FCC Part 15C Compliance Test Report

Test Report no.:	FCC15C_RM-648_12.doc	**Date of Report:**	19-Apr-2010
Number of pages:	43	**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.: **IC recognition no.:**	99059 661AL-1		
Tested devices/ accessories:	**Phone RM-648 / Battery BL-5F / AC-Charger AC-6E / Headset WH-102**		
FCC ID:	QTKRM-648	**IC:**	661AD-RM648
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:	 Digitally signed by Ruben Hansen DN: cn=Ruben Hansen, o=Nokia, ou=CertMT, email=ruben.hansen@nokia.com, c=DK Date: 2010.04.20 08:37:34 +02'00'		

Ruben Hansen, System Manager, EMC

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	13-Mar-2010
Testing completed	30-Mar-2010
The customer's contact person	Mohammad El-haj
Test Plan referred to	T:\Projects\RM-627\TestPlan\RS_testplan_RM-627.xls
Notes	None
Document name	FCC15C_RM-648_12.doc

1.1. EUT and Accessory Information

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

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-627	004402130272374	0200A	-	041.005RD	24391
Phone	RM-627	004402130272671	0200A	-	041.005RD	24392
Phone	RM-627	004402130275708	0200A	-	041.005RD	24402
Phone	RM-627	004402130270147	0200A	-	041.005RD	24398
Phone	RM-627	004402130271996	0200A	-	041.005RD	24412
Battery	BL-5F	363563936631160875 6;0670498	-	-	-	24371
Battery	BL-5F	363563936631160875 2;0670498	-	-	-	24373
AC Charger	AC-6E	394349940114121018 6;0675590	-	-	-	24387
AC Charger	AC-6E	394349940114121012 6;0675590	-	-	-	24384
Headset	WH-102	06947869453I1R00533	-	-	-	24383
Headset	WH-102	06947869453I1R00076	-	-	-	24376

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-627 are re-used for certification of the QTKRM-648. The tables above indicate the results, which will be re-used.

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CONTENTS

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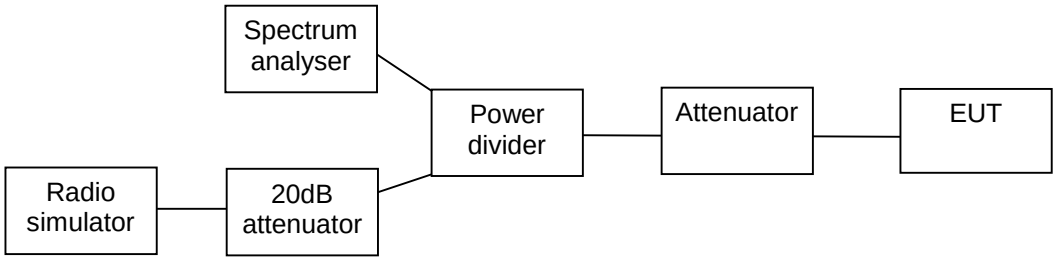
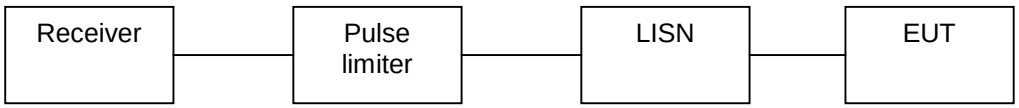
2. Test setups

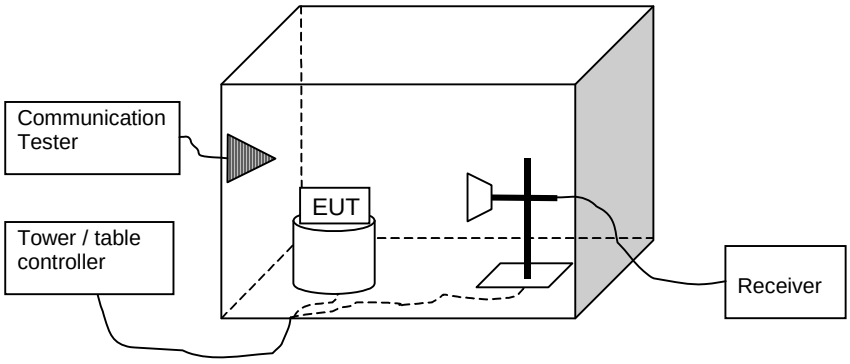
2.1. Conducted RF test setup



2.2. AC powerline conducted emissions test setup



2.3. Radiated test setup



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3. Conducted peak output power

(FCC §15.247(b)(1), RSS-210 A8.4 (2))

EUT with DUT number	RM-627 DUT 24391
Accessories with DUT numbers	BL-5F DUT 24371, AC-6E DUT 24387, WH-102 DUT 24383
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 36 / 102.5
Date of measurements	18-Mar-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

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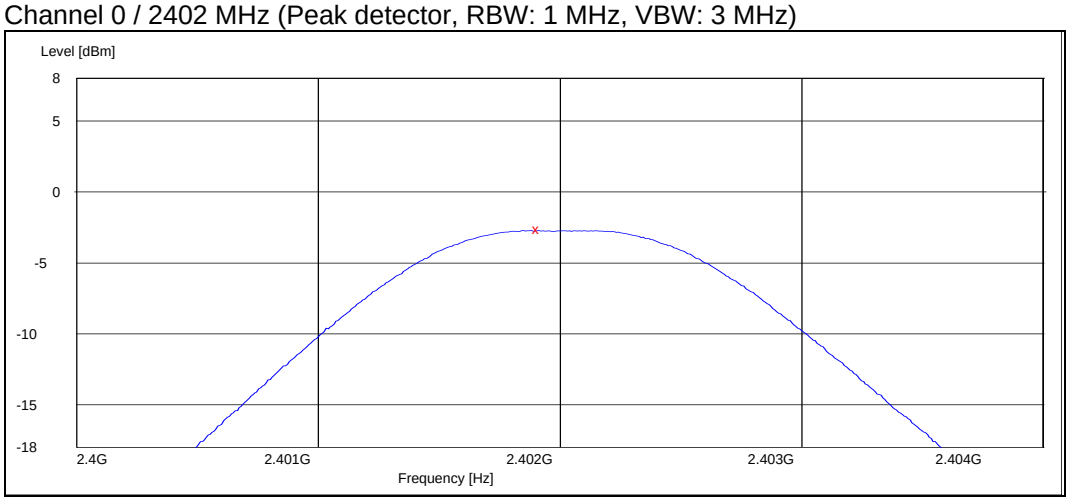
3.2. Bluetooth Test results

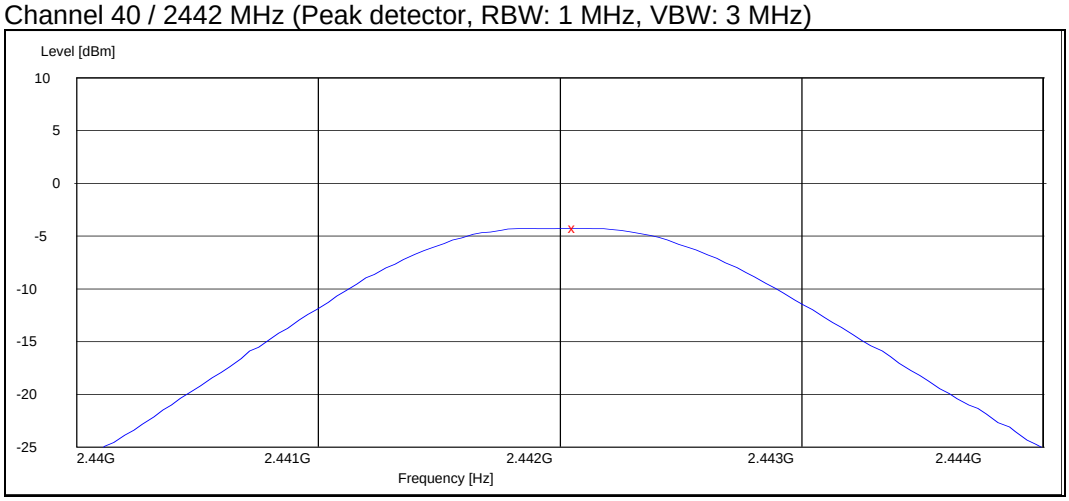
3.2.1 GFSK modulation, PRBS packet type

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
0 / 2402	-2.60	0.550	Passed
40 / 2442	-4.20	0.380	Passed
78 / 2480	-5.20	0.302	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)

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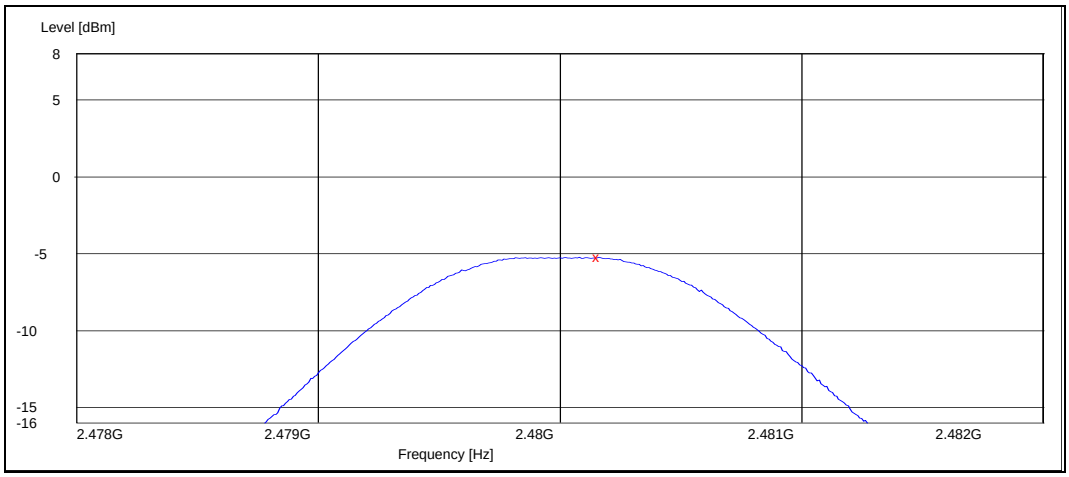
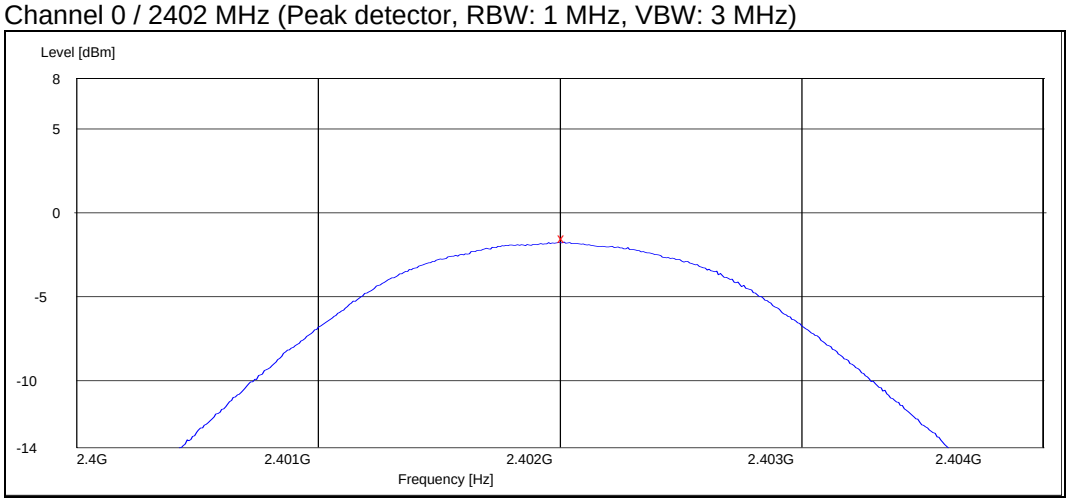


3.2.2 8DPSK modulation, PRBS packet type

Channel / f_C [MHz]	P [dBm]	P [mW]	Result
0 / 2402	-1.50	0.708	Passed
40 / 2442	-2.80	0.525	Passed
78 / 2480	-3.40	0.457	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)

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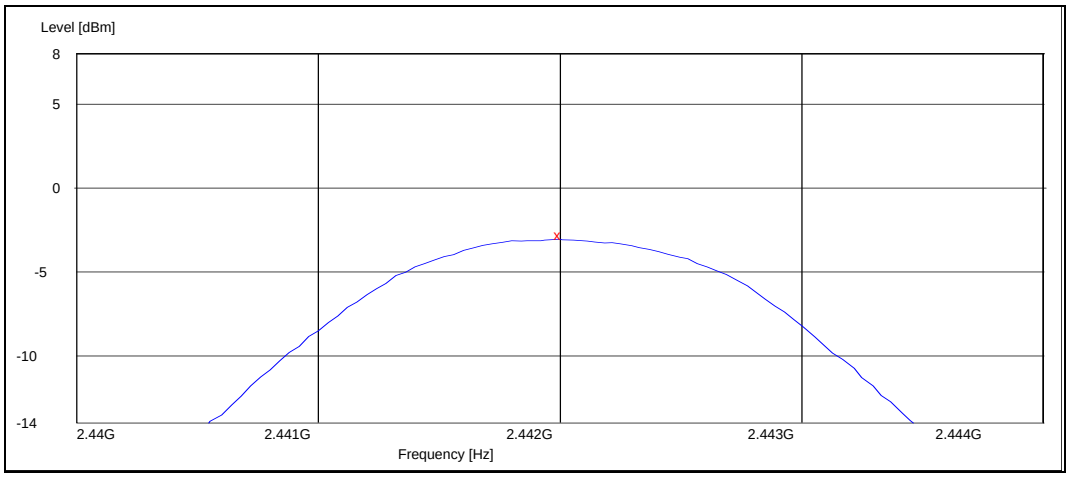
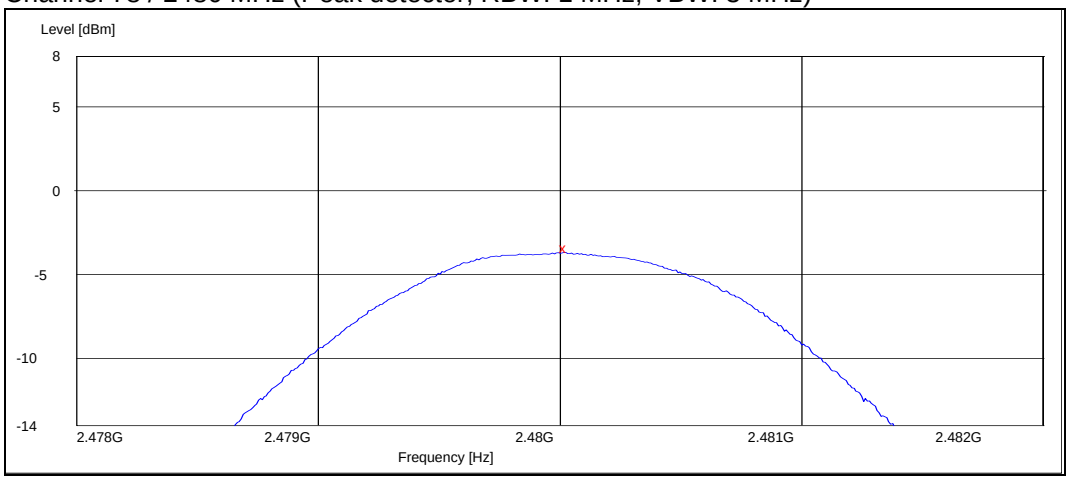


Channel 78 / 2480 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



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4. Band edge compliance of RF emissions

(FCC §15.247(d), RSS-210 A8.5)

EUT with DUT number	RM-627, DUT 24398
Accessories with DUT numbers	BL-5F, DUT 24391 ; AC-6E, DUT 24384 ; WH-102, DUT 24377
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 /42 / 100.1
Date of measurements	30-Mar-2010
Measured by	Christian Andersen

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

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4.2. Bluetooth Test results

4.2.1 GFSK modulation, PRBS packet type

Phone slide open

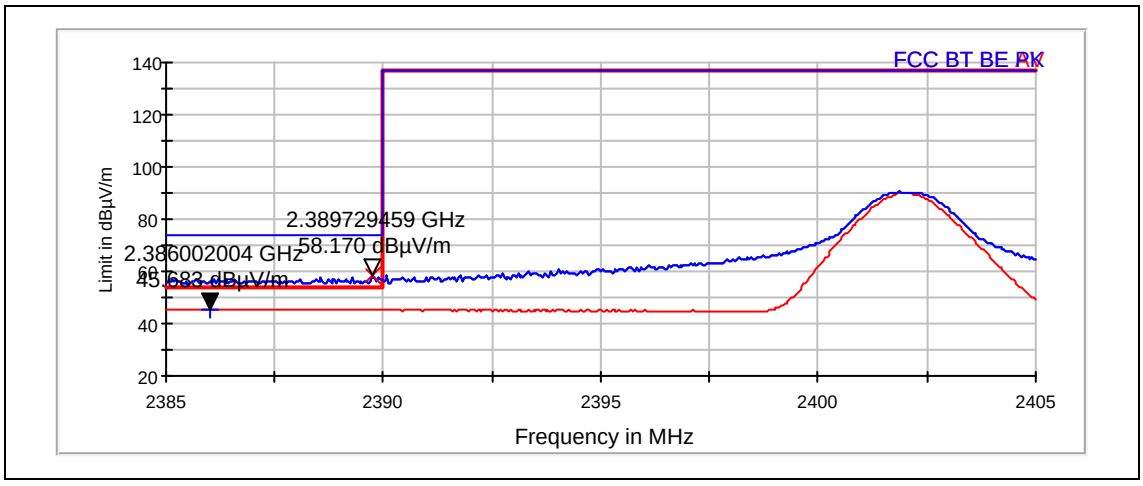
Average (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_C [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Result
0 / 2402	45.68	192.386	47.3	-1.62	Passed
Hopping on, low end	46.93	221.987	48.55	-1.62	Passed
78 / 2480	47.28	231.261	48.52	-1.24	Passed
Hopping on, high end	48.44	264.186	49.68	-1.24	Passed

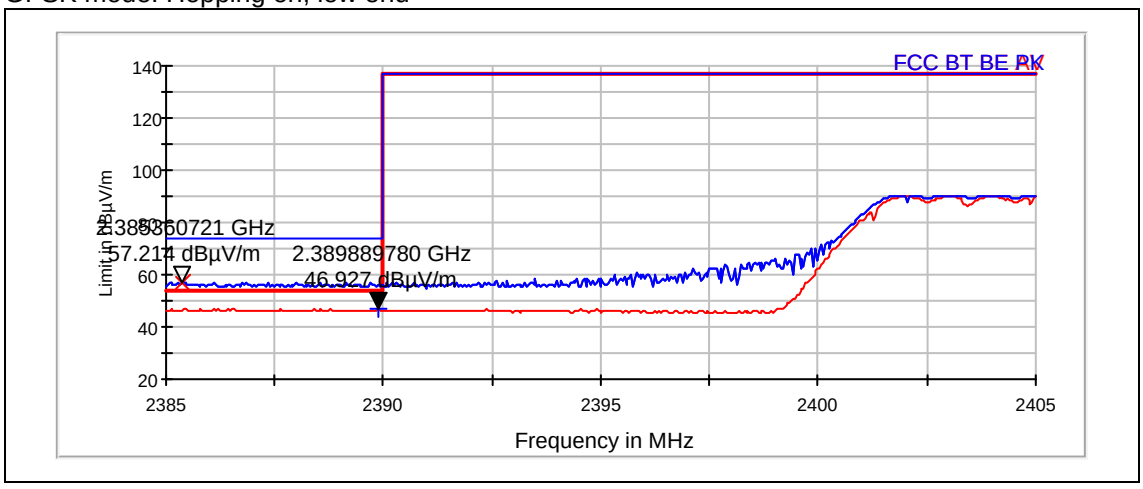
Peak (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_C [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Result
0 / 2402	58.17	810.057	59.79	-1.62	Passed
Hopping on, low end	57.21	725.589	58.83	-1.62	Passed
78 / 2480	59.04	895.234	60.28	-1.24	Passed
Hopping on, high end	59.02	893.011	60.26	-1.24	Passed

GFSK mode. Channel 0 / 2402 MHz



GFSK mode. Hopping on, low end



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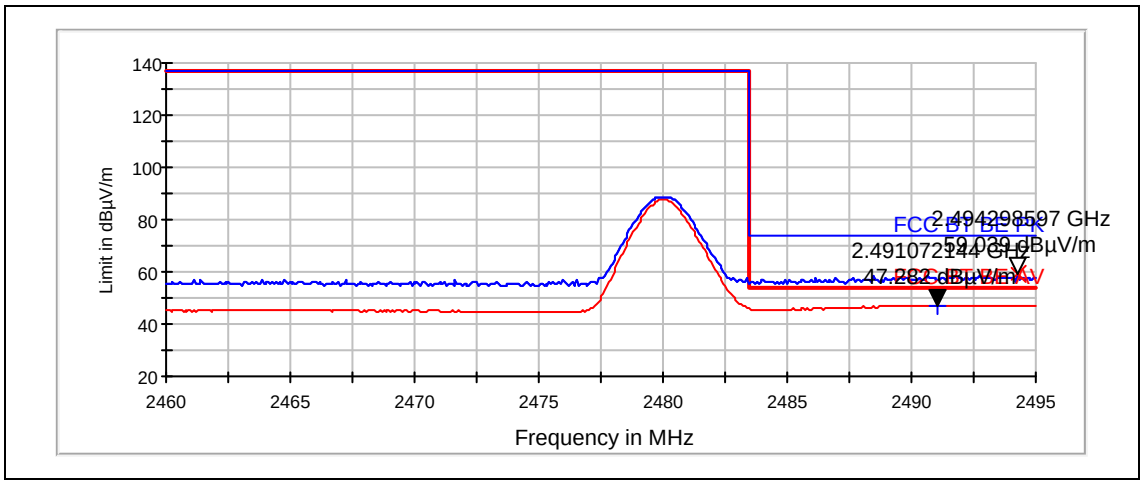
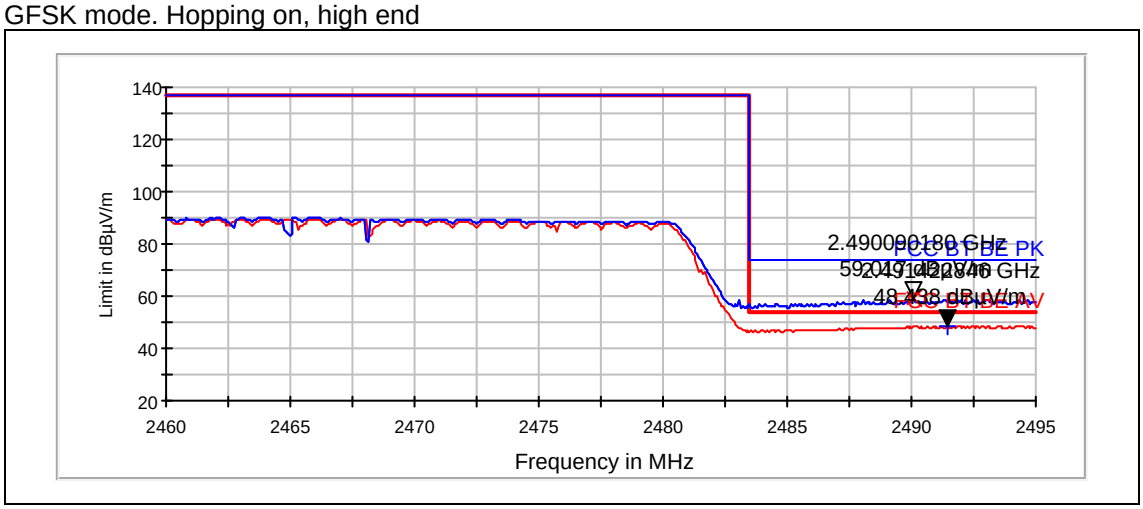
GFSK mode. Channel 78 / 2480 MHz



GFSK mode. Hopping on, high end



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Phone slide closed

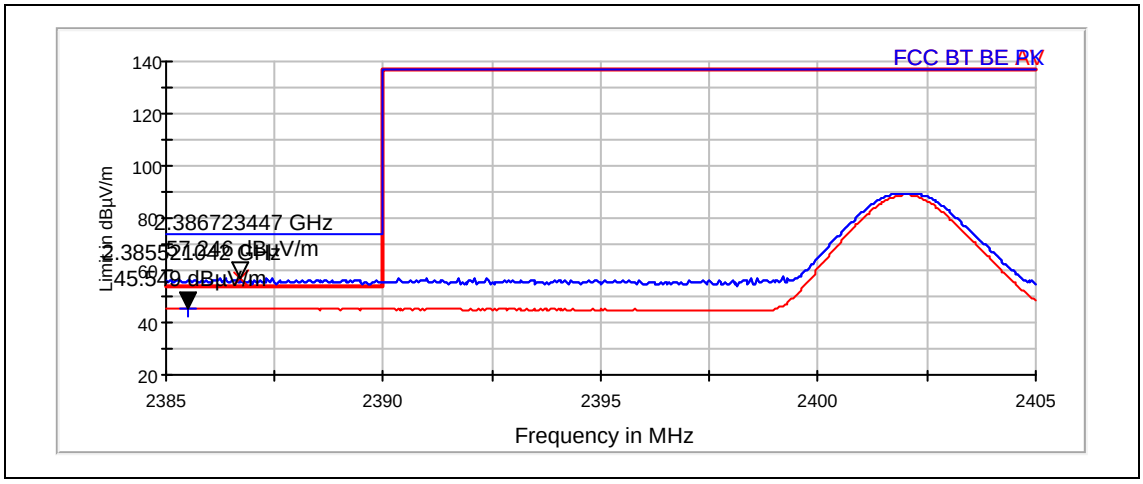
Average (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_C [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Result
0 / 2402	45.55	189.435	47.17	-1.62	Passed
Hopping on, low end	46.85	220.119	48.47	-1.62	Passed
78 / 2480	47.38	233.864	48.62	-1.24	Passed
Hopping on, high end	48.4	263.097	49.64	-1.24	Passed

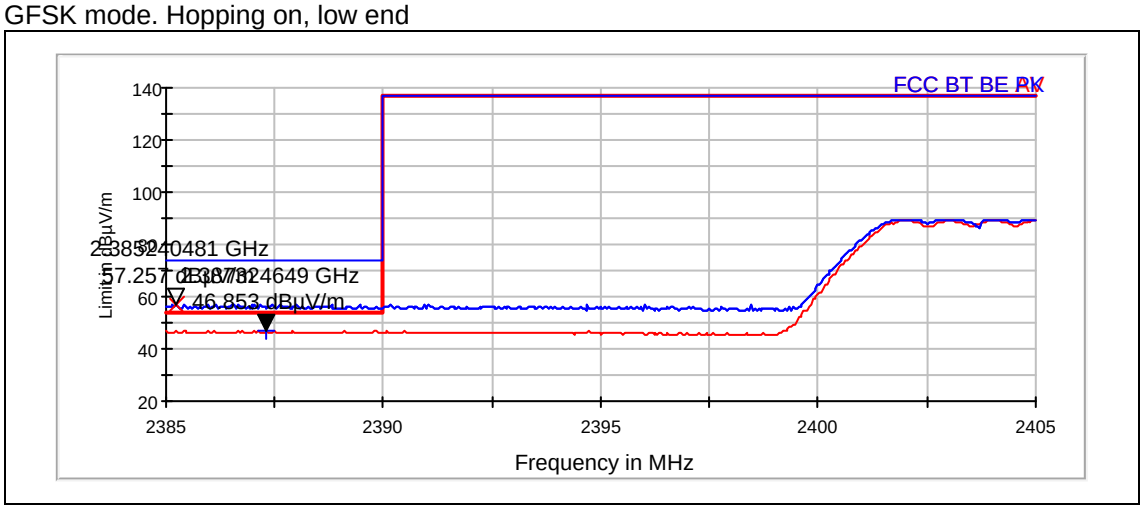
Peak (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_C [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Result
0 / 2402	57.25	728.312	58.87	-1.62	Passed
Hopping on, low end	57.26	729.191	58.88	-1.62	Passed
78 / 2480	58.98	889.364	60.22	-1.24	Passed
Hopping on, high end	58.63	854.514	59.87	-1.24	Passed

GFSK mode. Channel 0 / 2402 MHz



GFSK mode. Hopping on, low end



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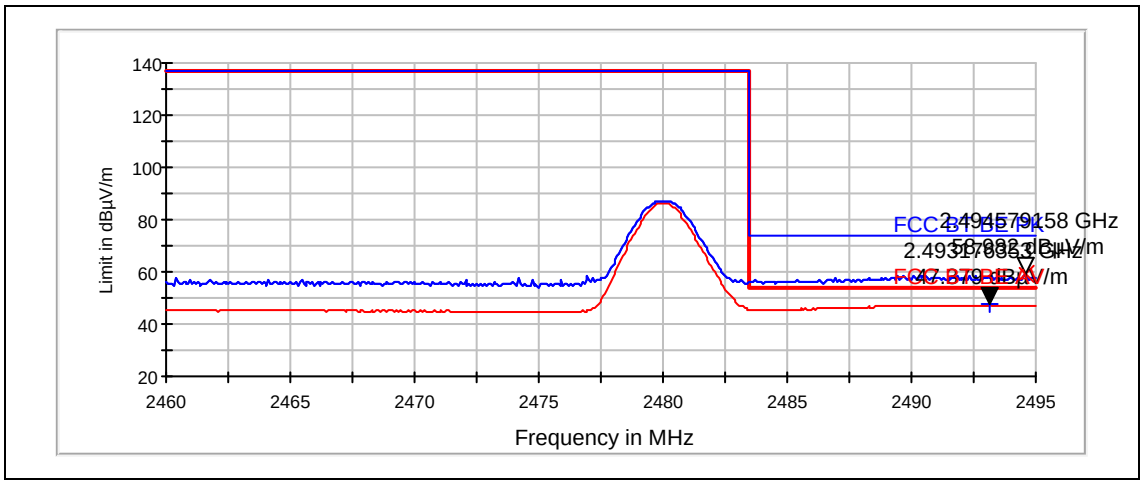
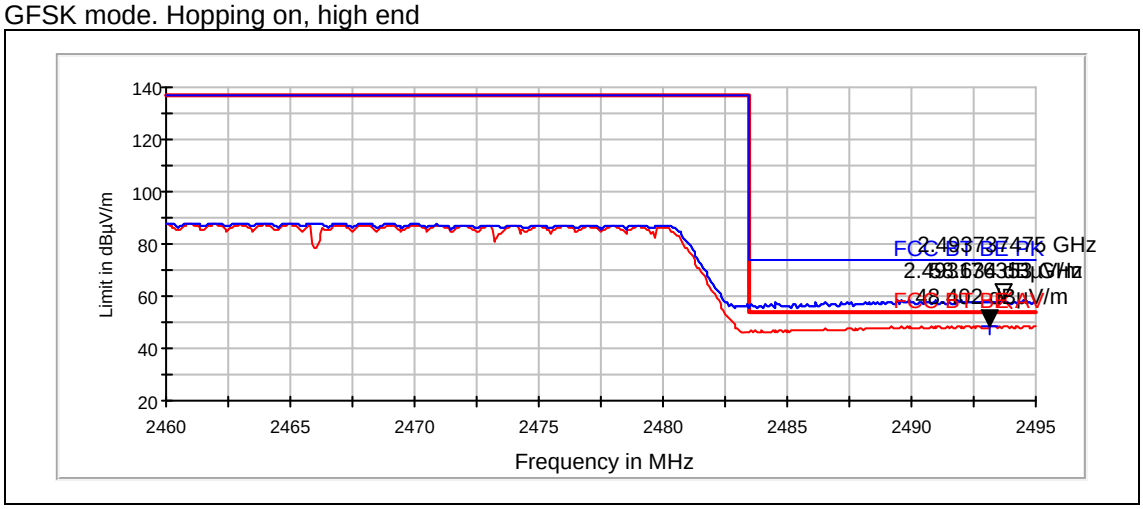
GFSK mode. Channel 78 / 2480 MHz



GFSK mode. Hopping on, high end



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4.2.2 8DPSK modulation, PRBS packet type

Phone slide open

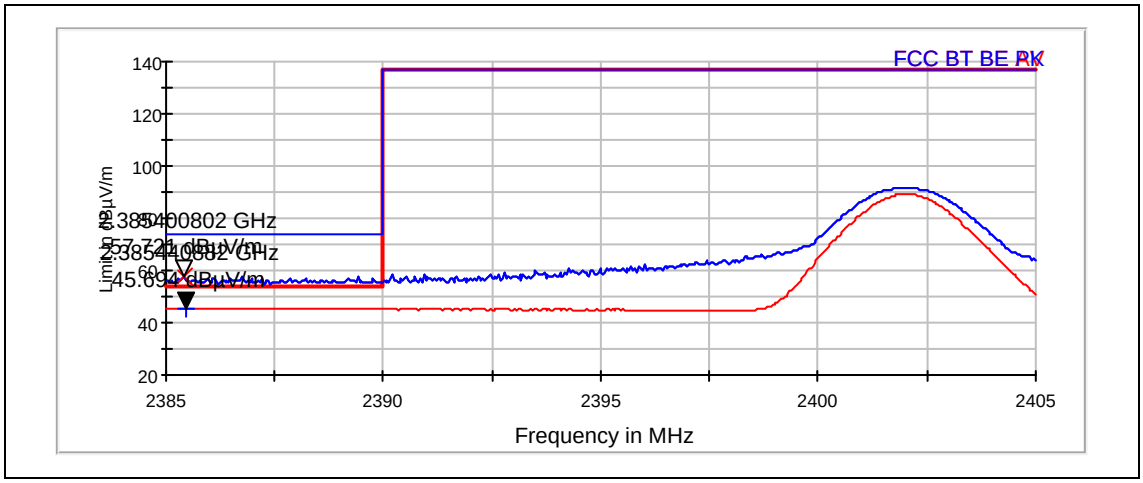
Average (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_C [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Result
0 / 2402	45.69	192.627	47.31	-1.62	Passed
Hopping on, low end	46.83	219.548	48.45	-1.62	Passed
78 / 2480	47.26	230.725	48.5	-1.24	Passed
Hopping on, high end	48.62	269.802	49.86	-1.24	Passed

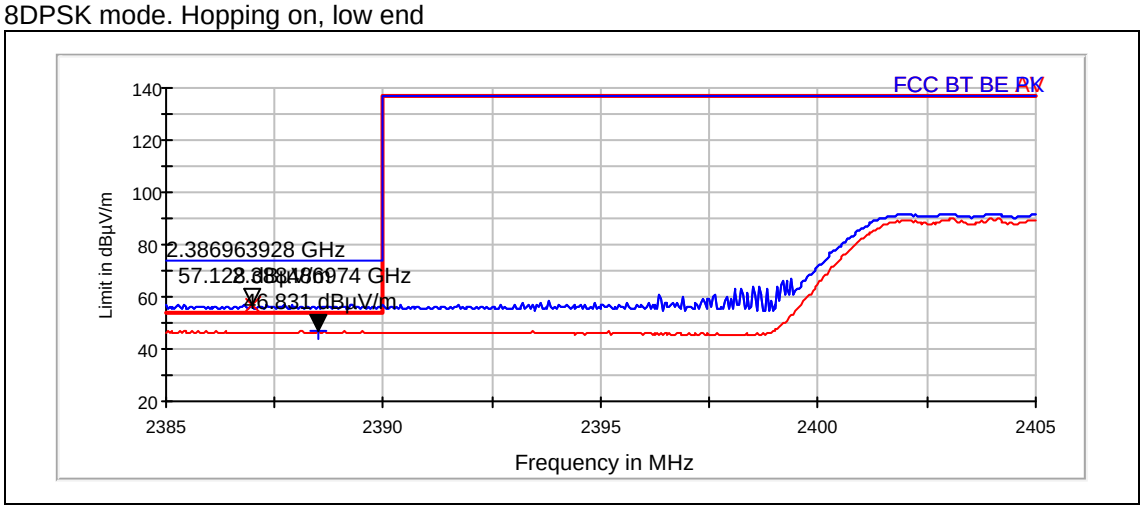
Peak (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_C [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Result
0 / 2402	57.72	769.261	59.34	-1.62	Passed
Hopping on, low end	57.13	718.439	58.75	-1.62	Passed
78 / 2480	58.68	858.896	59.92	-1.24	Passed
Hopping on, high end	59.04	895.846	60.28	-1.24	Passed

8DPSK mode. Channel 0 / 2402 MHz



8DPSK mode. Hopping on, low end



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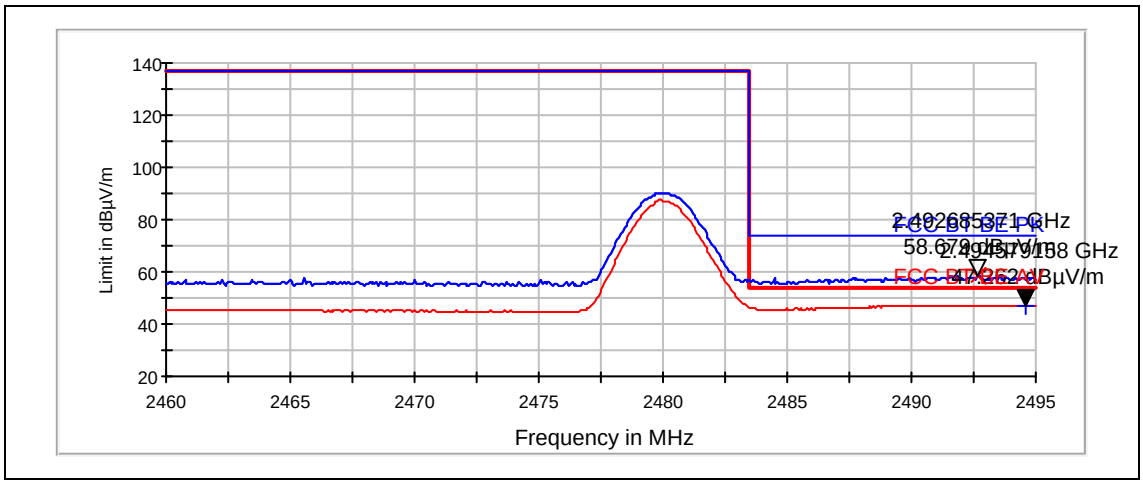
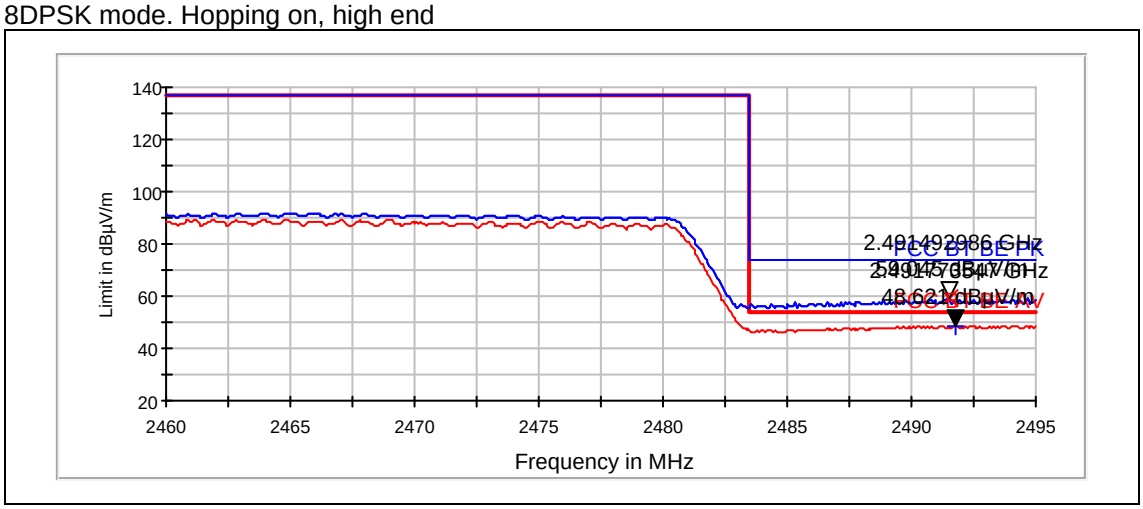
8DPSK mode. Channel 78 / 2480 MHz



8DPSK mode. Hopping on, high end



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Phone in slide closed mode

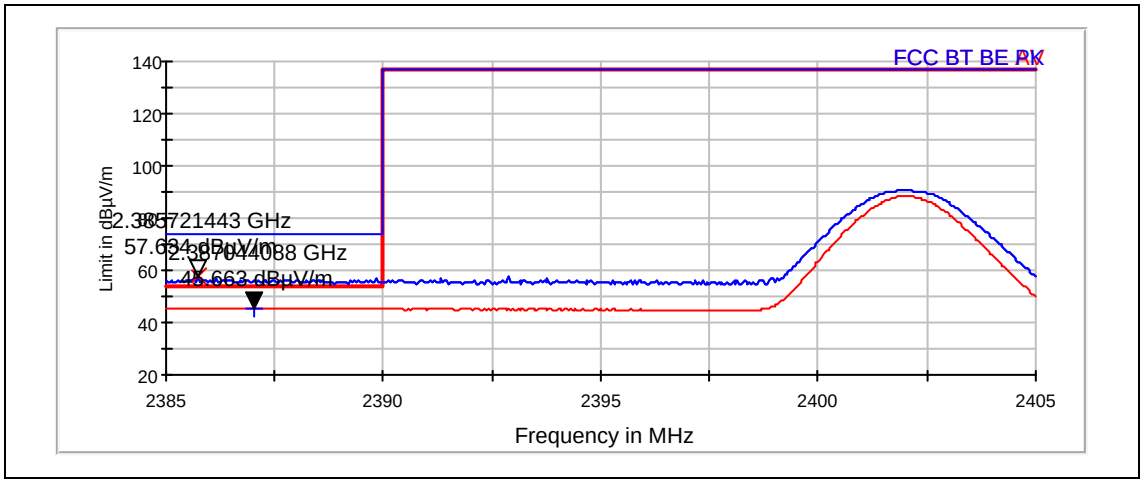
Average (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_C [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Result
0 / 2402	45.66	191.938	47.28	-1.62	Passed
Hopping on, low end	47.04	224.936	48.66	-1.62	Passed
78 / 2480	47.36	233.421	48.6	-1.24	Passed
Hopping on, high end	48.77	274.58	50.01	-1.24	Passed

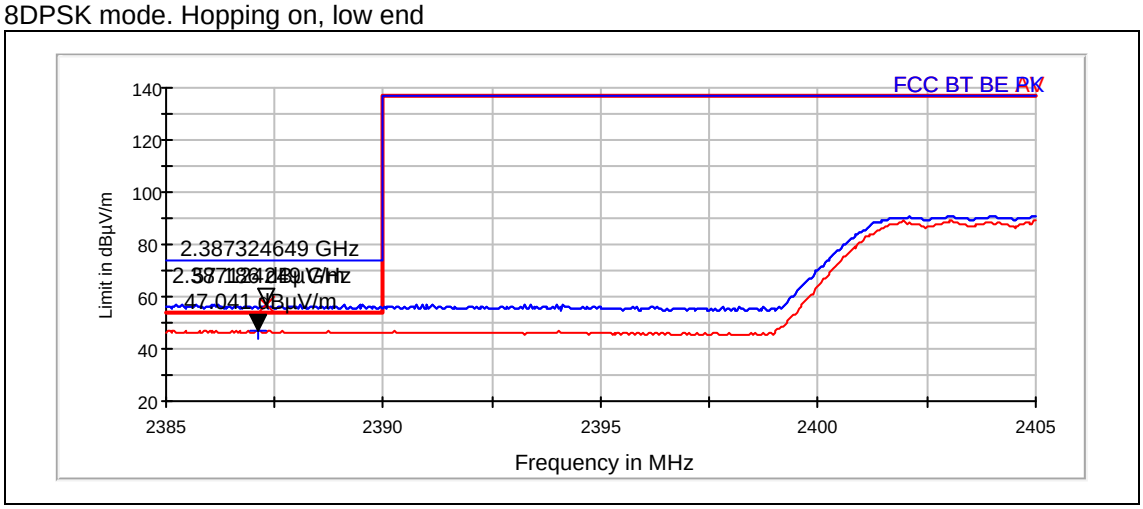
Peak (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_C [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Result
0 / 2402	57.63	761.544	59.25	-1.62	Passed
Hopping on, low end	57.19	723.259	58.81	-1.62	Passed
78 / 2480	59.2	911.796	60.44	-1.24	Passed
Hopping on, high end	58.64	855.068	59.88	-1.24	Passed

8DPSK mode. Channel 0 / 2402 MHz



8DPSK mode. Hopping on, low end



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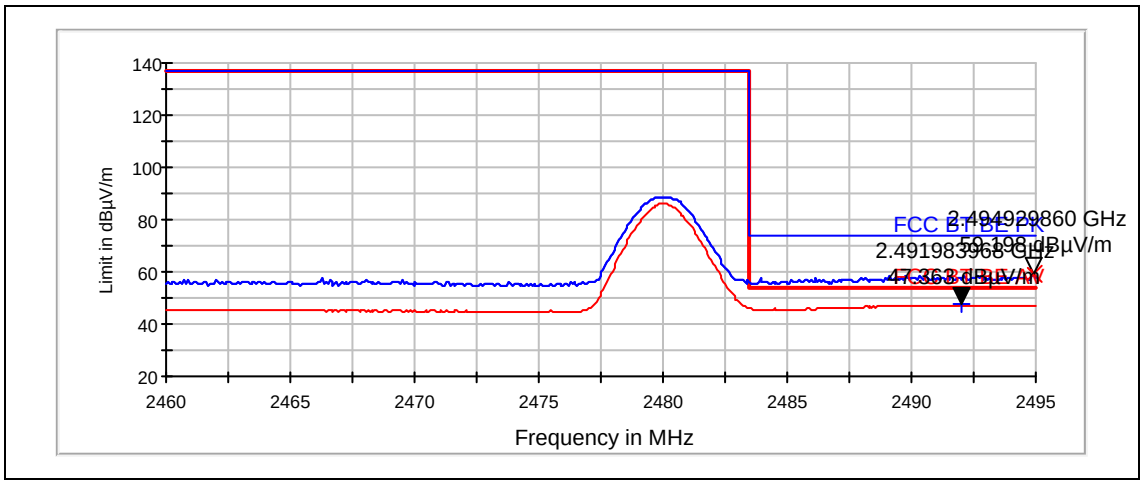
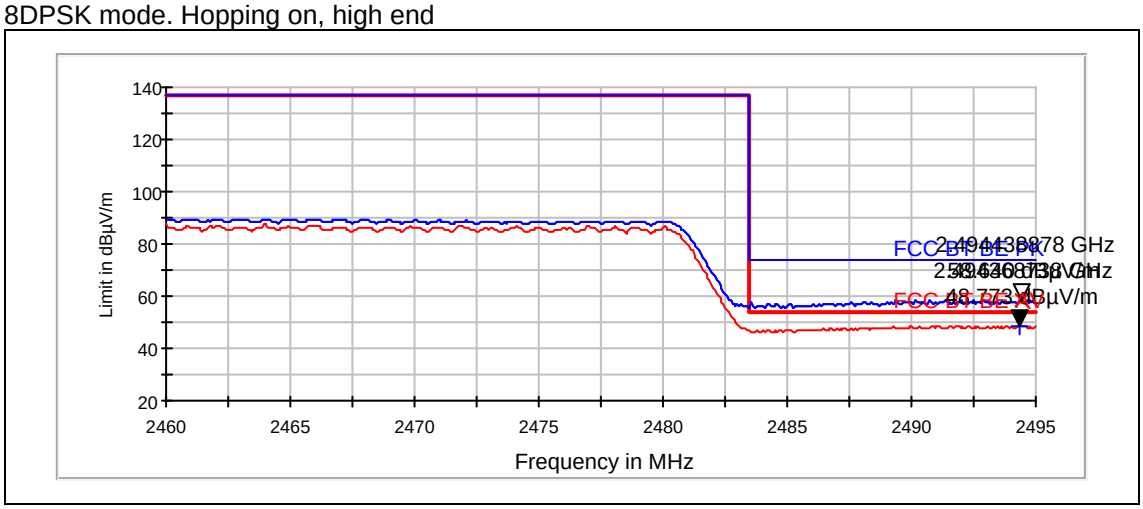
8DPSK mode. Channel 78 / 2480 MHz



8DPSK mode. Hopping on, high end



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5. Spurious RF conducted emissions

(FCC §15.247(d), RSS-A8.5)

EUT with DUT number	RM-627 DUT 24391
Accessories with DUT numbers	BL-5F DUT 24371, AC-6E DUT 24387, WH-102 DUT 24383
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 36 / 102.5
Date of measurements	18-Mar-2010
Measured by	Ruben Hansen

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

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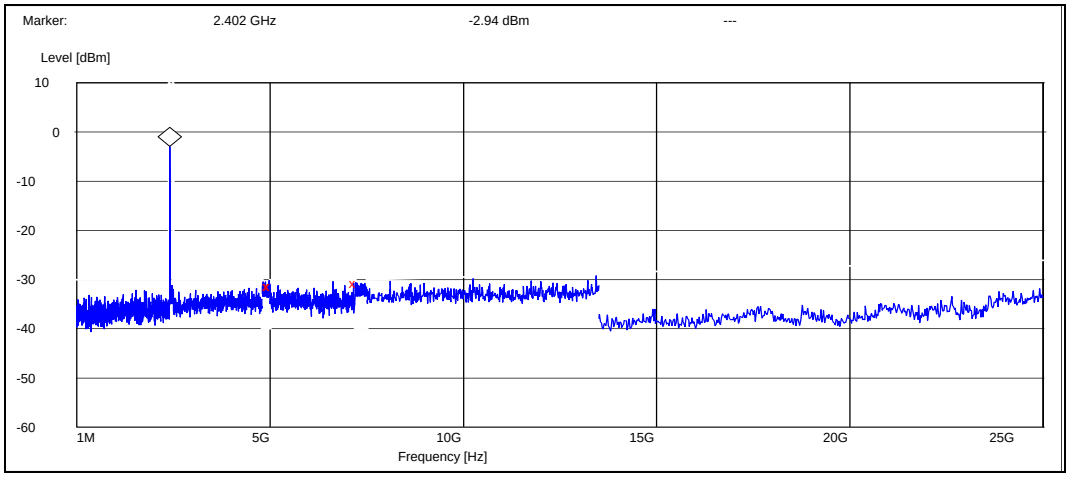
5.2. Bluetooth Test results

5.2.1 GFSK modulation, PRBS packet type

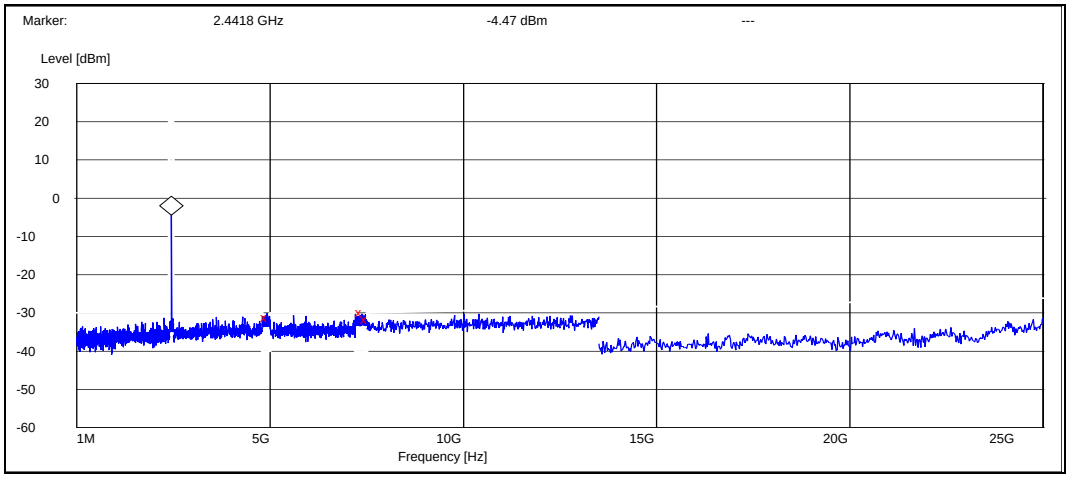
Channel 0 / 2402 MHz



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

Frequency [MHz]	P [dBc]	Result
4972.000000	-28.463690	Passed
5000.000000	-28.363690	Passed
7214.400000	-27.763690	Passed

Channel 40 / 2442 MHz



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

Frequency [MHz]	P [dBc]	Result
4924.800000	-26.529976	Passed
7364.400000	-25.329976	Passed
7500.000000	-27.329976	Passed

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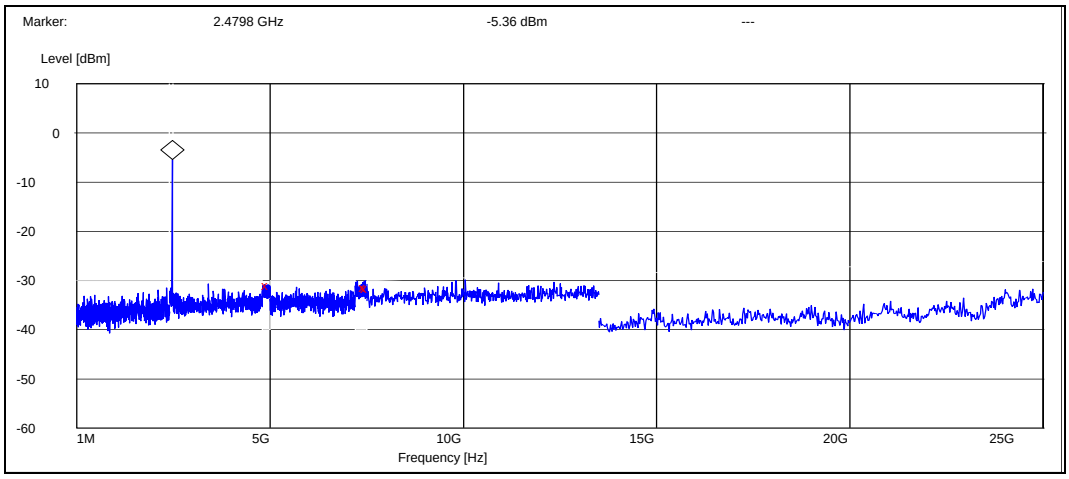
Channel 78 / 2480 MHz

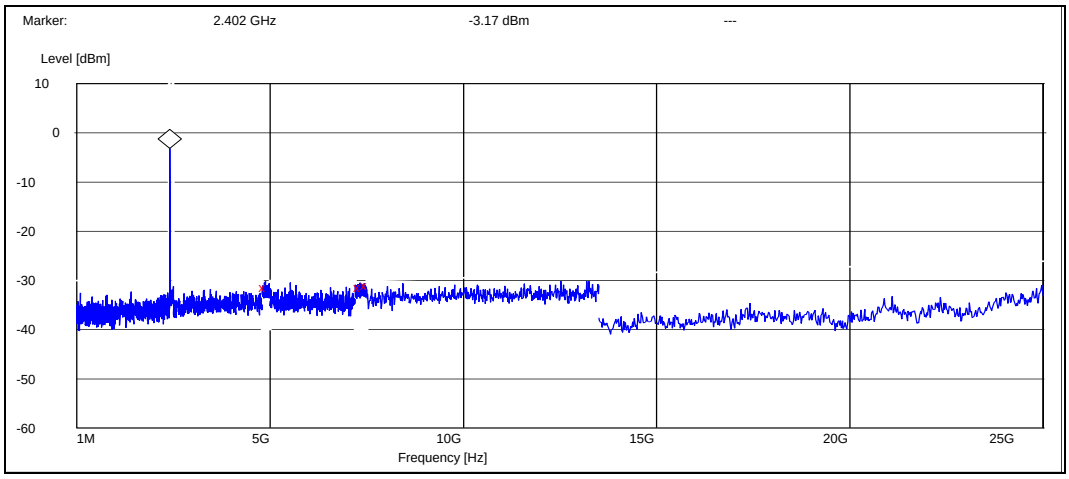


Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4954.800000	-25.537764	Passed
7467.000000	-25.937764	Passed
7500.000000	-26.137764	Passed

5.2.2 8DPSK modulation, PRBS packet type

Channel 0 / 2402 MHz



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

Frequency [MHz]	P [dBc]	Result
4882.000000	-28.231795	Passed
7329.000000	-28.331795	Passed
7500.000000	-27.931795	Passed

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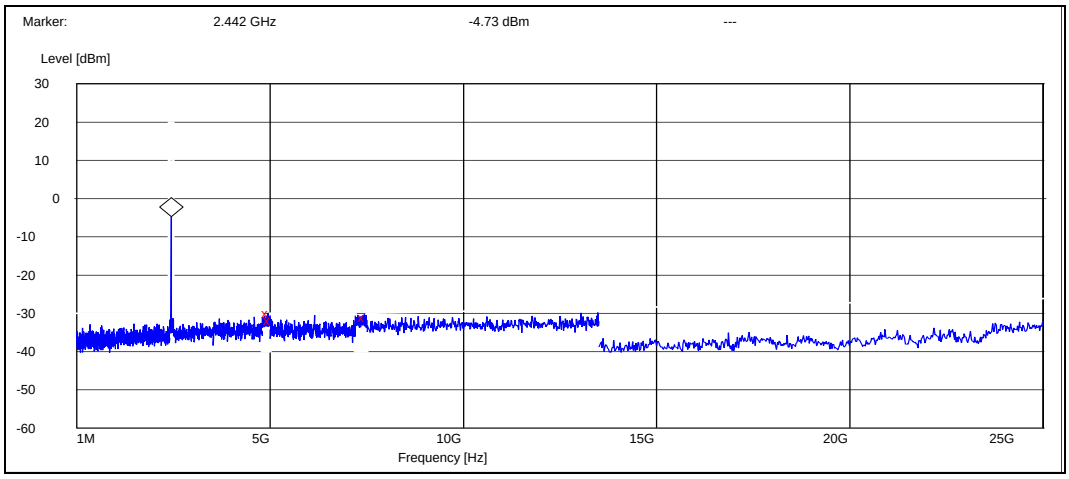
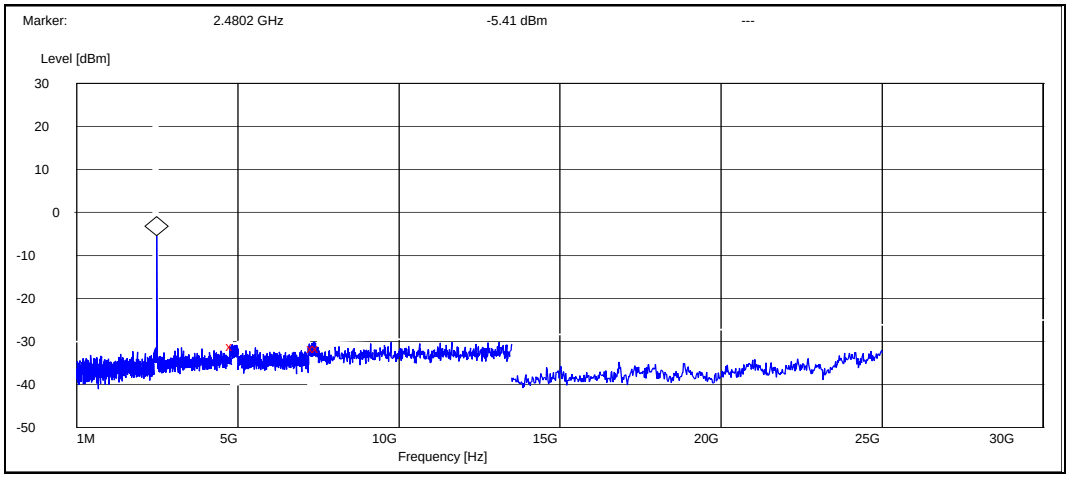
Channel 40 / 2442 MHz



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

Frequency [MHz]	P [dBc]	Result
4949.200000	-25.366342	Passed
5000.000000	-27.066342	Passed
7436.400000	-26.466342	Passed

Channel 78 / 2480 MHz



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

Frequency [MHz]	P [dBc]	Result
4816.800000	-25.691827	Passed
7354.800000	-26.291827	Passed
7500.000000	-26.191827	Passed

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6. Spurious radiated emissions

(FCC §15.247(d), §15.209, RSS-210 A8.5)

EUT with DUT number	RM-627, DUT 24402
Accessories with DUT numbers	BL-5F, DUT 24391 ; AC-6E, DUT 24384 ; WH-102, DUT 24377
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	Phone tested in slide open mode.
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 42 / 100.1
Date of measurements	30-Mar-2010
Measured by	Christian Andersen

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

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

Frequency range [MHz]	Limit [µV/m]	Limit [dBµV/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

TX mode, 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	34.30	51.88	34.80	-0.5	HORIZONTAL	Passed
7206.000000	41.40	117.49	32.60	8.8	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4804.000000	22.60	13.49	23.10	-0.5	HORIZONTAL	Passed
7206.000000	30.00	31.62	21.20	8.8	HORIZONTAL	Passed

TX mode, 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
37.835872	14.60	5.37	30.90	-16.3	VERTICAL	Passed
73.286573	14.00	5.01	39.70	-25.7	HORIZONTAL	Passed
75.069940	9.40	2.95	34.90	-25.5	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
7345.193387	42.60	134.90	32.90	9.7	HORIZONTAL	Passed
7383.269539	43.40	147.91	33.50	9.9	HORIZONTAL	Passed
17459.417836	52.60	426.58	29.00	23.6	HORIZONTAL	Passed
17922.841683	59.10	901.57	29.90	29.2	HORIZONTAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
7348.193387	29.80	30.90	19.90	9.9	HORIZONTAL	Passed
7381.769539	30.20	32.36	20.40	9.8	HORIZONTAL	Passed
17458.417836	39.90	98.86	16.30	23.6	HORIZONTAL	Passed
17924.841683	45.90	197.24	16.70	29.2	HORIZONTAL	Passed

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TX mode, 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	36.40	66.07	36.50	-0.1	HORIZONTAL	Passed
7440.000000	42.80	138.04	33.20	9.6	HORIZONTAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4960.000000	23.50	14.96	23.60	-0.1	HORIZONTAL	Passed
7440.000000	30.30	32.73	20.70	9.6	HORIZONTAL	Passed

6.2.2 8DPSK modulation, PRBS packet type

TX mode, 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	35.80	61.66	36.30	-0.5	HORIZONTAL	Passed
7206.000000	45.60	190.55	36.80	8.8	HORIZONTAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4804.000000	23.90	15.67	24.40	-0.5	HORIZONTAL	Passed
7206.000000	31.90	39.36	23.10	8.8	HORIZONTAL	Passed

TX mode, channel 40 / 2442 MHz

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
38.176353	21.00	11.22	37.50	-16.5	VERTICAL	Passed
73.486573	24.30	16.41	50.00	-25.7	HORIZONTAL	Passed
74.269940	22.70	13.65	48.30	-25.6	HORIZONTAL	Passed
111.323046	18.00	7.94	41.60	-23.6	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
7282.559118	41.70	121.62	33.20	8.5	HORIZONTAL	Passed
7340.679359	42.50	133.35	33.00	9.5	VERTICAL	Passed
7402.299599	42.30	130.32	32.00	10.3	VERTICAL	Passed
7426.849699	43.10	142.89	33.70	9.4	VERTICAL	Passed
17408.311623	52.30	412.10	29.30	23.0	HORIZONTAL	Passed
17998.493988	58.30	822.24	28.40	29.9	VERTICAL	Passed

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Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
7283.559118	28.40	26.30	19.90	8.5	HORIZONTAL	Passed
7341.179359	29.60	30.20	20.00	9.6	VERTICAL	Passed
7402.299599	29.80	30.90	19.50	10.3	VERTICAL	Passed
7427.849699	29.90	31.26	20.50	9.4	VERTICAL	Passed
17405.311623	39.40	93.33	16.50	22.9	HORIZONTAL	Passed
17993.493988	45.60	190.55	15.80	29.8	VERTICAL	Passed

TX mode, 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	36.60	67.61	36.70	-0.1	HORIZONTAL	Passed
7440.000000	43.10	142.89	33.50	9.6	HORIZONTAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4960.000000	23.90	15.67	24.00	-0.1	HORIZONTAL	Passed
7440.000000	30.60	33.88	21.00	9.6	HORIZONTAL	Passed

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7. AC powerline conducted emissions

(FCC §15.207, RSS-GEN 7.2.2)

EUT with DUT number	RM-627 DUT 24402
Accessories with DUT numbers	BL-5F DUT 24373, AC-6E DUT 24384, WH-102 DUT 24383
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	none
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 41 / 102
Date of measurements	25-Mar-2010
Measured by	Bo Moltved Christiansen

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

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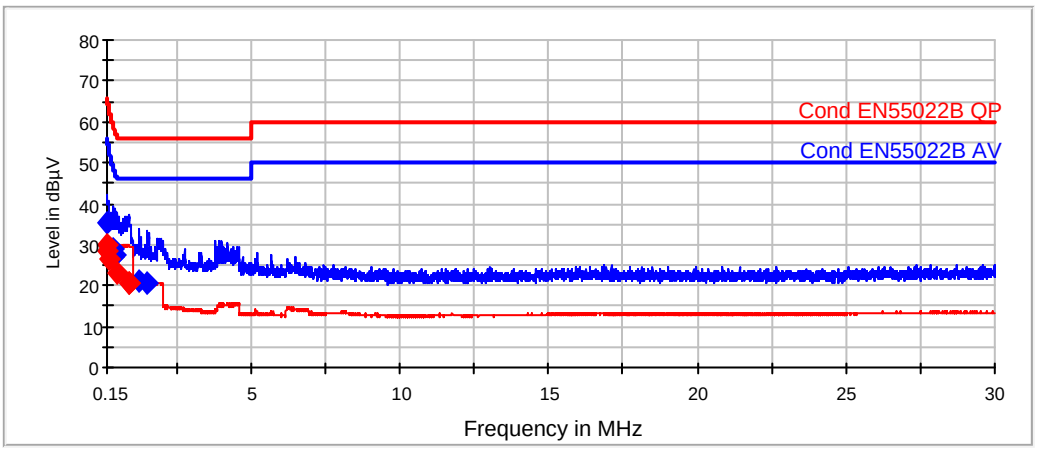
7.2. Bluetooth Test results

7.2.1 GFSK modulation, PRBS packet type

Channel 40 / 2442 MHz



Quasi peak

Frequency[MHz]	Level [dBµV]	Meas. time[ms]	IF-BW[kHz]	Line	Margin	Result
0.175	35.49	20000	10	L1	29.22	Passed
0.345	29.18	20000	10	L1	29.88	Passed
0.36	26.87	20000	10	N	31.83	Passed
0.44	27.29	20000	10	L1	29.76	Passed
1.255	21.22	20000	10	L1	34.8	Passed
1.52	20.55	20000	10	L1	35.4	Passed

Average

Frequency[MHz]	Level [dBµV]	Meas. time[ms]	IF-BW[kHz]	Line	Margin	Result
0.15	29.95	20000	10	L1	26	Passed
0.175	28.6	20000	10	L1	26.12	Passed
0.23	26.32	20000	10	L1	26.15	Passed
0.52	22.86	20000	10	L1	23.1	Passed
0.87	20.51	20000	10	L1	25.5	Passed
0.885	20.43	20000	10	L1	25.6	Passed

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8. 20 dB bandwidth

(FCC §15.247(a)(1), RSS-210 A8.1 (a))

EUT with DUT number	RM-627 DUT 24391
Accessories with DUT numbers	BL-5F DUT 24371, AC-6E DUT 24387, WH-102 DUT 24383
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 36 / 102.5
Date of measurements	18-Mar-2010
Measured by	Ruben Hansen

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

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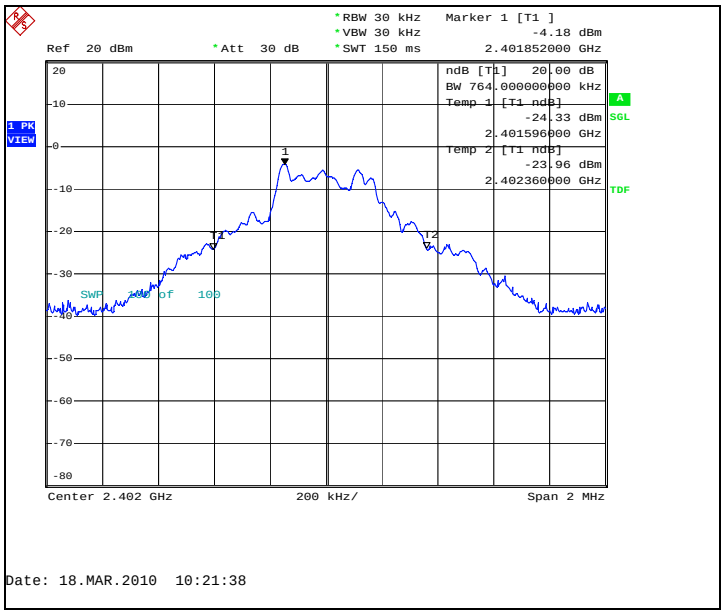
8.2. Bluetooth Test results

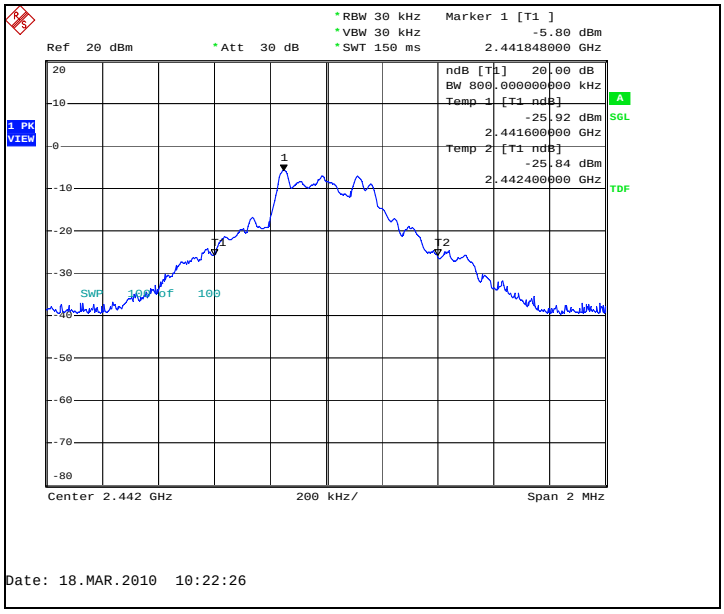
8.2.1 GFSK modulation, PRBS packet type

Channel / f_C [MHz]	20 dB bandwidth [kHz]	Result
0 / 2402	764.000	Passed
40 / 2442	800.000	Passed
78 / 2480	808.000	Passed

Channel 0 / 2402 MHz



Channel 40 / 2442 MHz



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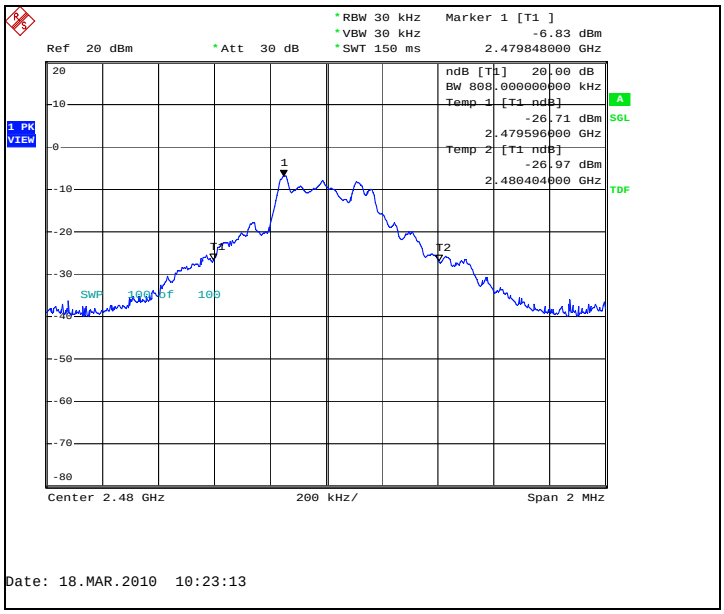
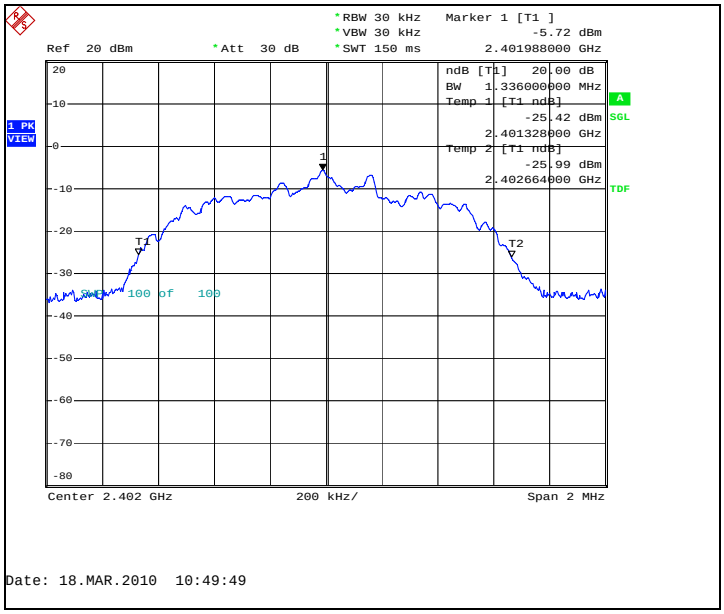
Channel 78 / 2480 MHz



8.2.2 8DPSK modulation, PRBS packet type

Channel / f_C [MHz]	20 dB bandwidth [kHz]	Result
0 / 2402	1336.000	Passed
40 / 2442	1340.000	Passed
78 / 2480	1336.000	Passed

Channel 0 / 2402 MHz



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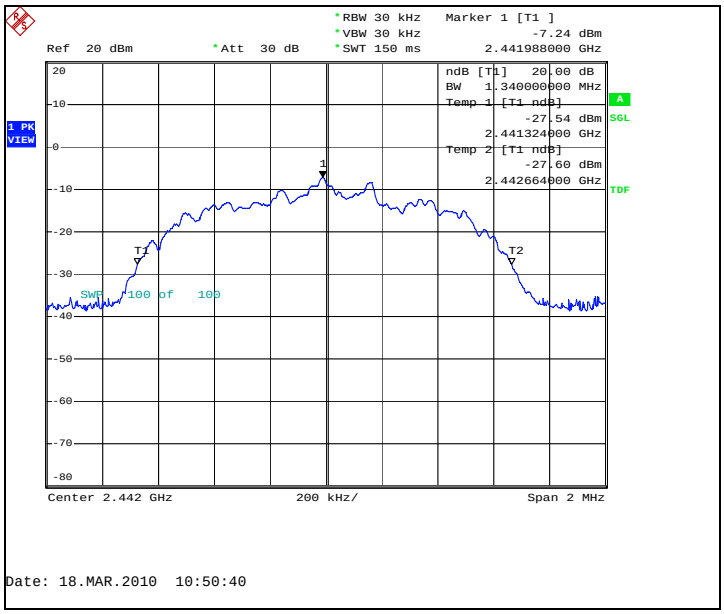
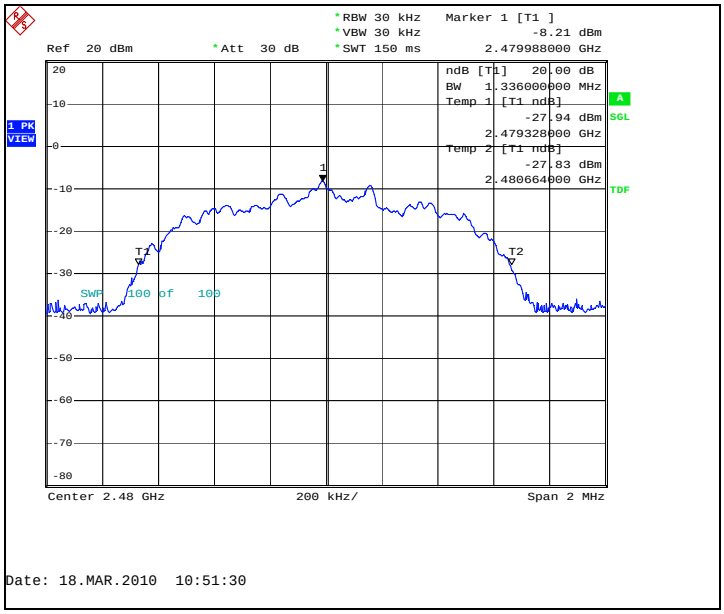
Channel 40 / 2442 MHz



Channel 78 / 2480 MHz



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9. Carrier frequency separation

(FCC §15.247(a)(1), RSS-210 A8.1 (b))

EUT with DUT number	RM-627 DUT 24391
Accessories with DUT numbers	BL-5F DUT 24371, AC-6E DUT 24387, WH-102 DUT 24383
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 36 / 102.5
Date of measurements	18-Mar-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 carrier frequency separation measurements

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

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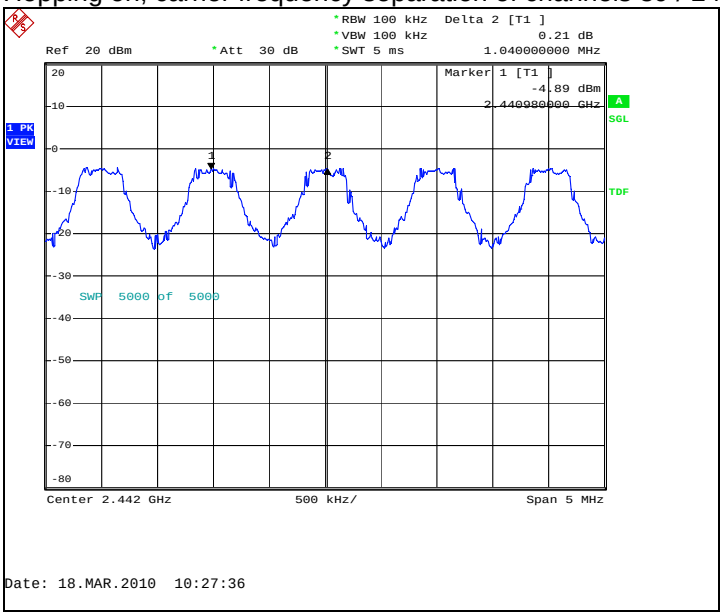
9.2. Bluetooth Test results

9.2.1 GFSK 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



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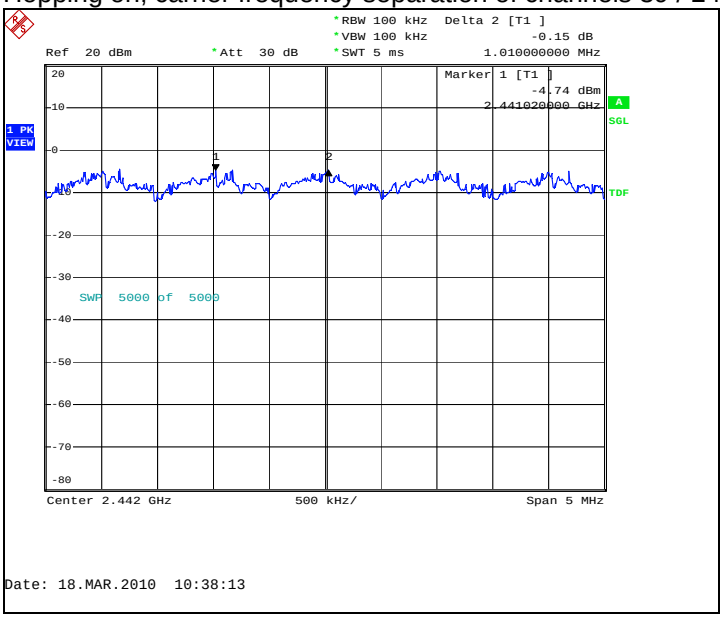
9.2.2 8DPSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
1010	Passed

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



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10. Number of hopping frequencies

(FCC §15.247(a)(1)(iii), RSS-210 A8.1 (d))

EUT with DUT number	RM-627 DUT 24391
Accessories with DUT numbers	BL-5F DUT 24371, AC-6E DUT 24387, WH-102 DUT 24383
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 36 / 102.5
Date of measurements	18-Mar-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 number of hopping frequencies measurements

Limit [number]
≥ 15

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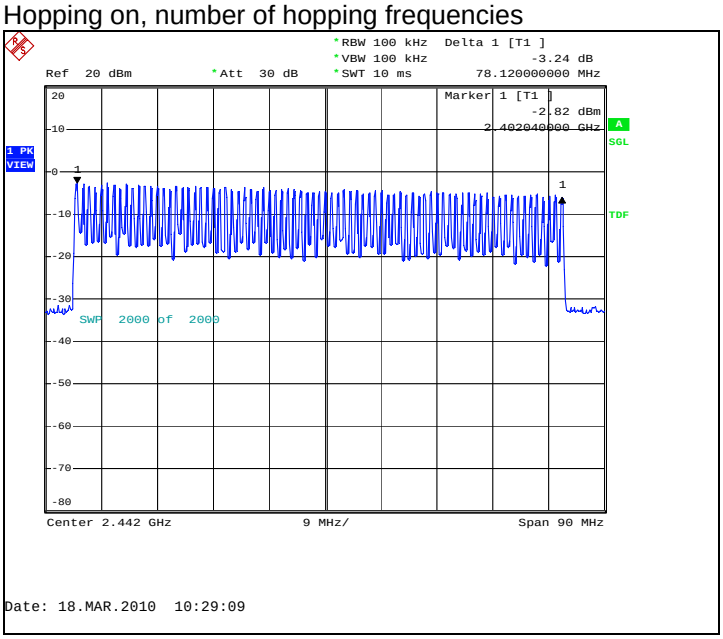
10.2. Bluetooth Test results

10.2.1 GFSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
78	Passed

Hopping on, number of hopping frequencies



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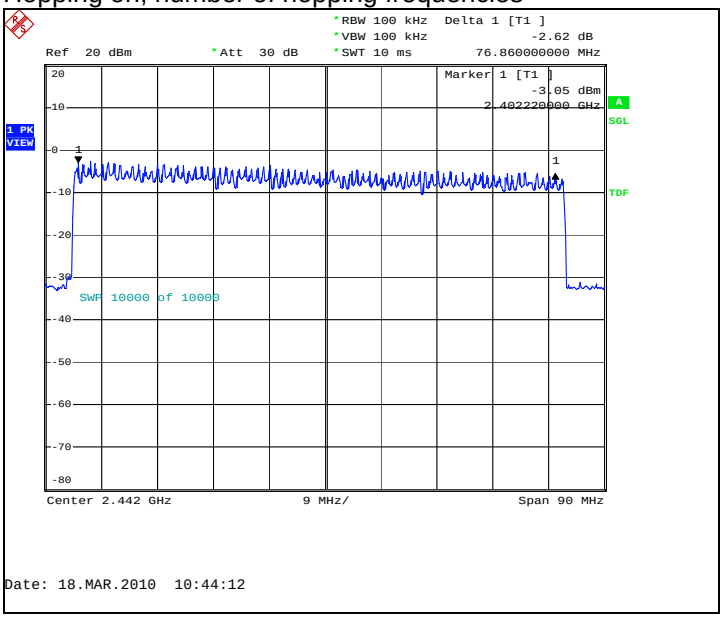
10.2.2 8DPSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
70	Passed

Hopping on, number of hopping frequencies



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11. Time of occupancy

(FCC §15.247(a)(1)(iii), RSS-210 A8.1 (d))

EUT with DUT number	RM-627 DUT 24391
Accessories with DUT numbers	BL-5F DUT 24371, AC-6E DUT 24387, WH-102 DUT 24383
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 36 / 102.5
Date of measurements	18-Mar-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 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

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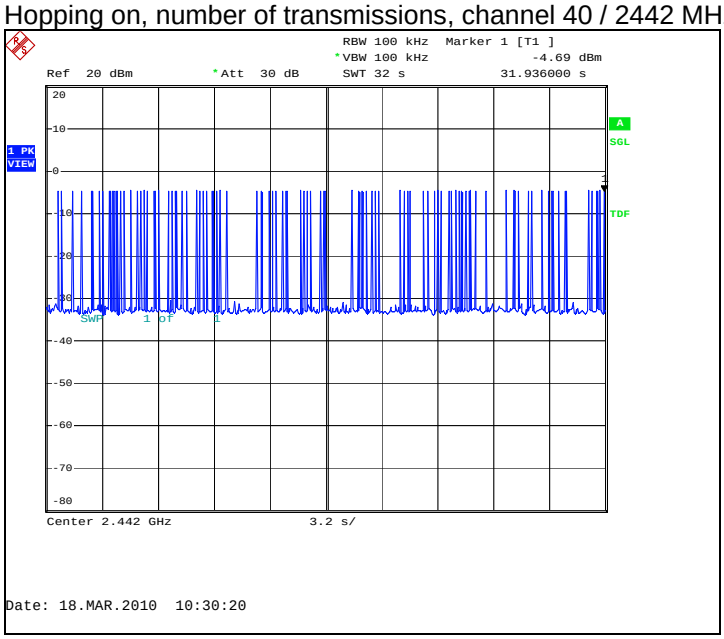
11.2. Bluetooth test results

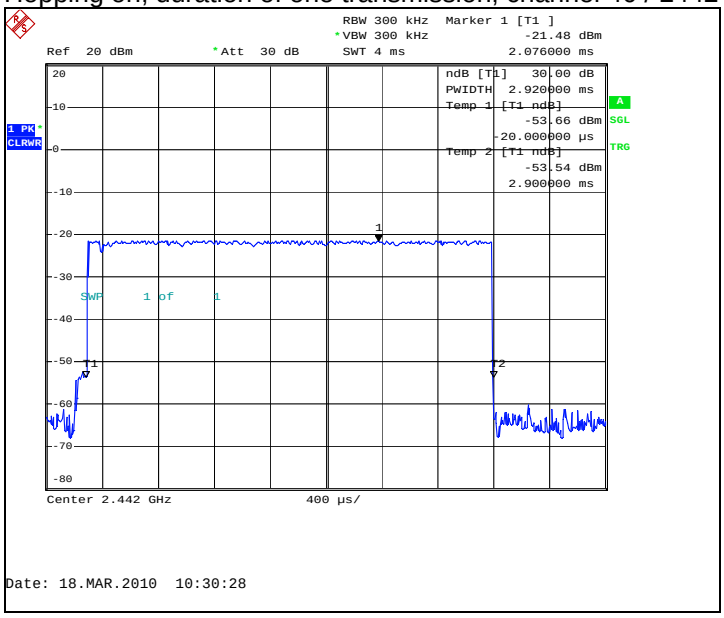
11.2.1 GFSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [µs]	Time of occupancy [s]	Result
86	2,920	0.251120	Passed

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



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



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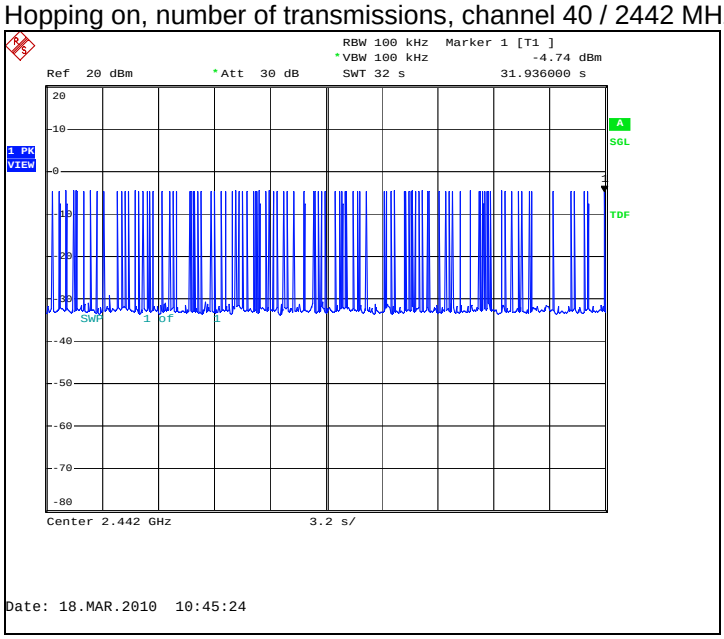
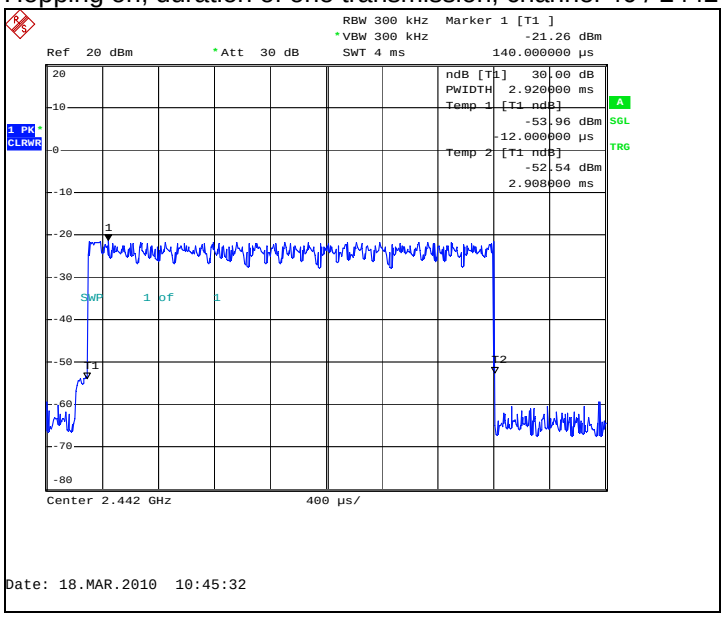
11.2.2 8DPSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [µs]	Time of occupancy [s]	Result
94	2,920	0.274480	Passed

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



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



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12. Test Equipment

12.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
13037	Power Supply 0-15V 10A	EA3012	LP Instruments	15C, 15B
13513	Pulse Limiter 9KHz-30MHz	ESH3Z2	Rohde&Schwarz	15C, 15B
13666	EMI Test Reciever 9KHz-2,5GHz	ESPC	Rohde&Schwarz	15C, 15B
13935	Two Lines Artificial Mains Network	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	Universal Radio Communication Tester	CMU200	Rohde&Schwarz	15C, 15B
11386	System DC Power Supply	HP6632A	Hewlett Packard	22/24/27, 15C, 15B
19678	Spectrum Analyzer 26 GHz	FSP	Rohde&Schwarz	22/24/27, 15C, 15B
16601	Universal Radio Communication Tester	CMU200	Rohde&Schwarz	22/24/27, 15C, 15B
19625	Vötsch Climatic Chamber	VT4002EMC	Vötsch	22/24/27, 15C, 15B
13357	Rohde & Schwartz Signal Generator	SMP02	Rohde&Schwarz	22/24/27, 15C, 15B
20168	Bluetooth EDR Tester	CBT	Rohde&Schwarz	22/24/27, 15C, 15B

12.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
18416	Universal Radio Communication Tester	CMU200	Rohde&Schwarz	22/24/27, 15C, 15B
	Programmable Relay Switching System	----------	Pickering	22/24/27, 15C, 15B
15742	Programmable Relay Switching System	----------	Pickering	22/24/27, 15C, 15B
14020	Power Supply Module Relay Switching System 45W	10-910-002	Pickering	22/24/27, 15C, 15B
15743	Power Supply Module Relay Switching System 50W	10-910L-001	Pickering	22/24/27, 15C, 15B
16490	RS-232/IEEE-488.2 Interface	10-921-001	Pickering	22/24/27, 15C, 15B
	RS-232/IEEE-488.2 Interface	10-921-001	Pickering	22/24/27, 15C, 15B
20078	Relay 2x6 Chnl µWave Mux	10-785B-522	Pickering	22/24/27, 15C, 15B
14021	Relay Dual 6 Chnl µWave Mux	10-785-522		22/24/27, 15C, 15B
	Relay Dual 6 Chnl µWave 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
18792	Multi Device Controller	2090	ETS-EMCO	22/24/27, 15C, 15B
14963	RF Preamplifier 100MHz-4GHz (Metal Chassis)	AFS3-00100400	Miteq/NMP Cph	22/24/27, 15C, 15B
18861	EMI Test Receiver 20Hz-26,5GHz	ESI	Rohde&Schwarz	22/24/27, 15C, 15B
20335	Ultra Broadband Antenna Ultralog 30-3000MHz	HL562	Rohde&Schwarz	22/24/27, 15C, 15B
18773	Shielded Chamber	RFD-100	ETS-Lindgren	22/24/27, 15C, 15B
18774	Shielded Chamber	RFSD-F/A-100	ETS-Lindgren	22/24/27, 15C, 15B
19151	High Pass Filter 3GHz	WHJS3000-10SS	Wainwright	22/24/27, 15C, 15B

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Eq. No	Equipment	Type	Manufacturer	Used in
	WHK3.0/18G-10ss			
13937	Ultra Stable Notch Filter 850MHz	WRCA902.4-0.2/40-6SS	Wainwright Instruments	22/24/27, 15C, 15B
13936	Ultra Stable Notch Filter 1747,5MHz	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
14188	Ultra Stable Notch Filter 902,4MHz	WRCA902.4-0.2/40-6SS	Wainwright	22/24/27, 15C, 15B
14187	Ultra Stable Notch Filter 1747,5MHz	WRCD1747.5-0.2/40-10SS	Wainwright	22/24/27, 15C, 15B
16633	Ultra Stable Notch Filter 1880,0MHz	WRCD1880.0-0.2/40-10SS	Wainwright	22/24/27, 15C, 15B
19587	BT/WLAN Band Reject Filter	WRCG2400/2483-2390/2493-35/10SS	Wainwright	22/24/27, 15C, 15B
20115	WDCMA Band 2 filter		Wainwright	24, 15C, 15B
20114	WDCMA Band 4 filter	WRCG1737/1743-1733/1747-40/6SS	Wainwright	27, 15C, 15B
20116	WDCMA Band 5&6 filter	WRCG832/83/-825/845-40/5SS	Wainwright	22, 15C, 15B
18323	Band reject filter 1947-1953MHz 40dB	WRCG1947/1953-1940/1960-40/6SS	Wainwright	22/24/27, 15C, 15B
20031	Double Ridged Broadband Horn	BBHA 9120 D	SCHWARZBECK	22/24/27, 15C, 15B
19966	Magnetic Loop Antenna 9 kHz - 30 MHz	HFH2-Z2	Rohde&Schwarz	15C, 15B
14993	EMI Test Receiver 9KHz-2750MHz	ESCS30	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
19374	Resonant Dipole Antenna 850MHz SMA m Conn.	---------	NMP Cph	22/24/27, 15C, 15B
19375	Resonant Dipole Antenna 1900MHz SMA m Conn.	----------	NMP Cph	22/24/27, 15C, 15B
20168	Bluetooth EDR Tester	CBT	Rohde&Schwarz	22/24/27, 15C, 15B

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