

FCC Part 15C Compliance Test Report

Test Report no.:	FCC15CBT_RM-800_01.docx	Date of Report:	13-Oct-2011
Number of pages:	37	Customer's Contact person:	Cremer Tobias
Testing laboratory:	TCC Nokia Salo Laboratory P.O.Box(86) Joensuunkatu 7H / Kiila 1B FIN-24101 SALO, FINLAND Tel. +358 (0) 7180 08000 Fax. +358 (0) 7180 45220	Customer:	Nokia Corporation Lise Meitner Strasse 10 89081 ULM GERMANY Tel. +49 731 1754 0 Fax. +49 731 1754 6800
FCC listing no.:	533467		
IC recognition no.:	661V-1		
Tested devices/ accessories:	Phone RM-800 / Battery BL-5J, Headset WH-102 and AC-Charger AC-11E		
FCC ID:	PPIRM-800	IC:	661U-RM800
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:			

Anni Manninen, System Specialist, EMC

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	17-Feb-2011
Testing completed	29-Sep-2011
The customer's contact person	Cremer Tobias
Test Plan referred to	T:\Projects\RM-800\TestPlan\RS_testplan_RM-800.xls
Notes	-
Document name	T:\Projects\RM-800\EMC\FCC15CBT_RM-800_01.docx

1.1. EUT and Accessory Information

The EUT is a 4-band mobile phone:

GSM850/1900/GPRS/Monopole without GND reflector (GSM/WCDMA)

WCDMA Monopole without GND reflector (GSM/WCDMA)

Bluetooth

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

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-800	004402136771130	0821	-	10.19	15964
Phone	RM-800	004402136771569	0821	-	10.19	15962
Battery	BL-5J	4175351204N1010025780670573	-	-	-	15972
Battery	BL-5J	4175351204N1010025780670573	-	-	-	15969
Headset	WH-102	06947870512d4108190	-	-	-	15968
Headset	WH-102	06947870512d4108206	-	-	-	15967
AC-Charger	AC-11E	409049124697050019880675479	-	-	-	15971
AC-Charger	AC-11E	409049124697050017980675479	-	-	-	15970

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)	A8(0.5)	Band edge compliance of RF emissions	PASSED
15.247(d)	A8(0.5)	Spurious RF conducted emissions	PASSED
15.247(d), 15.209	A8(0.5)	Spurious radiated emissions	PASSED
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

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 Laboratory.

CONTENTS

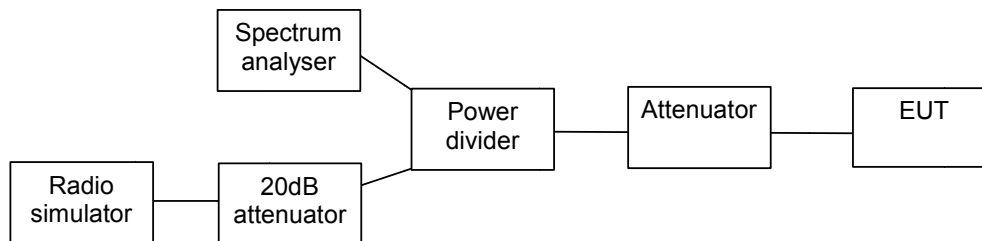
1. Summary for FCC Part 15C Compliance Test Report	2
1.1. EUT and Accessory Information	2
1.2. Summary of Test Results	2
2. Conducted peak output power (15.247(b)(1), RSS-210 A8.4 (2)).....	5
2.1. Test Setup	5
2.2. Test method and limit	5
2.3. Bluetooth Test results	6
3. Spurious RF conducted emissions (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. 20 dB bandwidth 15.247(a)(1), A8.1 (a)	13
4.1. Test Setup	13
4.2. Test method and limit	13
4.3. Bluetooth Test results	14
5. Carrier frequency separation 15.247(a)(1), A8.1 (b)	17
5.1. Test Setup	17
5.2. Test method and limit	17
5.3. Bluetooth Test results	18
6. Number of hopping frequencies 15.247(a)(1)(iii), A8.1 (d).....	19
6.1. Test Setup	19
6.2. Test method and limit	19
6.3. Bluetooth Test results	20
7. Time of occupancy 15.247(a)(1)(iii), A8.1 (d).....	21
7.1. Test Setup	21
7.2. Test method and limit	21
7.3. Bluetooth Test results	22
8. AC powerline conducted emissions (FCC §15.207, RSS-GEN 7.2.2).....	24
8.1. Test method and limit	24
8.2. Bluetooth Test results	25
9. Band edge compliance of RF emissions (FCC §15.247(d), RSS-210 A8.5)	26
9.2. Test method and limit	26
9.3. Bluetooth Test results	27

10. Spurious radiated emissions	
(FCC §15.247(d), §15.209, RSS-210 A8.5)	31
10.2. Test method and limit	31
10.3. Bluetooth Test results	33
11. Test Equipment	36
11.1. Conducted measurements	36
11.2. Radiated measurements	36

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

EUT with DUT number	RM-800, DUT 15964
Accessories with DUT numbers	BL-5J, DUT 15972 ; WH-102, DUT 15968 ; AC-11E, DUT 15971
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 45 / 100
Date of measurements	29-Sep-2011
Measured by	Anni Manninen

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

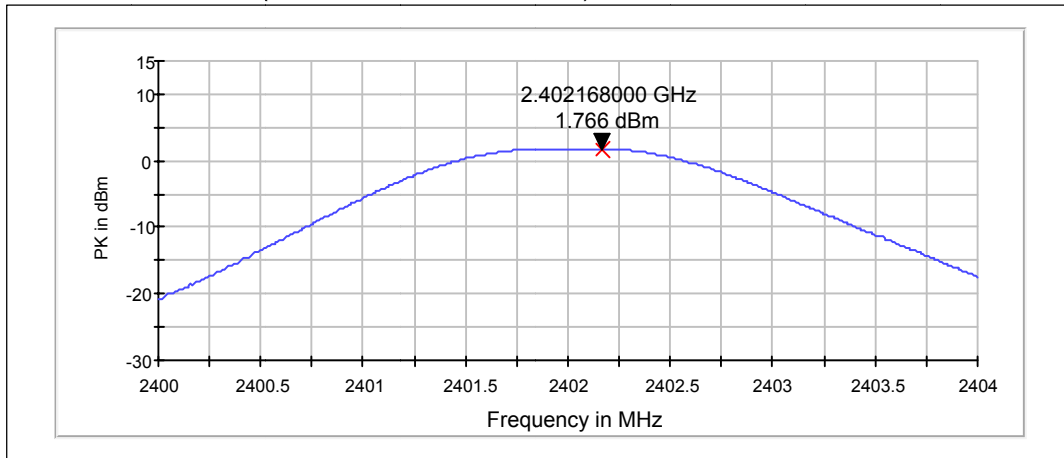
Frequency range [MHz]	Limit [W]	Limit [dBm]
2400 – 2483.5	<= 1	<= 30

2.3. Bluetooth Test results

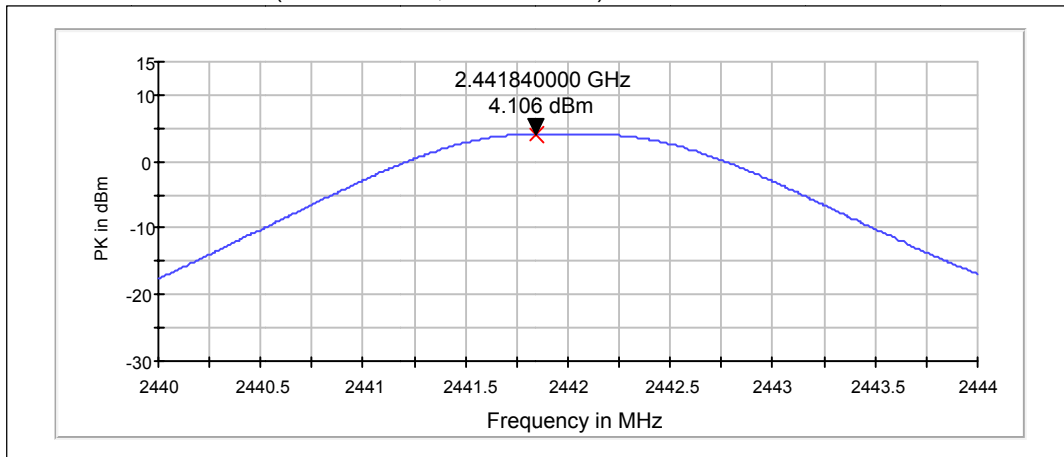
2.3.1 GFSK modulation, PRBS packet type

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
0 / 2402	1.77	1.503	PASSED
40 / 2442	4.11	2.576	PASSED
78 / 2480	4.45	2.786	PASSED

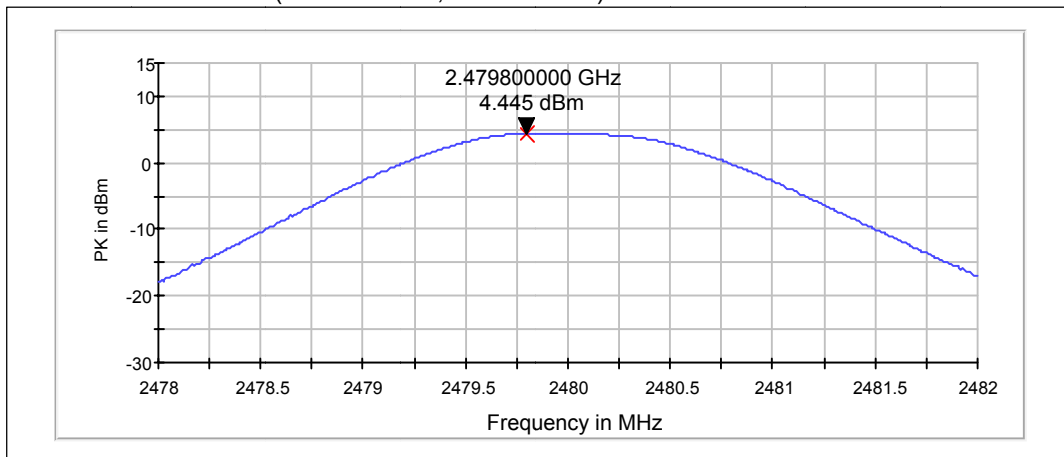
Channel 0 / 2402 MHz (Peak detector, RBW: 1 MHz)



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



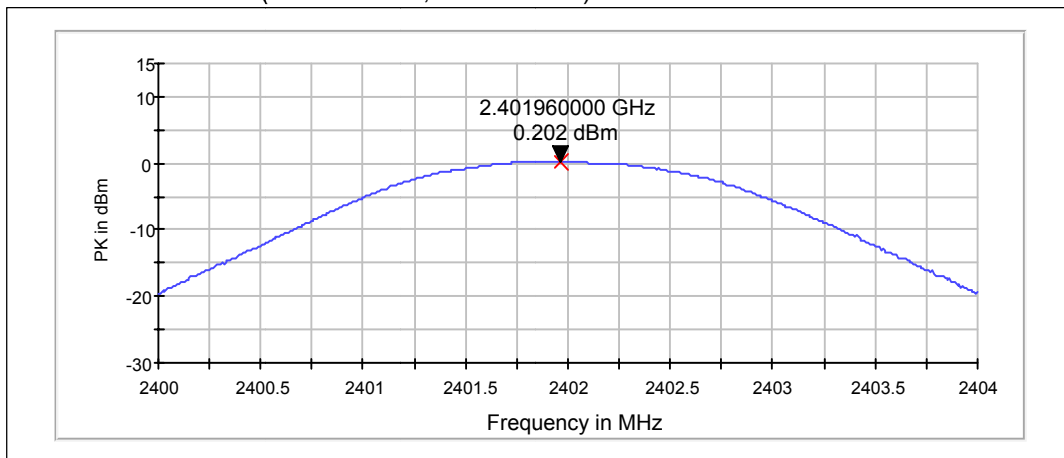
Channel 78 / 2480 MHz (Peak detector, RBW: 1 MHz)



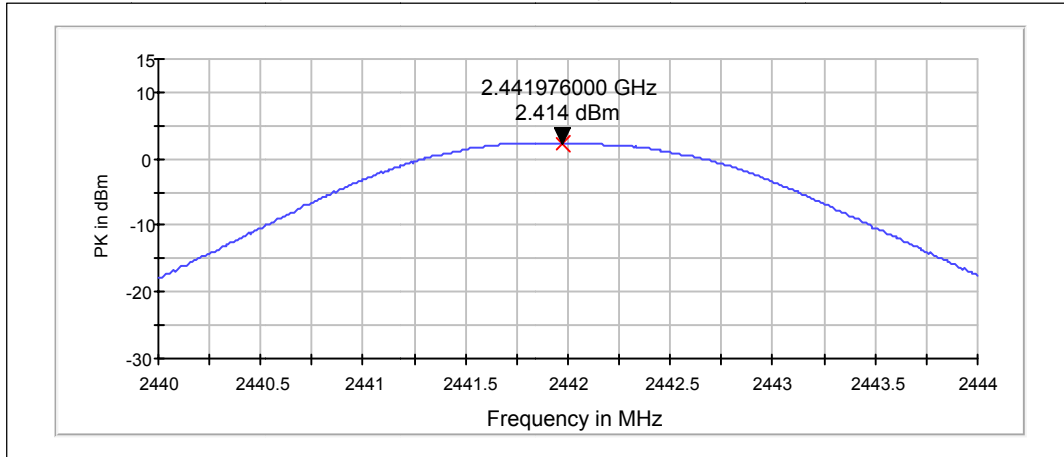
2.3.2 8DPSK modulation, PRBS packet type

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
0 / 2402	0.2	1.047	PASSED
40 / 2442	2.41	1.742	PASSED
78 / 2480	1.85	1.531	PASSED

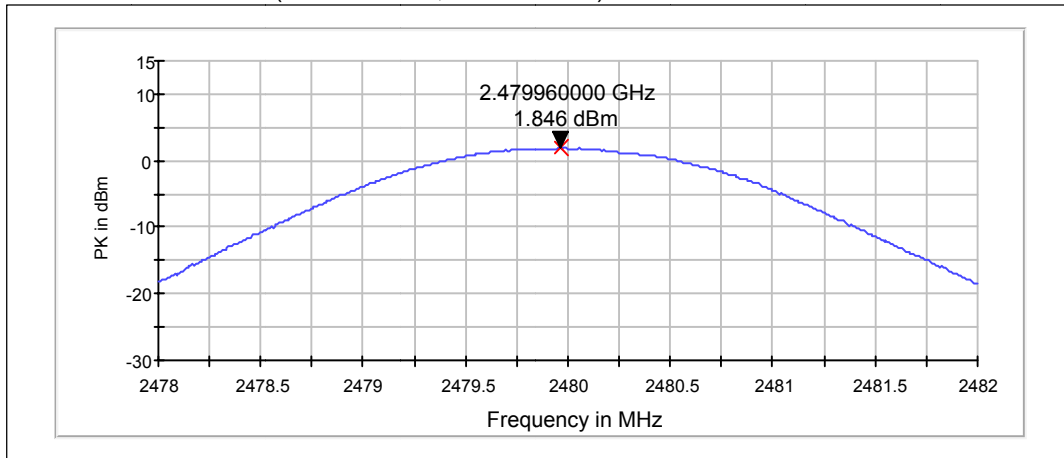
Channel 0 / 2402 MHz (Peak detector, RBW: 1 MHz)



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



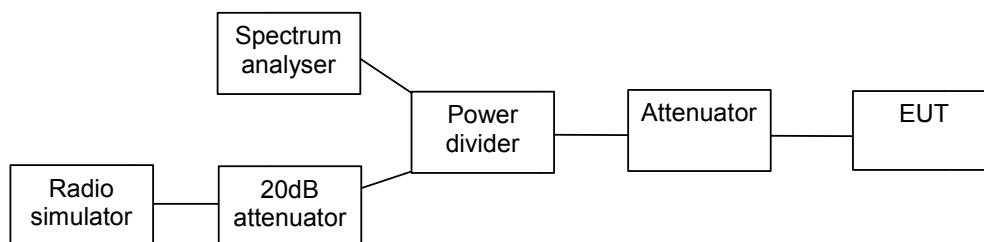
Channel 78 / 2480 MHz (Peak detector, RBW: 1 MHz)



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

EUT with DUT number	RM-800, DUT 15964
Accessories with DUT numbers	BL-5J, DUT 15972 ; WH-102, DUT 15968 ; AC-11E, DUT 15971
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 45 / 100
Date of measurements	29-Sep-2011
Measured by	Anni Manninen

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.

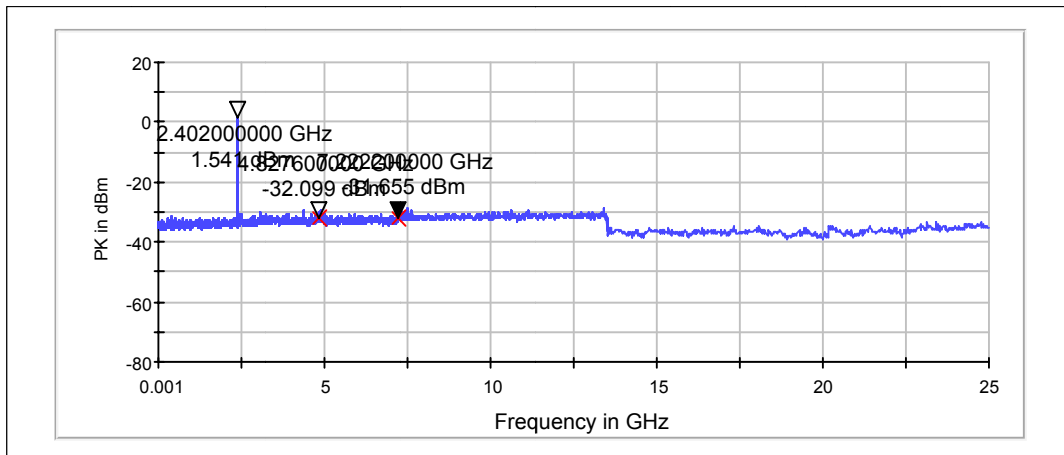
Limits for spurious RF conducted emissions measurements

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

3.3. Bluetooth Test results

3.3.1 GFSK modulation, PRBS packet type

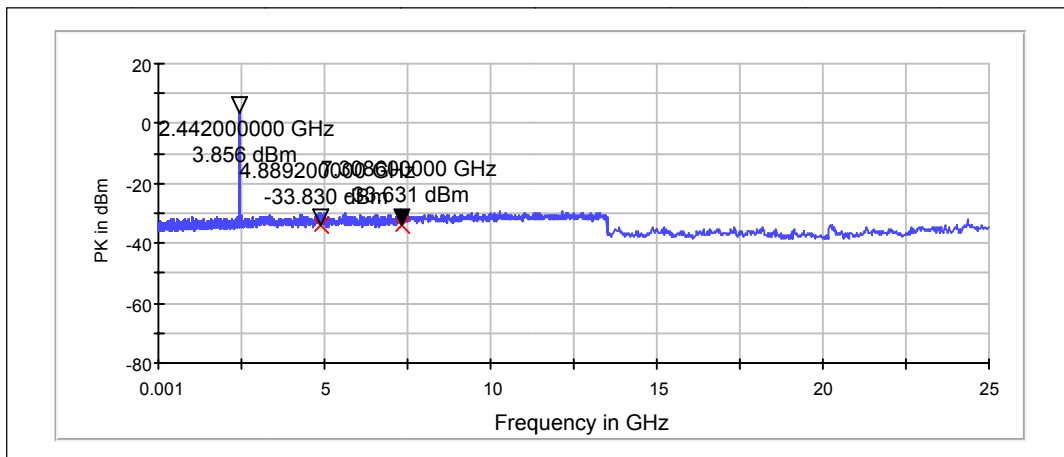
Channel 0 / 2402 MHz



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

Frequency [MHz]	P [dBc]	Result
4827.6	-32.1	PASSED
7222.2	-31.65	PASSED

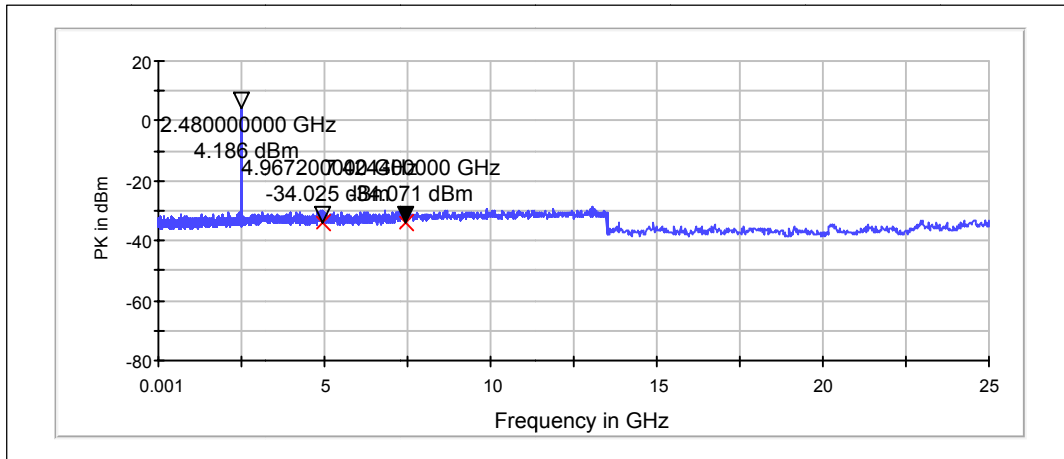
Channel 40 / 2442 MHz



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

Frequency [MHz]	P [dBc]	Result
4889.2	-33.83	PASSED
7308.6	-33.63	PASSED

Channel 78 / 2480 MHz

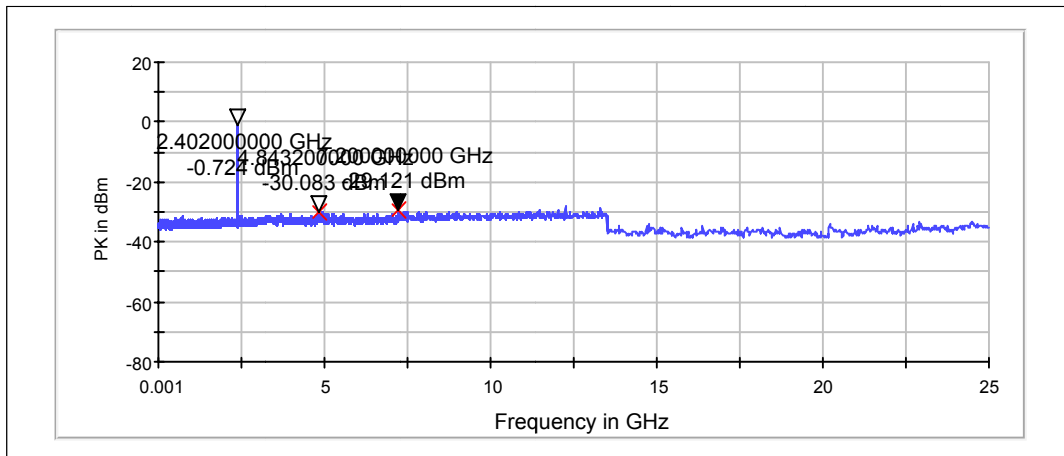


Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4967.2	-34.02	PASSED
7424.4	-34.07	PASSED

3.3.2 8DPSK modulation, PRBS packet type

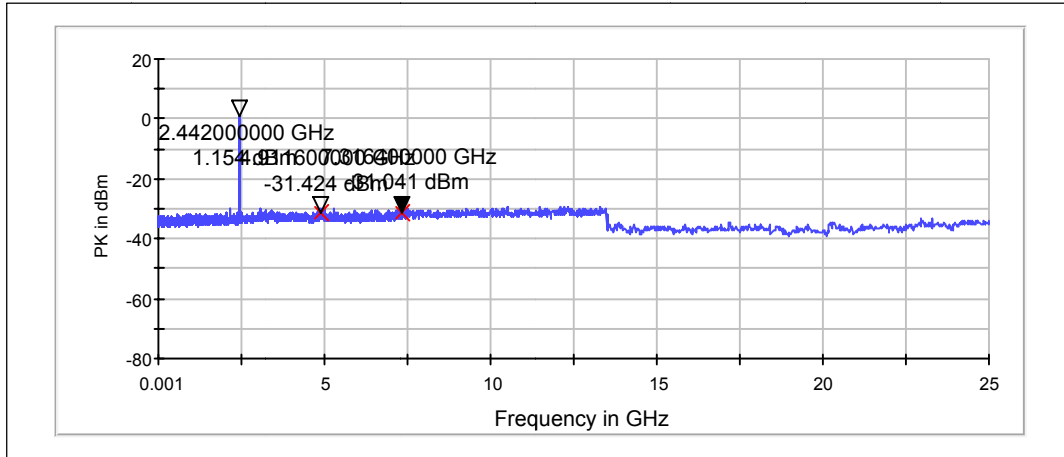
Channel 0 / 2402 MHz



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

Frequency [MHz]	P [dBc]	Result
4843.2	-30.08	PASSED
7200	-29.12	PASSED

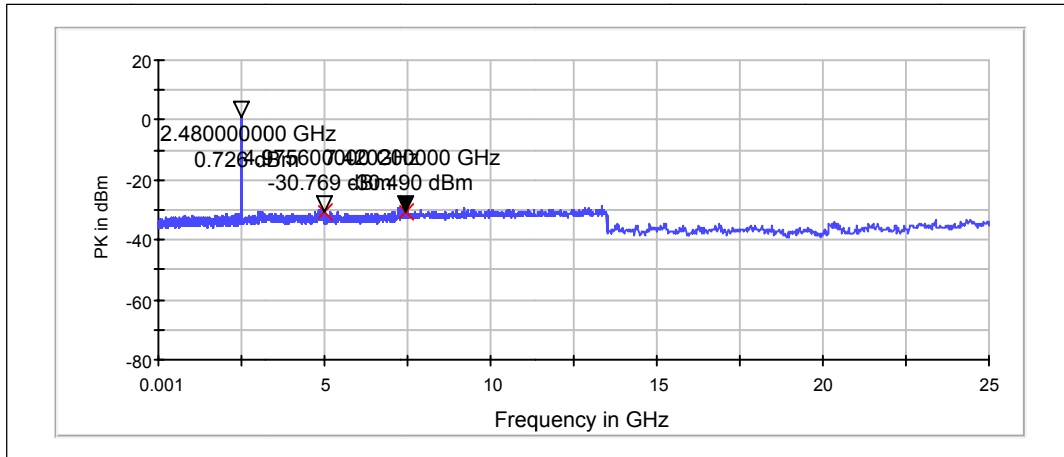
Channel 40 / 2442 MHz



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

Frequency [MHz]	P [dBc]	Result
4911.6	-31.42	PASSED
7316.4	-31.04	PASSED

Channel 78 / 2480 MHz



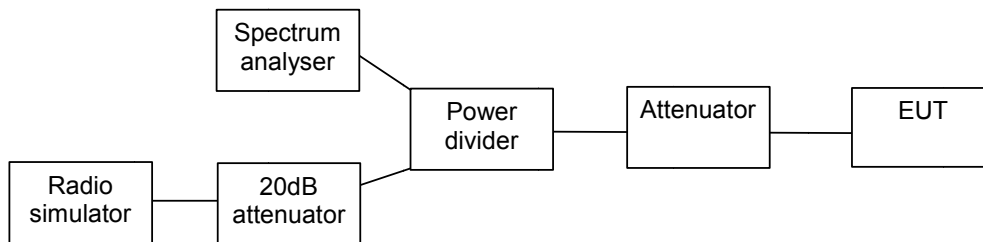
Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4975.6	-30.77	PASSED
7420.2	-30.49	PASSED

4. 20 dB bandwidth 15.247(a)(1), A8.1 (a)

EUT with DUT number	RM-800, DUT 15964
Accessories with DUT numbers	BL-5J, DUT 15972 ; WH-102, DUT 15968 ; AC-11E, DUT 15971
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 45 / 100
Date of measurements	29-Sep-2011
Measured by	Anni Manninen

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-210.

Limits for 20 dB bandwidth measurements

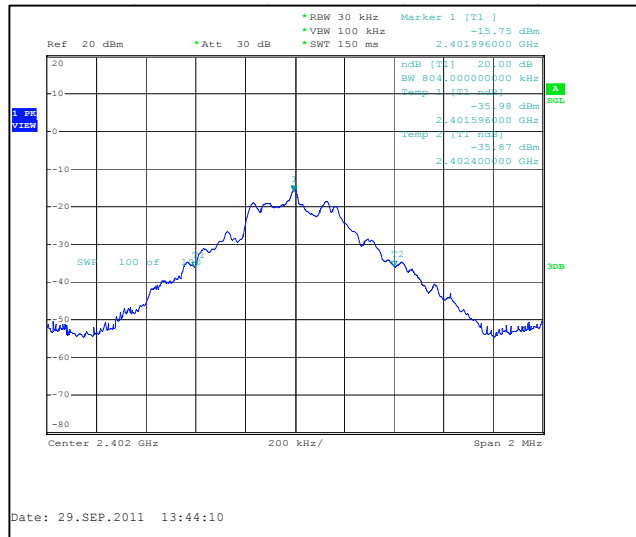
Limit [MHz]
N/A

4.3. Bluetooth Test results

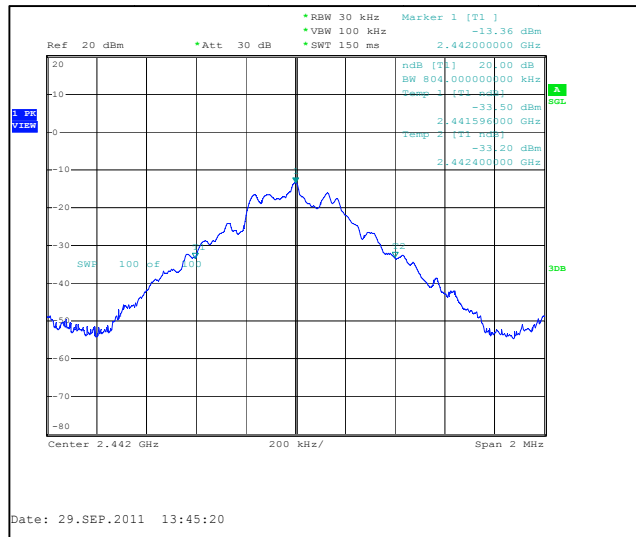
4.3.1 GFSK modulation, PRBS packet type

	20 dB bandwidth [kHz]
0 / 2402	804
40 / 2442	804
78 / 2480	844

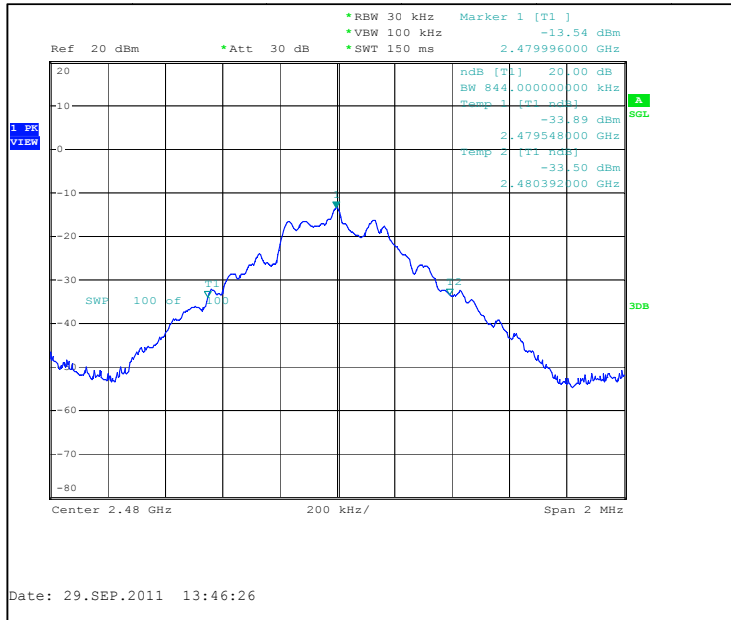
Channel 0 / 2402 MHz



Channel 40 / 2442 MHz



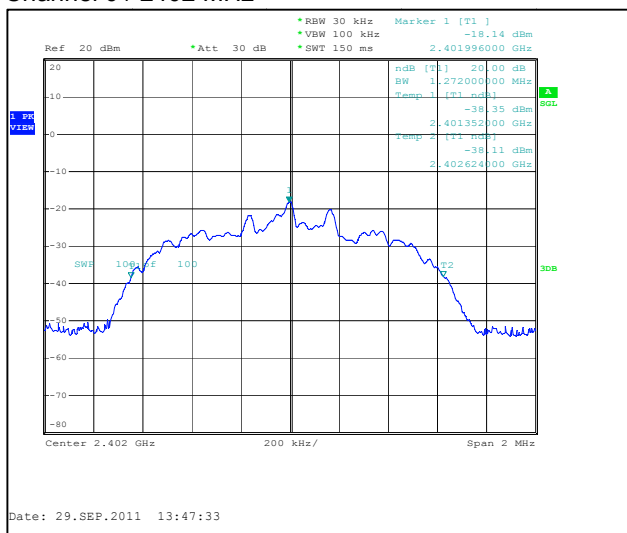
Channel 78 / 2480 MHz



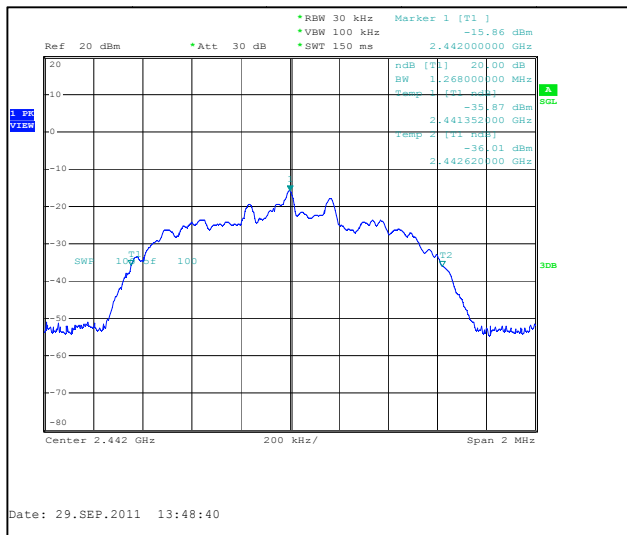
4.3.2 8DPSK modulation, PRBS packet type

	20 dB bandwidth [kHz]
0 / 2402	1272
40 / 2442	1268
78 / 2480	1268

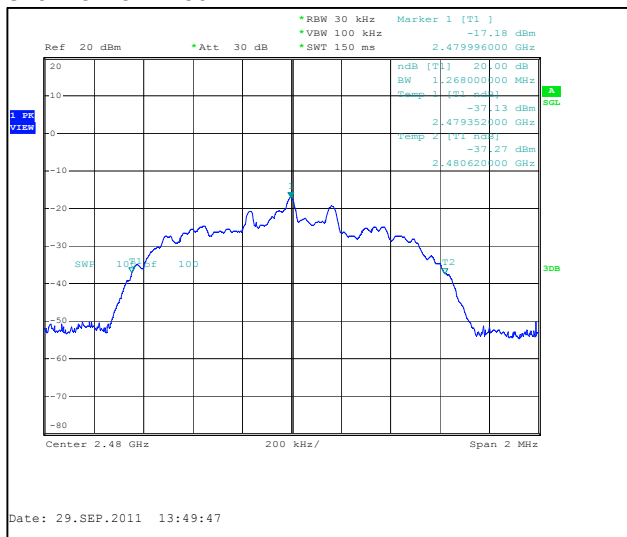
Channel 0 / 2402 MHz



Channel 40 / 2442 MHz



Channel 78 / 2480 MHz

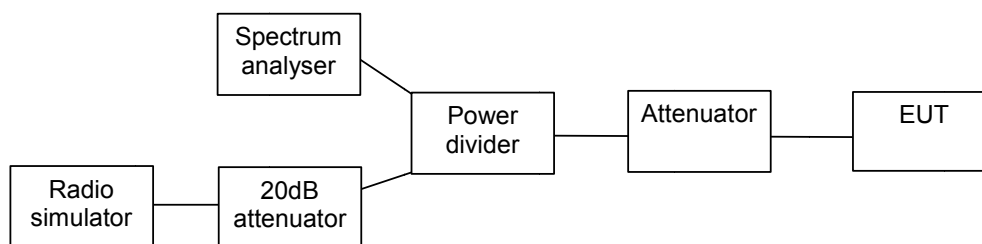


5. Carrier frequency separation

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

EUT with DUT number	RM-800, DUT 15964
Accessories with DUT numbers	BL-5J, DUT 15972 ; WH-102, DUT 15968 ; AC-11E, DUT 15971
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 45 / 100
Date of measurements	29-Sep-2011
Measured by	Anni Manninen

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 carrier frequency separation measurements

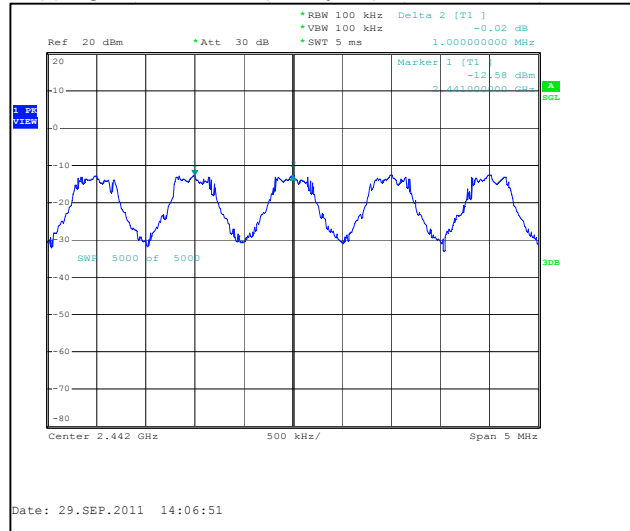
Limit [MHz]
≥ 0.025 or $2/3$ of the 20 dB bandwidth

5.3. Bluetooth Test results

5.3.1 GFSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
1000	PASSED

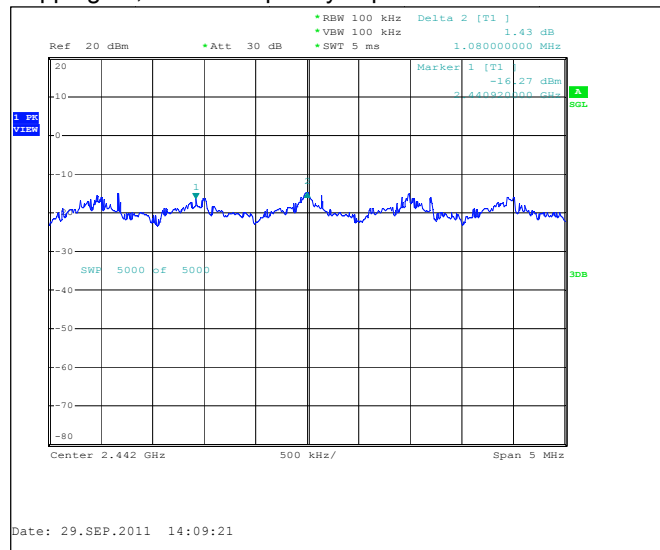
Hopping on, carrier frequency separation of channels 39 / 2441 MHz and 40 / 2442 MHz



5.3.2 8DPSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
1080	PASSED

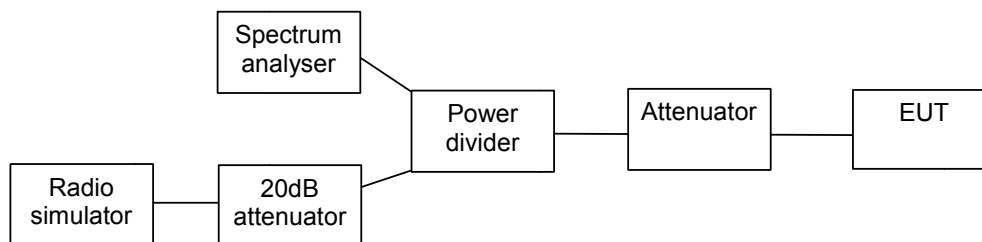
Hopping on, carrier frequency separation of channels 39 / 2441 MHz and 40 / 2442 MHz



6. Number of hopping frequencies 15.247(a)(1)(iii), A8.1 (d)

EUT with DUT number	RM-800, DUT 15964
Accessories with DUT numbers	BL-5J, DUT 15972 ; WH-102, DUT 15968 ; AC-11E, DUT 15971
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 45 / 100
Date of measurements	29-Sep-2011
Measured by	Anni Manninen

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 number of hopping frequencies measurements

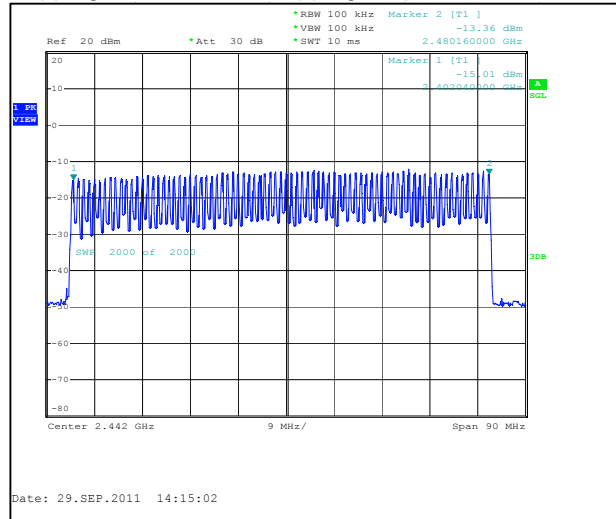
Limit [number]
>= 15

6.3. Bluetooth Test results

6.3.1 GFSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
78	PASSED

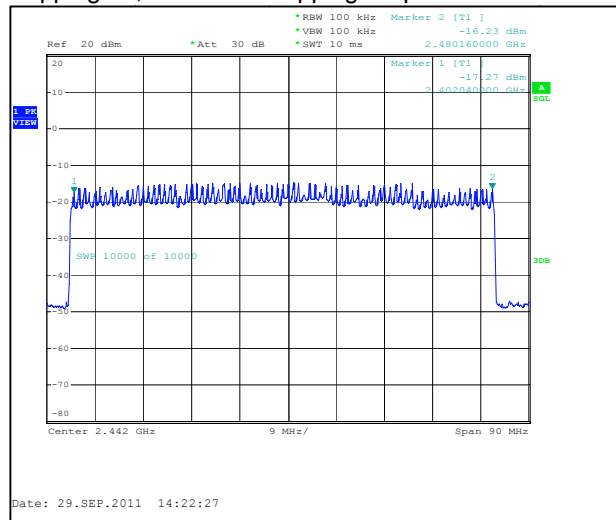
Hopping on, number of hopping frequencies



6.3.2 8DPSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
74	PASSED

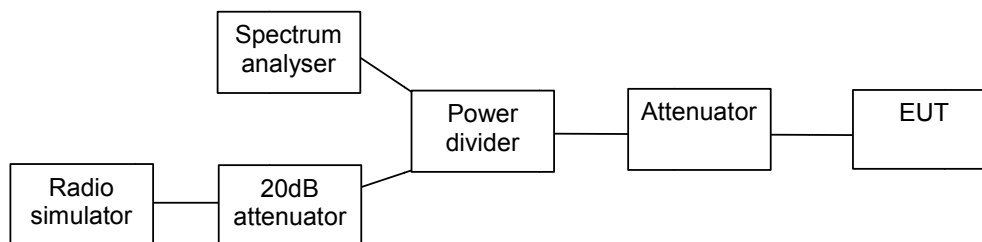
Hopping on, number of hopping frequencies



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

EUT with DUT number	RM-800, DUT 15964
Accessories with DUT numbers	BL-5J, DUT 15972 ; WH-102, DUT 15968 ; AC-11E, DUT 15971
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 45 / 100
Date of measurements	29-Sep-2011
Measured by	Anni Manninen

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.

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

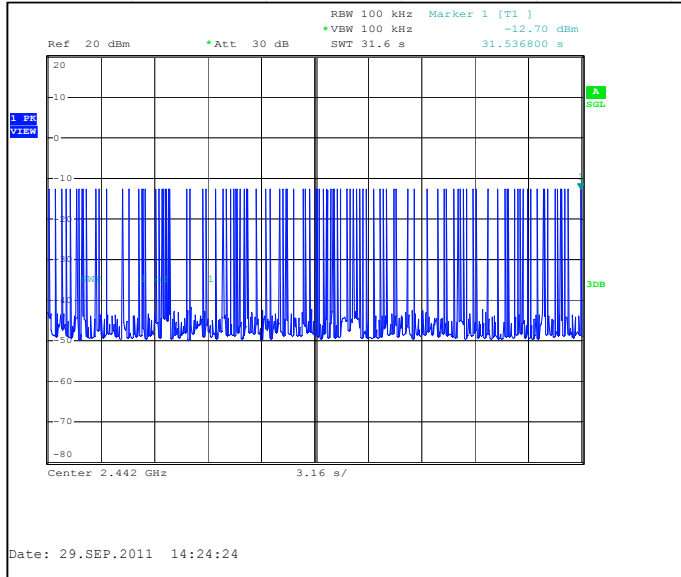
Limit [s]
<= 0.4

7.3. Bluetooth Test results

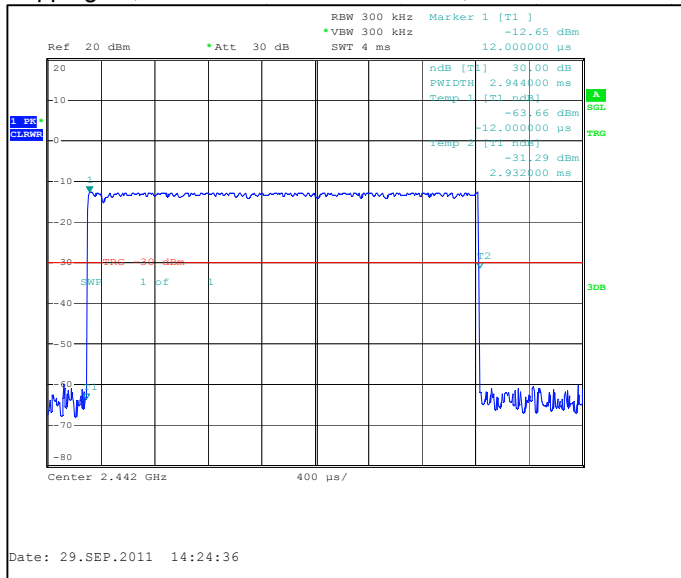
7.3.1 GFSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [ms]	Time of occupancy [s]	Result
98	2.944	0.289	PASSED

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



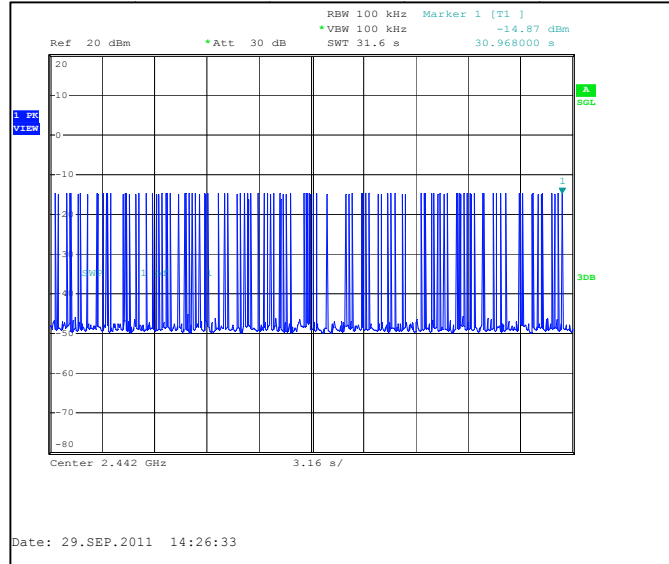
Hopping on, duration of one transmission, channel 40 / 2442 MHz



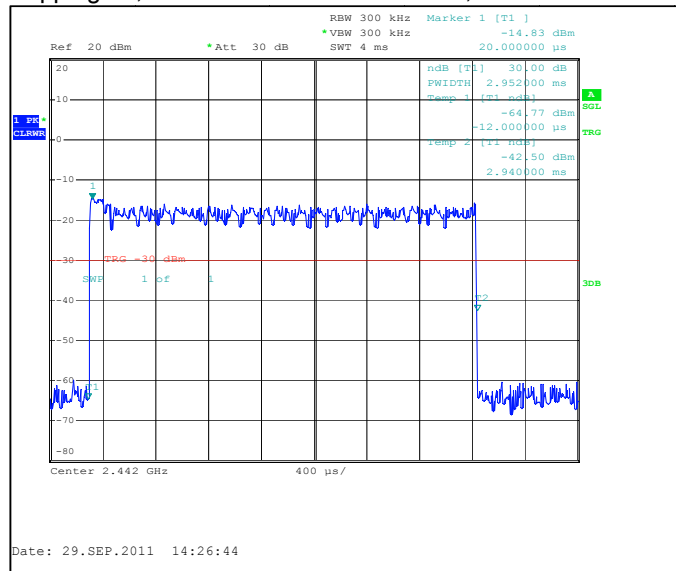
7.3.2 8DPSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [ms]	Time of occupancy [s]	Result
95	2.952	0.28	PASSED

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



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



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

EUT with DUT number	RM-800, DUT 15962
Accessories with DUT numbers	BL-5J, DUT 15972 ; WH-102, DUT 15968 ; AC-11E, DUT 15971
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 45 / 100
Date of measurements	29-Sep-2011
Measured by	Anni Manninen

8.1. Test method and limit

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

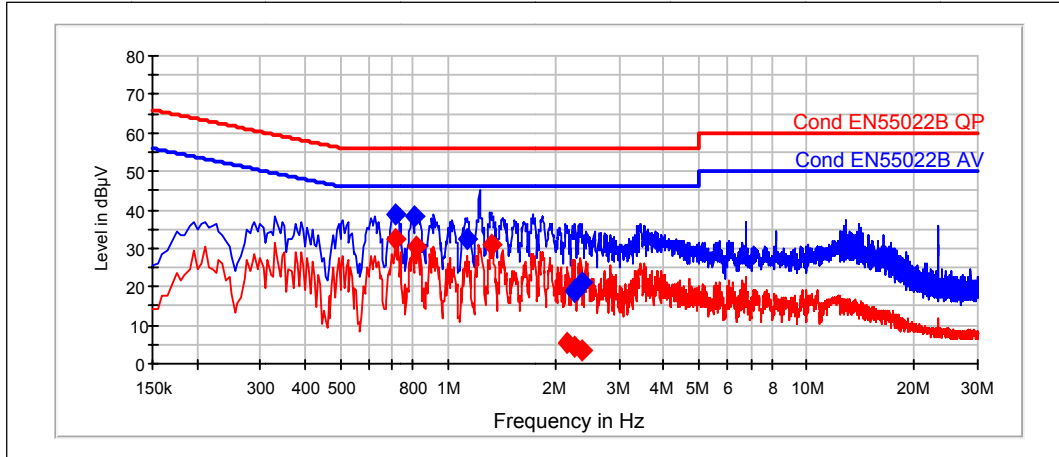
CISPR 22 Class B limits

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

8.2. Bluetooth Test results

8.2.1 GFSK modulation, PRBS packet type

Channel 40 / 2442 MHz



Quasi peak (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.71	38.86	N	PASSED
0.81	38.25	N	PASSED
1.135	32.57	L1	PASSED
2.25	18.74	L1	PASSED
2.255	19.23	L1	PASSED
2.355	21.21	N	PASSED

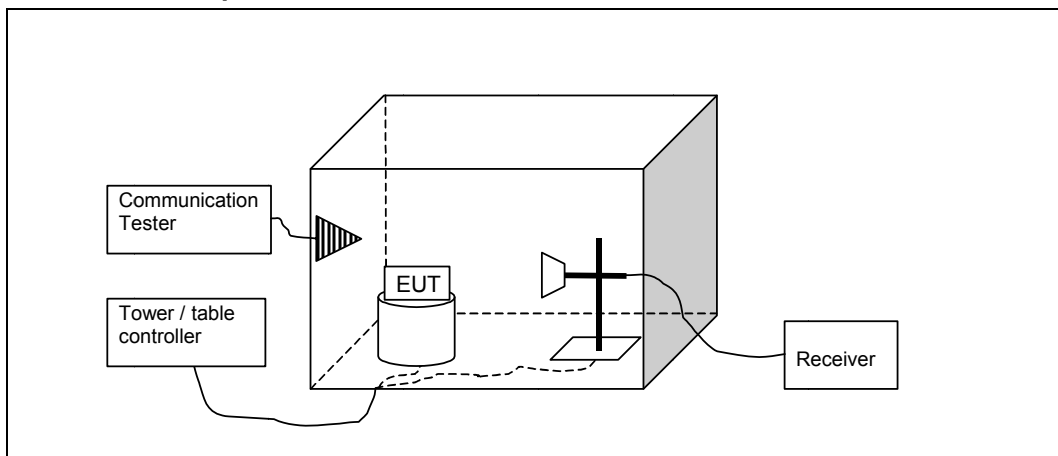
Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.71	32.15	N	PASSED
0.815	30.63	N	PASSED
1.32	30.82	N	PASSED
2.135	5.21	N	PASSED
2.24	4.28	N	PASSED
2.36	3.61	L1	PASSED

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

EUT with DUT number	RM-800, DUT 15962
Accessories with DUT numbers	BL-5J, DUT 15969; WH-102, DUT 15967; AC-11E, DUT 15970
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	19 / 51 / 104.1
Date of measurements	11-Oct-2011
Measured by	Kalle Hannila

9.1.1 Test Setup



9.2. 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

9.3. Bluetooth Test results

9.3.1 GFSK modulation, PRBS packet type

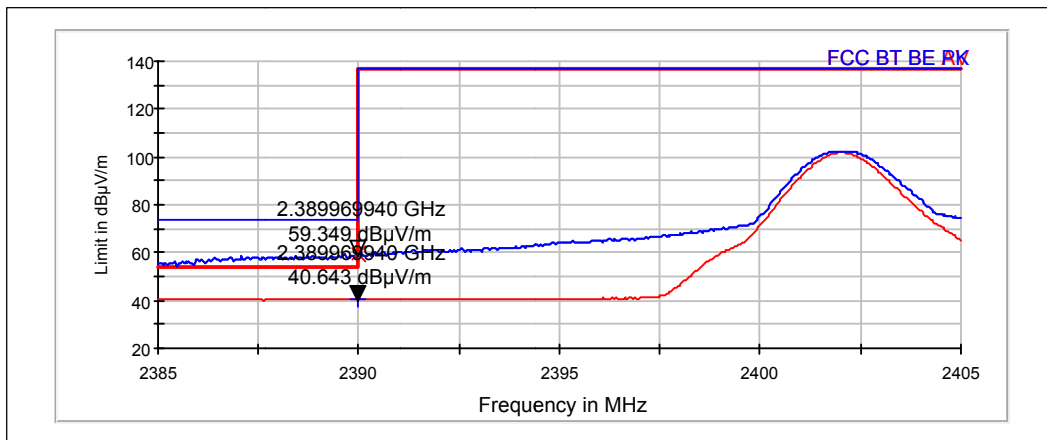
Average (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Result
0 / 2402	40.64	107.682	45.27	-4.63	PASSED
Hopping on, low end	42.7	136.529	47.33	-4.63	PASSED
78 / 2480	53.05	449.182	57.81	-4.76	PASSED
Hopping on, high end	52.86	439.417	57.62	-4.76	PASSED

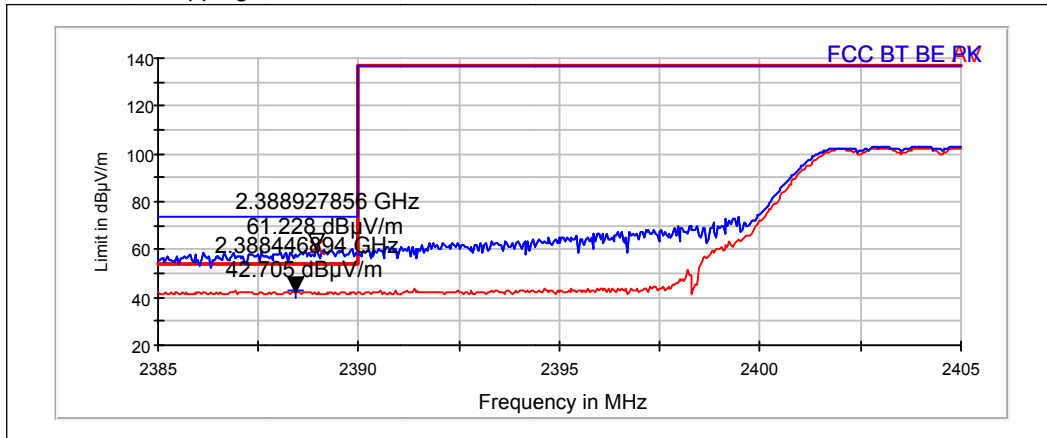
Peak (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Result
0 / 2402	59.35	927.752	63.98	-4.63	PASSED
Hopping on, low end	61.23	1151.802	65.86	-4.63	PASSED
78 / 2480	68.04	2524.506	72.8	-4.76	PASSED
Hopping on, high end	66.55	2126.016	71.31	-4.76	PASSED

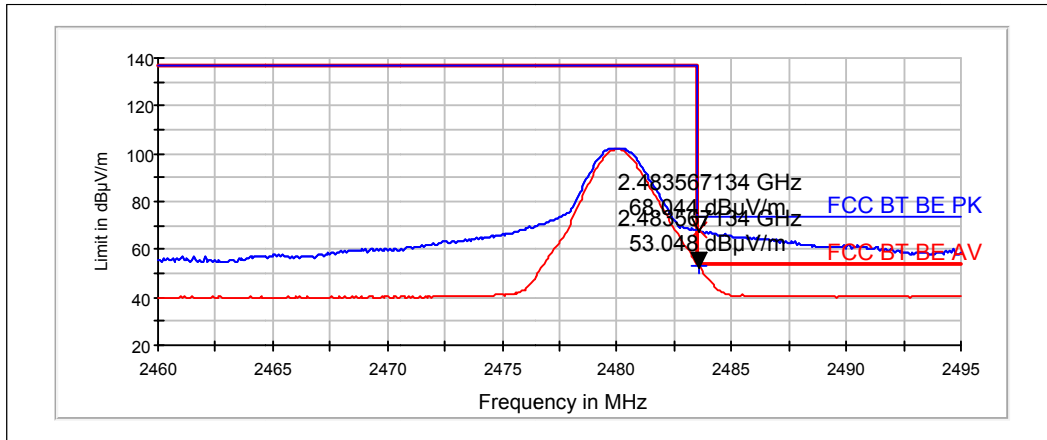
GFSK mode. Channel 0 / 2402 MHz



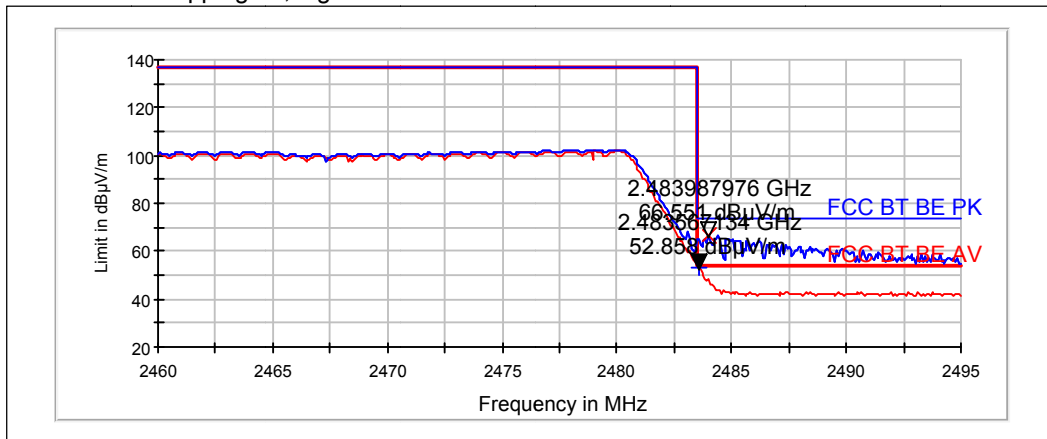
GFSK mode. Hopping on, low end



GFSK mode. Channel 78 / 2480 MHz



GFSK mode. Hopping on, high end



9.3.2 8DPSK modulation, PRBS packet type

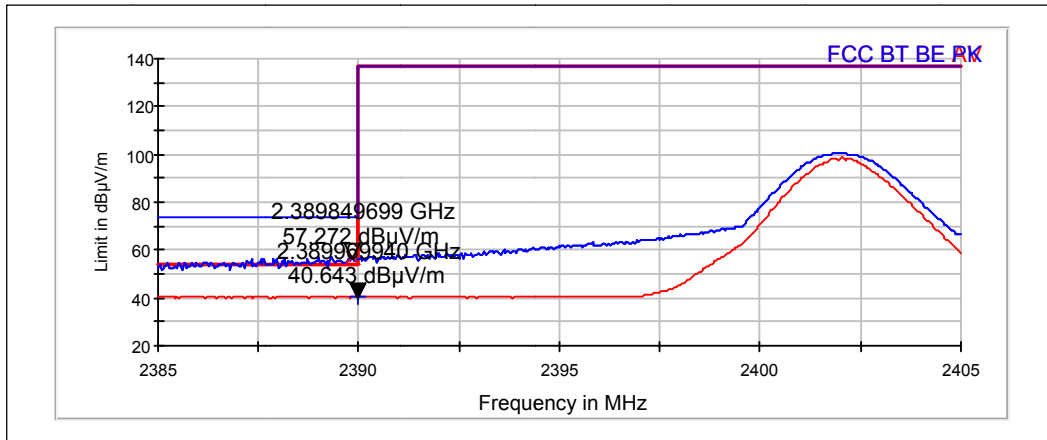
Average (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	E [μ V/m]	U_{RX} [dB μ V]	A_{TOT} [dB]	Result
0 / 2402	40.64	107.682	45.27	-4.63	PASSED
Hopping on, low end	42.09	127.197	46.72	-4.63	PASSED
78 / 2480	52.46	419.888	57.22	-4.76	PASSED
Hopping on, high end	52.66	429.652	57.42	-4.76	PASSED

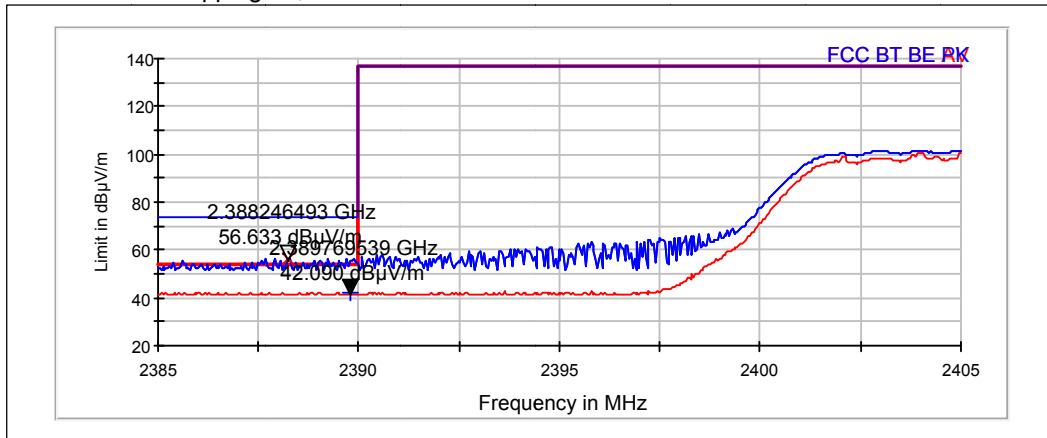
Peak (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	E [μ V/m]	U_{RX} [dB μ V]	A_{TOT} [dB]	Result
0 / 2402	57.27	730.433	61.9	-4.63	PASSED
Hopping on, low end	56.63	678.638	61.26	-4.63	PASSED
78 / 2480	65.89	1971.281	70.65	-4.76	PASSED
Hopping on, high end	64.94	1766.684	69.7	-4.76	PASSED

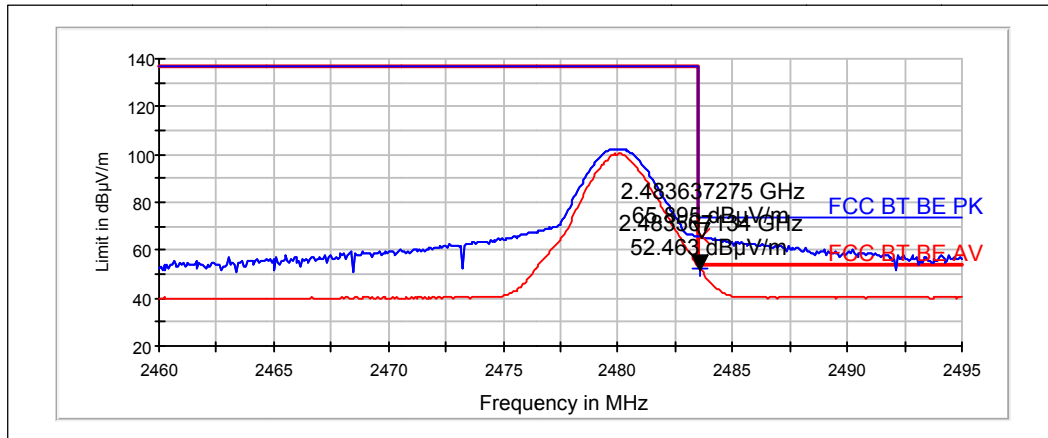
8DPSK mode. Channel 0 / 2402 MHz



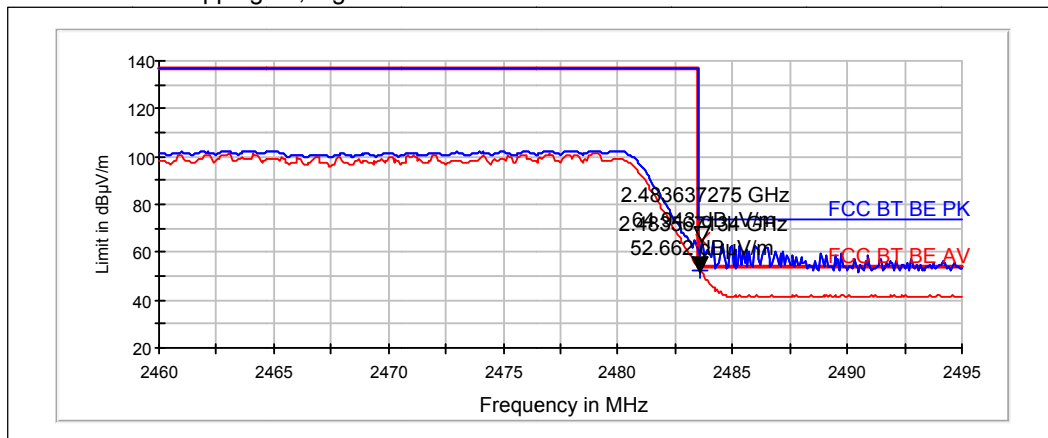
8DPSK mode. Hopping on, low end



8DPSK mode. Channel 78 / 2480 MHz



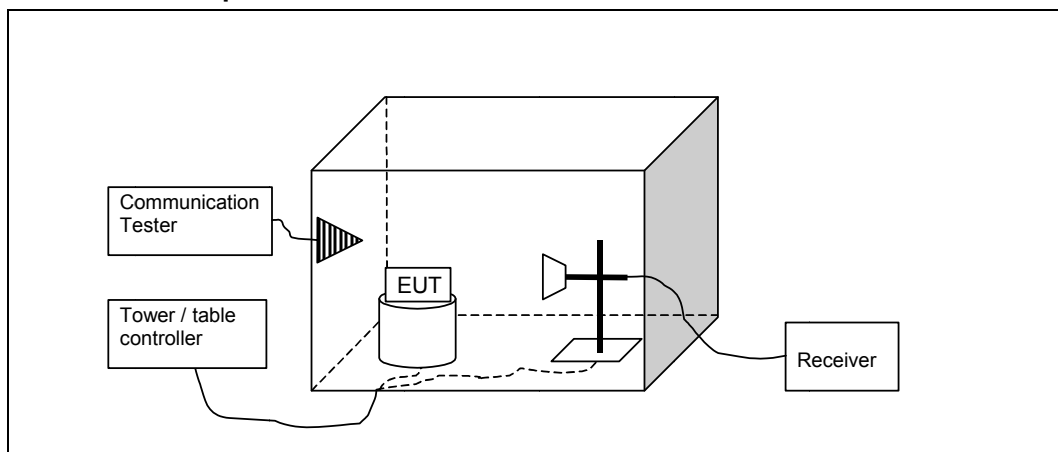
8DPSK mode. Hopping on, high end



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

EUT with DUT number	RM-800, DUT 15962
Accessories with DUT numbers	BL-5J, DUT 15969; WH-102, DUT 15967; AC-11E, DUT 15970
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	Substitution method could not be utilized as no emissions above noise floor were found during measurements.
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	19 / 51 / 104.1
Date of measurements	03-Oct-2011
Measured by	Kalle Hannila

10.1.1 Test Setup



10.2. 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

10.3. Bluetooth Test results

10.3.1 GFSK modulation, PRBS packet type

Channel 78 / 2480 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4959.9	47.58	239.414	52.34	-4.76	VERTICAL	PASSED
7441	47.68	242.187	46.68	1	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
4959.9	33.26	46.031	38.02	-4.76	VERTICAL	PASSED
7441	34.68	54.213	33.68	1	HORIZONTAL	PASSED

Channel 0 / 2402 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804.1	48.46	264.789	53.15	-4.69	VERTICAL	PASSED
7206.7	46.71	216.546	46.68	0.03	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
4804.1	32.6	42.673	37.29	-4.69	VERTICAL	PASSED
7206.7	34.04	50.35	34.01	0.03	VERTICAL	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
48.792	33.14	45.405	54.19	-21.05	VERTICAL	PASSED
49.047	32.69	43.112	53.91	-21.22	VERTICAL	PASSED
49.249	33.24	45.893	54.59	-21.35	VERTICAL	PASSED
49.458	33.31	46.265	54.8	-21.49	VERTICAL	PASSED
49.74	32.12	40.383	53.8	-21.68	VERTICAL	PASSED
139.182	19.91	9.897	42.7	-22.79	VERTICAL	PASSED
156.954	15.58	6.009	38.91	-23.33	VERTICAL	PASSED

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
10682.363	52.68	430.527	44.31	8.37	VERTICAL	PASSED
10864.025	54.15	509.918	45.09	9.06	HORIZONTAL	PASSED
14490.884	57.22	726.022	44.18	13.04	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
10682.363	40.41	104.821	32.04	8.37	VERTICAL	PASSED
10864.025	41.28	115.851	32.22	9.06	HORIZONTAL	PASSED
14490.884	44.36	165.158	31.32	13.04	HORIZONTAL	PASSED

10.3.2 8DPSK modulation, PRBS packet type

Channel 78 / 2480 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4961.5	47.08	225.866	51.83	-4.75	HORIZONTAL	PASSED
7438.8	47.38	233.938	46.42	0.96	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
4961.5	33.2	45.698	37.95	-4.75	HORIZONTAL	PASSED
7438.8	34.6	53.728	33.64	0.96	VERTICAL	PASSED

Channel 0 / 2402 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4803.4	47.92	248.828	52.61	-4.69	VERTICAL	PASSED
7204.2	47.55	238.506	47.55	0	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
4803.4	32.66	42.954	37.35	-4.69	VERTICAL	PASSED
7204.2	34.15	50.968	34.15	0	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
48.106	32.57	42.491	53.17	-20.6	VERTICAL	PASSED
49.089	34.21	51.357	55.46	-21.25	VERTICAL	PASSED
49.1	33.78	48.882	55.04	-21.26	VERTICAL	PASSED
49.159	34.05	50.385	55.34	-21.29	VERTICAL	PASSED
49.957	32.82	43.737	54.64	-21.82	VERTICAL	PASSED
50.335	31.69	38.393	52.22	-20.53	HORIZONTAL	PASSED
50.528	29.14	28.625	51.39	-22.25	VERTICAL	PASSED

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
10645.389	54.25	515.585	45.76	8.49	VERTICAL	PASSED
11571.446	53.44	469.786	45.23	8.21	VERTICAL	PASSED
14475.35	56.87	697.349	43.79	13.08	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
10645.389	40.56	106.598	32.07	8.49	VERTICAL	PASSED
11571.446	40.47	105.536	32.26	8.21	VERTICAL	PASSED
14475.35	44.41	166.169	31.33	13.08	VERTICAL	PASSED

11. Test Equipment

11.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
1759	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
1916	Communication Tester	CMTA84	R&S	15B
1992	Signal Generator	83630B	Agilent	15C, 15B
1999	Receiver	ESIB26	R&S	22/24/27, 15C, 15B
2039	Power Supply	PL330QMD	Thurlby	15C, 15B
2060	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
2068	CDN	S1	NMP	15C, 15B
2097	Pulse Limiter	ESH3-Z2	R&S	15C, 15B
2156	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2180	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2206	Signal Generator	SMX	R&S	15C, 15B
2347	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2352	Spectrum Analyzer	FSP-30	R&S	22/24/27, 15C
2359	Temperature Test Chamber	VT4002	Vötsch	22/24/27
2360	Serial Bus Converter	Serial 488A	IO Tech	22/24/27
2362	Power Supply	NGPX 70/5	R&S	22/24/27
2388	Bluetooth Tester	CBT	R&S	15B
2389	Signal Generator	SMJ 100A	R&S	15B
2390	Directional Coupler	DC2600	AR	-
6009	GPS Antenna	SA-700	Chronos	15C
6010	GPS Network amplifier	NLA20FPDC	GPS Networking, Inc	15C
6011	GPS signal Splitter	LDCBS1x4	GPS Networking, Inc	15C
6012	CDN	CDN USB/c	Teseq	-
6015	Receiver	ESI	R&S	22/24, 15C, 15B
-	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	ES-K1 v.1.71	R&S	22/24/27, 15C, 15B
6036	Data Logger	175-H2	Testo	22/24/27, 15C, 15B
6038	Data Logger	Testo 580	Testo	22/24/27, 15C, 15B
6039	USB Interface	5541765	Testo	22/24/27, 15C, 15B
2059	V-network	ESH3-Z6	R&S	-
6044	V-network	ESH3-Z6	R&S	-
6045	Power splitter	11667B	Agilent	22/24/27, 15C
6046	Attenuator 10dB	8493C	Agilent	22/24/27, 15C
6047	Attenuator 20dB	8493C	Agilent	22/24/27, 15C

11.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
1917	Communication Tester	CMTA84	R&S	15B
1988	Antenna	HL562	R&S	22/24/27, 15C, 15B
1989	Relay Switch Unit	TS-RSP	R&S	22/24/27, 15C, 15B
2009	Signal Generator	SMP 22	R&S	22/24/27, 15C, 15B
2027	CDN	M2 (modified) DC1	MEB	22/24/27, 15C, 15B
2028	CDN	M3 (modified) DC2	MEB	22/24/27, 15C, 15B
2029	Power Supply	PL330	Thurlby	22/24/27, 15C
2043	Band Reject Filter	WRCA824/849-0.2-6SS	Wainwright	22
2047	Band Reject Filter	WRCC1800/2000-0.2-10SS	Wainwright	24
2051	High Pass Filter	4HC1700-1-KK	R&S	22
2109	Power Supply	PL330QMD	Thurlby	22/24/27, 15C, 15B
2116	Controller	EMCO 2090	ETS	22/24/27, 15C, 15B

Eq. No	Equipment	Type	Manufacturer	Used in
2135	CDN	CDN 801-M3	Lüthi	22/24/27, 15C, 15B
2150	High Pass Filter	F-15041	RLC	22/24/27, 15C
2156	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2176	CDN	CDN 801-M3	Lüthi	22/24/27, 15C, 15B
2180	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2188	Preamplifier	AFS4-00100300-20-23P-6	Miteq	22/24/27, 15C, 15B
2347	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2348	Controller	G-1000DXC	Yaesu	22/24/27, 15C, 15B
2349	Computer Controller	GS-232B	Yaesu	22/24/27, 15C, 15B
2350	Preamplifier	AMF-6D-020180-29-20P	Miteq	22/24/27, 15C, 15B
2353	Receiver	ESIB26	R&S	22/24/27, 15C, 15B
2357	Band Reject Filter	WRCG2400/2483-2390/2493-35/10SS	Wainwright	15C
2361	Anechoic Chamber	3 m Semi / Full Anechoic Chamber	Euroshield	22/24/27, 15C, 15B
2364	Band Reject Filter	WRCG1877/1883 - 1870/1890-40/6SS	Wainwright	24
2366	Relay Switch Unit	TS-RSP	R&S	22/24/27, 15C, 15B
2384	Band Reject Filter	WRCG832/838-825/845-40/5SS	Wainwright	22
2388	Bluetooth Tester	CBT	R&S	15B
2389	Signal Generator	SMJ 100A	R&S	15B
2391	Band Reject Filter	WRCG1729.4/1735.4-1722.4/1742.4-40/6SS	Wainwright	27
6009	GPS Antenna	SA-700	Chronos	15C
6010	GPS Network amplifier	NLA20FPDC	GPS Networking, Inc	15C
6011	GPS signal Splitter	LDCBS1x4	GPS Networking, Inc	15C
6014	Substitute Calibration Cable	Sucoflex 104PB	Suhner	-
-	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	ES-K1 v.1.71	R&S	22/24/27, 15C, 15B
-	RF immunity / Emission Software	EMC32	R&S	22/24/27, 15C, 15B
6037	Data Logger	175-H2	Testo	22/24/27, 15C, 15B
6038	Data Logger	Testo 580	Testo	22/24/27, 15C, 15B
6039	USB Interface	5541765	Testo	22/24/27, 15C, 15B