASSED

Channel 40 / 2442 MHz



Frequency [MHz]	P [dBc]	Result
4805.448718	43.355583	PASSED
7474.519231	42.655583	PASSED
7500.000000	42.455583	PASSED

Channel 78 / 2480 MHz



Frequency [MHz]	P [dBc]	Result
4809.294872	43.24040	PASSED
7500.000000	41.94040	PASSED
7500.000000	42.24040	PASSED

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

EUT with DUT number	RM-293 DUT 41013
Accessories with DUT numbers	BL-4B DUT 41010, AC-3 DUT 41012, HS-47 DUT 40979
Operation Voltage [V] / [Hz]	Nominal
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 45 / 101.0
Date of measurements	4.4.2007
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)

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	39.90	98.86	41.60	-1.7	HORIZONTAL	PASSED
7206.000000	41.50	118.85	39.80	1.7	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	26.70	21.63	28.40	-1.7	VERTICAL	PASSED
7206.000000	28.50	26.61	26.80	1.7	VERTICAL	PASSED

Channel 40 / 2442 MHz

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
38.235872	7.10	2.26	18.60	-11.50	HORIZONTAL	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
4896.793587	39.90	98.86	41.40	-1.50	VERTICAL	PASSED
4953.903808	40.90	110.92	42.10	-1.20	VERTICAL	PASSED
7280.553106	42.60	134.90	40.20	2.40	VERTICAL	PASSED
7285.071142	42.70	136.46	40.30	2.40	VERTICAL	PASSED
7416.831663	42.50	133.35	39.70	2.80	VERTICAL	PASSED
7417.337675	42.40	131.83	39.60	2.80	VERTICAL	PASSED
17975.457916	54.40	524.81	33.20	21.20	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
4898.793587	27.20	22.91	28.70	-1.50	VERTICAL	PASSED

4951.903808	27.40	23.44	28.60	-1.20	VERTICAL	PASSED
7276.553106	29.80	30.90	27.40	2.40	VERTICAL	PASSED
7285.571142	29.70	30.55	27.30	2.40	VERTICAL	PASSED
7416.837675	29.80	30.90	27.00	2.80	VERTICAL	PASSED
7417.831663	29.80	30.90	27.00	2.80	VERTICAL	PASSED
17981.457916	42.40	131.83	21.20	21.20	VERTICAL	PASSED

Channel 78 / 2480 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	39.70	96.61	40.90	-1.2	HORIZONTAL	PASSED
7440.000000	42.80	138.04	40.10	2.7	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	27.50	23.71	28.70	-1.2	HORIZONTAL	PASSED
7440.000000	29.60	30.20	26.90	2.7	HORIZONTAL	PASSED

6.2.2 8DPSK modulation, PRBS packet type

Channel 0 / 2402 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	39.80	97.72	41.50	-1.7	HORIZONTAL	PASSED
7206.000000	41.20	114.82	39.50	1.7	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	28.00	25.12	29.70	-1.7	VERTICAL	PASSED
7206.000000	28.40	26.30	26.70	1.7	VERTICAL	PASSED

Channel 40 / 2442 MHz

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
37.695391	7.50	2.37	18.60	-11.10	VERTICAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4884.769539	41.00	112.20	42.60	-1.60	HORIZONTAL	PASSED
4922.847695	40.40	104.71	41.80	-1.40	HORIZONTAL	PASSED

7280.059118	43.00	141.25	40.60	2.40	VERTICAL	PASSED
7343.681363	42.00	125.89	39.60	2.40	HORIZONTAL	PASSED
7394.293587	42.20	128.82	39.50	2.70	HORIZONTAL	PASSED
7414.331663	43.30	146.22	40.50	2.80	HORIZONTAL	PASSED
17494.995992	51.40	371.54	33.40	18.00	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4884.269539	28.30	26.00	29.90	-1.60	HORIZONTAL	PASSED
4921.847695	27.30	23.17	28.70	-1.40	HORIZONTAL	PASSED
7276.559118	29.70	30.55	27.30	2.40	VERTICAL	PASSED
7336.681363	29.40	29.51	27.00	2.40	HORIZONTAL	PASSED
7392.793587	29.60	30.20	26.90	2.70	HORIZONTAL	PASSED
7418.831663	29.70	30.55	26.90	2.80	HORIZONTAL	PASSED
17497.495992	38.80	87.10	20.70	18.10	VERTICAL	PASSED
17899.295591	42.10	127.35	21.00	21.10	VERTICAL	PASSED

Channel 78 / 2480 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4960.000000	40.20	102.33	41.40	-1.2	VERTICAL	PASSED
7440.000000	42.10	127.35	39.40	2.7	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4960.000000	27.60	23.99	28.80	-1.2	HORIZONTAL	PASSED
7440.000000	29.60	30.20	26.90	2.7	HORIZONTAL	PASSED

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

EUT with DUT number	RM-293 DUT 41013
Accessories with DUT numbers	BL-4B DUT 41010, AC-3 DUT 41012, HS-47 DUT 40979
Operation Voltage [V] / [Hz]	Nominal
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	19 / 50 / 101.8
Date of measurements	2.4.2007
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.

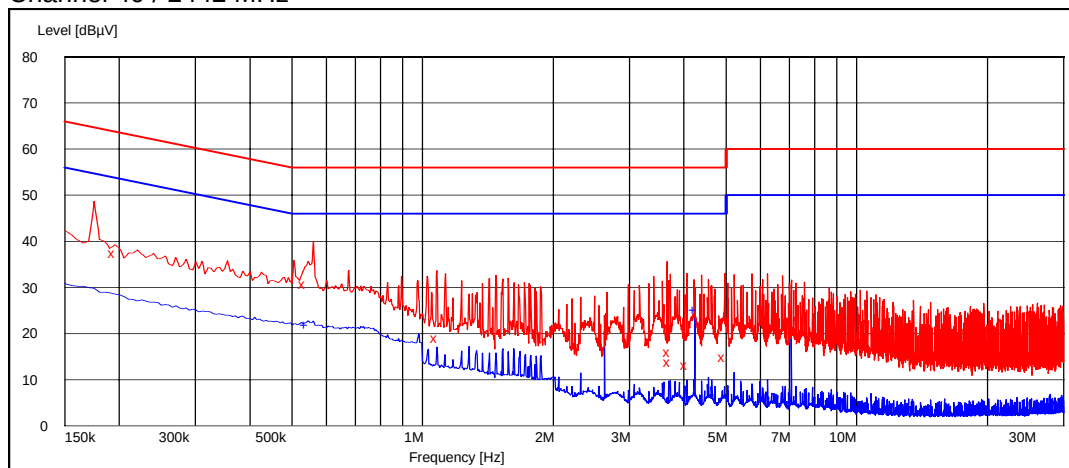
CISPR 22 Class B limits

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)

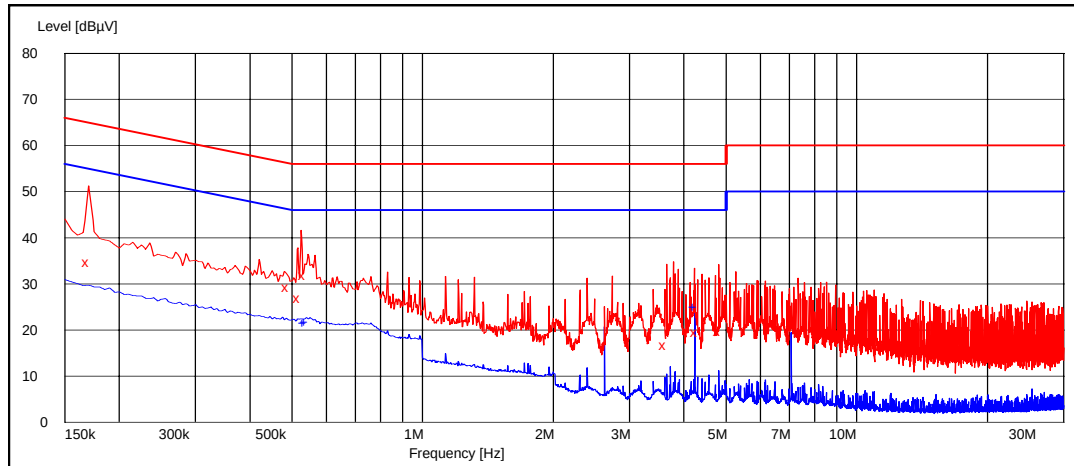
Frequency [MHz]	U [dBμV]	Line	Result
0.195000	37.50	N	PASSED
0.535000	30.80	L1	PASSED
1.080000	19.00	N	PASSED
3.700000	15.90	L1	PASSED
3.715000	13.80	N	PASSED
4.060000	13.30	N	PASSED
4.960000	14.90	N	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.540000	21.70	L1	PASSED
4.240000	25.00	N	PASSED

7.2.2 8DPSK modulation, PRBS packet type

Channel 40 / 2442 MHz



Quasi peak (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.170000	34.80	N	PASSED
0.490000	29.30	N	PASSED
0.520000	26.80	L1	PASSED
0.535000	32.00	L1	PASSED
3.625000	16.60	L1	PASSED
4.275000	19.50	L1	PASSED
4.830000	19.70	L1	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.535000	21.50	L1	PASSED
0.540000	21.70	L1	PASSED
4.240000	25.00	L1	PASSED

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

EUT with DUT number	RM-293 DUT 41014
Accessories with DUT numbers	BL-4B DUT 41010
Operation Voltage [V] / [Hz]	Nominal
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 43 / 102.2
Date of measurements	30.3.2007
Measured by	Jari Jantunen

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

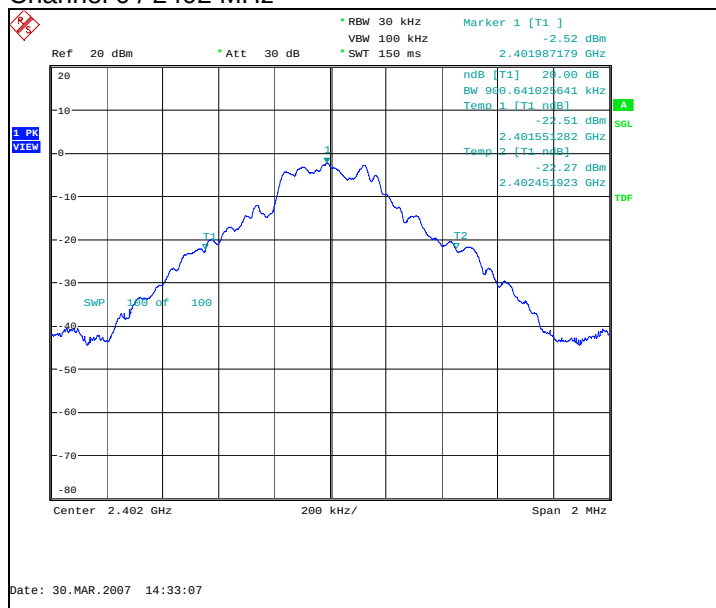
Limit [MHz]
N/A

8.2. Bluetooth Test results

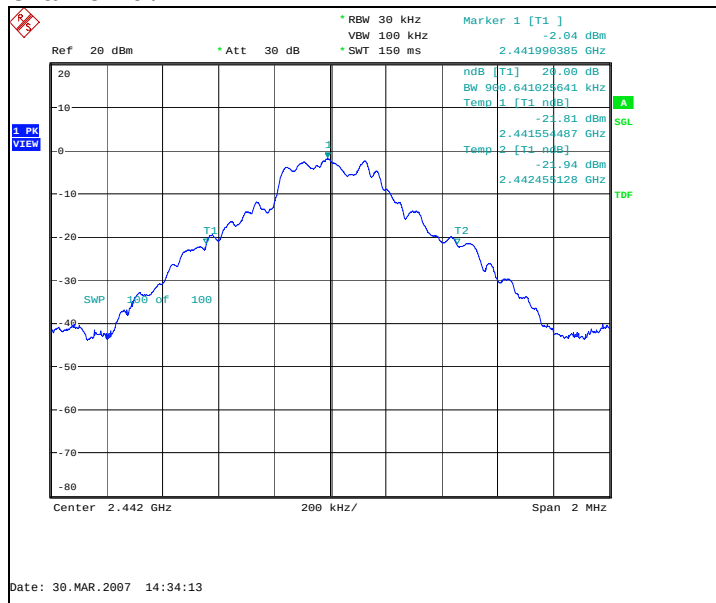
8.2.1 GFSK modulation, PRBS packet type

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

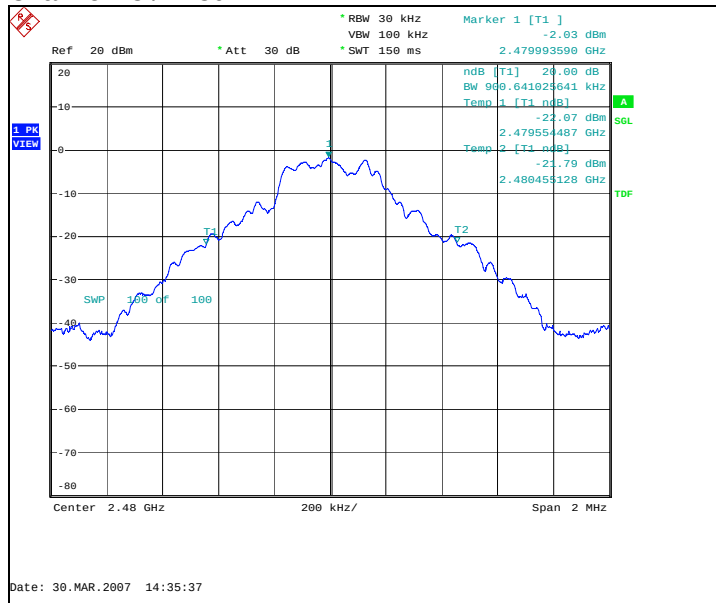
Channel 0 / 2402 MHz



Channel 40 / 2442 MHz



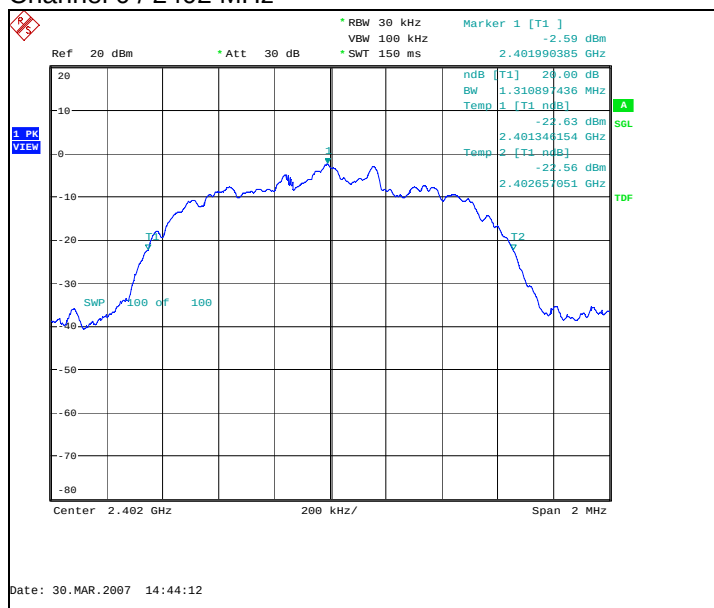
Channel 78 / 2480 MHz



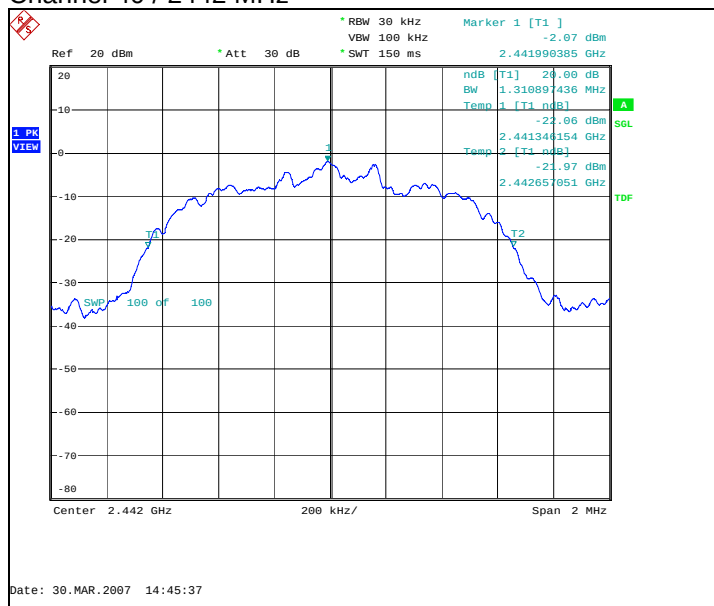
8.2.2 8DPSK modulation, PRBS packet type

Channel / f_c [MHz]	20 dB bandwidth [kHz]	Result
0 / 2402	1310.897	PASSED
40 / 2442	1310.897	PASSED
78 / 2480	1317.308	PASSED

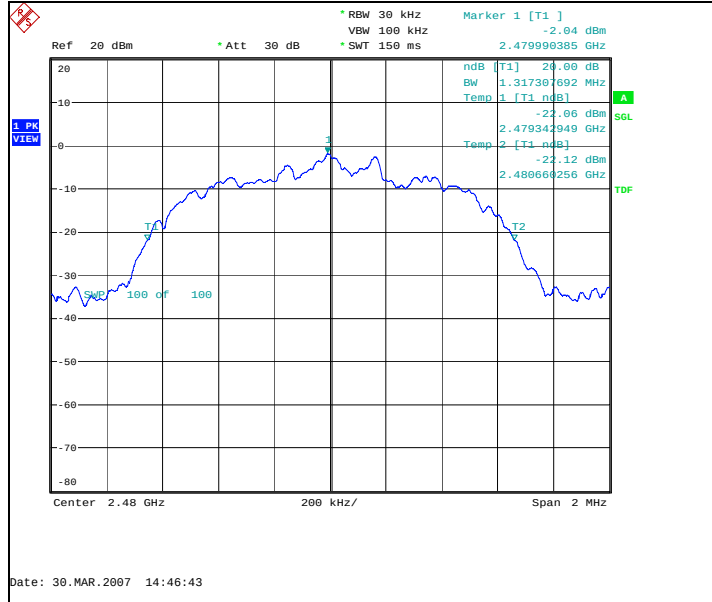
Channel 0 / 2402 MHz



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-293 DUT 41014
Accessories with DUT numbers	BL-4B DUT 41010
Operation Voltage [V] / [Hz]	Nominal
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 43 / 102.2
Date of measurements	30.3.2007
Measured by	Jari Jantunen

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

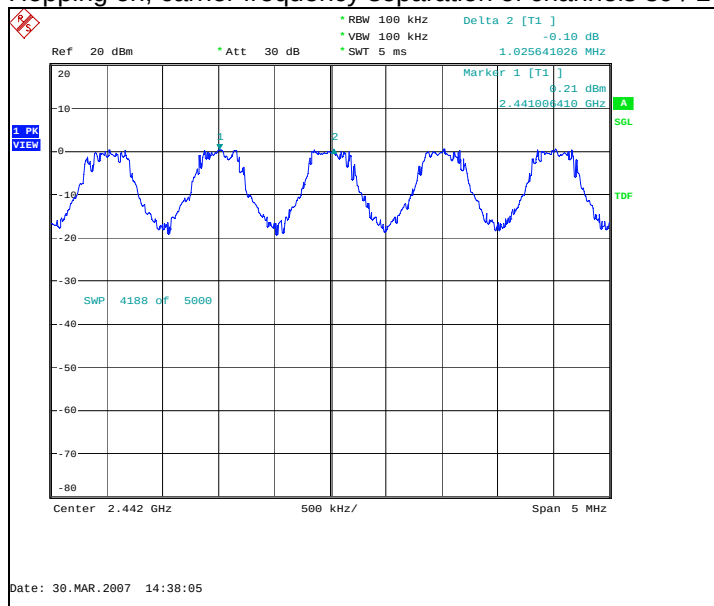
Limit [MHz]
≥ 0.025 or 2/3 of the 20 dB bandwidth

9.2. Bluetooth Test results

9.2.1 GFSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
1025.641	PASSED

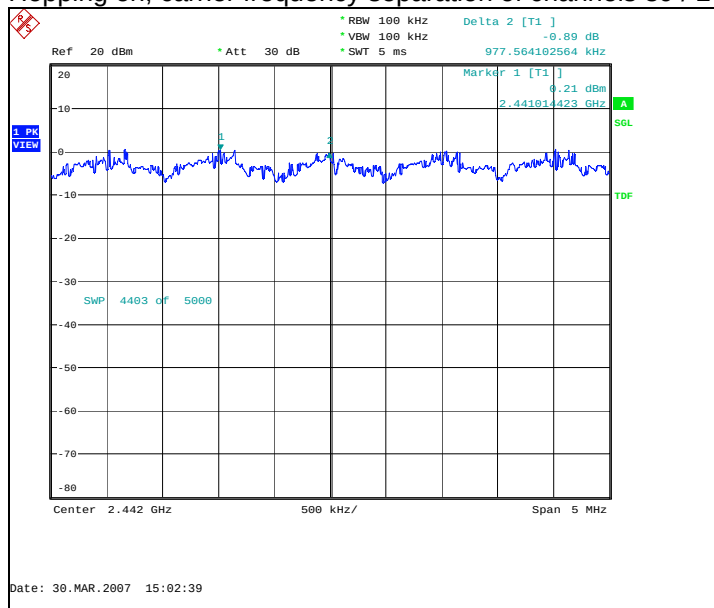
Hopping on, carrier frequency separation of channels 39 / 2441 MHz and 40 / 2442 MHz



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-293 DUT 41014
Accessories with DUT numbers	BL-4B DUT 41010
Operation Voltage [V] / [Hz]	Nominal
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 43 / 102.2
Date of measurements	30.3.2007
Measured by	Jari Jantunen

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

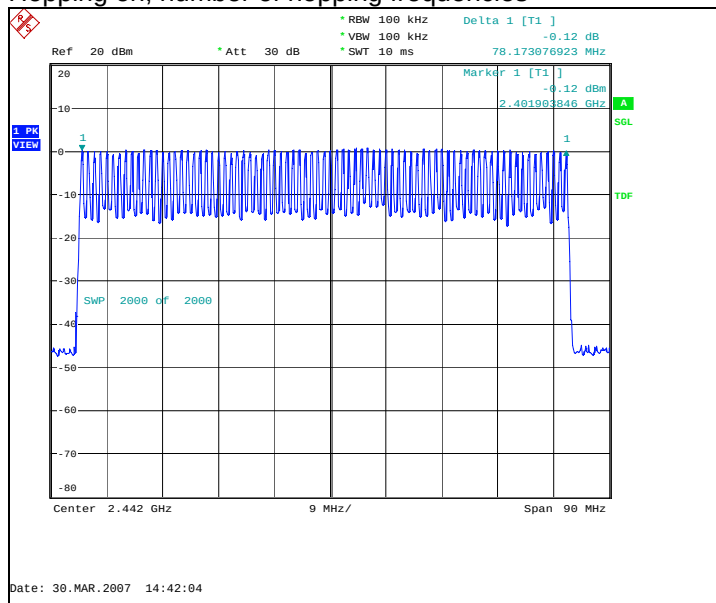
Limit [number]
≥ 15

10.2. Bluetooth Test results

10.2.1 GFSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
79	PASSED

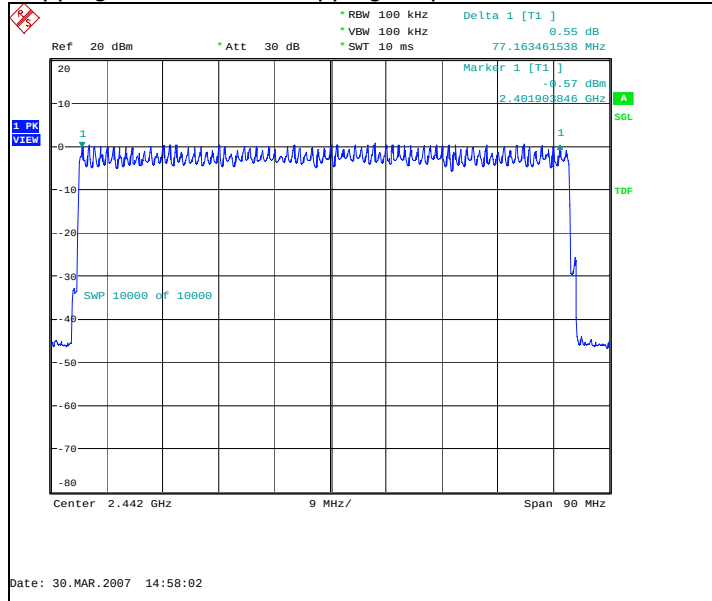
Hopping on, number of hopping frequencies



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-293 DUT 41014
Accessories with DUT numbers	BL-4B DUT 41010
Operation Voltage [V] / [Hz]	Nominal
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 43 / 102.2
Date of measurements	30.3.2007
Measured by	Jari Jantunen

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

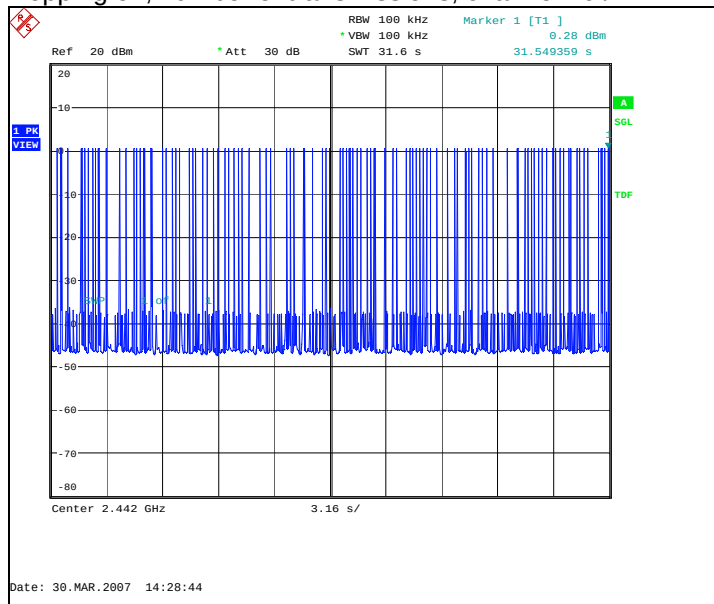
Limit [s]
≤ 0.4

11.2. Bluetooth test results

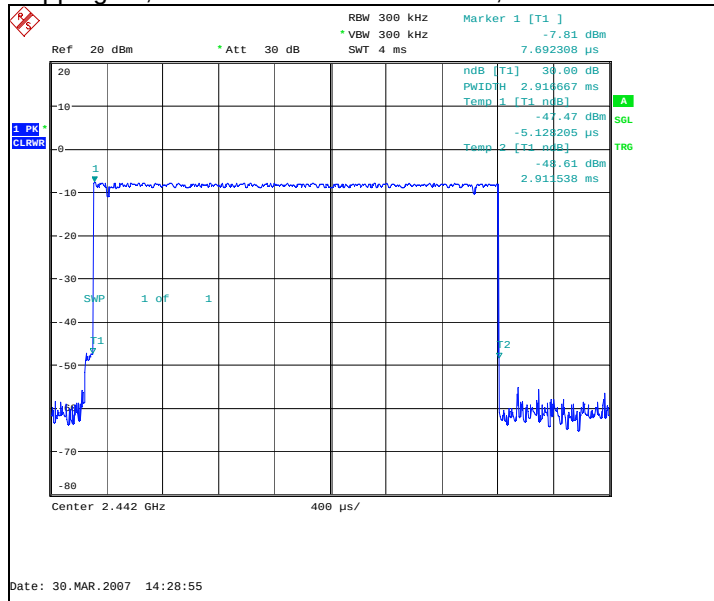
11.2.1 GFSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [μ s]	Time of occupancy [s]	Result
102	2 917	0.297500	PASSED

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



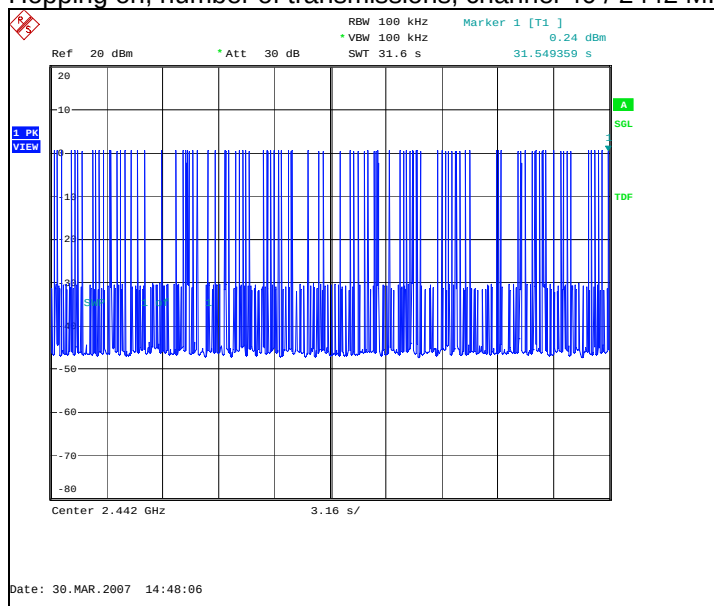
Hopping on, duration of one transmission, channel 40 / 2442 MHz



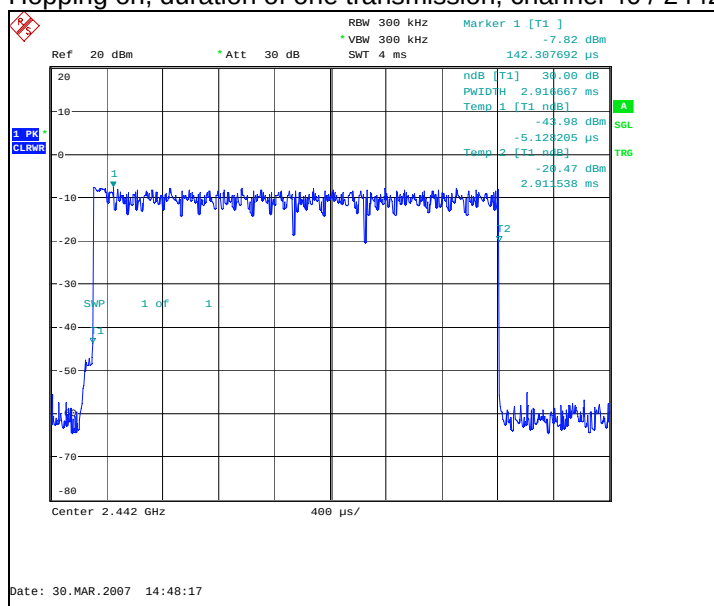
11.2.2 8DPSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [μs]	Time of occupancy [s]	Result
94	2 917	0.274167	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