

FCC Part 15C Compliance Test Report

Test Report no.:	FCC15C_RM-719_09.docx	Date of Report:	11-Nov-2010
Number of pages:	41	Customer's Contact person:	Mohammad El-Haj
Testing laboratory:	TCC Nokia Copenhagen Laboratory Frederikskaj 1790 COPENHAGEN V DENMARK Tel. +45 33 292929 Fax. +45 33 292934	Customer:	Nokia Corporation Frederikskaj 1790 COPENHAGEN V DENMARK Tel. +45 33 292929 Fax. +45 33 292934
FCC listing no.:	99059		
IC recognition no.:	661AL-1		
Tested devices/ accessories:	Phone RM-719; Battery BL-4U; AC-Charger AC-8; Headset WH-102		
FCC ID:	QTKRM-719	IC:	661AD-RM-719
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, System Manager, EMC

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	31-Aug-2010
Testing completed	16-Sep-2010
The customer's contact person	Mohammad El-Haj
Test Plan referred to	T:\Projects\RM-697\TestPlan\RS_testplan_RM-697 EMC FCC SAR.xls
Notes	None
Document name	FCC15C_RM-697_01.docx

1.1. EUT and Accessory Information

The EUT is a 7-band (GSM850/900/1800/1900 and WCDMA Band I/II(1900)/V(850)) mobile phone with Bluetooth and WLAN. Bluetooth and WLAN are tested with maximum rated TX power.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-697	004402/13/108474/5	2200	-	0.0.109	24097
Battery	BL-4U	4955400093210401053;0670560	-	-	-	24080
AC-Charger	AC-8E	4868670162530602954;0675387	-	-	-	24077
Headset	WH-102	0694323022523104246	-	-	-	24079
Phone	RM-697	004402/13/108361/4	2200	-	0.0.109	24092
Battery	BL-4U	4955400203010405902;0670560	-	-	-	24084
AC-Charger	AC-8E	4868670162510602628;0675387	-	-	-	24078
Headset	WH-102	0694323022523104246	-	-	-	24079
Phone	RM-697	004402/13/108387/9	2200	-	0.0.109	24099
Battery	BL-4U	4955400093210401068;0670560	-	-	-	24091
Headset	WH-102	0694323022523104246	-	-	-	24079
AC-Charger	AC-8E	4868670162530602954;0675387	-	-	-	24077

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 (a)	20 dB bandwidth	PASSED
15.247(a)(1)	A8.1 (b)	Carrier frequency separation	PASSED
15.247(a)(1)(iii)	A8.1 (d)	Number of hopping frequencies	PASSED
15.247(a)(1)(iii)	A8.1 (d)	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 Copenhagen Laboratory.

The test results of QTKRM-697 are re-used for certification of the QTKRM -719. The table above indicates the results, which will be re-used.

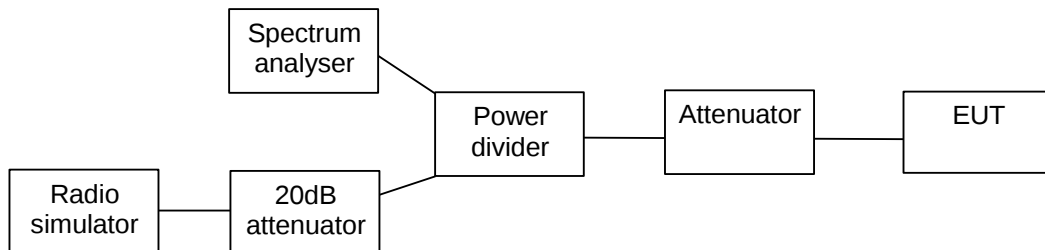
CONTENTS

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. AC powerline conducted emissions (FCC §15.107, ICES-003 section 5.3)	10
4.2. Test method and limit	10
4.3. BT TX Test Results	11
5. Band edge compliance of RF emissions (FCC §15.247(d), RSS-210 A8.5).....	12
5.1. Test Setup.....	12
5.2. Test method and limit	12
5.3. Bluetooth Test results.....	13
6. Spurious RF conducted emissions (FCC §15.247(d), RSS-A8.5).....	17
6.1. Test method and limit	17
6.2. Bluetooth Test results.....	18
7.....	21
8. Spurious radiated emissions (FCC §15.247(d), §15.209, RSS-210 A8.5).....	21
8.1. Test Setup.....	21
8.2. Test method and limit	21
8.3. Bluetooth Test results.....	23
9. 20 dB bandwidth (FCC §15.247(a)(1), RSS-210 A8.1 (a))	27
9.1. Test method and limit	27
9.2. Bluetooth Test results.....	28
10. Carrier frequency separation (FCC §15.247(a)(1), RSS-210 A8.1 (b))	31
10.1. Test method and limit	31
10.2. Bluetooth Test results.....	32
11. Number of hopping frequencies (FCC §15.247(a)(1)(iii), RSS-210 A8.1 (d)).....	34
11.1. Test method and limit	34

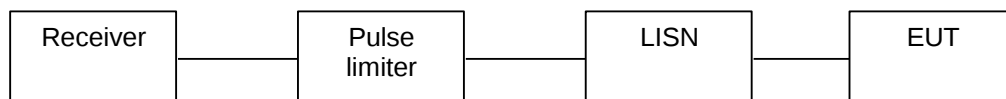
11.2.	Bluetooth Test results.....	35
12.	Time of occupancy (FCC §15.247(a)(1)(iii), RSS-210 A8.1 (d))	37
12.1.	Test method and limit	37
12.2.	Bluetooth test results	38
13.		40
14.	Test Equipment	40
14.1.	Conducted measurements.....	40
14.2.	Radiated measurements.....	40

2. Test setups

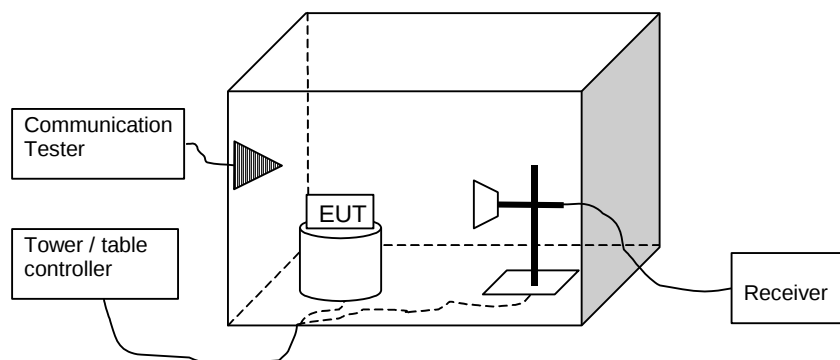
2.1. Conducted RF test setup



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-697 DUT 24097
Accessories with DUT numbers	BL-4U DUT 24080; AC-8 DUT 24077; WH-102 DUT 24079
Operation Voltage [V] / [Hz]	115V / 60Hz
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24 / 45 / 1022
Date of measurements	2-Sep-2010
Measured by	Ruben Hansen

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

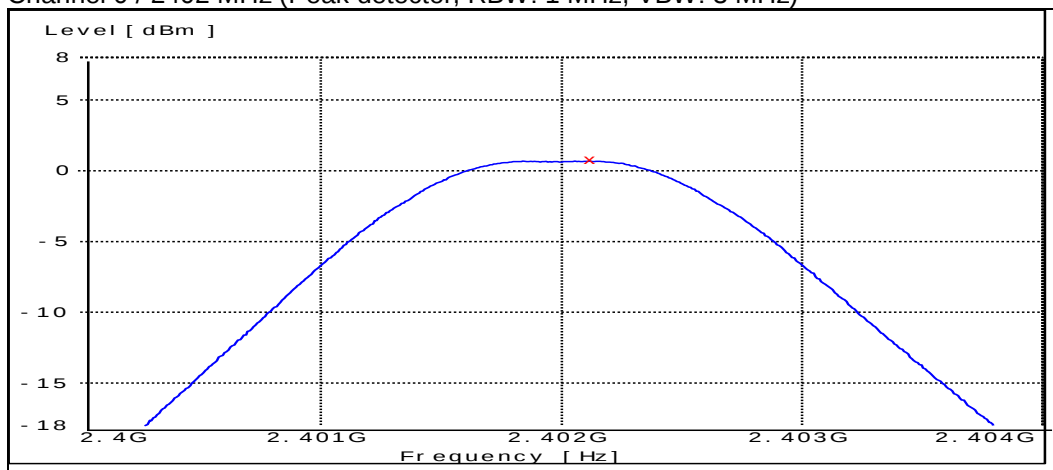
Frequency range [MHz]	Limit [W]	Limit [dBm]
2400 – 2483.5	≤ 1	≤ 30

3.2. Bluetooth Test results

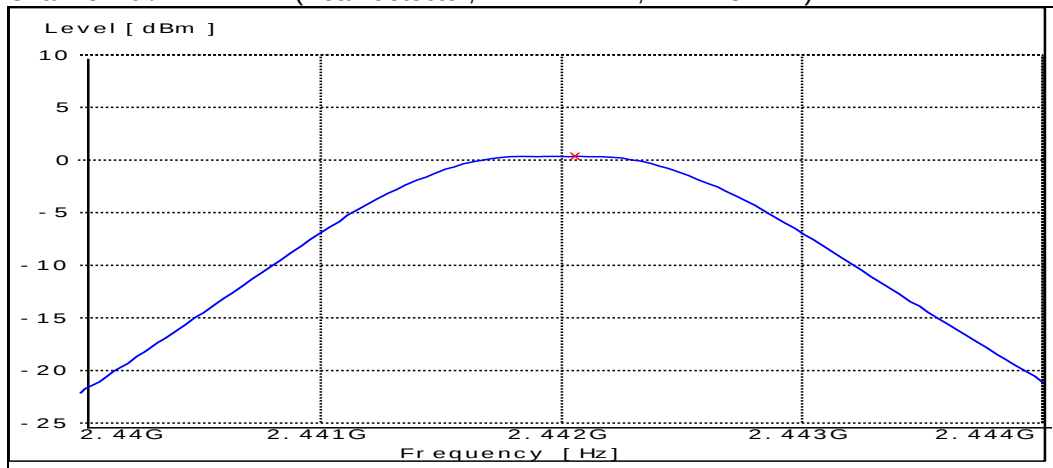
3.2.1 GFSK modulation, PRBS packet type

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
0 / 2402	0.80	1.202	PASSED
40 / 2442	0.40	1.096	PASSED
78 / 2480	0.10	1.023	PASSED

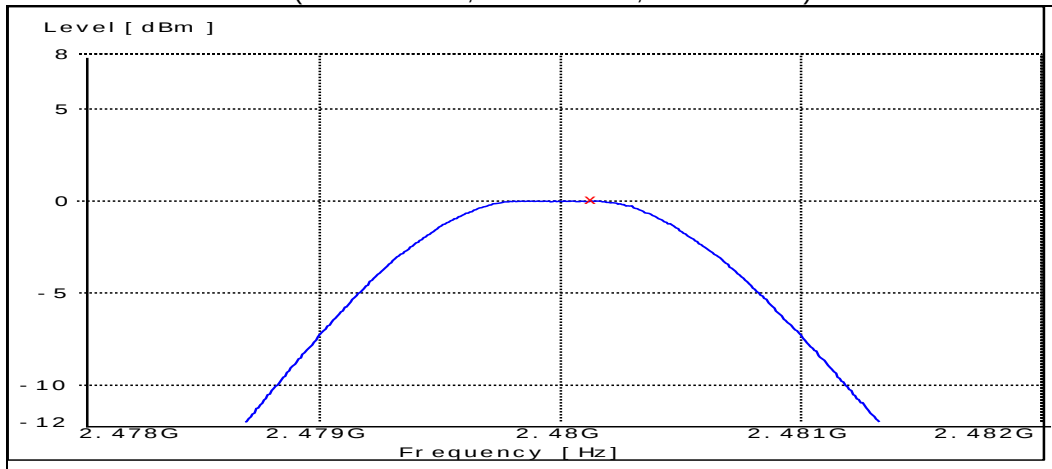
Channel 0 / 2402 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



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



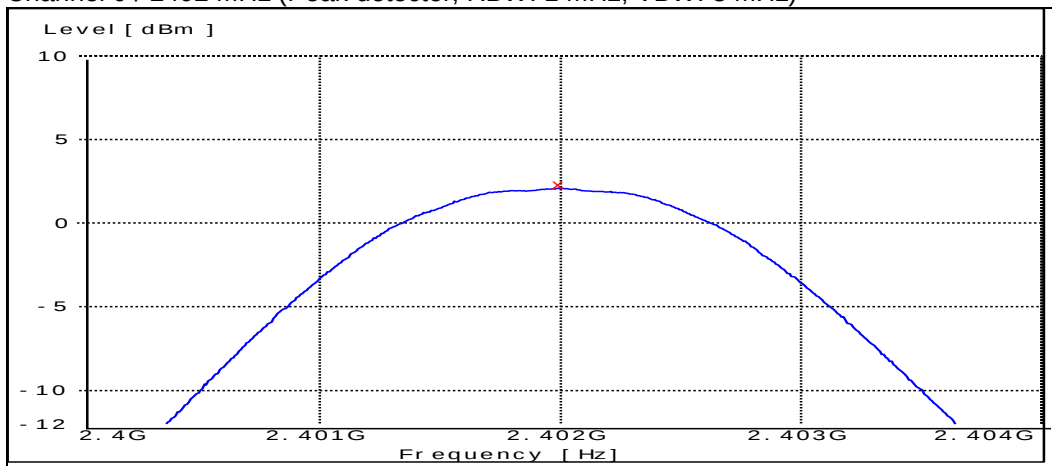
Channel 78 / 2480 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



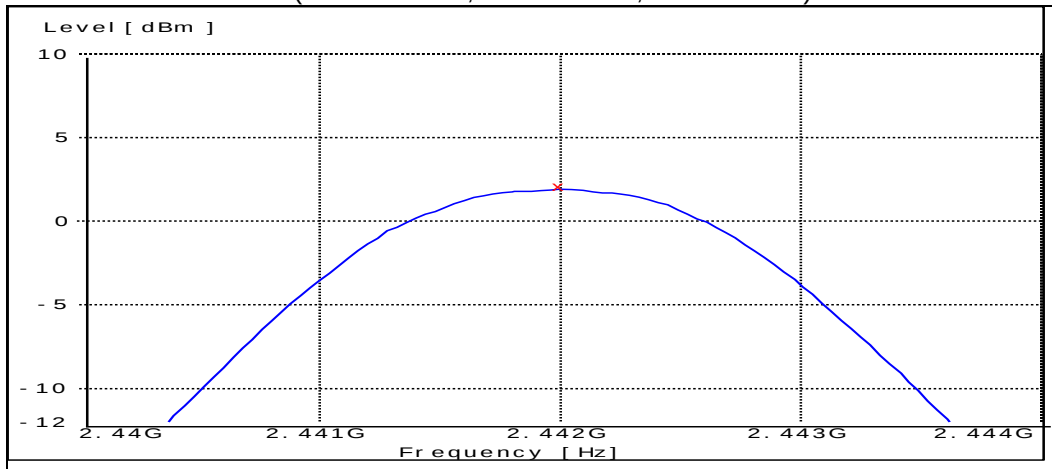
3.2.2 8DPSK modulation, PRBS packet type

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
0 / 2402	2.30	1.698	PASSED
40 / 2442	2.10	1.622	PASSED
78 / 2480	1.80	1.514	PASSED

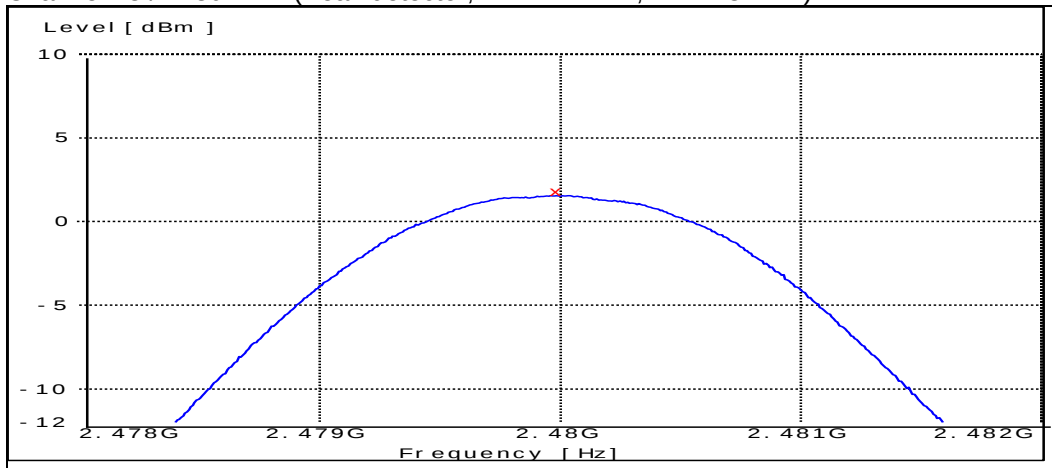
Channel 0 / 2402 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



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



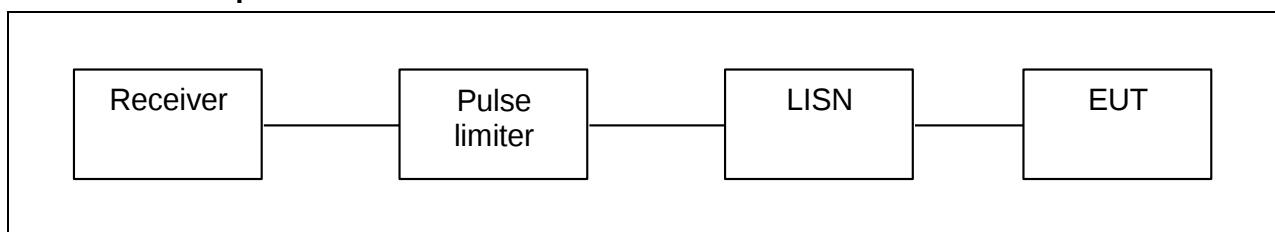
Channel 78 / 2480 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



4. AC powerline conducted emissions (FCC §15.107, ICES-003 section 5.3)

EUT with DUT number	RM-697, DUT 24099
Accessories with DUT numbers	BL-4U, DUT 24091 ; WH-102, DUT 24079 ; AC-8E, DUT 24077
Operation Voltage [V] / [Hz]	115 / 60
Results	none
Remarks	Passed
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 45 / 108
Date of measurements	23-Sep-2010
Measured by	Bo Moltved Christiansen

4.1.1 Test Setup



4.2. Test method and limit

The measurement is made according to ANSI C63.4-2003 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:

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

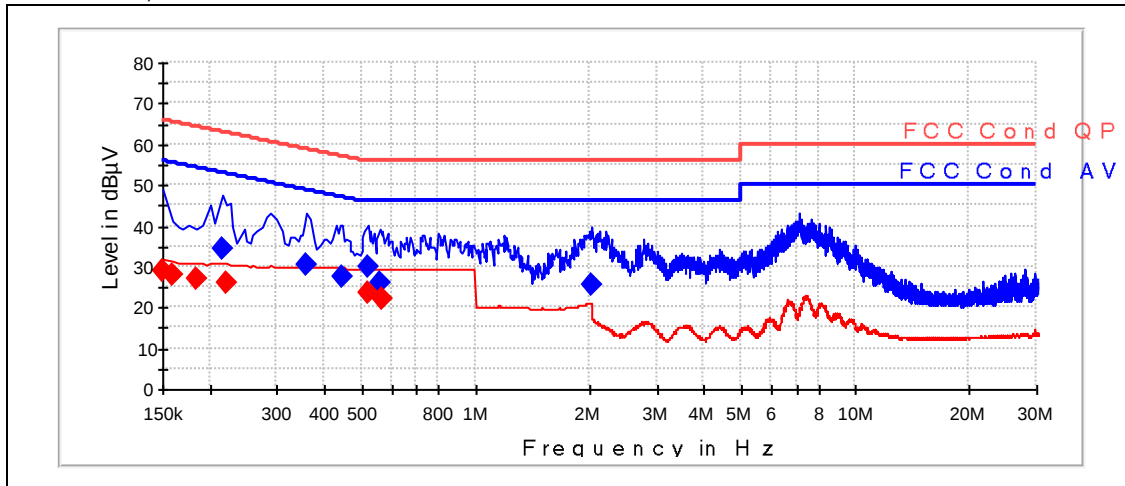
Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable and pulse limiter attenuations.

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

4.3. BT TX Test Results

GFSK mode, channel 42



Quasi peak

Frequency [MHz]	U [dBμV]	IF-BW[kHz]	Line	Margin	Result
0.215	34.49	10	L1	28.51	Passed
0.36	30.2	10	L1	28.53	Passed
0.445	27.44	10	L1	29.57	Passed
0.52	29.76	10	L1	26.2	Passed
0.56	26.01	10	L1	30	Passed
2.015	25.44	10	N	30.6	Passed

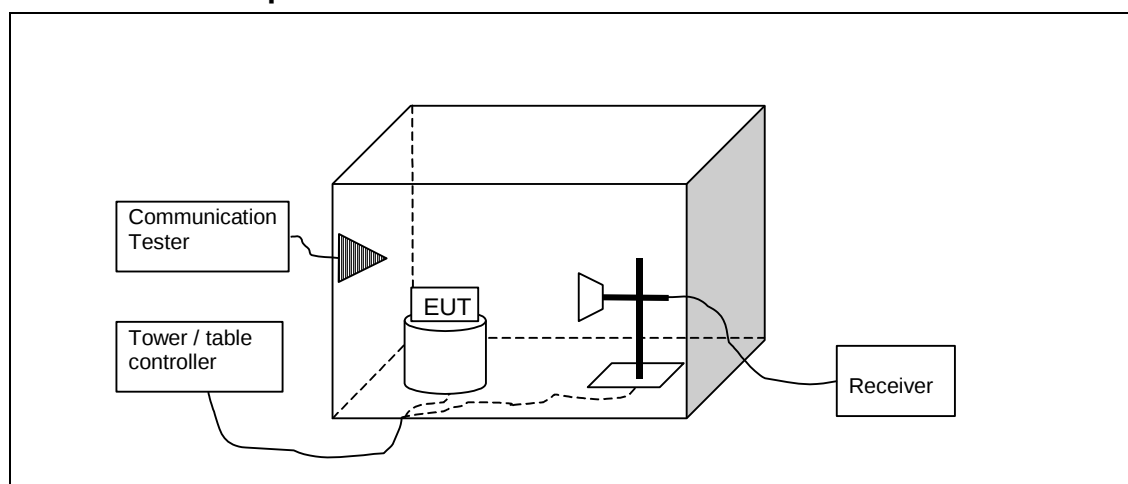
Average

Frequency [MHz]	U [dBμV]	IF-BW[kHz]	Line	Margin	Result
0.15	29.18	10	L1	26.8	Passed
0.16	28.02	10	N	27.46	Passed
0.185	27.19	10	L1	27.06	Passed
0.22	26.06	10	L1	26.72	Passed
0.52	23.8	10	L1	22.2	Passed
0.57	21.94	10	L1	24.1	Passed

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

EUT with DUT number	RM-697, DUT 24092
Accessories with DUT numbers	BL-4U, DUT 24084 ; AC-8E, DUT 24078 ; WH-102, DUT 24079
Operation Voltage [V] / [Hz]	115 / 60
Results	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 45 / 101.1
Date of measurements	14-Sep-2010
Measured by	Christian Andersen

5.1. Test Setup



5.2. Test method and limit

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

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 ($A_{TOT} = L_{CABLES} + A_F - G_{PREAMP}$).

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

5.3. Bluetooth Test results

5.3.1 GFSK modulation, PRBS packet type

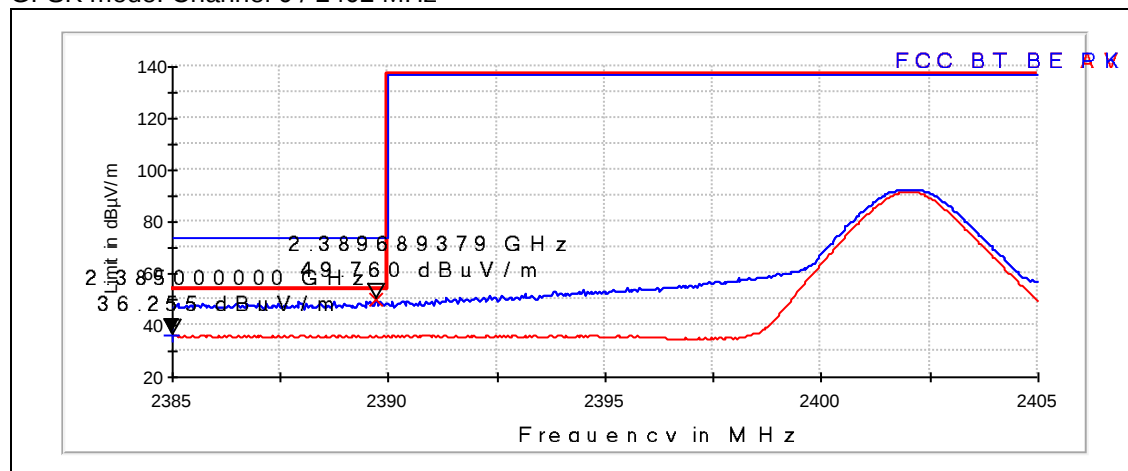
Average (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Result
0 / 2402	36.25	64.972	37.87	-1.62	Passed
Hopping on, low end	37.43	74.353	39.05	-1.62	Passed
78 / 2480	41.99	125.767	43.23	-1.24	Passed
Hopping on, high end	40.94	111.372	42.18	-1.24	Passed

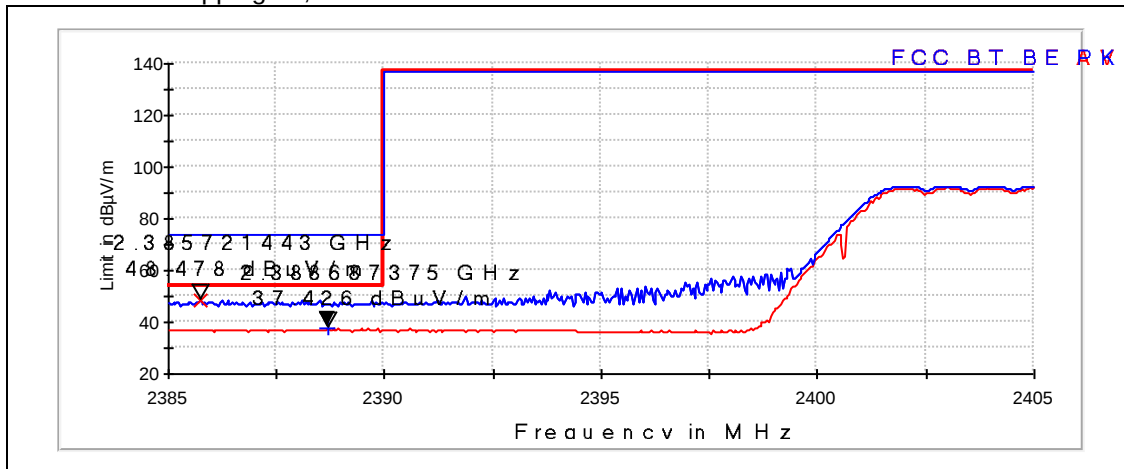
Peak (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Result
0 / 2402	49.76	307.595	51.38	-1.62	Passed
Hopping on, low end	48.48	265.401	50.1	-1.62	Passed
78 / 2480	55.64	605.025	56.88	-1.24	Passed
Hopping on, high end	54.56	534.416	55.8	-1.24	Passed

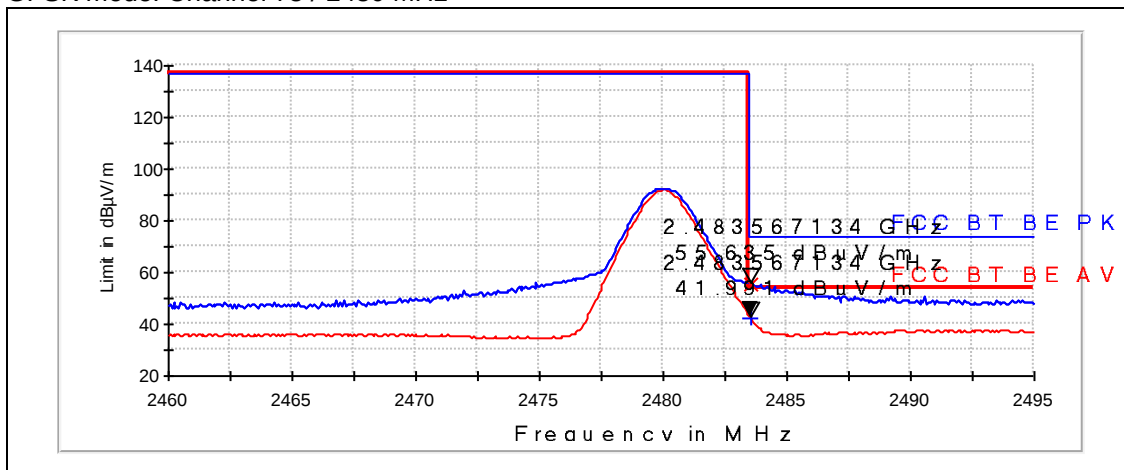
GFSK mode. Channel 0 / 2402 MHz



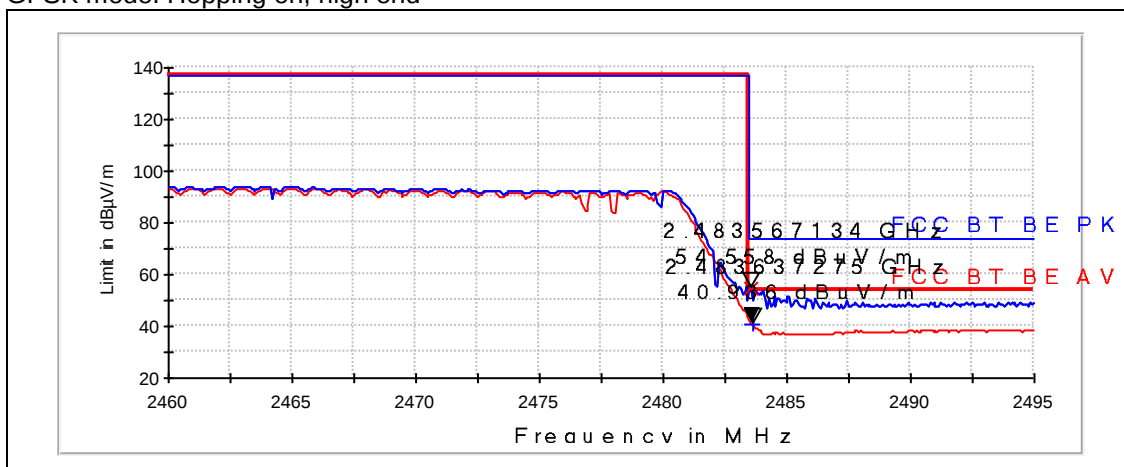
GFSK mode. Hopping on, low end



GFSK mode. Channel 78 / 2480 MHz



GFSK mode. Hopping on, high end



5.3.2 8DPSK modulation, PRBS packet type

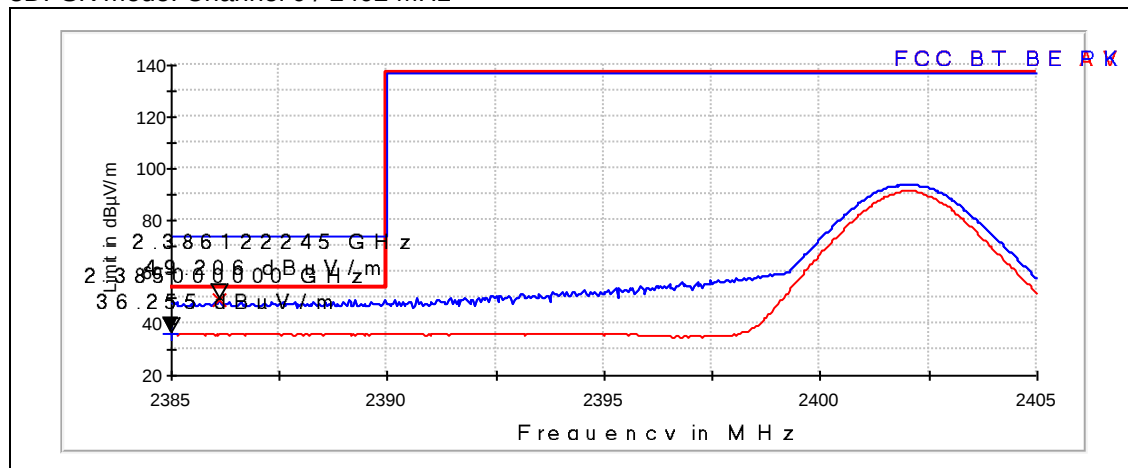
Average (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Result
0 / 2402	36.25	64.972	37.87	-1.62	Passed
Hopping on, low end	37.49	74.921	39.11	-1.62	Passed
78 / 2480	43.79	154.79	45.03	-1.24	Passed
Hopping on, high end	43.79	154.79	45.03	-1.24	Passed

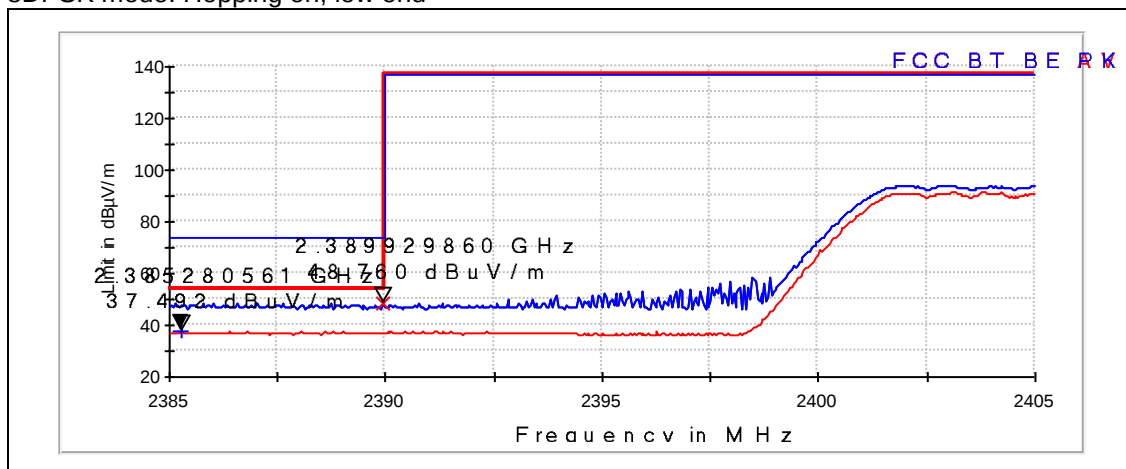
Peak (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Result
0 / 2402	49.21	288.619	50.83	-1.62	Passed
Hopping on, low end	48.76	274.171	50.38	-1.62	Passed
78 / 2480	54.97	560.624	56.21	-1.24	Passed
Hopping on, high end	54.5	530.858	55.74	-1.24	Passed

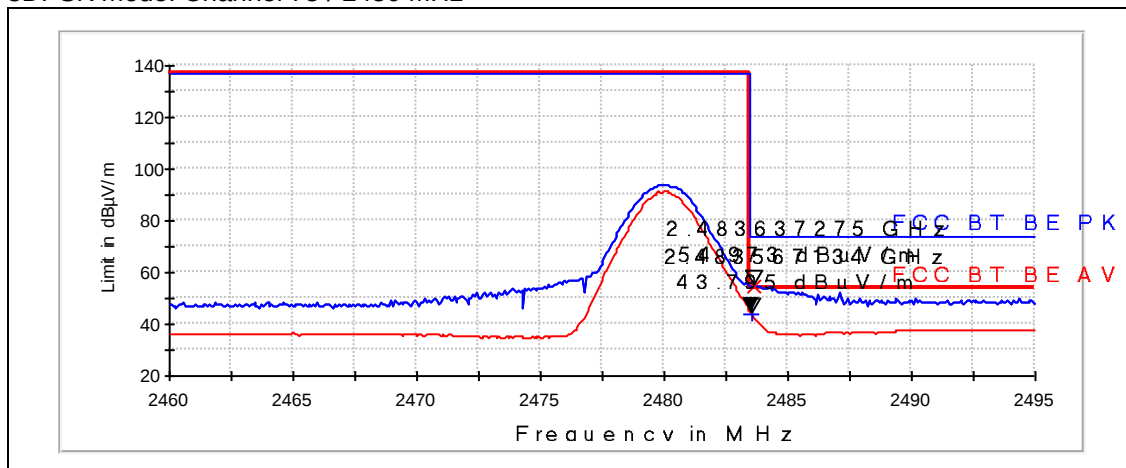
8DPSK mode. Channel 0 / 2402 MHz



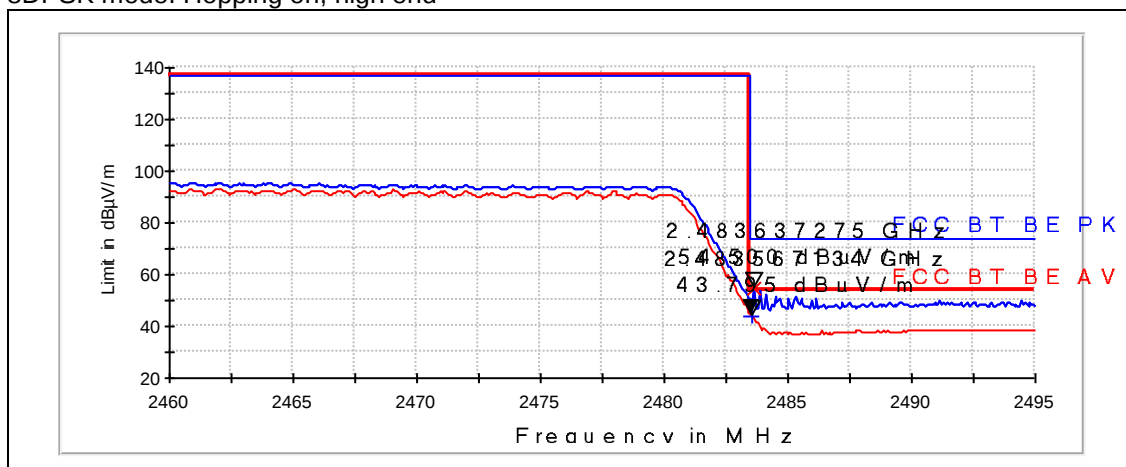
8DPSK mode. Hopping on, low end



8DPSK mode. Channel 78 / 2480 MHz



8DPSK mode. Hopping on, high end



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

EUT with DUT number	RM-697 DUT 24097
Accessories with DUT numbers	BL-4U DUT 24080; AC-8 DUT 24077; WH-102 DUT 24079
Operation Voltage [V] / [Hz]	115V / 60Hz
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24 / 45 / 1022
Date of measurements	2-Sep-2010
Measured by	Ruben Hansen

6.1. Test method and limit

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

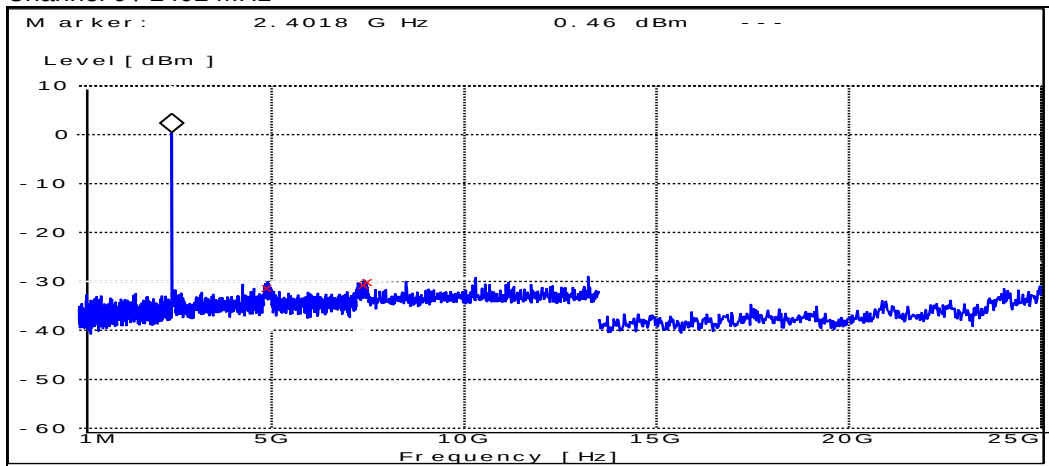
Limits for spurious RF conducted emissions measurements

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

6.2. Bluetooth Test results

6.2.1 GFSK modulation, PRBS packet type

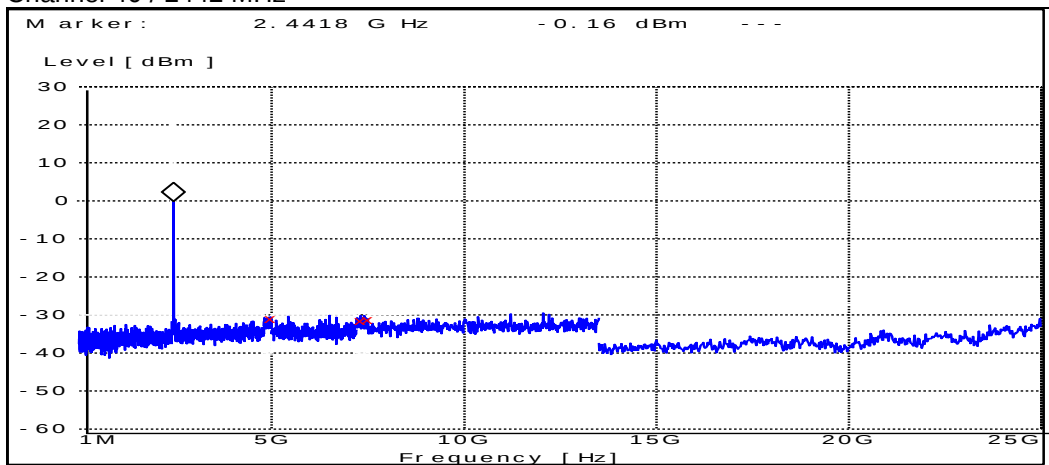
Channel 0 / 2402 MHz



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

Frequency [MHz]	P [dBc]	Result
4888.000000	-31.659824	PASSED
7407.600000	-31.159824	PASSED
7500.000000	-30.559824	PASSED

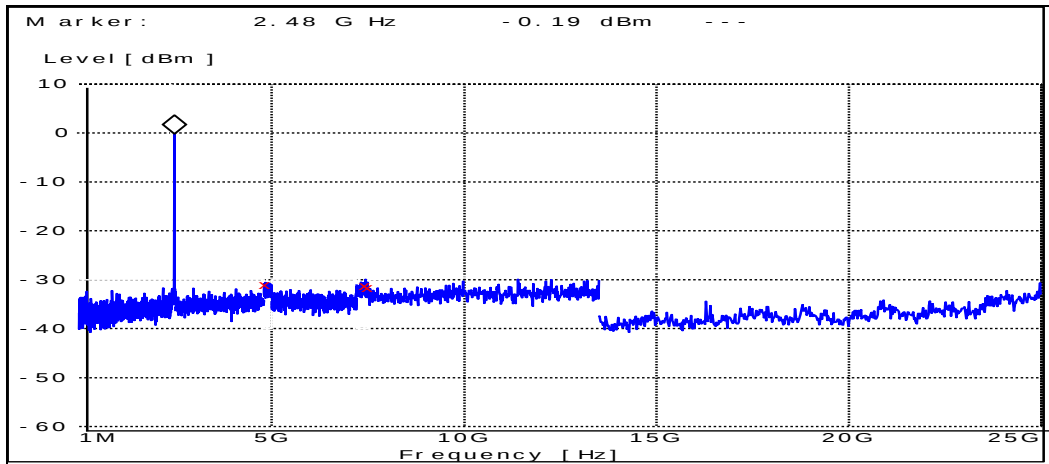
Channel 40 / 2442 MHz



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

Frequency [MHz]	P [dBc]	Result
4980.000000	-30.938928	PASSED
7316.400000	-31.238928	PASSED
7500.000000	-31.138928	PASSED

Channel 78 / 2480 MHz

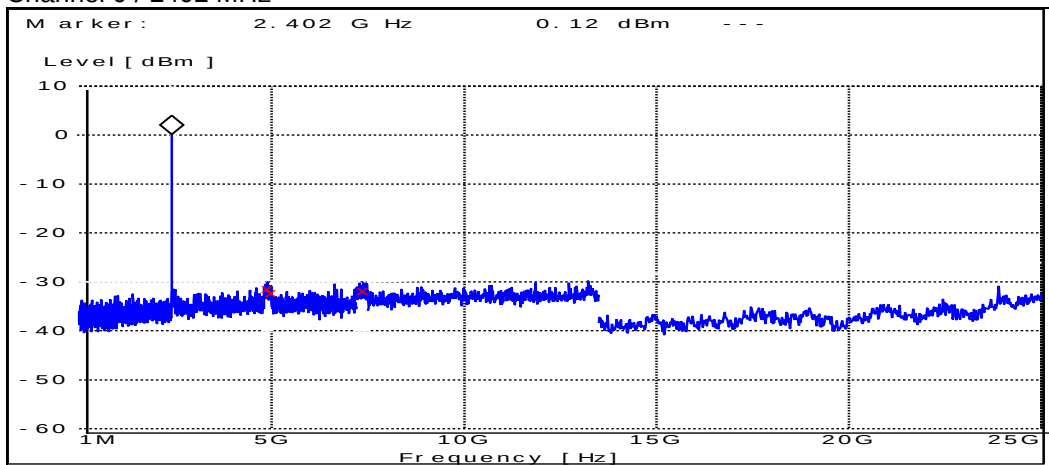


Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4845.600000	-30.913446	PASSED
7440.600000	-31.113446	PASSED
7500.000000	-31.413446	PASSED

6.2.2 8DPSK modulation, PRBS packet type

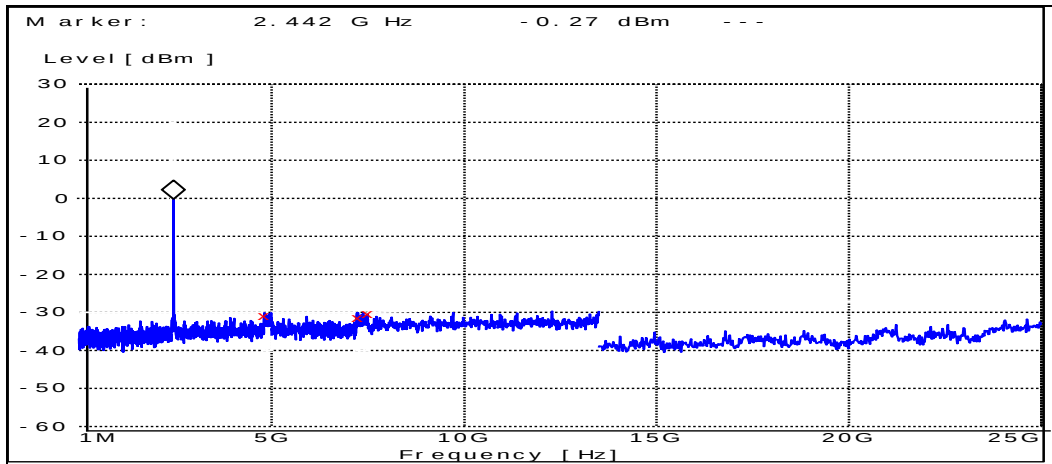
Channel 0 / 2402 MHz



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

Frequency [MHz]	P [dBc]	Result
4900.800000	-31.423528	PASSED
5000.000000	-32.223528	PASSED
7381.800000	-31.923528	PASSED

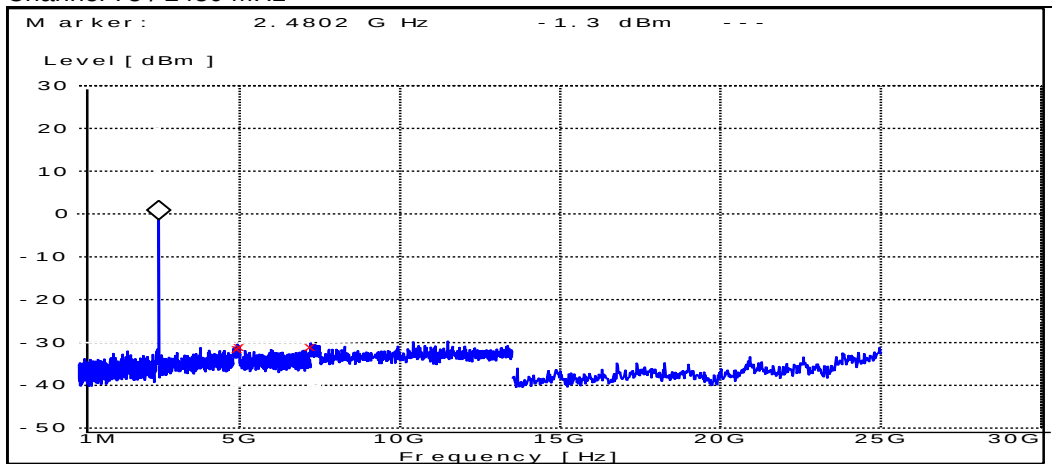
Channel 40 / 2442 MHz



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

Frequency [MHz]	P [dBc]	Result
4816.000000	-30.628607	PASSED
7249.800000	-31.028607	PASSED
7500.000000	-30.128607	PASSED

Channel 78 / 2480 MHz



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

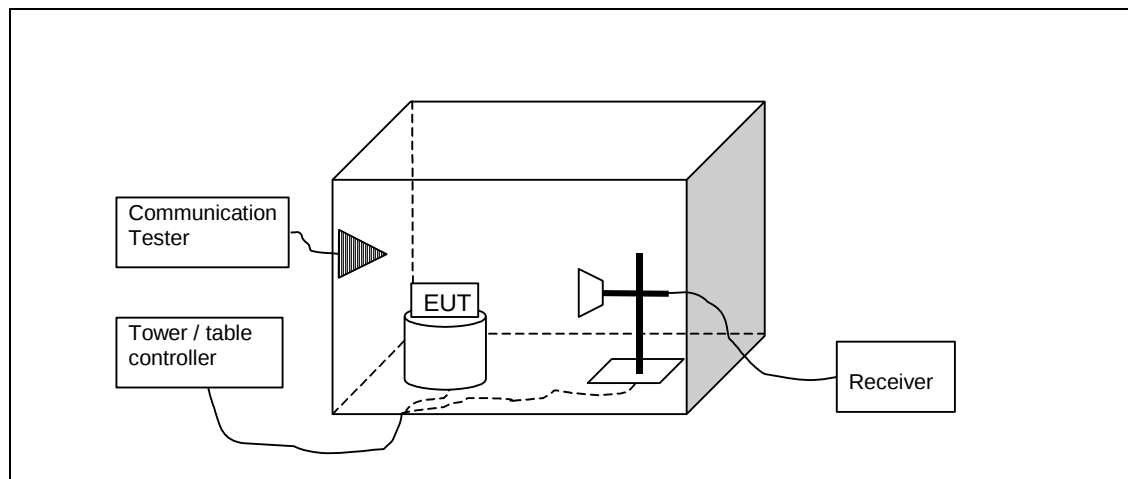
Frequency [MHz]	P [dBc]	Result
4931.600000	-30.199631	PASSED
5000.000000	-29.599631	PASSED
7219.200000	-29.599631	PASSED

7.

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

EUT with DUT number	RM-697, DUT 24092
Accessories with DUT numbers	BL-4U, DUT 24084 ; AC-8E, DUT 24078 ; WH-102, DUT 24079
Operation Voltage [V] / [Hz]	115 V / 60Hz
Results	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [hPa]	23 / 41 / 998
Date of measurements	14-Sep-2010
Measured by	Christian Andersen

8.1. Test Setup



8.2. 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 ($A_{TOT} = L_{CABLES} + A_F - G_{PREAMP}$).

Limits for spurious radiated emissions measurements (3 m measurement distance)

Frequency range [MHz]	Limit [$\mu V/m$]	Limit [dB $\mu V/m$]	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

8.3. Bluetooth Test results

8.3.1 GFSK modulation, PRBS packet type

Channel 0 / 2402 MHz

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

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
10863.829	57.97	791.134	40.01	17.96	HORIZONTAL	PASSED
11516.632	56.5	668.575	38.17	18.33	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
10863.829	44.1	160.398	26.14	17.96	HORIZONTAL	PASSED
11516.632	43.72	153.515	25.39	18.33	HORIZONTAL	PASSED

Channel 40 / 2442 MHz

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

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4803.7	45.54	189.169	43.73	1.81	HORIZONTAL	PASSED
7206	50.14	321.44	38.68	11.46	VERTICAL	PASSED

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

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4803.7	28.14	25.515	26.33	1.81	HORIZONTAL	PASSED
7206	37.27	73.047	25.81	11.46	VERTICAL	PASSED

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

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
31.596	26.11	20.202	32.22	-6.11	VERTICAL	PASSED
42.564	12.71	4.318	26.09	-13.38	HORIZONTAL	PASSED
72.495	33.31	46.265	53.07	-19.76	VERTICAL	PASSED
72.955	32.62	42.771	52.31	-19.69	VERTICAL	PASSED
73.216	32.87	43.985	52.53	-19.66	VERTICAL	PASSED

Channel 78 / 2480 MHz

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

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4959.8	44.26	163.211	41.92	2.34	HORIZONTAL	PASSED
7441.9	50.17	322.367	38.56	11.61	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4959.8	29.48	29.789	27.14	2.34	HORIZONTAL	PASSED
7441.9	36.88	69.783	25.27	11.61	HORIZONTAL	PASSED

8.3.2 8DPSK modulation, PRBS packet type

Channel 0 / 2402 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
4804.6	43.85	155.74	42.04	1.81	HORIZONTAL	PASSED
7205.7	51.82	389.807	40.39	11.43	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
4804.6	28.02	25.183	26.21	1.81	HORIZONTAL	PASSED
7205.7	37.29	73.173	25.86	11.43	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
30.87	20.18	10.206	25.8	-5.62	VERTICAL	PASSED
72.802	22.63	13.533	42.35	-19.72	VERTICAL	PASSED
72.905	21.67	12.124	41.37	-19.7	VERTICAL	PASSED
73.674	20.09	10.106	39.69	-19.6	VERTICAL	PASSED
557.833	15.95	6.273	26.51	-10.56	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
10851.503	56.82	693.186	38.93	17.89	HORIZONTAL	PASSED
11494.488	56.56	673.287	37.92	18.64	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
10851.503	43.8	154.81	25.91	17.89	HORIZONTAL	PASSED
11494.488	43.81	155.078	25.17	18.64	VERTICAL	PASSED

Channel 78 / 2480 MHz

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

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4958.9	42.36	131.19	40.01	2.35	HORIZONTAL	PASSED
7441.8	49.54	299.813	37.93	11.61	VERTICAL	PASSED

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

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4958.9	29.47	29.747	27.12	2.35	HORIZONTAL	PASSED
7441.8	36.77	68.921	25.16	11.61	VERTICAL	PASSED

9. 20 dB bandwidth (FCC §15.247(a)(1), RSS-210 A8.1 (a))

EUT with DUT number	RM-697 DUT 24097
Accessories with DUT numbers	BL-4U DUT 24080; AC-8 DUT 24077; WH-102 DUT 24079
Operation Voltage [V] / [Hz]	115V / 60Hz
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24 / 45 / 1022
Date of measurements	2-Sep-2010
Measured by	Ruben Hansen

9.1. 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

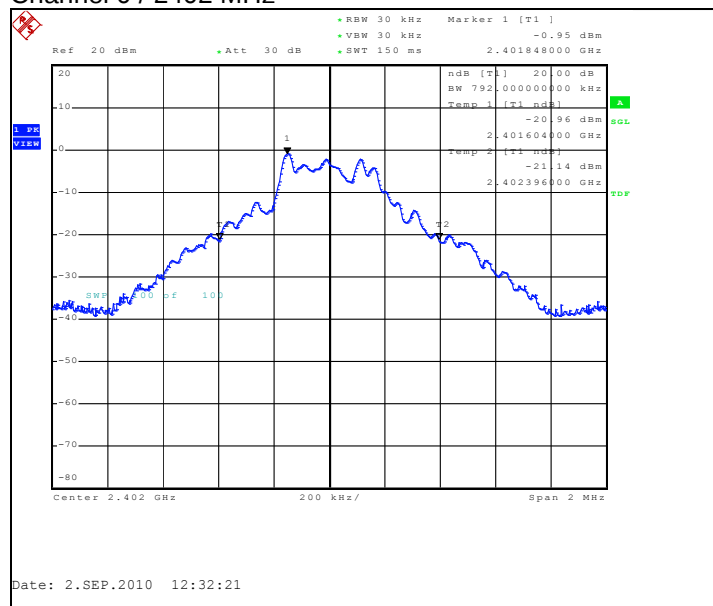
Limit [MHz]
N/A

9.2. Bluetooth Test results

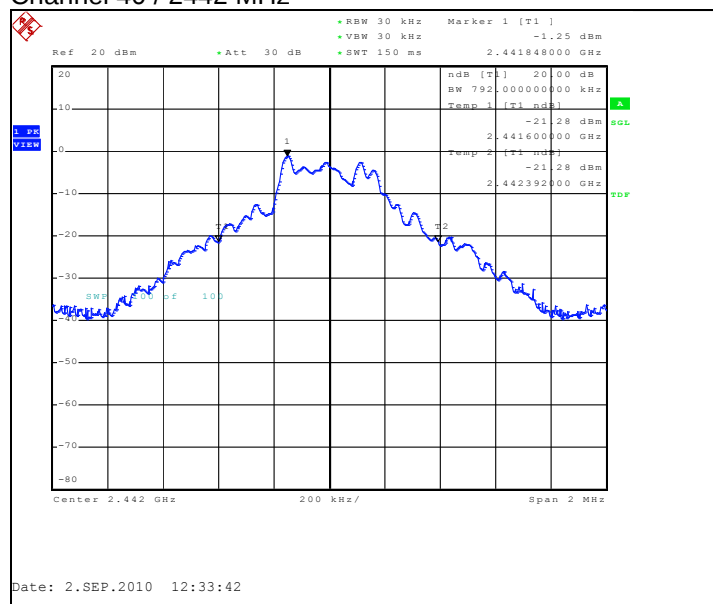
9.2.1 GFSK modulation, PRBS packet type

Channel / f _c [MHz]	20 dB bandwidth [kHz]	Result
0 / 2402	792.000	PASSED
40 / 2442	792.000	PASSED
78 / 2480	768.000	PASSED

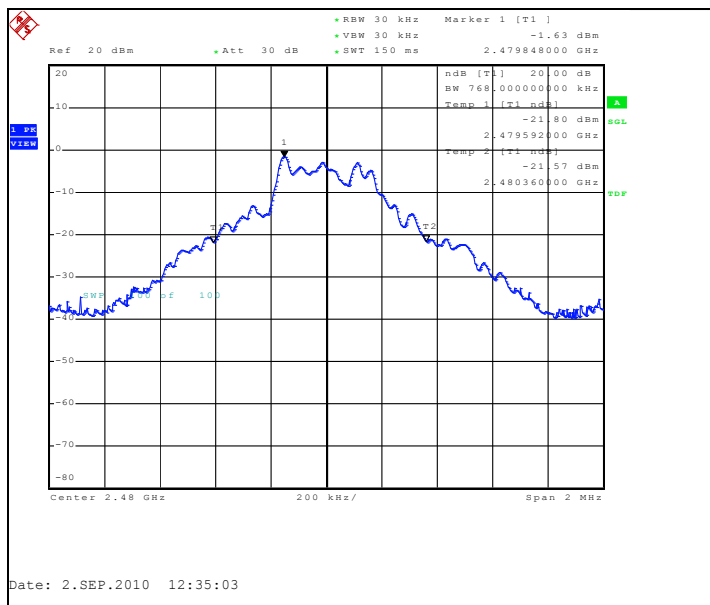
Channel 0 / 2402 MHz



Channel 40 / 2442 MHz



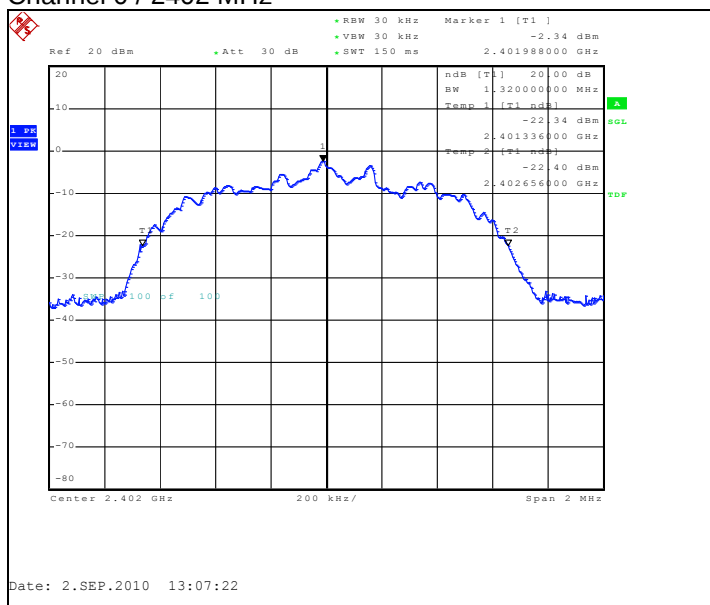
Channel 78 / 2480 MHz



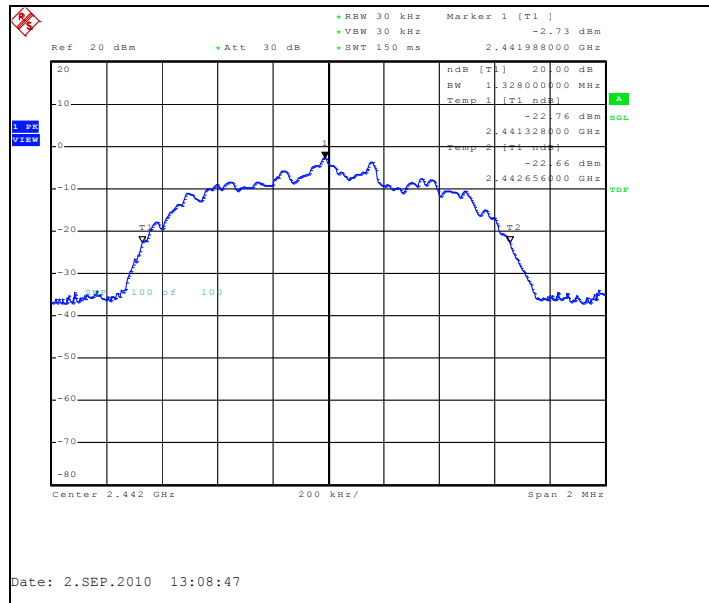
9.2.2 8DPSK modulation, PRBS packet type

Channel / f_c [MHz]	20 dB bandwidth [kHz]	Result
0 / 2402	1320.000	PASSED
40 / 2442	1328.000	PASSED
78 / 2480	1328.000	PASSED

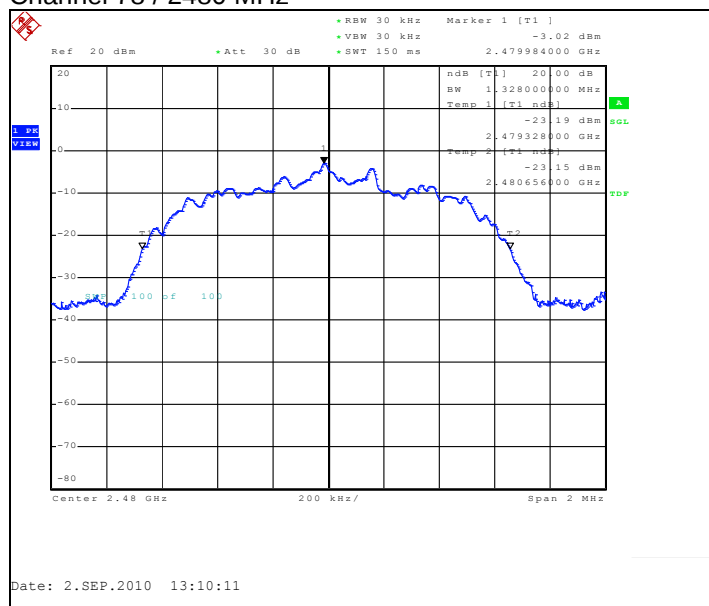
Channel 0 / 2402 MHz



Channel 40 / 2442 MHz



Channel 78 / 2480 MHz



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

EUT with DUT number	RM-697 DUT 24097
Accessories with DUT numbers	BL-4U DUT 24080; AC-8 DUT 24077; WH-102 DUT 24079
Operation Voltage [V] / [Hz]	115V / 60Hz
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24 / 45 / 1022
Date of measurements	2-Sep-2010
Measured by	Ruben Hansen

10.1. 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

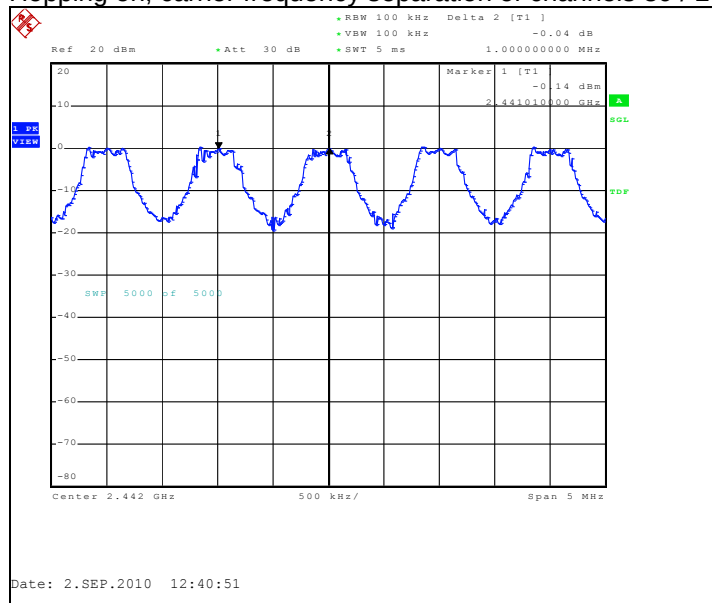
Limit [MHz]
≥ 0.025 or 2/3 of the 20 dB bandwidth

10.2. Bluetooth Test results

10.2.1 GFSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
1000	PASSED

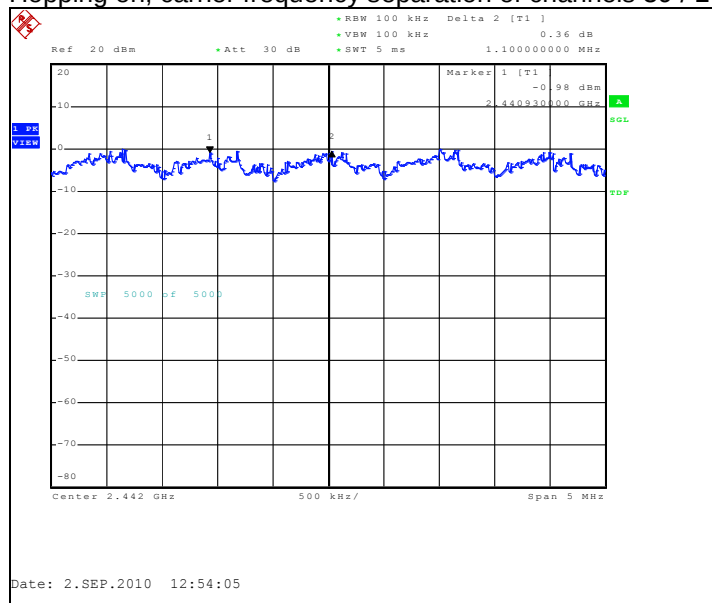
Hopping on, carrier frequency separation of channels 39 / 2441 MHz and 40 / 2442 MHz



10.2.2 8DPSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
1100	PASSED

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



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

EUT with DUT number	RM-697 DUT 24097
Accessories with DUT numbers	BL-4U DUT 24080; AC-8 DUT 24077; WH-102 DUT 24079
Operation Voltage [V] / [Hz]	115V / 60Hz
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24 / 45 / 1022
Date of measurements	2-Sep-2010
Measured by	Ruben Hansen

11.1. 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

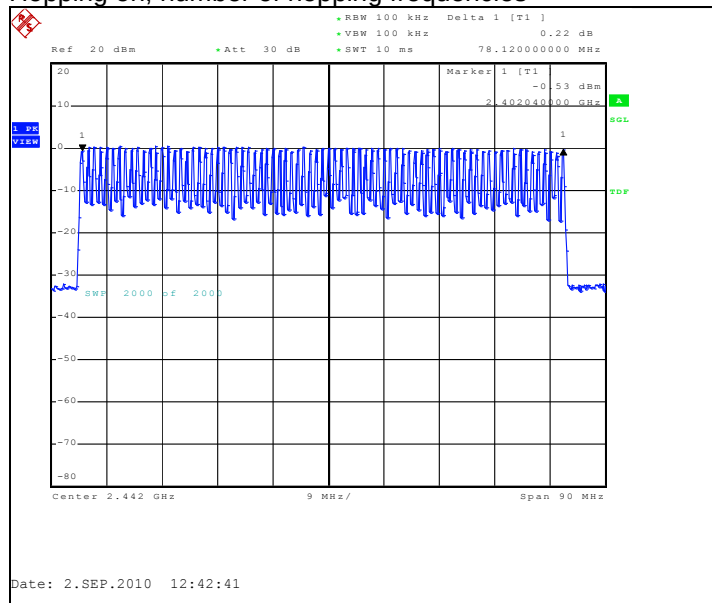
Limit [number]
≥ 15

11.2. Bluetooth Test results

11.2.1 GFSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
78	PASSED

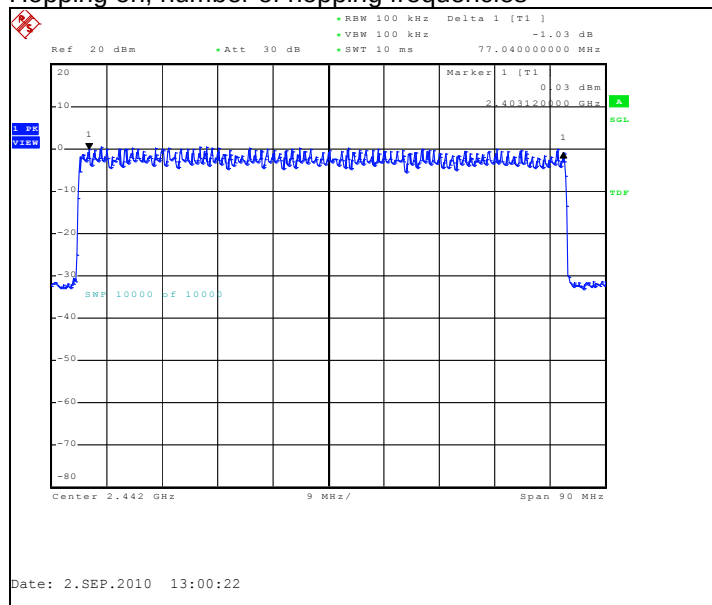
Hopping on, number of hopping frequencies



11.2.2 8DPSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
68	PASSED

Hopping on, number of hopping frequencies



12. Time of occupancy (FCC §15.247(a)(1)(iii), RSS-210 A8.1 (d))

EUT with DUT number	RM-697 DUT 24097
Accessories with DUT numbers	BL-4U DUT 24080; AC-8 DUT 24077; WH-102 DUT 24079
Operation Voltage [V] / [Hz]	115V / 60Hz
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24 / 45 / 1022
Date of measurements	2-Sep-2010
Measured by	Ruben Hansen

12.1. 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

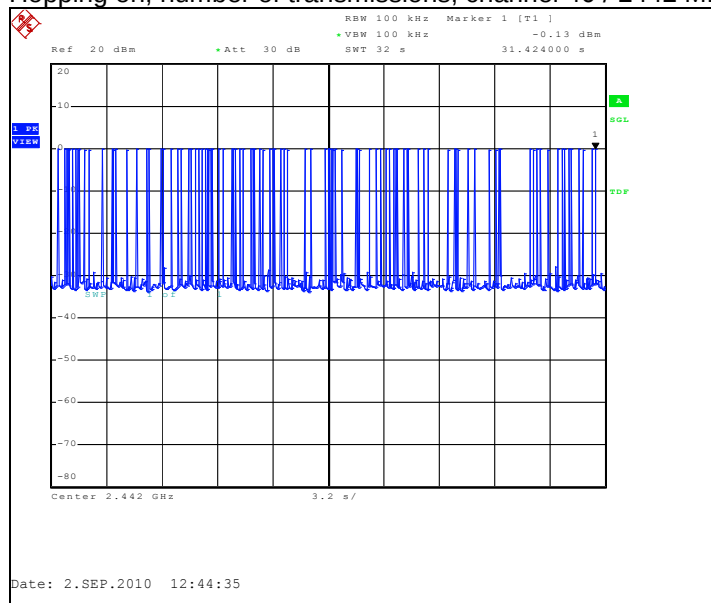
Limit [s]
≤ 0.4

12.2. Bluetooth test results

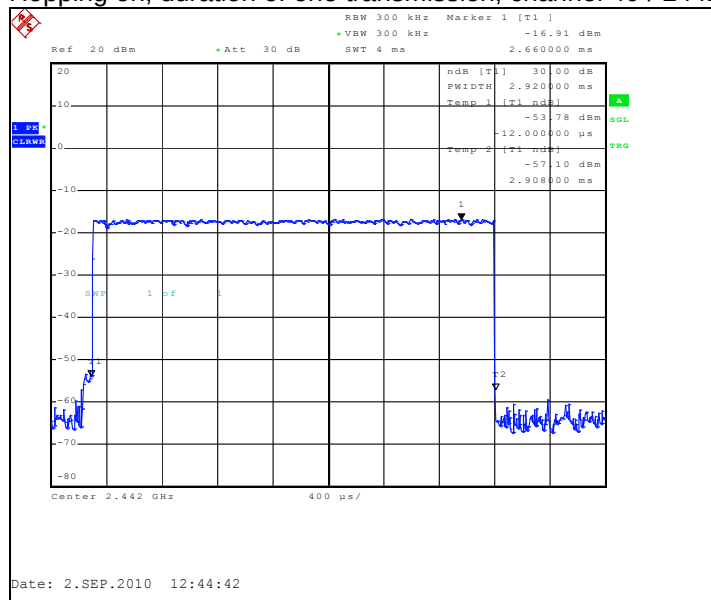
12.2.1 GFSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [μs]	Time of occupancy [s]	Result
87	2,920	0.254040	PASSED

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



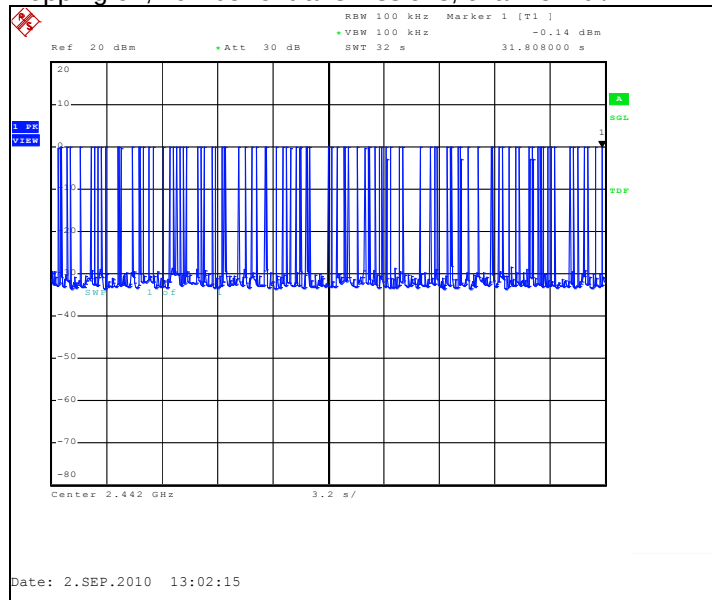
Hopping on, duration of one transmission, channel 40 / 2442 MHz



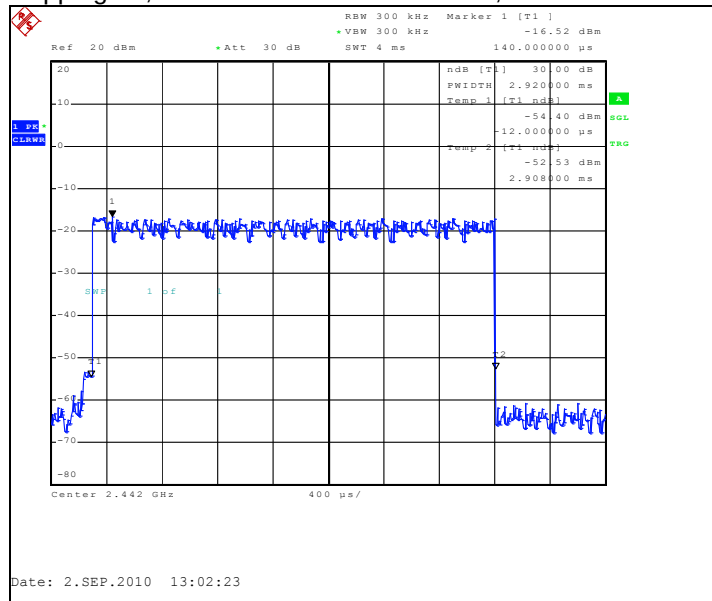
12.2.2 8DPSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [μs]	Time of occupancy [s]	Result
91	2,920	0.265720	PASSED

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



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



13.

14. Test Equipment

14.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
20168	Bluetooth Tester	CBT	Rohde&Schwarz	22/24/27, 15C, 15B
18772	Shielded Chamber	RFD-100	ETS-Lindgren	15C, 15B
13037	Power Supply 0-15V 10A	EA3012	LP Instruments	15C, 15B
13513	Pulse Limiter	ESH3Z2	Rohde&Schwarz	15C, 15B
13666	Receiver	ESPC	Rohde&Schwarz	15C, 15B
13935	LISN	ESH3-Z5	Rohde&Schwarz	15C, 15B
16995	Directional Coupler 20dB 0,5-2,0 GHz SMA Conn.	1538RA-20	Weinschel	15C, 15B
18772	Shielded Chamber	RFD-100	ETS-Lindgren	15C, 15B
19171	Communication Tester	CMU200	Rohde&Schwarz	15C, 15B
11386	DC Power Supply	HP6632A	Hewlett Packard	22/24/27, 15C, 15B
19678	Spectrum Analyzer	FSP	Rohde&Schwarz	22/24/27, 15C, 15B
16601	Communication Tester	CMU200	Rohde&Schwarz	22/24/27, 15C, 15B
19625	Climatic Chamber	VT4002EMC	Vötsch	22/24/27, 15C, 15B
13357	Signal Generator	SMP02	Rohde&Schwarz	22/24/27, 15C, 15B
19116	Power splitter	-	various	22/24/27, 15C, 15B
20544	Transformer. 230/115V	-	Nokia	22/24/27, 15C, 15B
20543	UPS. 700V/A 490W	PW 9120 700i	Powerware	22/24/27, 15C, 15B

14.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
18792	Mast/turntable controller	2090	ETS-EMCO	22/24/27, 15C, 15B
18416	Communication Tester	CMU200	Rohde&Schwarz	22/24/27, 15C, 15B
20168	Bluetooth Tester	CBT	Rohde&Schwarz	22/24/27, 15C, 15B
13077	Power Supply	EA-3016	-	22/24/27, 15C, 15B
15742	Programmable Relay Switching System	-----	Pickering	22/24/27, 15C, 15B
20078	Relay 2x6 Chnl μ Wave Mux	10-785B-522	Pickering	22/24/27, 15C, 15B
14021	Relay Dual 6 Chnl μ Wave Mux	10-785-522	-	22/24/27, 15C, 15B
-	Relay Dual 6 Chnl μ Wave Mux	10-785-522	-	22/24/27, 15C, 15B
17644	Dual 6 Channel MUX Microwave Relay SMA 50 Ohm	10-785-522	Pickering	22/24/27, 15C, 15B
16948	Dual 6 Channel MUX Microwave Relay SMA 50 Ohm	10-785-522	Pickering	22/24/27, 15C, 15B
16949	Dual 6 Channel MUX Microwave Relay SMA 50 Ohm	10-785-522	Pickering	22/24/27, 15C, 15B
18861	Receiver	EMI Test Receiver 20Hz-26,5GHz ESI	Rohde&Schwarz	22/24/27, 15C, 15B
18860	Antenna	HL562	Rohde&Schwarz	22/24/27, 15C, 15B
18773	Anechoic chamber	RFD-100	ETS-Lindgren	22/24/27, 15C, 15B
18774	Anechoic chamber	RFSD-F/A-100	ETS-Lindgren	22/24/27, 15C, 15B
19151	High Pass Filter	WHJS3000-10SS	Wainwright	22/24/27, 15C, 15B
13937	Band reject filter	WRCA902.4-0.2/40-6SS	Wainwright Instruments	22/24/27, 15C, 15B
13936	Band reject filter	WRCD1747.5-0.2/40-10SS	Wainwright Instruments	22/24/27, 15C, 15B
14114	Highpass Filter	WHK1000-12SS	Wainwright Instruments	22/24/27, 15C, 15B

Eq. No	Equipment	Type	Manufacturer	Used in
14188	Band reject filter	WRCA902.4-0.2/40-6SS	Wainwright	22/24/27, 15C, 15B
14187	Band reject filter	WRCD1747.5-0.2/40-10SS	Wainwright	22/24/27, 15C, 15B
16633	Band reject filter	WRCD1880.0-0.2/40-10SS	Wainwright	22/24/27, 15C, 15B
19587	Band reject filter	WRCG2400/2483-2390/2493-35/10SS	Wainwright	22/24/27, 15C, 15B
20115	Band reject filter	-	Wainwright	22/24/27, 15C, 15B
20114	Band reject filter	WRCG1737/1743-1733/1747-40/6SS	Wainwright	22/24/27, 15C, 15B
20116	Band reject filter	WRCG832/83/-825/845-40/5SS	Wainwright	22/24/27, 15C, 15B
20698	Antenna	BBHA 9120 D	SCHWARZBECK	22/24/27, 15C, 15B
19966	Antenna	HFH2-Z2	Rohde&Schwarz	15C, 15B
13799	Signal Generator	SMP02	Rohde&Schwarz	22/24/27, 15C, 15B
15191	Turntable Contoller Unit	G-800SDX	YAESU	22/24/27, 15C, 15B
14900	Antenna Controller	HD100	HD GmbH	22/24/27, 15C, 15B
20544	Transformer. 230/115V	-	Nokia	22/24/27, 15C, 15B
20543	UPS. 700V/A 490W	PW 9120 700i	Powerware	22/24/27, 15C, 15B