

FCC Part 15C Compliance Test Report

Test Report no.:	FCC15CBT_RM-852_08.docx	Date of Report:	15-Jun-2012
Number of pages:	28	Customer's Contact person:	Zhang Wei
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FCC listing no.:	975940		
IC recognition no.:	661AH-1		
Tested devices/ accessories:	Phone RM-852 / Battery BL-4U / AC Charger AC-11E / Headset WH-102		
FCC ID:	QTLRM-852	IC:	661AB-RM852
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-210 (Issue 8, December 2010). 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:			

Zou Ming, Engineer, EMC

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	23-May-2012
Testing completed	30-May-2012
The customer's contact person	Zhang Wei
Test Plan referred to	T:\Projects\RM-844\TestPlan\RS_testplan_RM-844.xls
Notes	-
Document name	FCC15CBT_RM-852_08.docx

1.1. EUT and Accessory Information

The EUT is a mobile phone with following features:

GSM/Bluetooth

The EUT is tested with maximum rated TX power, modulated with pseudo random bit sequence (PRBS9).

Devices under tests

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-844	004402138815463	0204	-	tn12w19	52742
Battery	BL-4U	4955402032021202681;0670560	-	-	-	52752
AC-Charger	AC-11E	4090491466160502548;0675479	-	-	-	52754
Headset	WH-102	0694323152311D23538	-	-	-	52755
Phone	RM-844	004402138815992	0204	-	tn12w19	52748
Battery	BL-4U	4955402032021202846;0670560	-	-	-	52750
AC-Charger	AC-11E	4090491466160502548;0675479	-	-	-	52754
Headset	WH-102	0694323152311D23538	-	-	-	52755

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(0.4(2))	Conducted peak output power	PASSED
15.247(d), 15.205(b)	A8(0.5)	Band edge compliance of RF emissions	NP
15.247(d)	A8(0.5)	Spurious RF conducted emissions	PASSED
15.247(d), 15.209	A8(0.5)	Spurious radiated emissions	NP
15.207	7.2.2	AC powerline conducted emissions	PASSED
15.247(a)(1)	A8(0.1(1))	20dB(bandwidth)	PASSED
15.247(a)(1)	A8(0.1(2))	Carrier frequency separation	PASSED
15.247(a)(1)(iii)	A8(0.1(4))	Number of hopping frequencies	PASSED
15.247(a)(1)(iii)	A8(0.1(4))	Time of occupancy	PASSED

PASSED

The EUT complies with the essential requirements in the standard.

FAILED

The EUT does not comply with the essential requirements in the standard.

NP

The test was not performed by the TCC Nokia Laboratory.

The test results of QTLRM-844 are re-used for certification of the QTLRM-852. The table above indicates the results, which will be re-used.

CONTENTS

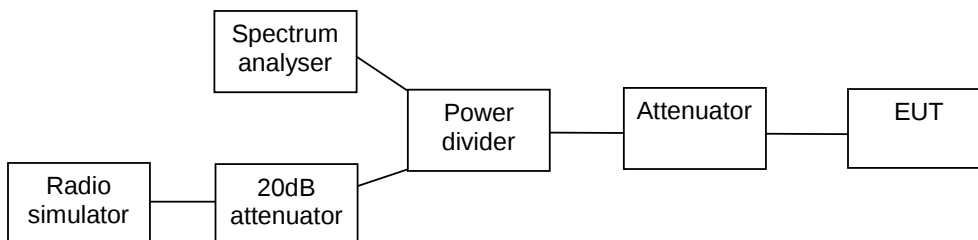
1. Summary for FCC Part 15C Compliance Test Report.....	2
1.1. EUT and Accessory Information.....	2
1.2. Summary of Test Results.....	2
2. Conducted peak output power (15.247(b)(1), RSS-210 A8.4 (2))	5
2.1. Test Setup.....	5
2.2. Test method and limit.....	5
2.3. Bluetooth Test results	6
3. Spurious RF conducted emissions (FCC §15.247(d), RSS-210 A8.5).....	9
3.1. Test Setup.....	9
3.2. Test method and limit.....	9
3.3. Bluetooth Test results	10
4. AC powerline conducted emissions FCC §15.207, RSS-GEN 7.2.2	13
4.1. Test Setup.....	13
4.2. Test method and limit.....	13
4.3. Test results	14
5. 20 dB bandwidth 15.247(a)(1), A8.1 (a).....	15
5.1. Test Setup.....	15
5.2. Test method and limit.....	15
5.3. Bluetooth Test results	16
6. Carrier frequency separation 15.247(a)(1), A8.1 (b)	19
6.1. Test Setup.....	19
6.2. Test method and limit.....	19
6.3. Bluetooth Test results	20
7. Number of hopping frequencies 15.247(a)(1)(iii), A8.1 (d)	22
7.1. Test Setup.....	22
7.2. Test method and limit.....	22
7.3. Bluetooth Test results	23
8. Time of occupancy 15.247(a)(1)(iii), A8.1 (d)	25
8.1. Test Setup.....	25

8.2.	Test method and limit.....	25
8.3.	Bluetooth Test results	26
9.	Test Equipment.....	28
9.1.	Conducted measurements	28
9.2.	Radiated measurements	28

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

EUT with DUT number	RM-844, DUT 52742
Accessories with DUT numbers	BL-4U, DUT 52752 ; AC-11E, DUT 52754 ; WH-102, DUT 52755
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23/43/101.3
Date of measurements	29-May-2012
Measured by	Gao Sherina

2.1. Test Setup



2.2. 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

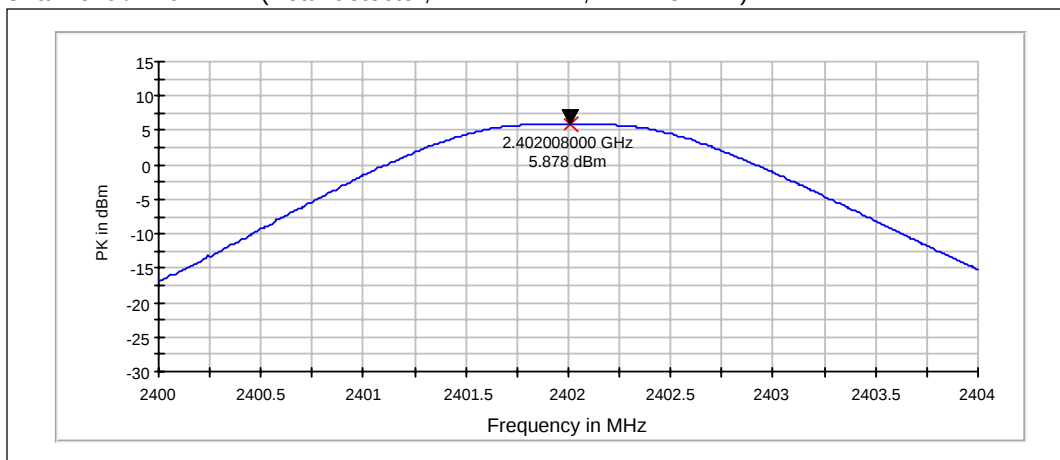
Frequency range [MHz]	Limit [W]	Limit [dBm]
2400 – 2483.5	≤ 1	≤ 30

2.3. Bluetooth Test results

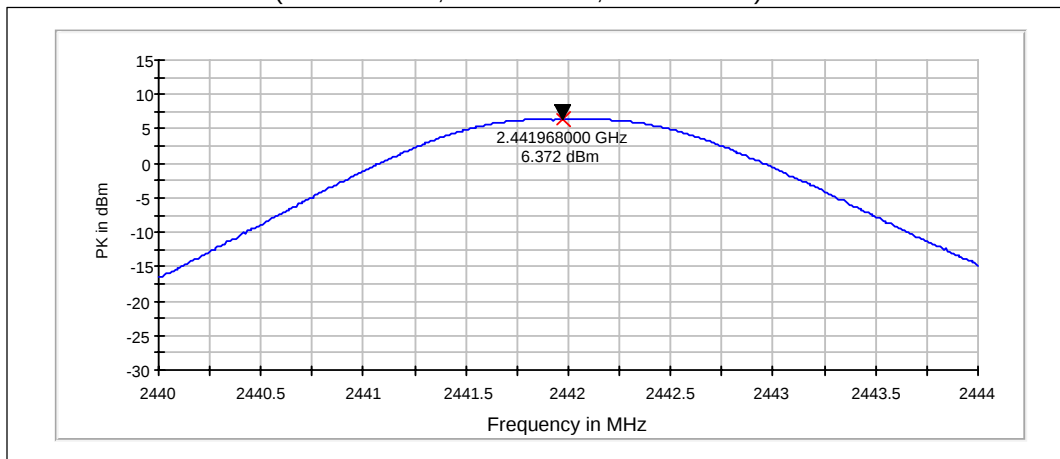
2.3.1 GFSK modulation, PRBS packet type

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
0 / 2402	5.88	3.873	PASSED
40 / 2442	6.37	4.335	PASSED
78 / 2480	6.1	4.074	PASSED

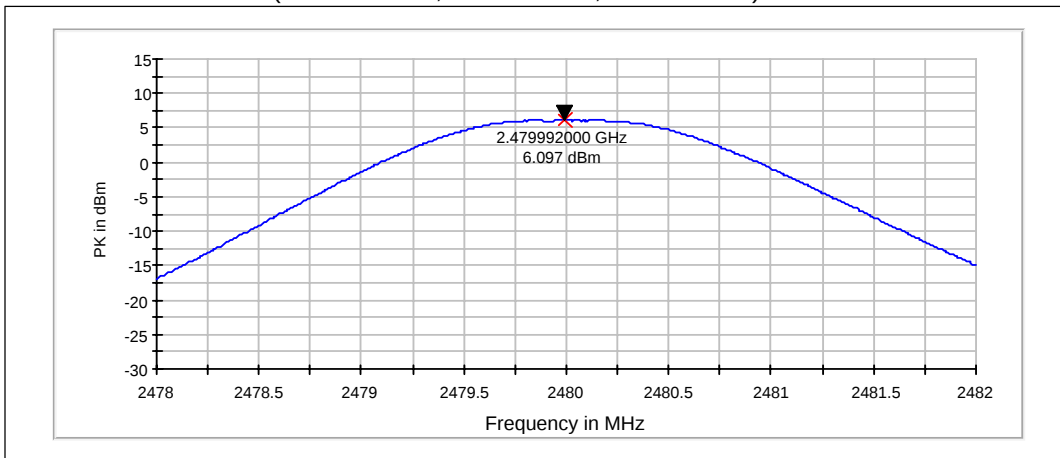
Channel 0 / 2402 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



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



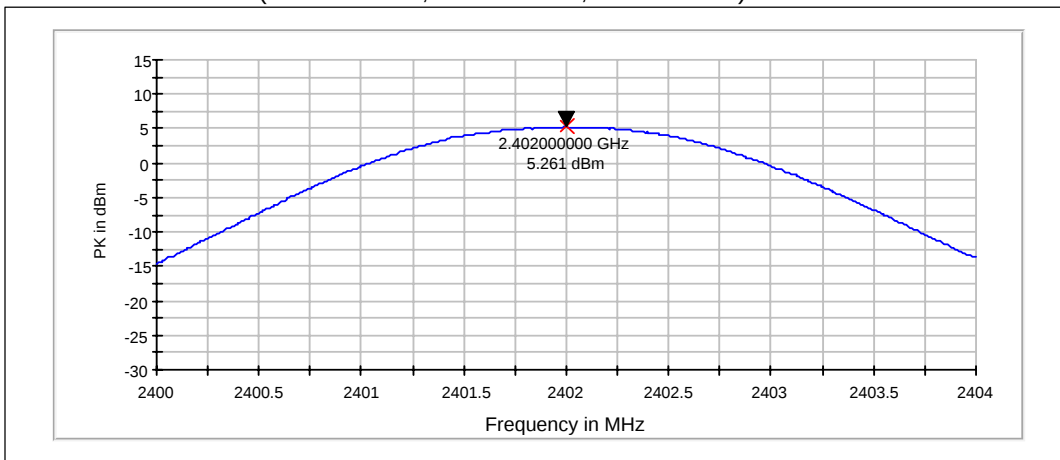
Channel 78 / 2480 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



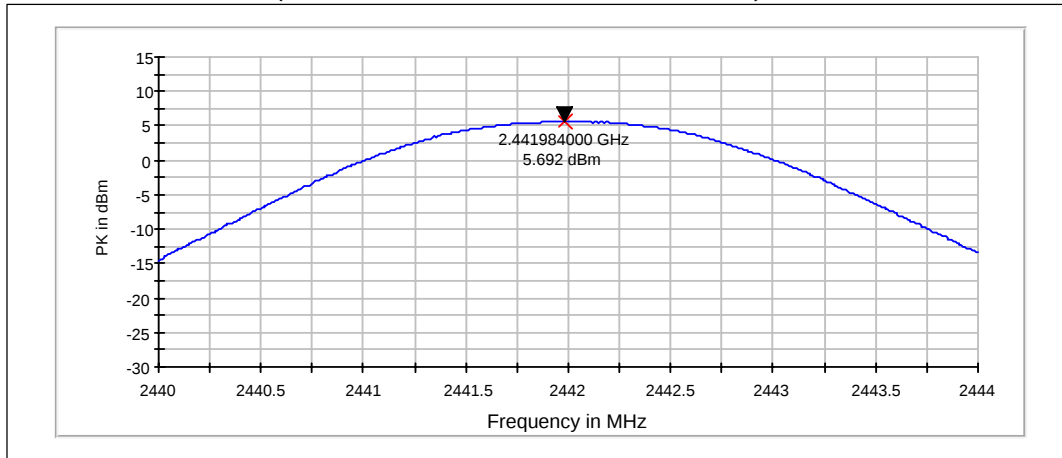
2.3.2 8DPSK modulation, PRBS packet type

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
0 / 2402	5.26	3.357	PASSED
40 / 2442	5.69	3.707	PASSED
78 / 2480	5.4	3.467	PASSED

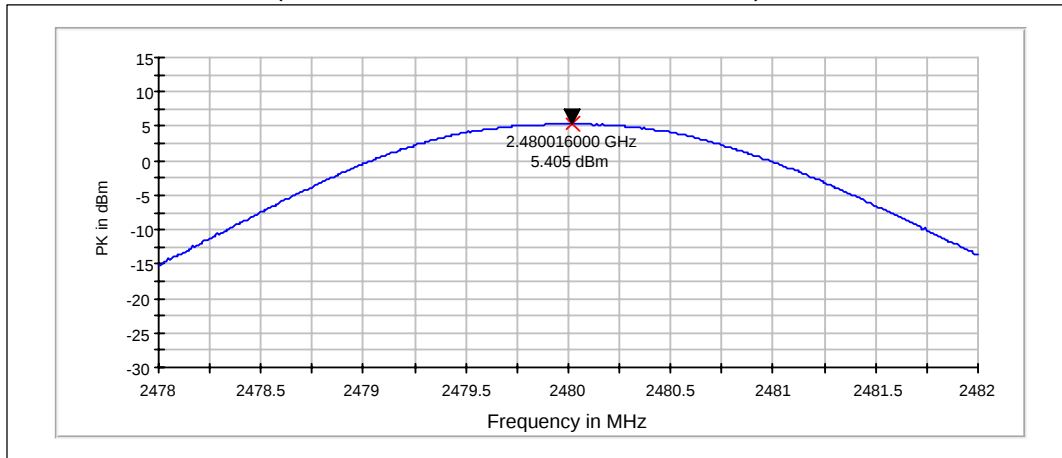
Channel 0 / 2402 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



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



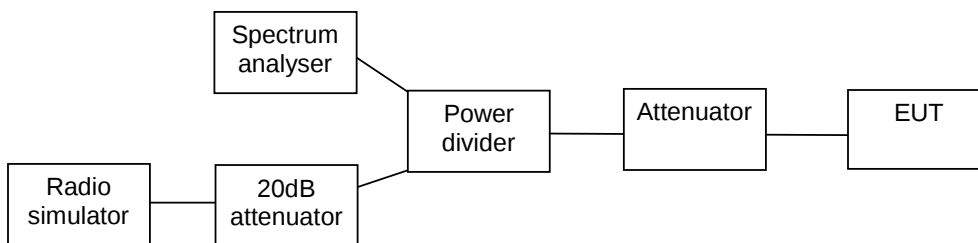
Channel 78 / 2480 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



3. Spurious RF conducted emissions (FCC §15.247(d), RSS-210 A8.5)

EUT with DUT number	RM-844, DUT 52742
Accessories with DUT numbers	BL-4U, DUT 52752 ; AC-11E, DUT 52754 ; WH-102, DUT 52755
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23/43/101.3
Date of measurements	29-May-2012
Measured by	Gao Sherina

3.1. Test Setup



3.2. Test method and limit

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

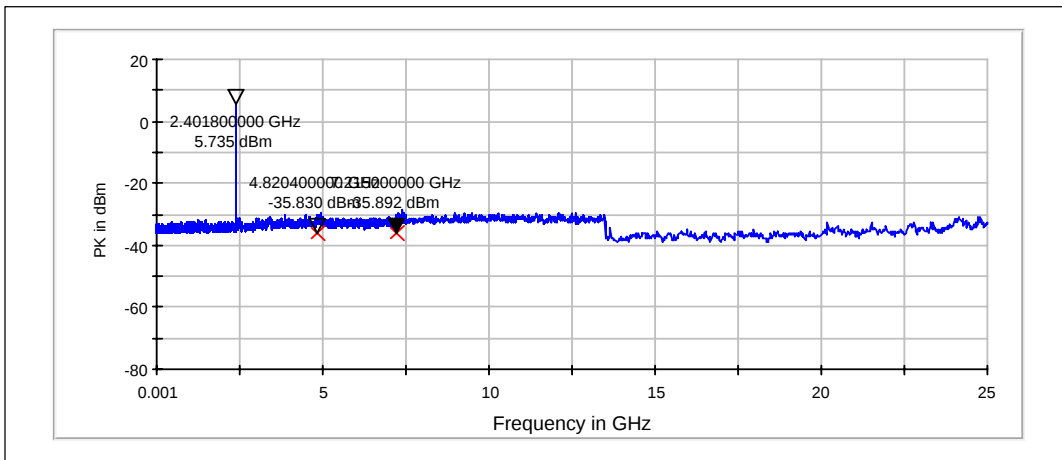
Limits for spurious RF conducted emissions measurements

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

3.3. Bluetooth Test results

3.3.1 GFSK modulation, PRBS packet type

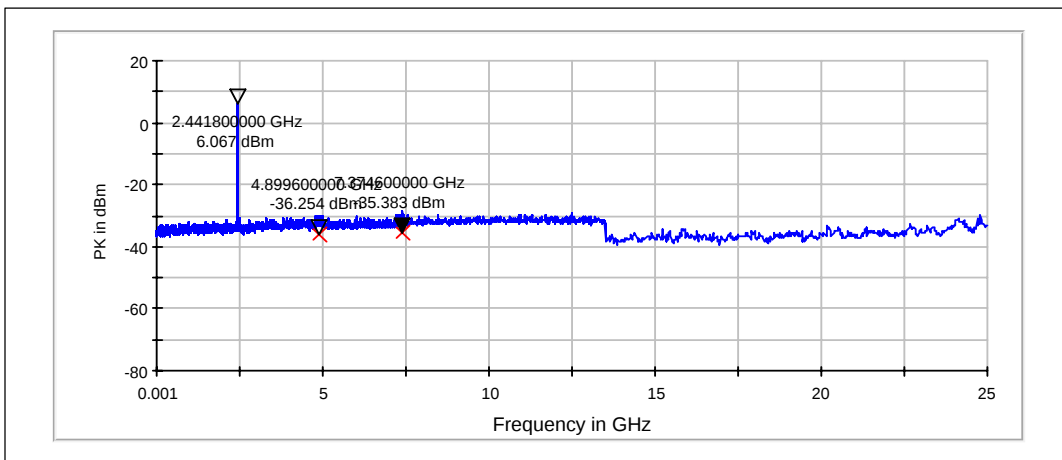
Channel 0 / 2402 MHz



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

Frequency [MHz]	P [dBc]	Result
4820.4	-35.83	PASSED
7215	-35.89	PASSED

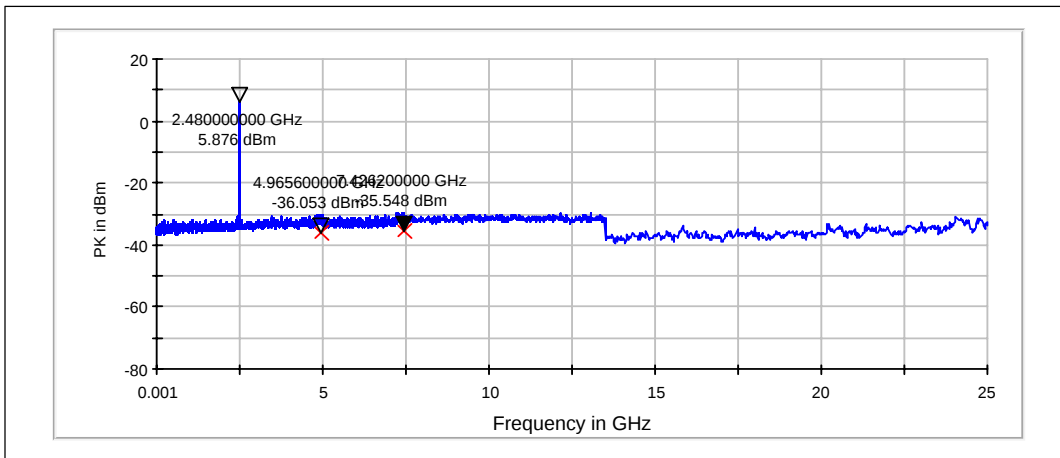
Channel 40 / 2442 MHz



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

Frequency [MHz]	P [dBc]	Result
4899.6	-36.25	PASSED
7374.6	-35.38	PASSED

Channel 78 / 2480 MHz

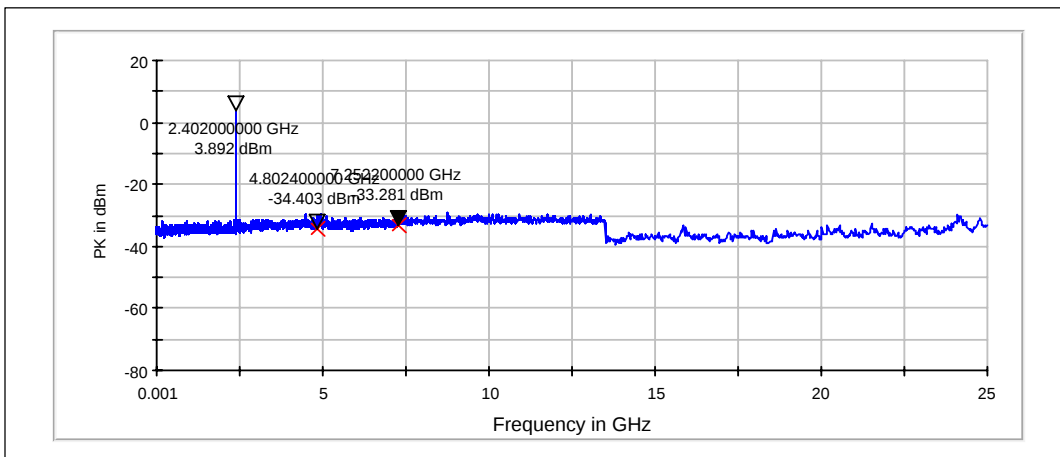


Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4965.6	-36.05	PASSED
7426.2	-35.55	PASSED

3.3.2 8DPSK modulation, PRBS packet type

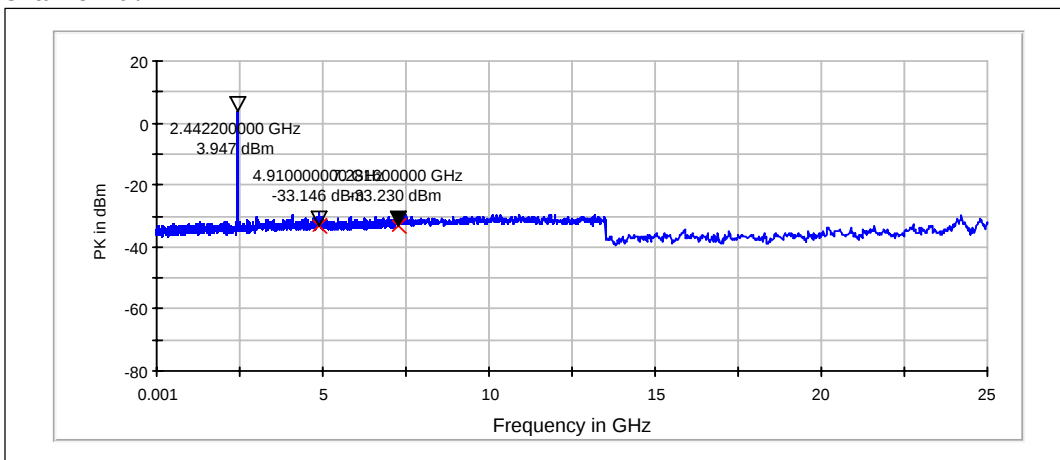
Channel 0 / 2402 MHz



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

Frequency [MHz]	P [dBc]	Result
4802.4	-34.4	PASSED
7252.2	-33.28	PASSED

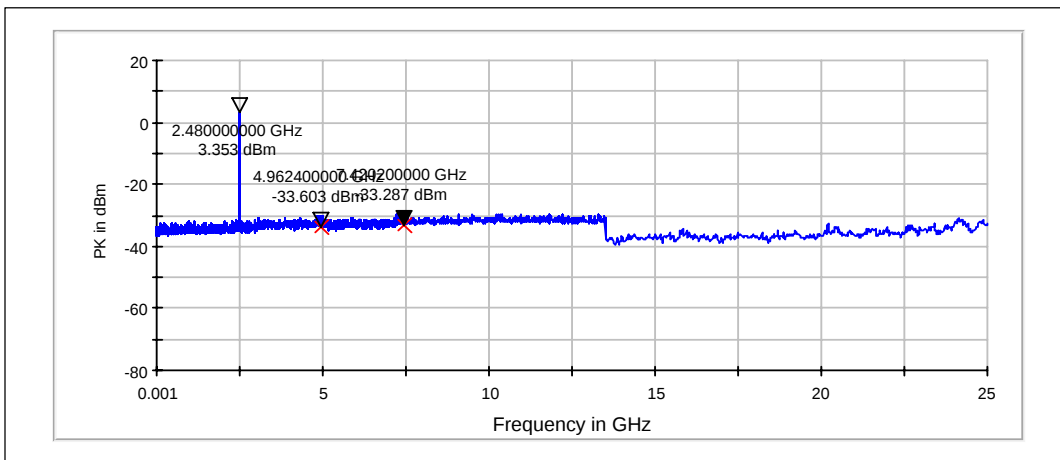
Channel 40 / 2442 MHz



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

Frequency [MHz]	P [dBc]	Result
4910	-33.15	PASSED
7281.6	-33.23	PASSED

Channel 78 / 2480 MHz



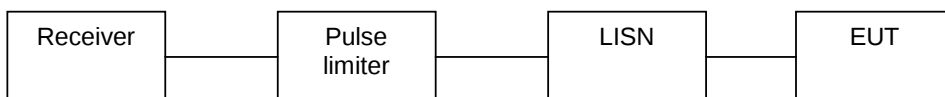
Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4962.4	-33.6	PASSED
7420.2	-33.29	PASSED

4. AC powerline conducted emissions FCC §15.207, RSS-GEN 7.2.2

EUT with DUT number	RM-844, DUT 52748
Accessories with DUT numbers	BL-4U, DUT 52750 ; AC-11E, DUT 52754 ; WH-102, DUT 52755
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23/44/101.2
Date of measurements	30-May-2012
Measured by	Gao Sherina

4.1. Test Setup



4.2. 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:

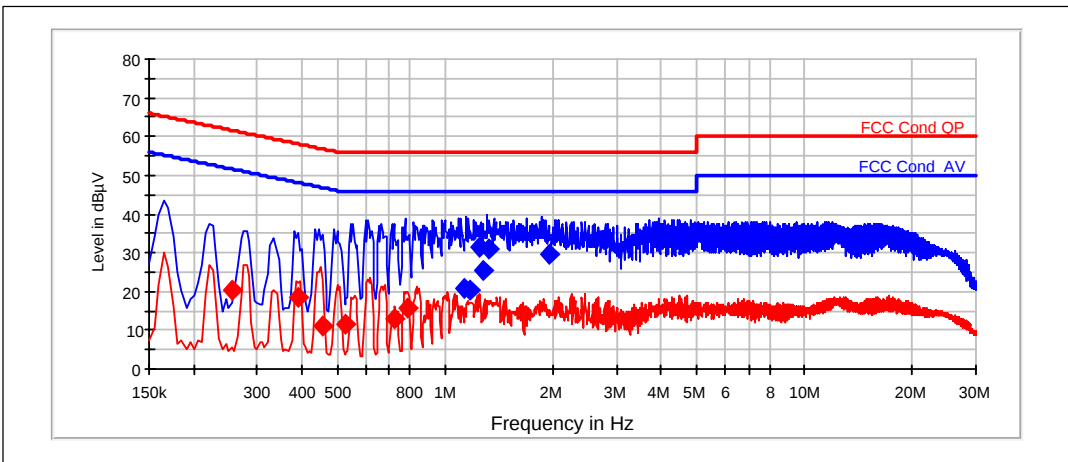
$$U [dB\mu V] = U_{RX} + A_{TOT}$$

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

4.3. Test results



QuasiPeak (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
1.135	20.79	L1	PASSED
1.175	20.2	L1	PASSED
1.25	31.41	L1	PASSED
1.27	25.38	L1	PASSED
1.33	31.06	N	PASSED
1.94	29.69	L1	PASSED

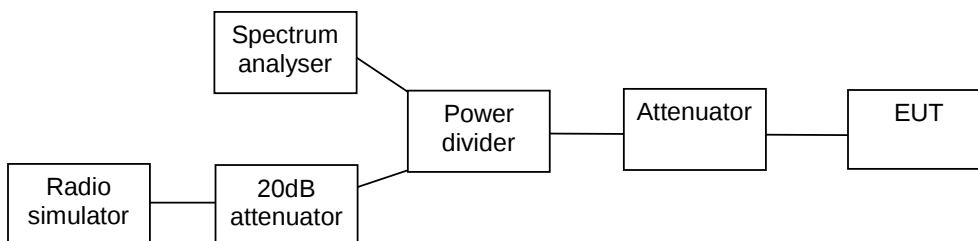
Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.255	20.34	L1	PASSED
0.39	18.33	L1	PASSED
0.455	11.21	L1	PASSED
0.53	11.56	N	PASSED
0.725	12.86	N	PASSED
0.79	15.65	L1	PASSED

5. 20 dB bandwidth 15.247(a)(1), A8.1 (a)

EUT with DUT number	RM-844, DUT 52742
Accessories with DUT numbers	BL-4U, DUT 52752 ; AC-11E, DUT 52754 ; WH-102, DUT 52755
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23/43/101.3
Date of measurements	29-May-2012
Measured by	Gao Sherina

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.

Limits for 20 dB bandwidth measurements

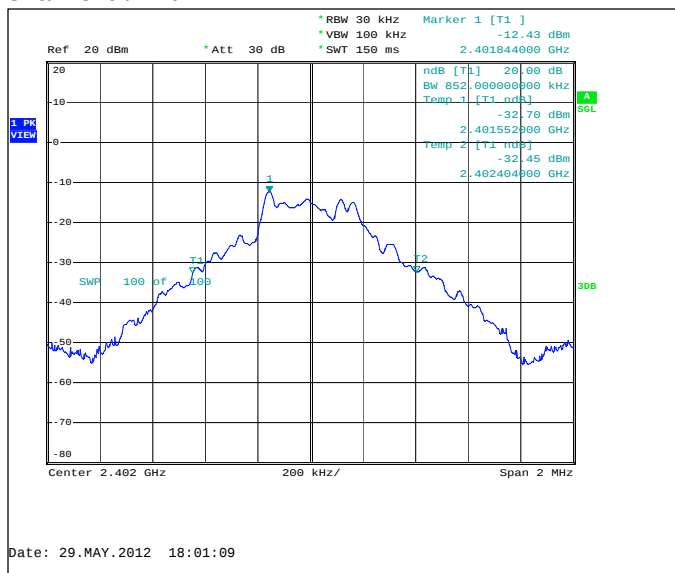
Limit [MHz]
N/A

5.3. Bluetooth Test results

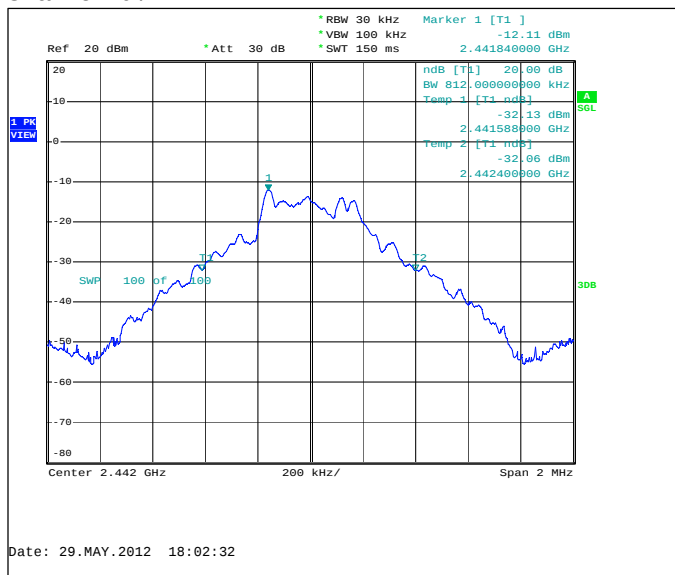
5.3.1 GFSK modulation, PRBS packet type

Channel / f_c [MHz]	20 dB bandwidth [kHz]
0 / 2402	852
40 / 2442	812
78 / 2480	812

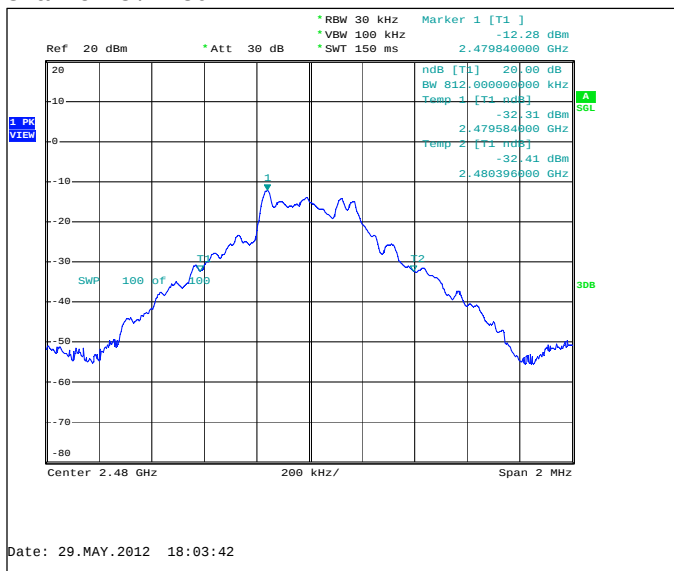
Channel 0 / 2402 MHz



Channel 40 / 2442 MHz



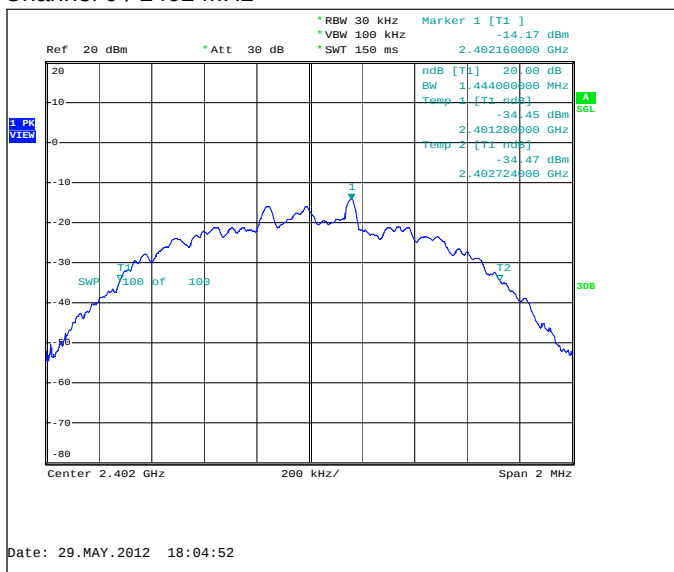
Channel 78 / 2480 MHz



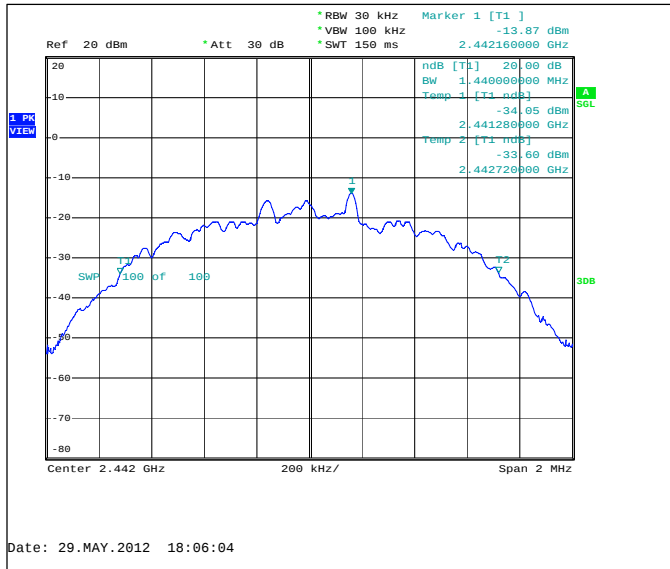
5.3.2 8DPSK modulation, PRBS packet type

Channel / f_c [MHz]	20 dB bandwidth [kHz]
0 / 2402	1444
40 / 2442	1440
78 / 2480	1444

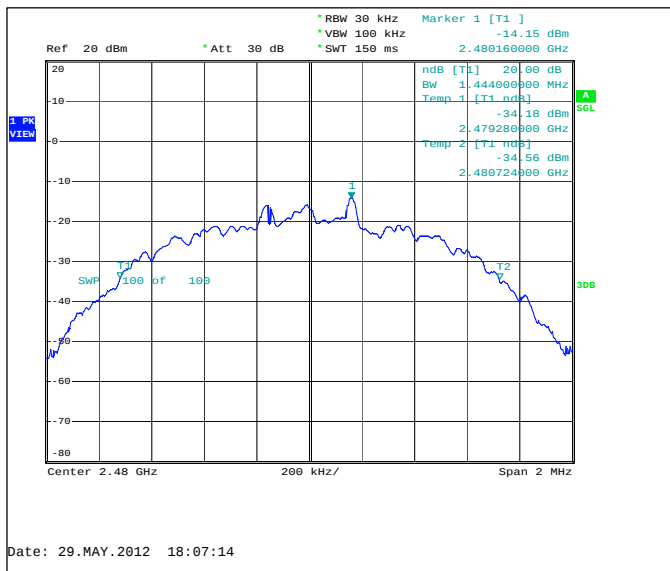
Channel 0 / 2402 MHz



Channel 40 / 2442 MHz



Channel 78 / 2480 MHz

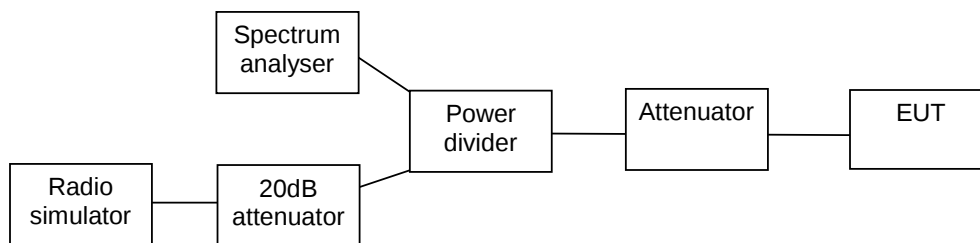


6. Carrier frequency separation

15.247(a)(1), A8.1 (b)

EUT with DUT number	RM-844, DUT 52742
Accessories with DUT numbers	BL-4U, DUT 52752 ; AC-11E, DUT 52754 ; WH-102, DUT 52755
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23/43/101.3
Date of measurements	29-May-2012
Measured by	Gao Sherina

6.1. Test Setup



6.2. 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

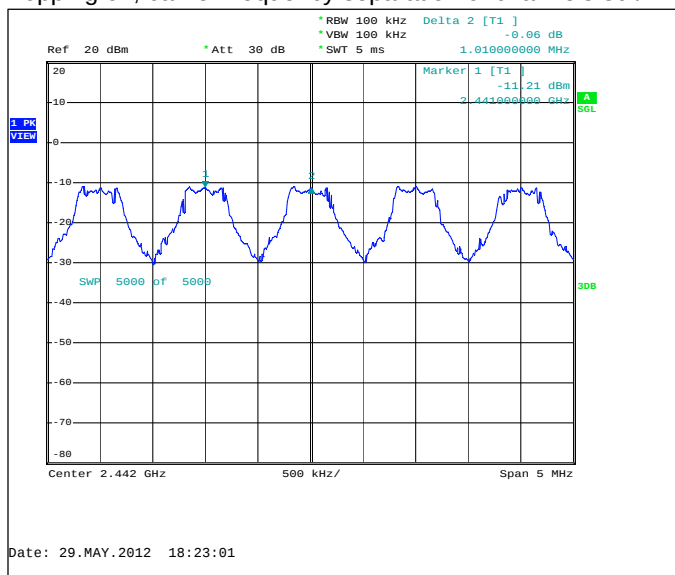
Limit [MHz]
≥ 0.025 or $2/3$ of the 20 dB bandwidth

6.3. Bluetooth Test results

6.3.1 GFSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
1010	PASSED

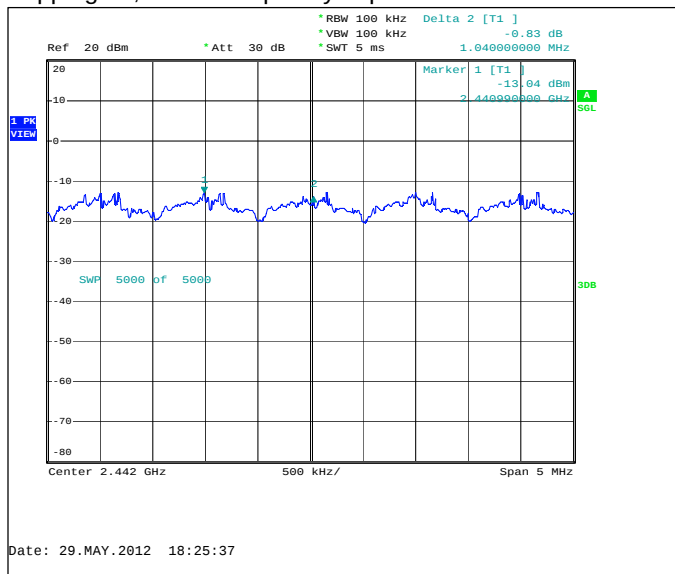
Hopping on, carrier frequency separation of channels 39 / 2441 MHz and 40 / 2442 MHz



6.3.2 8DPSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
1040	PASSED

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

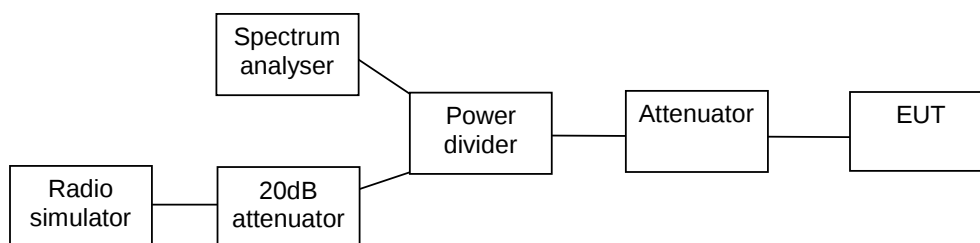


7. Number of hopping frequencies

15.247(a)(1)(iii), A8.1 (d)

EUT with DUT number	RM-844, DUT 52742
Accessories with DUT numbers	BL-4U, DUT 52752 ; AC-11E, DUT 52754 ; WH-102, DUT 52755
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23/43/101.3
Date of measurements	29-May-2012
Measured by	Gao Sherina

7.1. Test Setup



7.2. 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

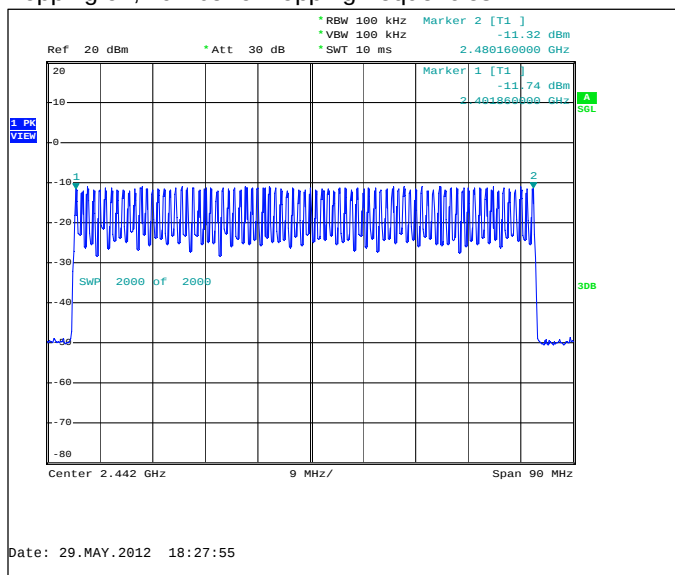
Limit [number]
>= 15

7.3. Bluetooth Test results

7.3.1 GFSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
78	PASSED

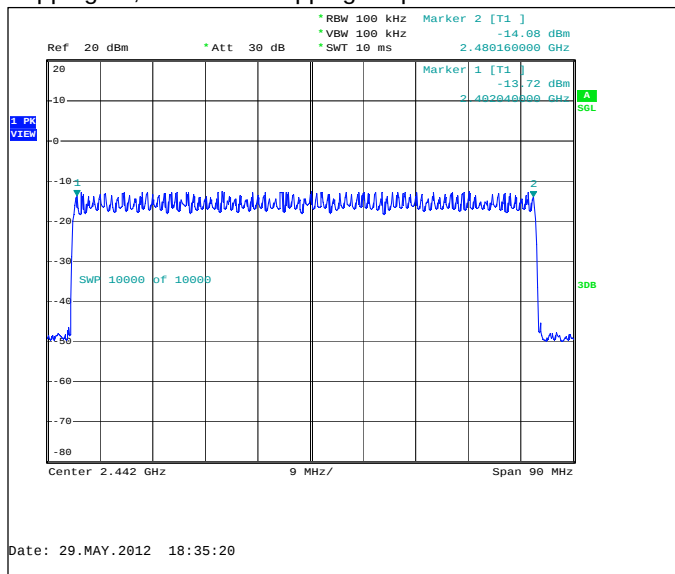
Hopping on, number of hopping frequencies



7.3.2 8DPSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
78	PASSED

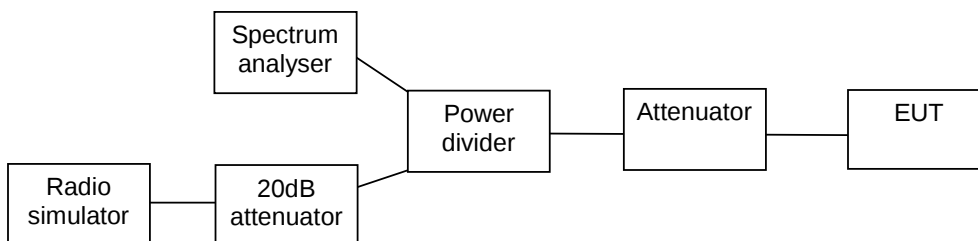
Hopping on, number of hopping frequencies



8. Time of occupancy 15.247(a)(1)(iii), A8.1 (d)

EUT with DUT number	RM-844, DUT 52742
Accessories with DUT numbers	BL-4U, DUT 52752 ; AC-11E, DUT 52754 ; WH-102, DUT 52755
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23/43/101.3
Date of measurements	29-May-2012
Measured by	Gao Sherina

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.

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

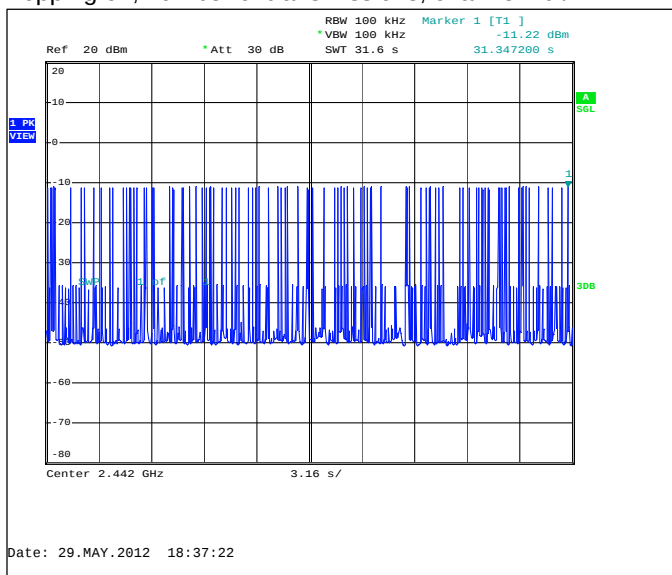
Limit [s]
<= 0.4

8.3. Bluetooth Test results

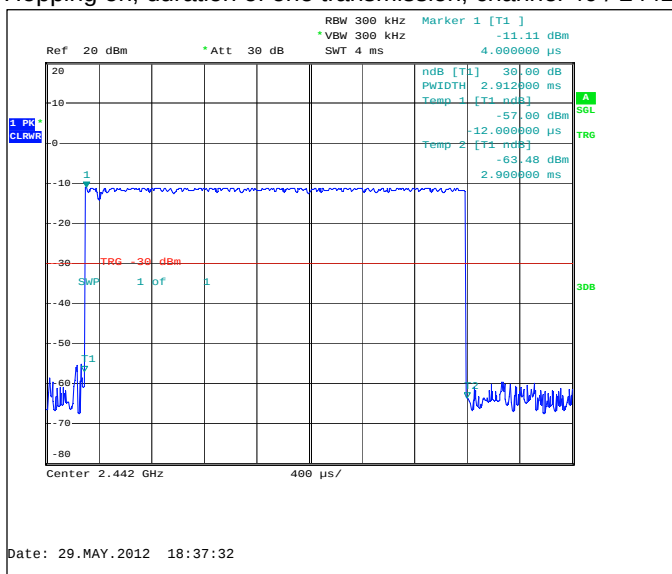
8.3.1 GFSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [ms]	Time of occupancy [s]	Result
85	2.912	0.248	PASSED

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



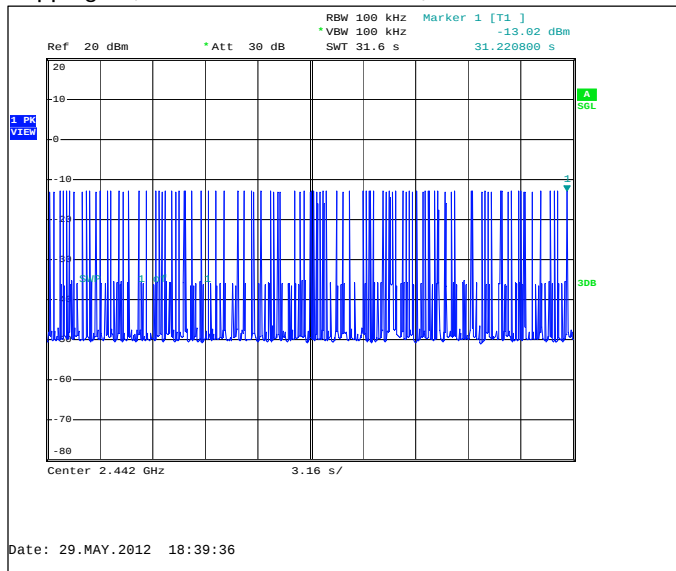
Hopping on, duration of one transmission, channel 40 / 2442 MHz



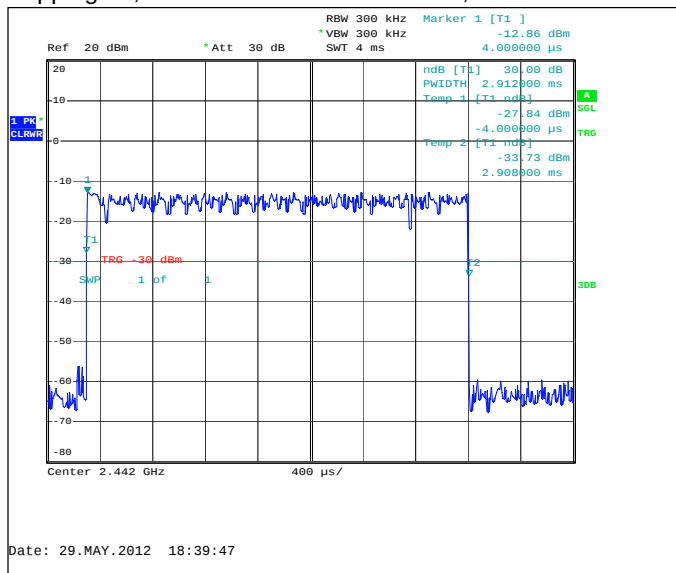
8.3.2 8DPSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [ms]	Time of occupancy [s]	Result
92	2.912	0.268	PASSED

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



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



9. Test Equipment

9.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
-	RF Emission Software	EMC32 Test Software	R&S	22/24/27, 15C, 15B
BJPCHW0020	DC Power supply	Hp6632B	HP	22/24/27, 15C
BJPCPT0040	Receiver	ESCS30	R&S	15C, 15B
BJPCPT0069	LISN 50 μ H	ESH3-Z5	R&S	15C, 15B
BJPCPT0073	Signal Generator	SMR 20	R&S	22/24/27, 15C, 15B
BJPCPT0191	Pulse Limiter	ESH3-Z2	R&S	15C, 15B
BJPCTC0017	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
BJPCTC0067	Bluetooth Tester	CBT	R&S	22/24/27, 15C
BJPCTC0089	Temperature Test chamber	VT4002	Votsch industrietechnik	22/24/27, 15C
BJPCTC0090	FSP spectrum analyzer	FSP30	R&S	22/24/27, 15C
BJPCTC0094	GPIO-RS232 convertor	GPIO-RS232	NI	22/24/27, 15C
BJPCTC0112	Power Splitter	11667B	Agilent	22/24/27, 15C
BJPCTC0114	Signal Generator	E8257C	Agilent	22/24/27, 15C
BJPCTC0115	Communication Tester	CMU200	R&S	22/24/27, 15B, 15C

9.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	15C, 15B
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	15C, 15B
-	RF Emission Software	EMC32 Test Software	R&S	22/24/27, 15C, 15B
BJPCPT0072	Receiver	ESI B26	R&S	22/24/27, 15C, 15B
BJPCPT0130	Relay Switch Unit	TS-RSP	R&S	22/24/27, 15C, 15B
BJPCPT0150	High Pass Filter	WHKS1200-10SS	Wainwright	22/24/27, 15C, 15B
BJPCPT0151	Band Reject Filter	WRCD1880/2000-0.2/40-5SSK	Wainwright	24, 15B
BJPCPT0154	Band Reject Filter	WRCT2402/2480-2400/2483.5-30-20SS	Wainwright	15C, 15B
BJPCPT0162	Antenna	HF906	R&S	22/24/27, 15C, 15B
BJPCTC0007	Antenna	HL562	R&S	22/24/27, 15C, 15B
BJPCTC0029	Antenna	HF906	R&S	22/24/27, 15C, 15B
BJPCTC0034	Band Reject Filter	WRCT 800/880-0.2/40-5SSK	Wainwright	22, 15B
BJPCTC0049	Preamplifier	Blma 0118-1A-Bt	Bonn	22/24/27, 15C, 15B
BJPCTC0055	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
BJPCTC0058	Bluetooth Tester	CBT	R&S	15C, 15B
BJPCTC0064	Band Reject Filter	WRCG1877/1883-1870/1890-40/6SS	Wainwright	24, 15B
BJPCTC0065	Band Reject Filter	WRCG832/838-825/845-40/5SS	Wainwright	27, 15B
BJPCTC0071	Multi-Device Controller	2090	EMCO	22/24/27, 15C, 15B
BJPCTC0072	Anechoic Chamber	3 m Semi / Full Anechoic Chamber	ETS	22/24/27, 15C, 15B
BJPCTC0073	MAST	Model-TR/POL	ETS	22/24/27, 15C, 15B
BJPCTC0074	MAST	Model 2070-2	ETS	22/24/27, 15C, 15B
BJPCTC0075	Turntable	Model 2188	ETS-EMCO	22/24/27, 15C, 15B
BJPCTC0096	Preamplifier	AFS4-00100300-20-23P-6	Miteq	22/24/27, 15C, 15B
BJPCTC0113	Receiver	ESI B26	R&S	22/24/27, 15B, 15C
BJPCTC0115	Communication Tester	CMU200	R&S	22/24/27, 15B, 15C
BJPCTC0124	Attenuator	SA18N200W-40	Fairview Microwave	-