

FCC Part 15C Compliance Test Report

Test Report no.:	FCC15C_RM-658_07.doc	Date of Report:	09-Apr-2010
Number of pages:	39	Customer's Contact person:	Jan Rasmussen
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FCC listing no.:	99059		
IC recognition no.:	661AL-1		
Tested devices/ accessories:	Phone RM-658 / Battery BP-4L / Headset WH-205 / AC Charger AC-10U		
FCC ID:	QTKRM-658	IC:	661AD-RM658
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:			

Christian Andersen, System Specialist, EMC

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	11-Mar-2010
Testing completed	08-Apr-2010
The customer's contact person	Jan Rasmussen
Test Plan referred to	T:\Projects\RM-658\TestPlan_RS\RS_testplan_RM-658.xls
Notes	None
Document name	FCC15C_RM-658_07.doc

1.1. EUT and Accessory Information

The EUT is a 7-band (GSM850/900/1800/1900) and WCDMA Band (I/IV(1700)/VIII) mobile phone with GPRS, EGPRS, HSDPA, HSUPA and WLAN and Bluetooth. Bluetooth and WLAN are tested with maximum rated TX power.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-658	004402019812243	9011	-	-	24417
Phone	RM-658	004401019811187	9011	-	041.003	24455
Battery	BP-4L	3932139463B61034038;0670519	-	-	-	24444
Battery	BP-4L	3932139463B61034035;0670519	-	-	-	24451
AC Charger	AC-10U	3997910035052200004;0675409	-	-	-	24446
AC Charger	AC-10U	3997910035052200093;0675409	-	-	-	24440
Headset	WH-205	06944219215D1R00130	-	-	-	24880
Headset	WH-205	06944219485D1R68493	-	-	-	24436
Phone	RM-658	004401019811062	9013	-	041.003RD	24357
Battery	BP-4L	3932139463B61034044;0670519	-	-	-	24450
Headset	WH-205	06944219485D1R68372	-	-	-	24443
AC Charger	AC-10U	3997910035052200095;0675409	-	-	-	24447

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.

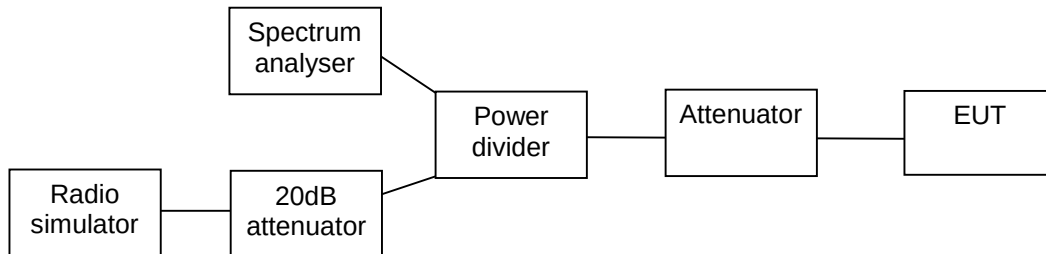
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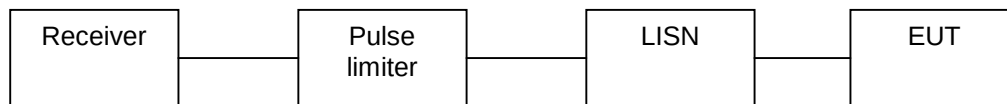
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2. Test setups

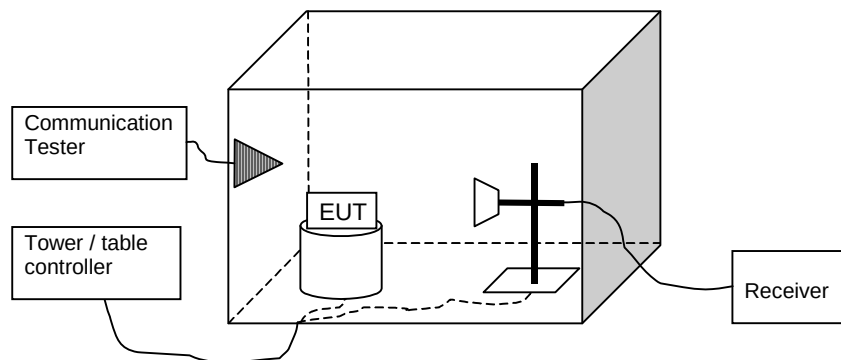
2.1. Conducted RF test setup



2.2. AC powerline conducted emissions test setup



2.3. Radiated test setup



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

EUT with DUT number	RM-658 DUT 24417
Accessories with DUT numbers	BP-4L DUT 24444, AC-10U DUT 24446, WH-205 DUT 24880
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24 / 43 / 102.3
Date of measurements	12-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

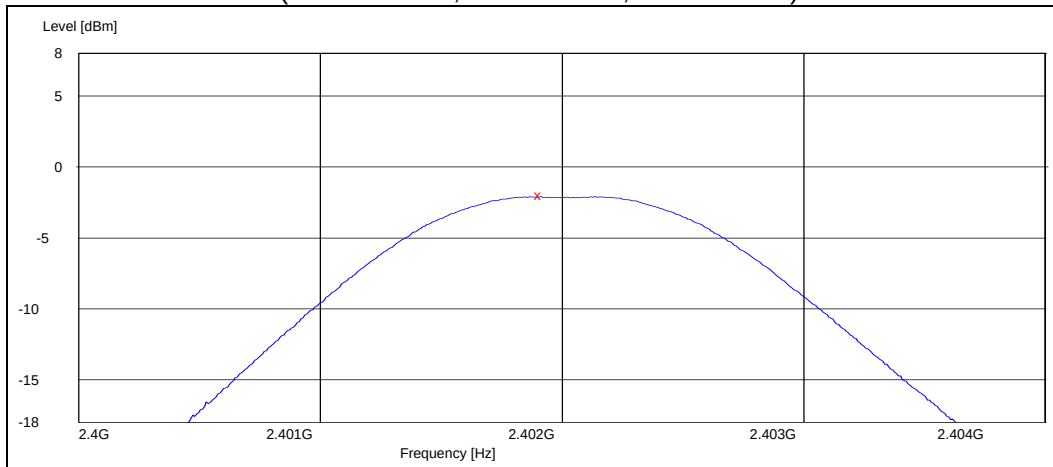
Frequency range [MHz]	Limit [W]	Limit [dBm]
2400 – 2483.5	≤ 1	≤ 30

3.2. Bluetooth Test results

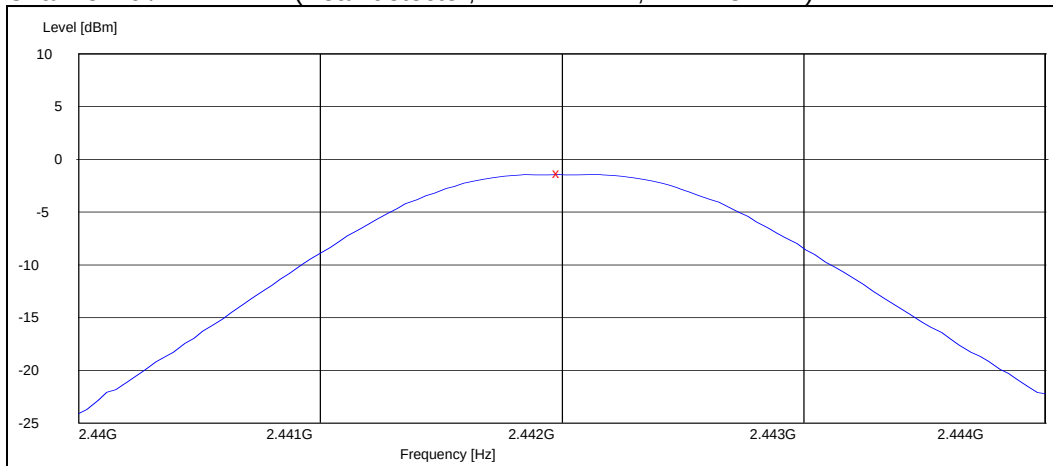
3.2.1 GFSK modulation, PRBS packet type

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
0 / 2402	-2.00	0.631	Passed
40 / 2442	-1.30	0.741	Passed
78 / 2480	-1.60	0.692	Passed

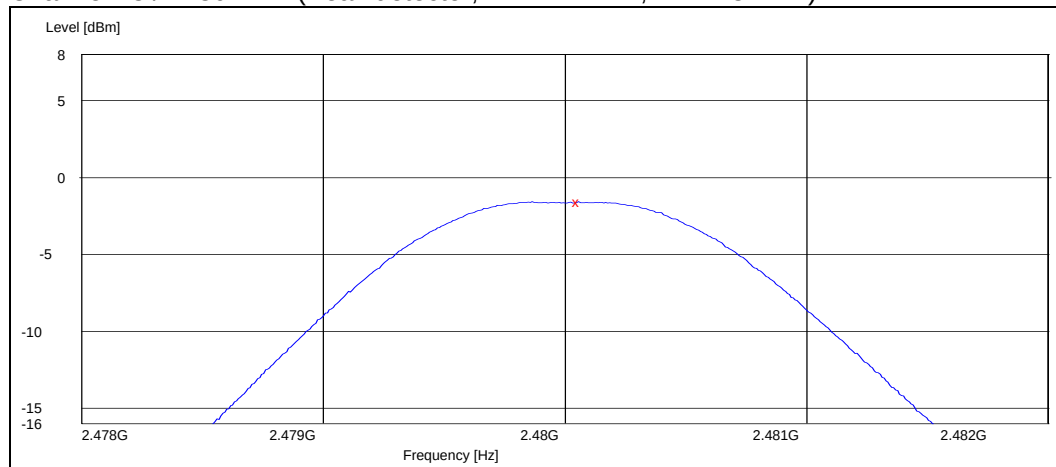
Channel 0 / 2402 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



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



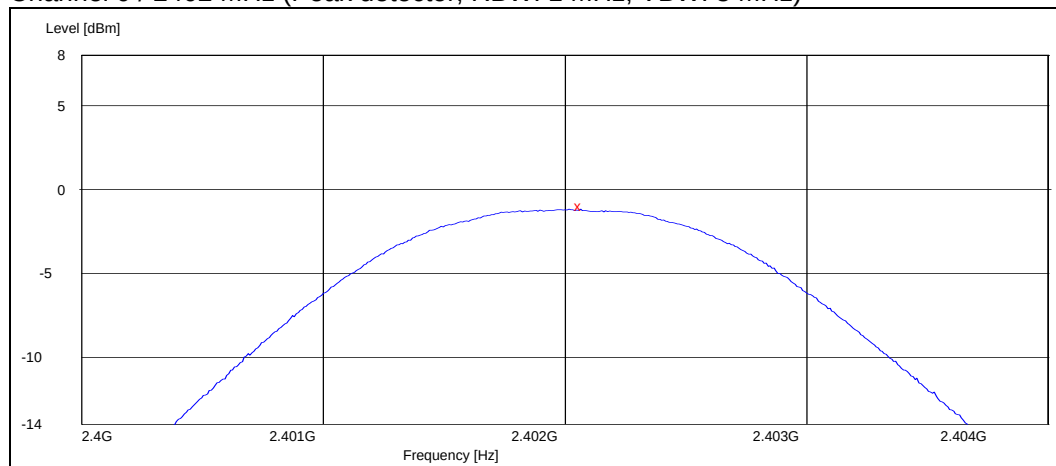
Channel 78 / 2480 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



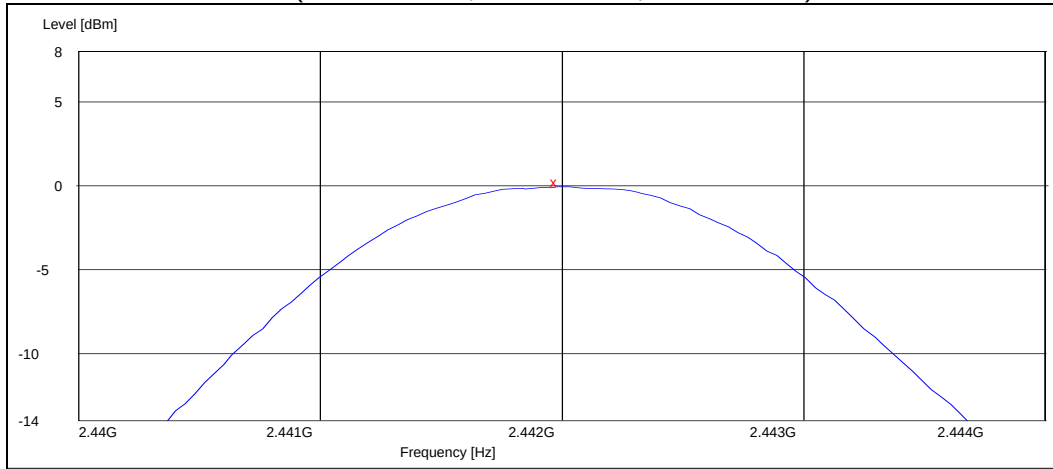
3.2.2 8DPSK modulation, PRBS packet type

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
0 / 2402	-1.00	0.794	Passed
40 / 2442	0.20	1.047	Passed
78 / 2480	0.30	1.072	Passed

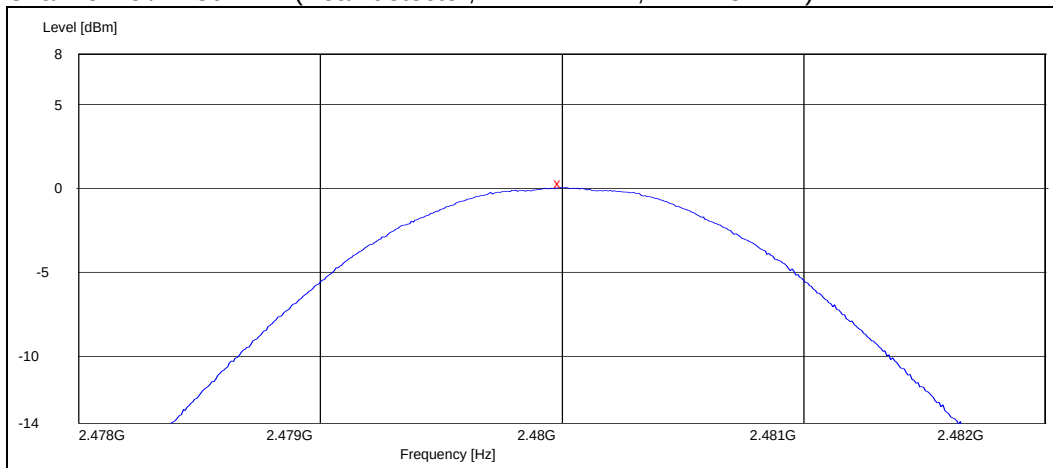
Channel 0 / 2402 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



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



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



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

EUT with DUT number	RM-658, DUT 24357
Accessories with DUT numbers	BP-4L, DUT 24450 ; WH-205, DUT 24443 ; AC-10U, DUT 24447
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 38 / 100.2
Date of measurements	08-Apr-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

4.2. Bluetooth Test results

4.2.1 GFSK modulation, PRBS packet type

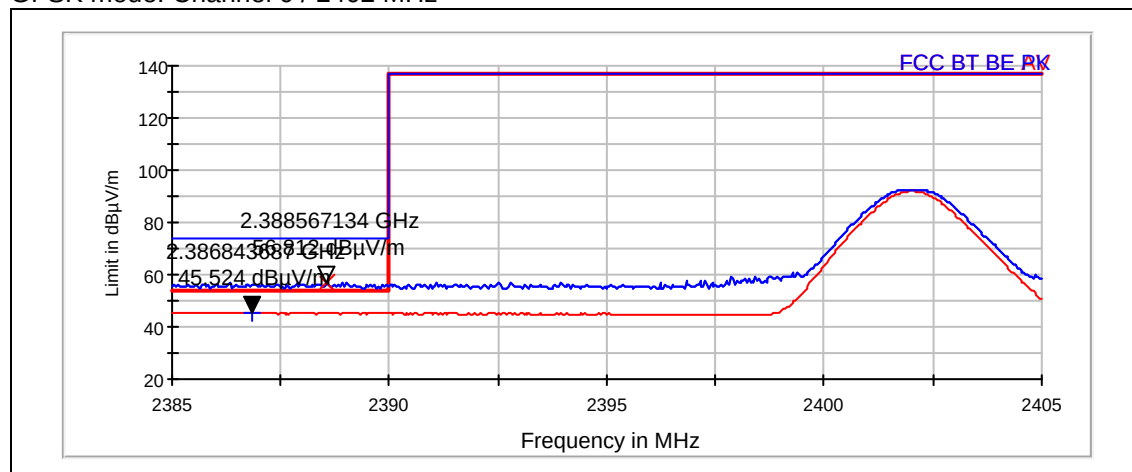
Average (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	E [μ V/m]	U_{RX} [dB μ V]	A_{TOT} [dB]	Result
0 / 2402	45.52	188.876	47.14	-1.62	Passed
Hopping on, low end	46.97	223.203	48.59	-1.62	Passed
78 / 2480	47.19	228.843	48.43	-1.24	Passed
Hopping on, high end	48.58	268.458	49.82	-1.24	Passed

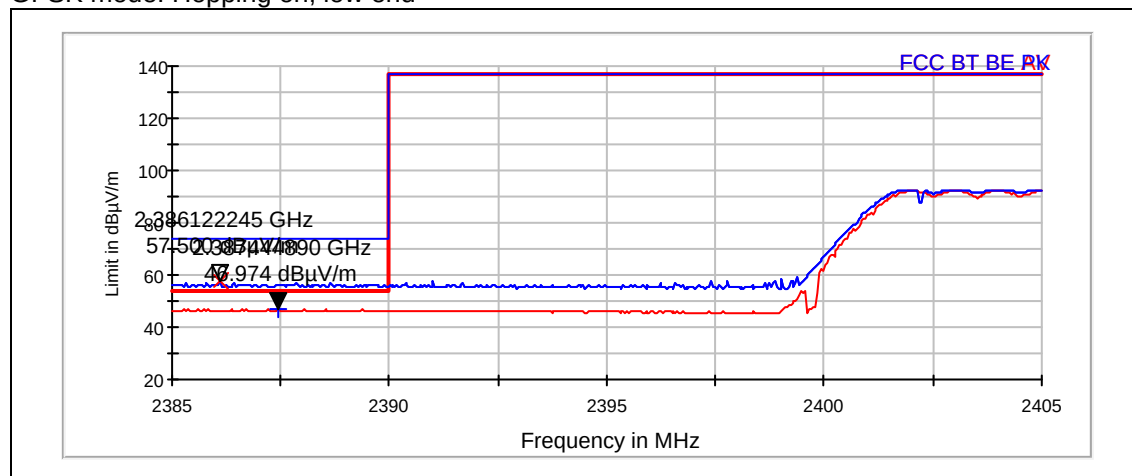
Peak (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	E [μ V/m]	U_{RX} [dB μ V]	A_{TOT} [dB]	Result
0 / 2402	56.81	692.784	58.43	-1.62	Passed
Hopping on, low end	57.5	749.897	59.12	-1.62	Passed
78 / 2480	58.81	871.632	60.05	-1.24	Passed
Hopping on, high end	58.84	874.708	60.08	-1.24	Passed

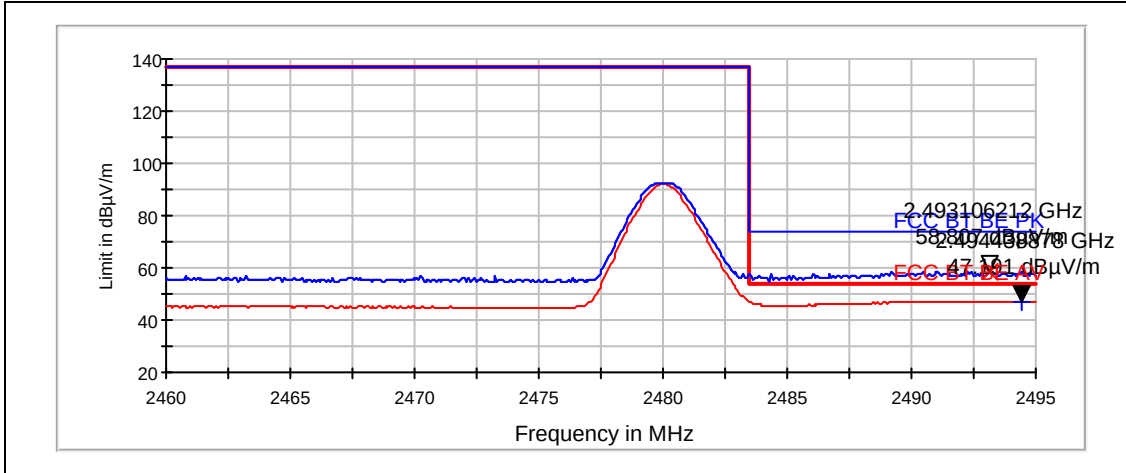
GFSK mode. Channel 0 / 2402 MHz



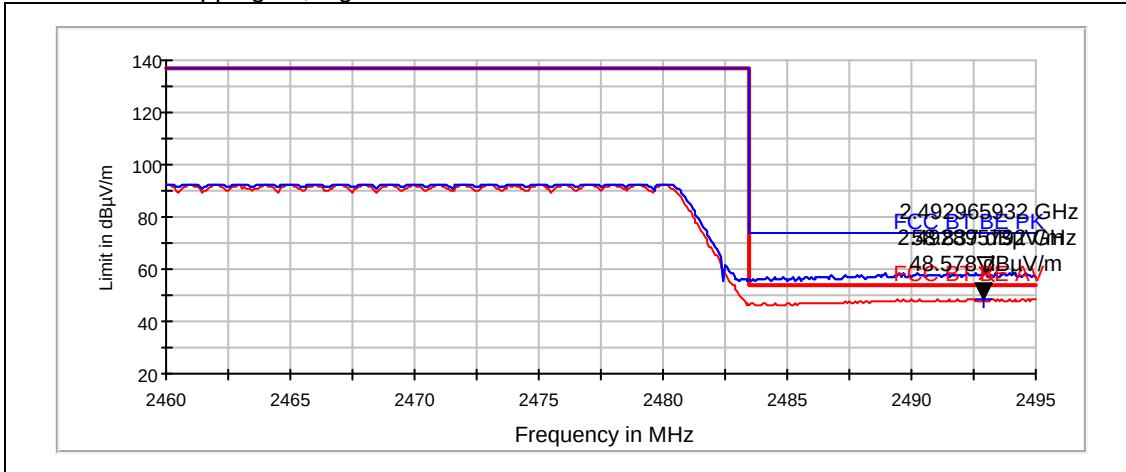
GFSK mode. Hopping on, low end



GFSK mode. Channel 78 / 2480 MHz



GFSK mode. Hopping on, high end



4.2.2 8DPSK modulation, PRBS packet type

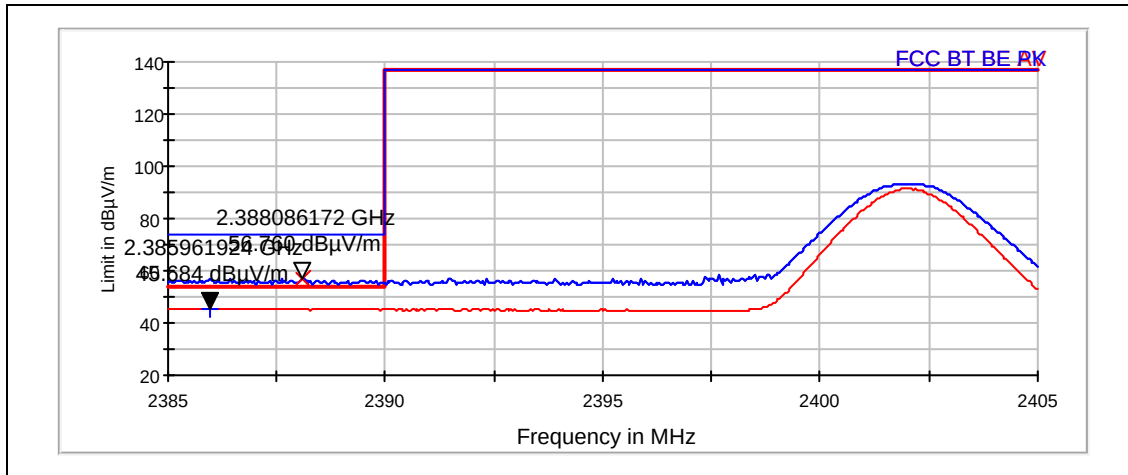
Average (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	E [μ V/m]	U_{RX} [dB μ V]	A_{TOT} [dB]	Result
0 / 2402	45.68	192.403	47.3	-1.62	Passed
Hopping on, low end	46.74	217.363	48.36	-1.62	Passed
78 / 2480	47.27	230.978	48.51	-1.24	Passed
Hopping on, high end	48.51	266.394	49.75	-1.24	Passed

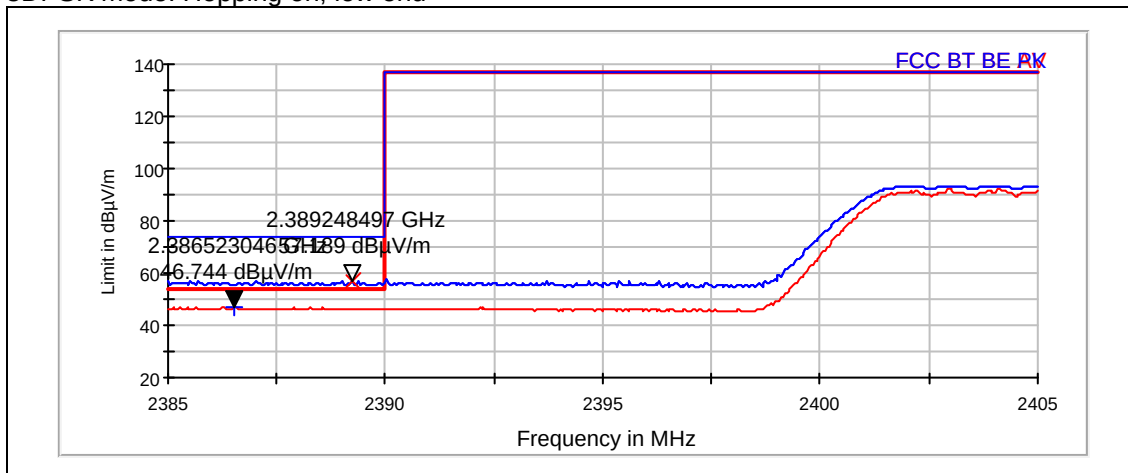
Peak (RBW: 1 MHz, VBW: 1 MHz)

Channel / f_c [MHz]	E [dB μ V/m]	E [μ V/m]	U_{RX} [dB μ V]	A_{TOT} [dB]	Result
0 / 2402	56.76	688.675	58.38	-1.62	Passed
Hopping on, low end	57.19	723.537	58.81	-1.62	Passed
78 / 2480	58.71	862.329	59.95	-1.24	Passed
Hopping on, high end	59.14	905.878	60.38	-1.24	Passed

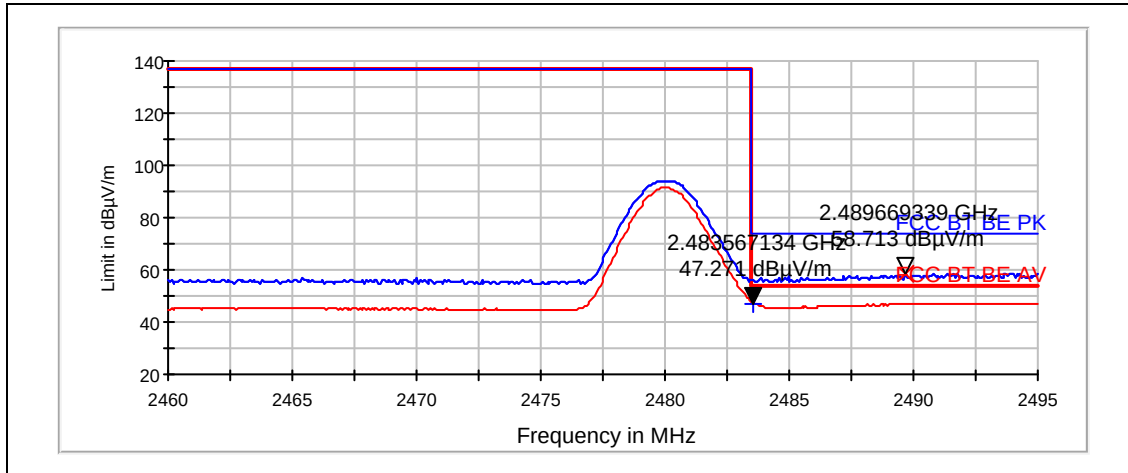
8DPSK mode. Channel 0 / 2402 MHz



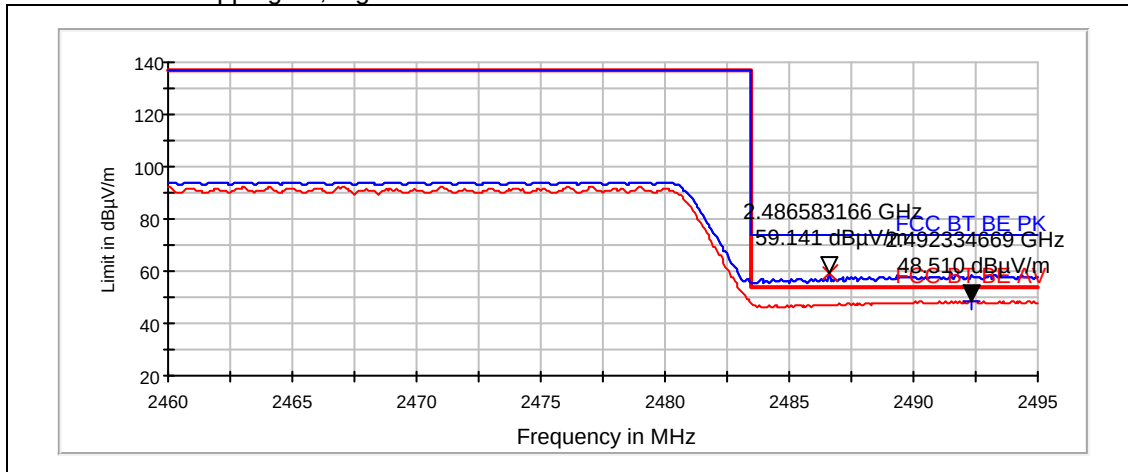
8DPSK mode. Hopping on, low end



8DPSK mode. Channel 78 / 2480 MHz



8DPSK mode. Hopping on, high end



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

EUT with DUT number	RM-658 DUT 24417
Accessories with DUT numbers	BP-4L DUT 24444, AC-10U DUT 24446, WH-205 DUT 24880
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24 / 43 / 102.3
Date of measurements	12-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.

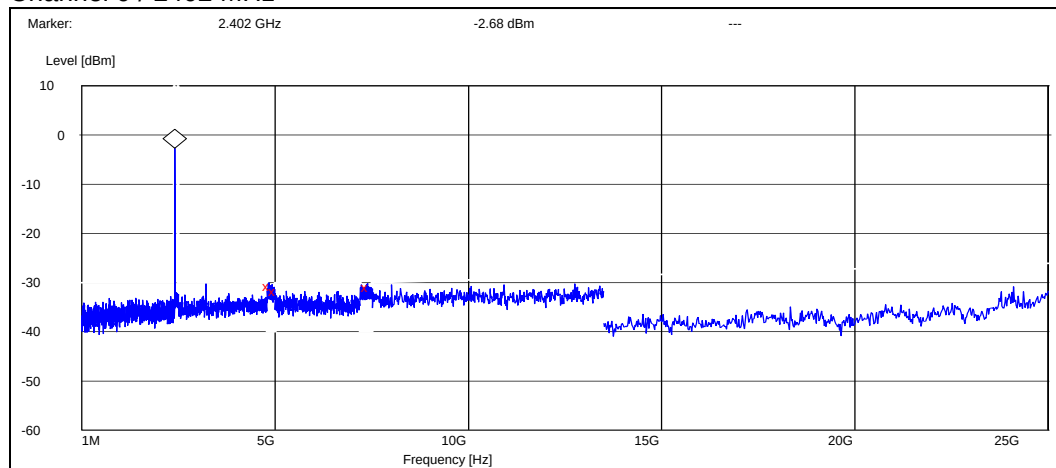
Limits for spurious RF conducted emissions measurements

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

5.2. Bluetooth Test results

5.2.1 GFSK modulation, PRBS packet type

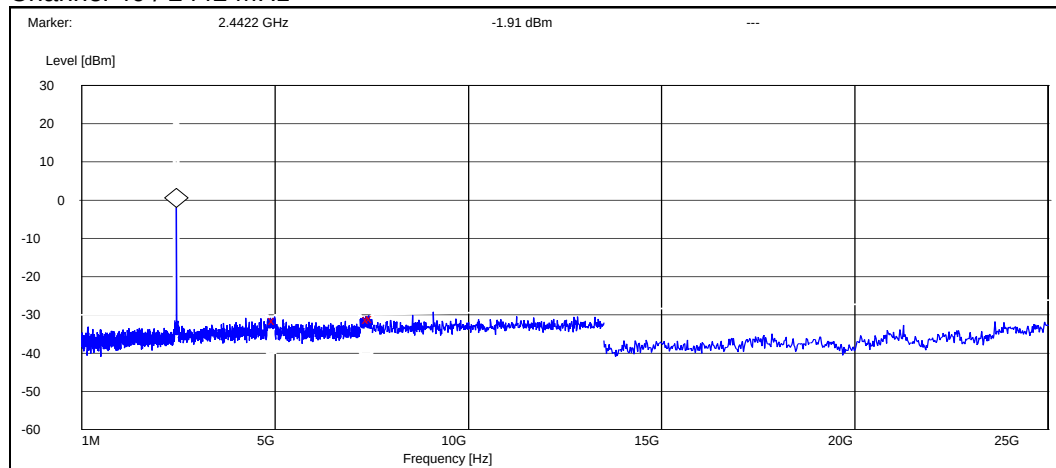
Channel 0 / 2402 MHz



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

Frequency [MHz]	P [dBc]	Result
4846.000000	-28.122174	Passed
5000.000000	-29.122174	Passed
7396.200000	-28.222174	Passed

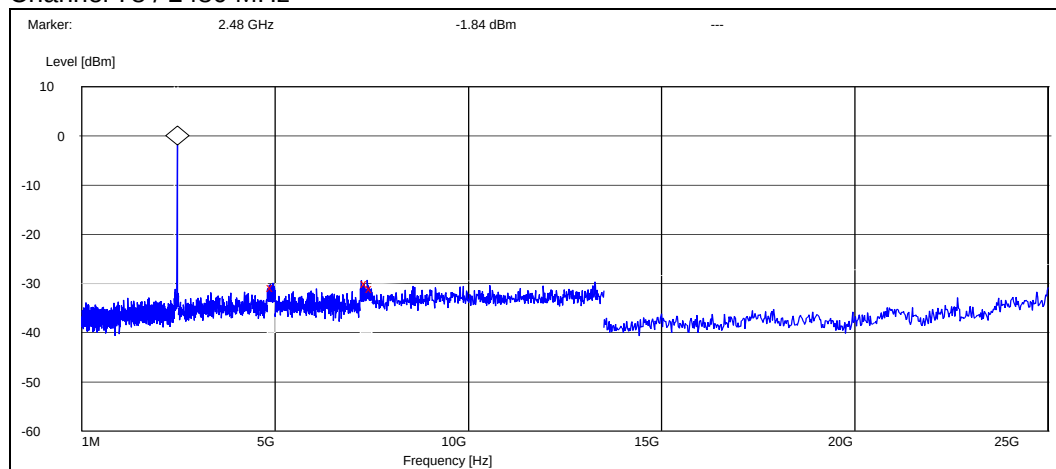
Channel 40 / 2442 MHz



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

Frequency [MHz]	P [dBc]	Result
4991.200000	-29.392987	Passed
7425.600000	-29.292987	Passed
7500.000000	-29.092987	Passed

Channel 78 / 2480 MHz

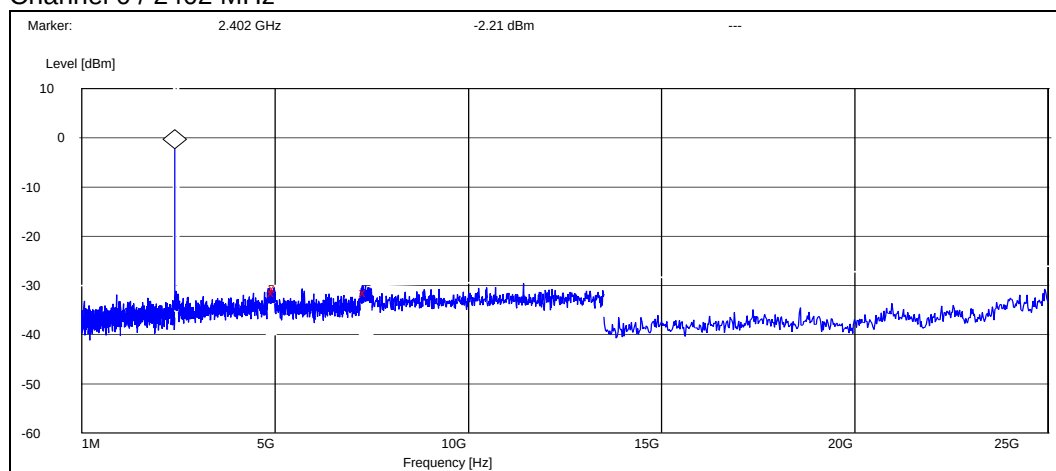


Peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	P [dBc]	Result
4943.600000	-28.856921	Passed
7383.600000	-28.156921	Passed
7500.000000	-29.156921	Passed

5.2.2 8DPSK modulation, PRBS packet type

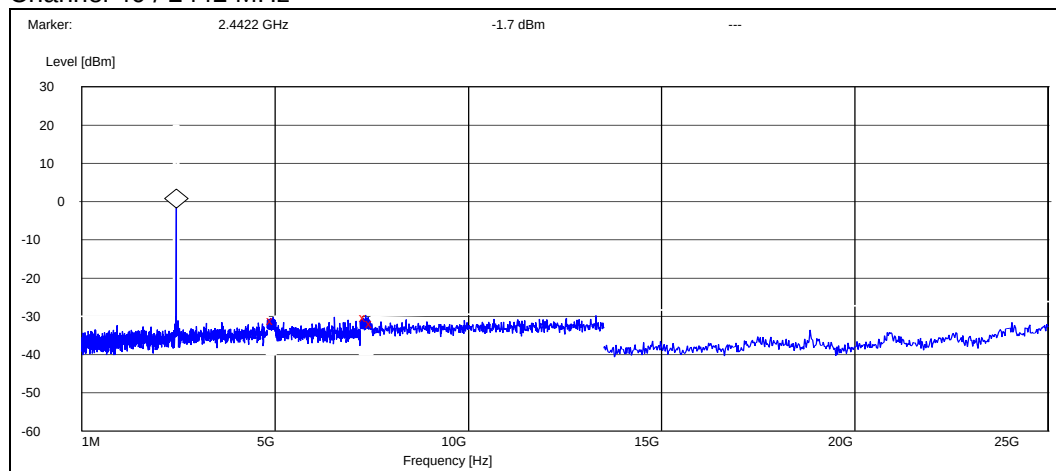
Channel 0 / 2402 MHz



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

Frequency [MHz]	P [dBc]	Result
4977.200000	-29.091237	Passed
5000.000000	-28.391237	Passed
7339.200000	-29.191237	Passed

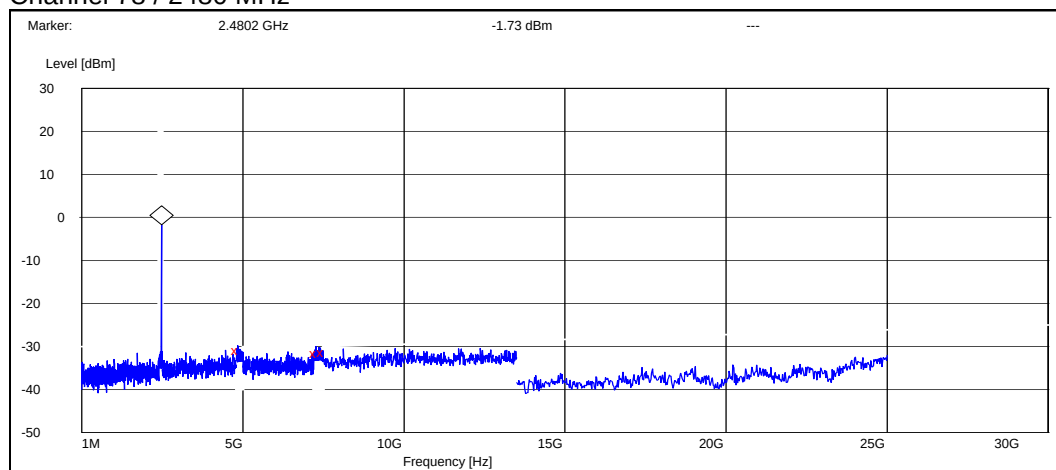
Channel 40 / 2442 MHz



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

Frequency [MHz]	P [dBc]	Result
4951.200000	-29.499149	Passed
7335.000000	-28.599149	Passed
7500.000000	-29.999149	Passed

Channel 78 / 2480 MHz



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

Frequency [MHz]	P [dBc]	Result
4846.400000	-29.170317	Passed
7264.800000	-29.770317	Passed
7500.000000	-29.570317	Passed

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

EUT with DUT number	RM-658, DUT 24357
Accessories with DUT numbers	BP-4L, DUT 24450 ; WH-205, DUT 24443 ; AC-10U, DUT 24447
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 38 / 100.2
Date of measurements	24-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 ($A_{TOT} = L_{CABLES} + AF - G_{PREAMP}$).

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

Frequency range [MHz]	Limit [$\mu\text{V/m}$]	Limit [dB $\mu\text{V/m}$]	Detector
30 – 88	100	40	Quasi peak
88 – 216	150	43.5	Quasi peak
216 – 960	200	46	Quasi peak
960 – 1000	500	54	Quasi peak
Above 1000	500	54	Average
Above 1000	5000	74	Peak

6.2. Bluetooth Test results

6.2.1 GFSK modulation, PRBS packet type

TX mode, channel 0 / 2402 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	34.90	55.59	35.40	-0.5	VERTICAL	Passed
7206.000000	41.00	112.20	32.20	8.8	HORIZONTAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	22.20	12.88	22.70	-0.5	VERTICAL	Passed
7206.000000	28.30	26.00	19.50	8.8	VERTICAL	Passed

TX mode, channel 40 / 2442 MHz

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
37.595391	12.80	4.37	28.90	-16.1	VERTICAL	Passed
73.948497	25.50	18.84	51.10	-25.6	HORIZONTAL	Passed
74.969940	23.80	15.49	49.30	-25.5	HORIZONTAL	Passed
111.582565	22.70	13.65	46.30	-23.6	HORIZONTAL	Passed
941.183768	47.50	237.14	58.90	-11.4	VERTICAL	Passed

*941 MHz frequency is coming from communication tester and thus ignored.

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

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
7335.663327	42.80	138.04	33.50	9.3	VERTICAL	Passed
7399.299599	43.20	144.54	32.80	10.4	VERTICAL	Passed
7427.861723	42.80	138.04	33.40	9.4	VERTICAL	Passed
17469.435872	53.70	484.17	30.10	23.6	VERTICAL	Passed
17897.789579	58.10	803.53	29.40	28.7	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
7331.663327	29.60	30.20	20.50	9.1	VERTICAL	Passed
7400.299599	30.20	32.36	19.80	10.4	VERTICAL	Passed
7427.361723	30.20	32.36	20.80	9.4	VERTICAL	Passed
17471.935872	39.90	98.86	16.30	23.6	VERTICAL	Passed
17898.289579	45.40	186.21	16.70	28.7	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	36.30	65.31	36.40	-0.1	VERTICAL	Passed
7440.000000	43.00	141.25	33.40	9.6	VERTICAL	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	VERTICAL	Passed
7440.000000	30.00	31.62	20.40	9.6	VERTICAL	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	34.90	55.59	35.40	-0.5	HORIZONTAL	Passed
7206.000000	40.90	110.92	32.10	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	22.30	13.03	22.80	-0.5	HORIZONTAL	Passed
7206.000000	28.20	25.70	19.40	8.8	VERTICAL	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
37.695391	11.80	3.89	28.00	-16.2	VERTICAL	Passed
73.967535	24.10	16.03	49.70	-25.6	HORIZONTAL	Passed
74.469940	24.60	16.98	50.20	-25.6	HORIZONTAL	Passed
111.444489	21.10	11.35	44.70	-23.6	HORIZONTAL	Passed
115.770741	22.20	12.88	45.80	-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
4930.355711	35.30	58.21	35.30	0.0	HORIZONTAL	Passed
7346.187375	42.20	128.82	32.40	9.8	VERTICAL	Passed
7401.809619	43.60	151.36	33.30	10.3	VERTICAL	Passed
7426.851703	43.00	141.25	33.60	9.4	VERTICAL	Passed
16043.078156	51.00	354.81	31.90	19.1	VERTICAL	Passed
17491.487976	53.40	467.74	29.80	23.6	HORIZONTAL	Passed
17856.213427	58.60	851.14	30.70	27.9	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4928.855711	22.80	13.80	22.80	0.0	HORIZONTAL	Passed
7341.687375	29.60	30.20	20.00	9.6	VERTICAL	Passed
7404.809619	29.50	29.85	19.40	10.1	VERTICAL	Passed
7421.851703	29.60	30.20	20.30	9.3	VERTICAL	Passed
16035.578156	38.10	80.35	19.10	19.0	VERTICAL	Passed
17490.487976	39.70	96.61	16.10	23.6	HORIZONTAL	Passed
17855.713427	45.40	186.21	17.50	27.9	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	35.30	58.21	35.40	-0.1	HORIZONTAL	Passed
7440.000000	42.30	130.32	32.70	9.6	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	23.00	14.13	23.10	-0.1	HORIZONTAL	Passed
7440.000000	29.80	30.90	20.20	9.6	HORIZONTAL	Passed

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

EUT with DUT number	RM-658 DUT 24455
Accessories with DUT numbers	BP-4L DUT 24451, AC-10U DUT 24440, WH-205 DUT 24436
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 38 / 101
Date of measurements	12-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.

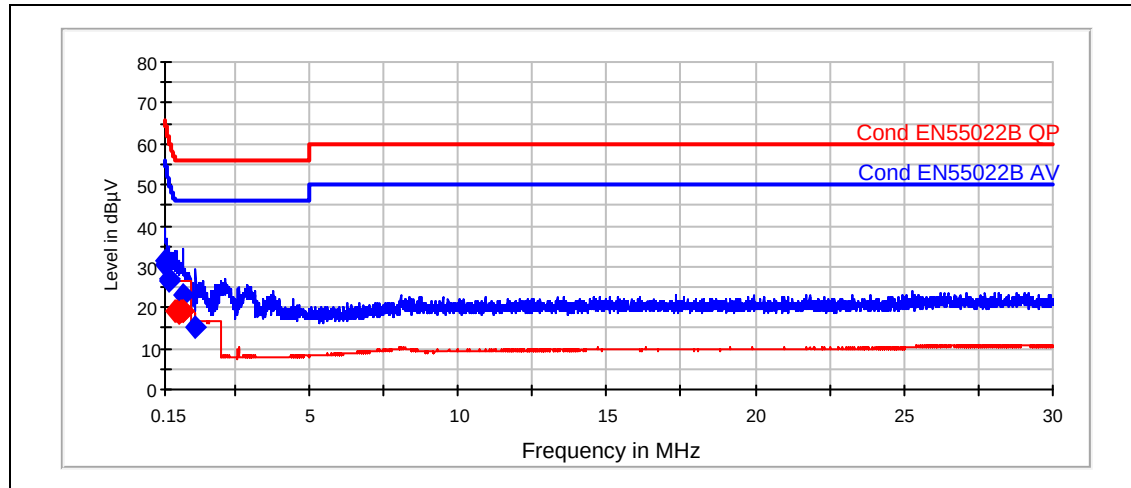
CISPR 22 Class B limits

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

7.2. Bluetooth Test results

7.2.1 GFSK modulation, PRBS packet type

Channel 40 / 2442 MHz



Quasi peak

Frequency[MHz]	Level [dBμV]	Line	Result
0.16	31.46	N	Passed
0.175	30.66	N	Passed
0.275	26.9	L1	Passed
0.285	26.64	N	Passed
0.745	23.24	N	Passed
1.19	14.98	N	Passed

Average

Frequency[MHz]	Level [dBμV]	Line	Result
0.5	19.16	N	Passed
0.535	18.94	N	Passed
0.625	18.63	N	Passed
0.715	18.97	L1	Passed
0.725	19.12	N	Passed
0.75	19.04	N	Passed

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

EUT with DUT number	RM-658 DUT 24417
Accessories with DUT numbers	BP-4L DUT 24444, AC-10U DUT 24446, WH-205 DUT 24880
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24 / 43 / 102.3
Date of measurements	12-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

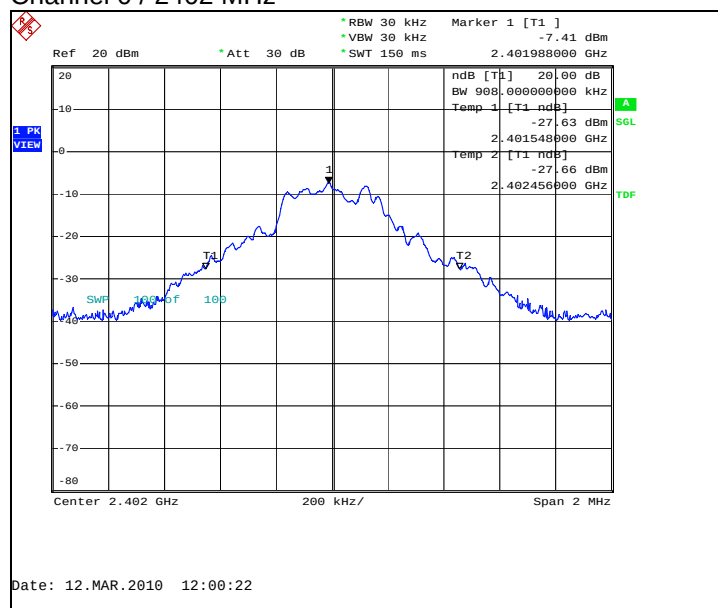
Limit [MHz]
N/A

8.2. Bluetooth Test results

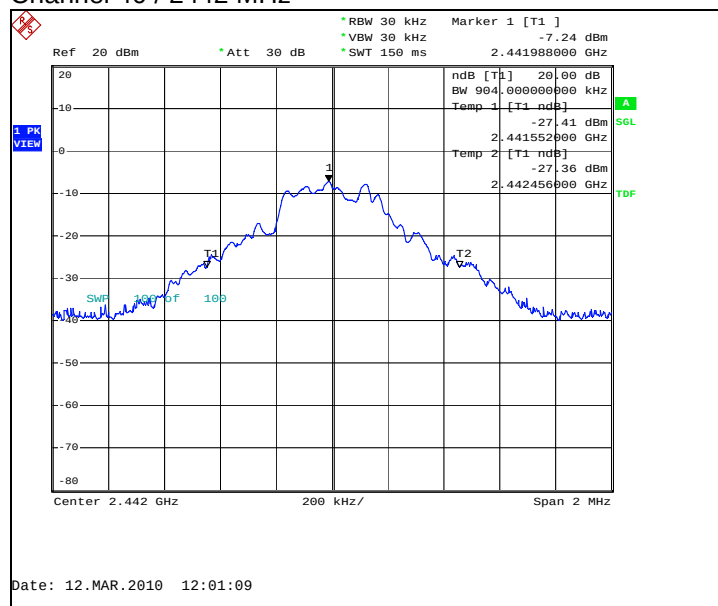
8.2.1 GFSK modulation, PRBS packet type

Channel / f_c [MHz]	20 dB bandwidth [kHz]	Result
0 / 2402	908.000	Passed
40 / 2442	904.000	Passed
78 / 2480	904.000	Passed

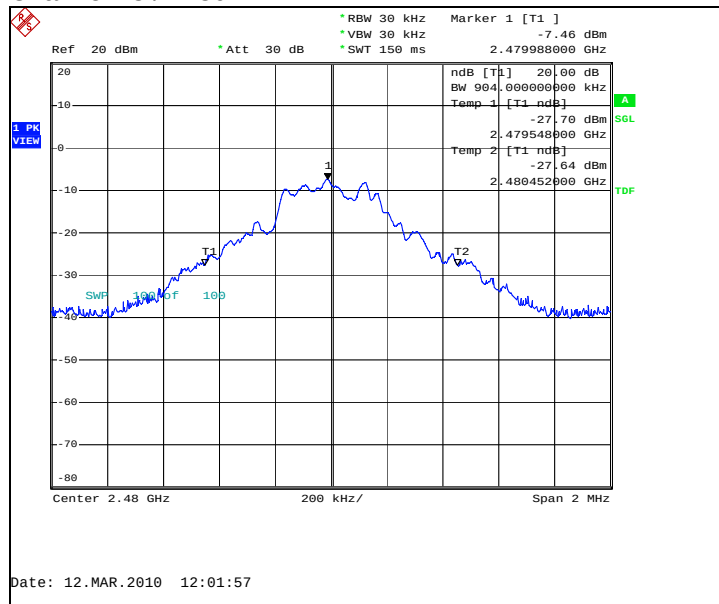
Channel 0 / 2402 MHz



Channel 40 / 2442 MHz



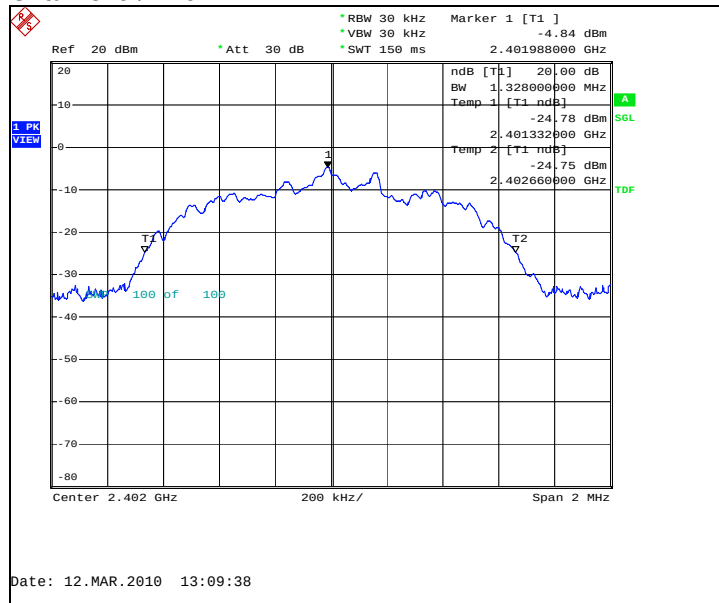
Channel 78 / 2480 MHz



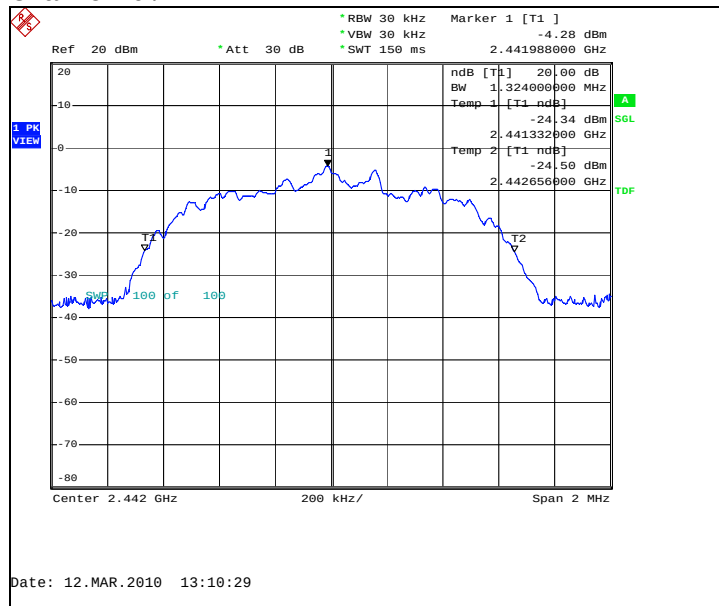
8.2.2 8DPSK modulation, PRBS packet type

Channel / f_c [MHz]	20 dB bandwidth [kHz]	Result
0 / 2402	1328.000	Passed
40 / 2442	1324.000	Passed
78 / 2480	1316.000	Passed

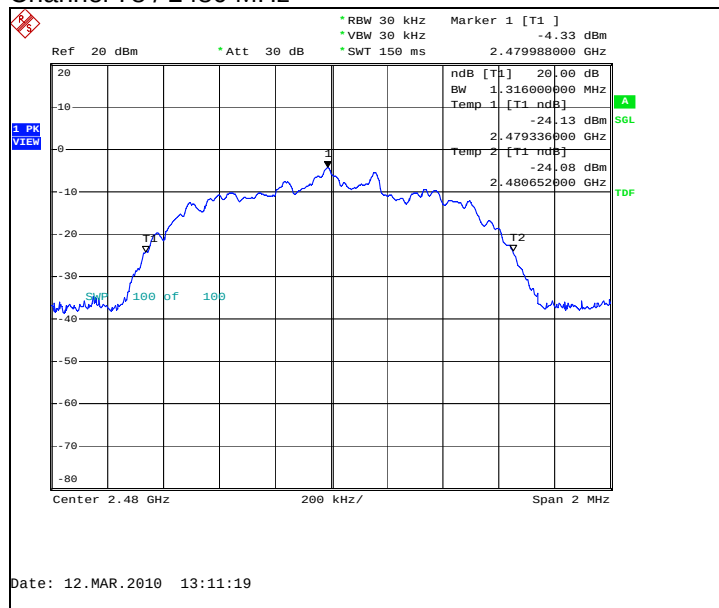
Channel 0 / 2402 MHz



Channel 40 / 2442 MHz



Channel 78 / 2480 MHz



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

EUT with DUT number	RM-658 DUT 24417
Accessories with DUT numbers	BP-4L DUT 24444, AC-10U DUT 24446, WH-205 DUT 24880
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24 / 43 / 102.3
Date of measurements	12-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

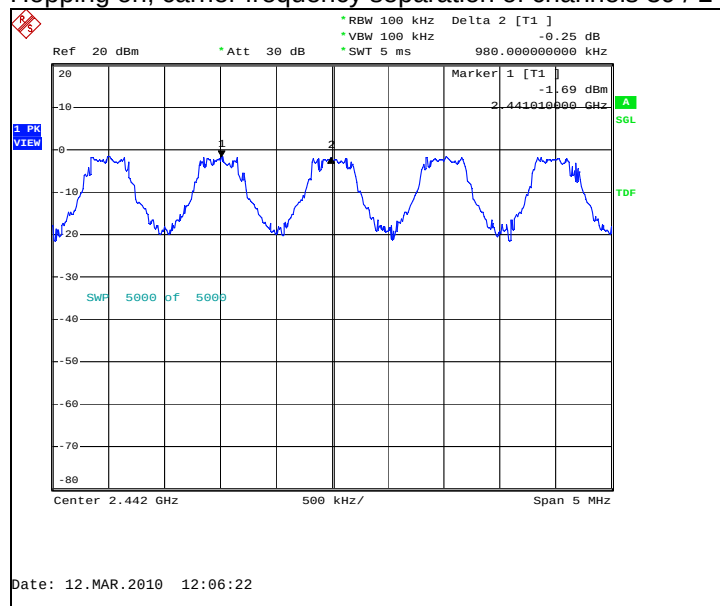
Limit [MHz]
≥ 0.025 or $2/3$ of the 20 dB bandwidth

9.2. Bluetooth Test results

9.2.1 GFSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
980	Passed

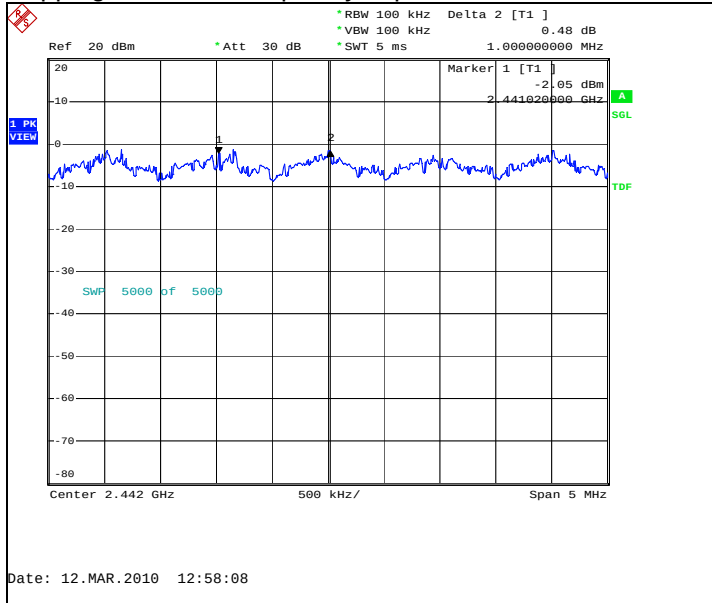
Hopping on, carrier frequency separation of channels 39 / 2441 MHz and 40 / 2442 MHz



9.2.2 8DPSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
1000	Passed

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



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

EUT with DUT number	RM-658 DUT 24417
Accessories with DUT numbers	BP-4L DUT 24444, AC-10U DUT 24446, WH-205 DUT 24880
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24 / 43 / 102.3
Date of measurements	12-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

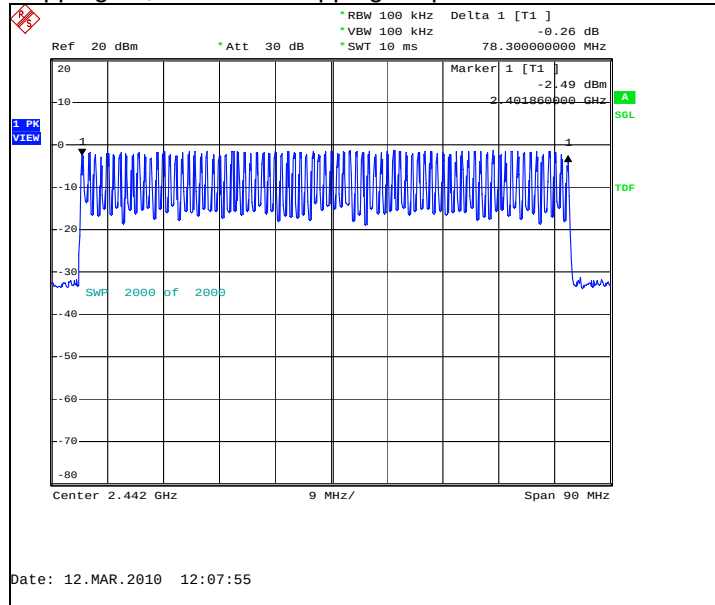
Limit [number]
≥ 15

10.2. Bluetooth Test results

10.2.1 GFSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
78	Passed

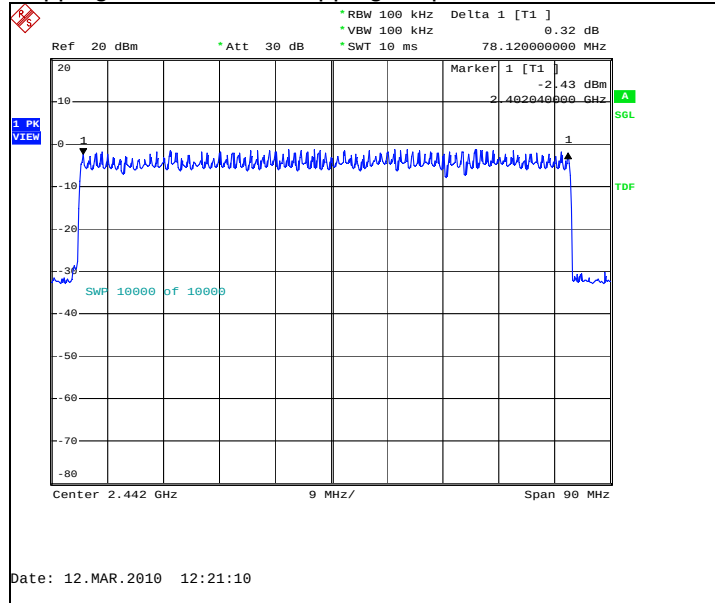
Hopping on, number of hopping frequencies



10.2.2 8DPSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
70	Passed

Hopping on, number of hopping frequencies



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

EUT with DUT number	RM-658 DUT 24417
Accessories with DUT numbers	BP-4L DUT 24444, AC-10U DUT 24446, WH-205 DUT 24880
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24 / 43 / 102.3
Date of measurements	12-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

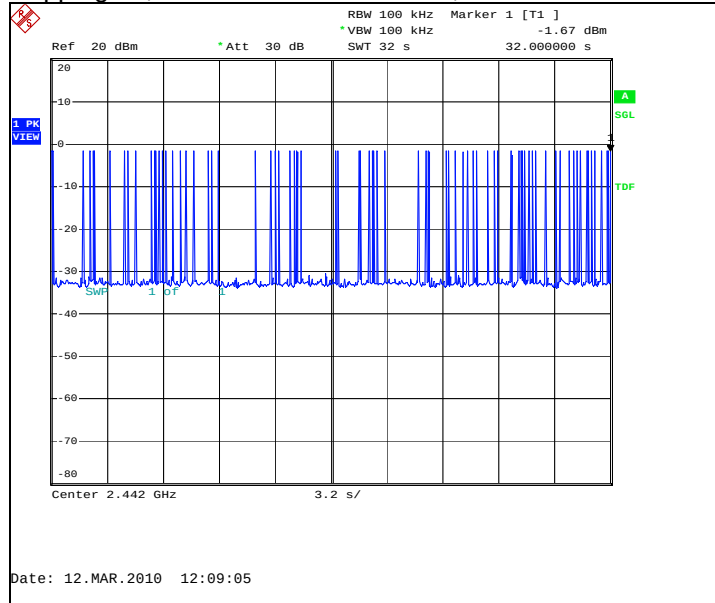
Limit [s]
≤ 0.4

11.2. Bluetooth test results

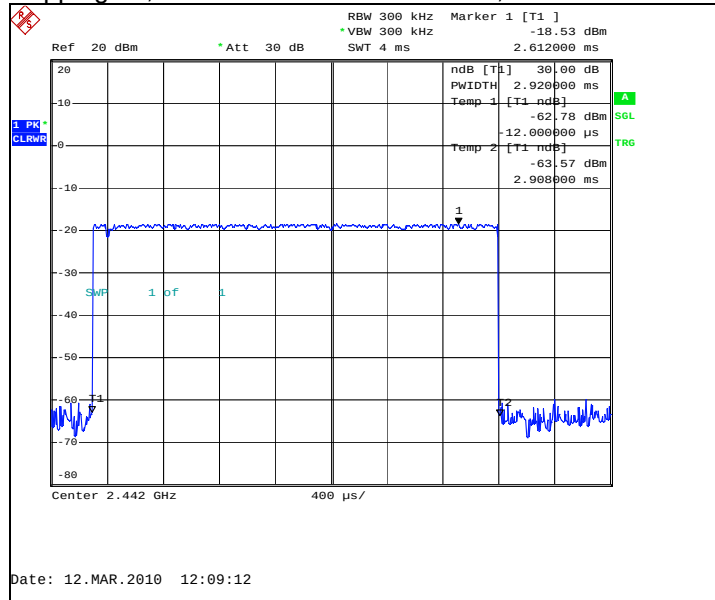
11.2.1 GFSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [μs]	Time of occupancy [s]	Result
69	2,920	0.201480	Passed

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



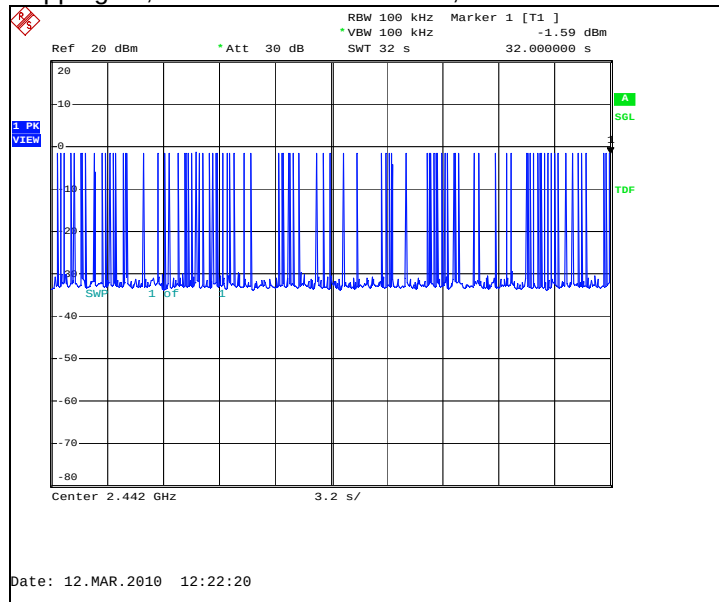
Hopping on, duration of one transmission, channel 40 / 2442 MHz



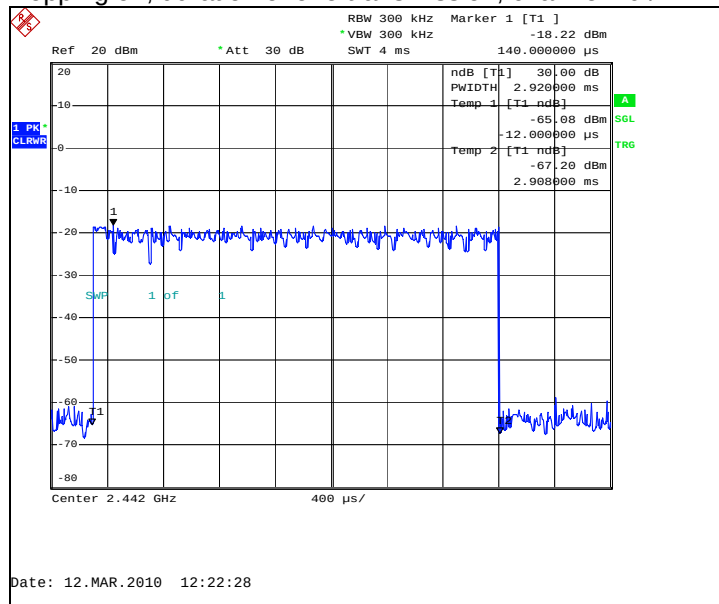
11.2.2 8DPSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [μs]	Time of occupancy [s]	Result
83	2,920	0.242360	Passed

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



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



12. Test Equipment

12.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
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

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