

FCC Part 15C Compliance Test Report

Test Report no.:	Cph_FCC_0748_17.doc	Date of Report:	30-11-2007
Number of pages:	36	Customer's Contact person:	Ernest Mayer
Testing laboratory:	TCC Nokia Copenhagen Laboratory Frederikskaj 1790 COPENHAGEN V DENMARK Tel. +45 33 292929 Fax. +45 33 292934	Customer:	Nokia Corporation Frederikskaj 1790 COPENHAGEN V DENMARK Tel. +45 33 292929 Fax. +45 33 292934
FCC listing no.:	99059		
IC recognition no.:	661AD-1		
Tested devices/ accessories:	Phone: RM-278, Battery: BP-5M, Headset: HS-45 AC charger: AC-4E		
FCC ID:	QTKRM-278	IC:	661AD-RM278
Supplement reports:	The Test Results in this Test Report is taken from the RM-240 Test Report number: Cph_FCC_0731_10.doc		
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 and RSS-210. 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:			

Allan F. Henriksen, Engineer

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	02-08-2007
Testing completed	07-08-2007
The customer's contact person	Ernest Mayer
Test Plan referred to	T:\Projects\RM-240\TestPlan_RS\RS_Testplan_for_RM-240.xls
Notes	The Test Result in this Report are valid for RM-278
Document name	T:\Projects\RM-278\EMC\Results\FCC\Cph_FCC_0748_17.doc

1.1. EUT and Accessory Information

The EUT is a 6-band (GSM850/900/1800/1900) mobile phone with GPRS, EGPRS and Bluetooth. Bluetooth is tested with maximum rated TX power.
The RM-278 Phone does not have WCDMA Band V (850).

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-240	004401/01/527195/5	0310	-	Vp shk3.03	27217
Battery	BP-5M	3932136435220103647;0670509	-	-	-	27216
Headset	HS-45	-	-	-	-	29207
AC charger	AC-4E	1103336253061209774;0675384	-	-	-	29206

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(c)	A8.5	Band edge compliance of RF emissions	NP
15.247(c)	A8.5	Spurious RF conducted emissions	Passed
15.247(c), 15.209	A8.5	Spurious radiated emissions	Passed
15.207	7.2.2	AC power line conducted emissions	Passed
15.247(a)(1)	A8.1 (1)	20 dB bandwidth	Passed
15.247(a)(1)	A8.1 (2)	Carrier frequency separation	Passed
15.247(a)(1)(iii)	A8.1 (4)	Number of hopping frequencies	Passed
15.247(a)(1)(iii)	A8.1 (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 Copenhagen Laboratory.

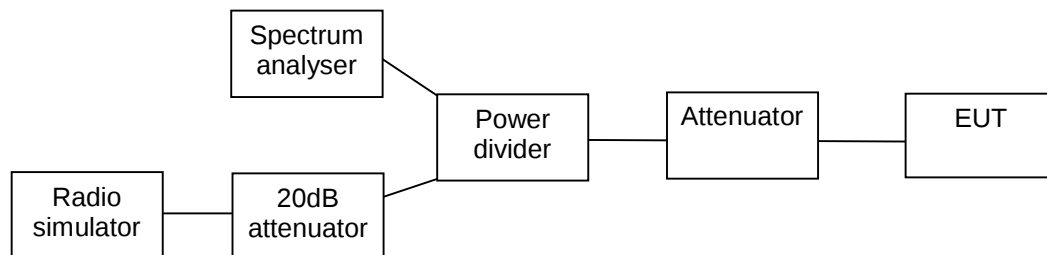
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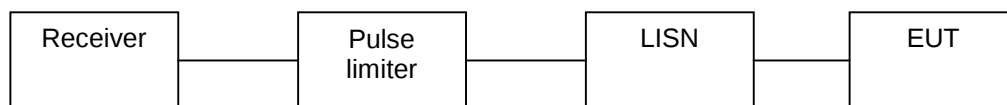
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2. Test setups

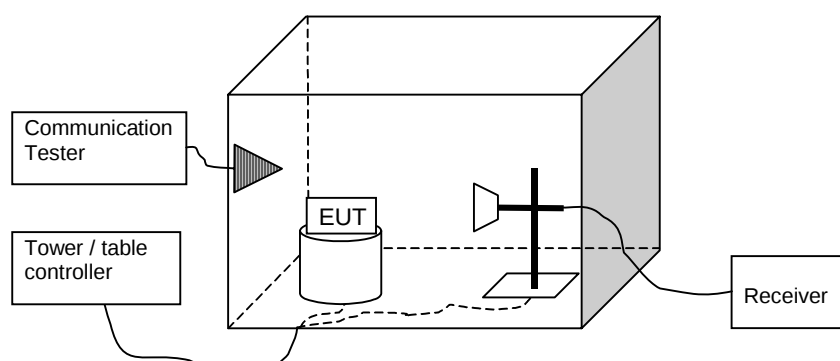
2.1. Conducted RF test setup



2.2. AC power line conducted emissions test setup



2.3. Spurious radiated emissions test setup



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

EUT with DUT number	RM-240 dut 27217, BP-5M dut 27216
Accessories with DUT numbers	HS-45 dut 29207, AC-4E dut 29206
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24.5 / 43.5 101.65
Date of measurements	02-08-2007
Measured by	Jan Engelbrechtsen

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

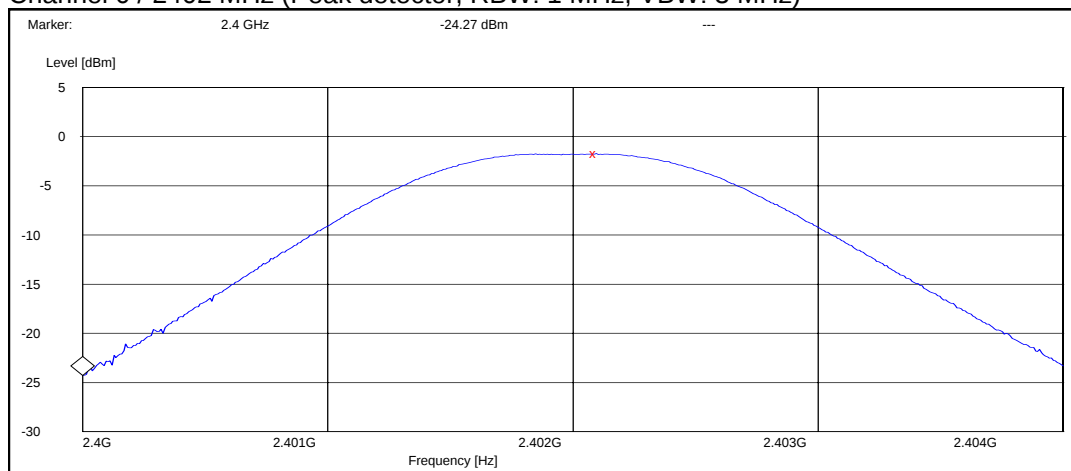
Frequency range [MHz]	Limit [W]	Limit [dBm]
2400 – 2483.5	≤ 1	≤ 30

3.2. Bluetooth Test results

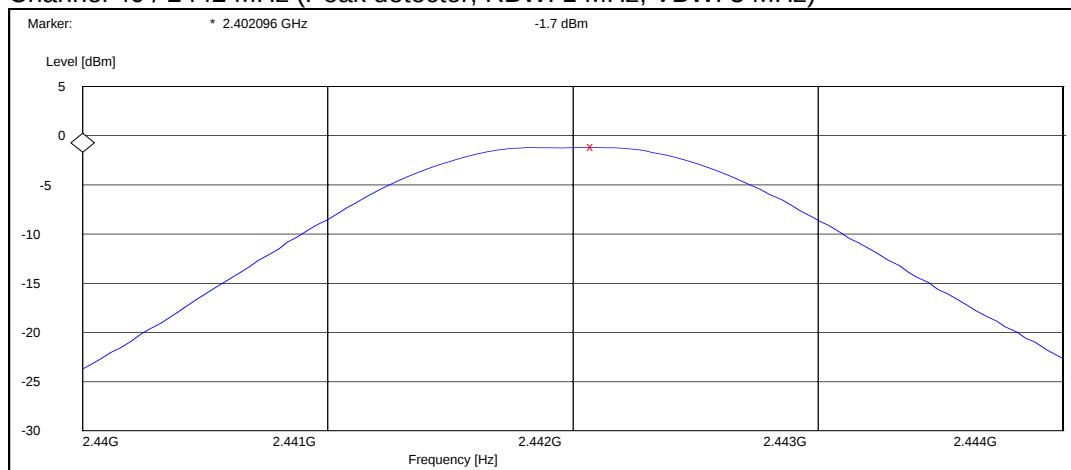
3.2.1 GFSK modulation, PRBS packet type

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
0 / 2402	-1.70	0.676	Passed
40 / 2442	-1.10	0.776	Passed
78 / 2480	-1.10	0.776	Passed

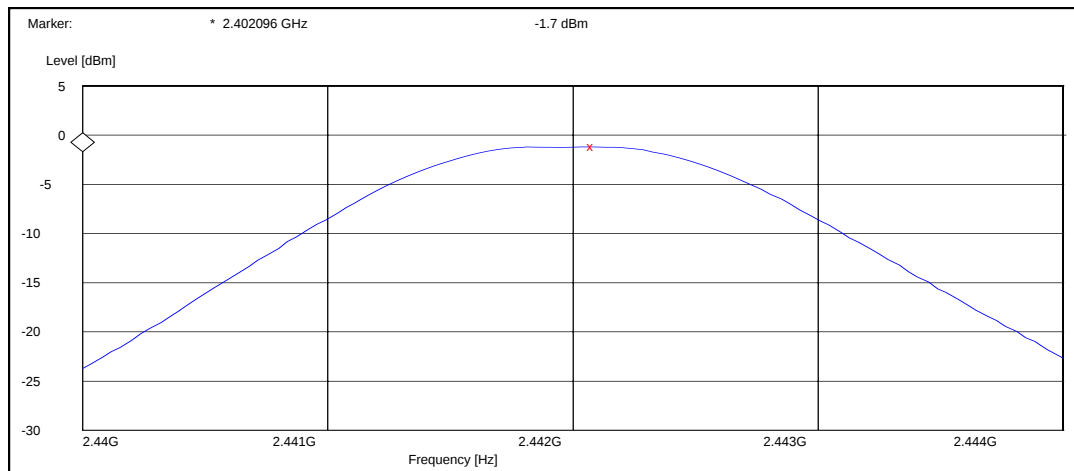
Channel 0 / 2402 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



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



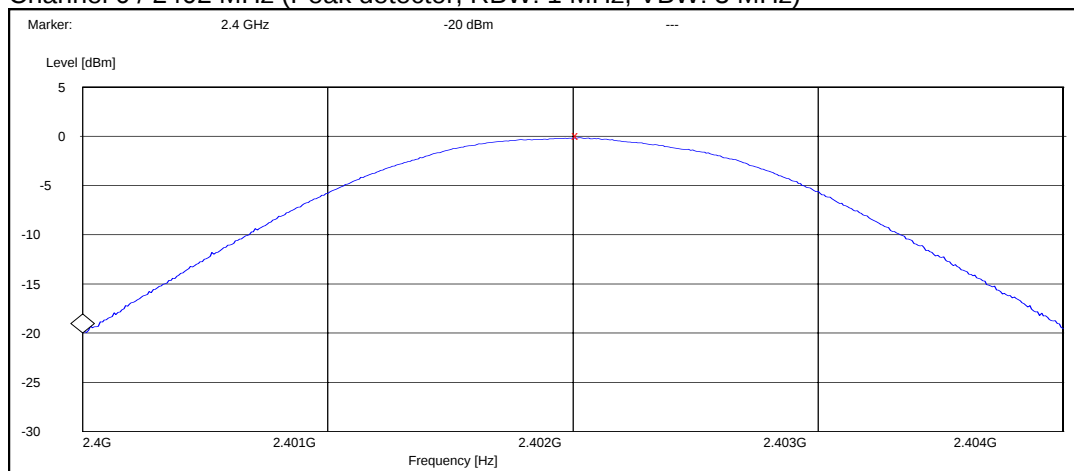
Channel 78 / 2480 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



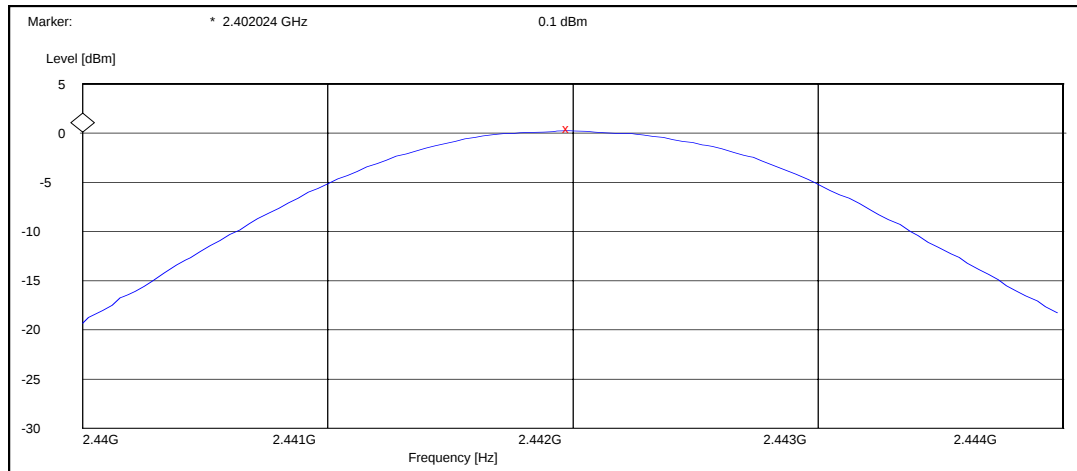
3.2.2 8DPSK modulation, PRBS packet type

Channel / f_c [MHz]	P [dBm]	P [mW]	Result
0 / 2402	0.10	1.023	Passed
40 / 2442	0.50	1.122	Passed
78 / 2480	0.50	1.122	Passed

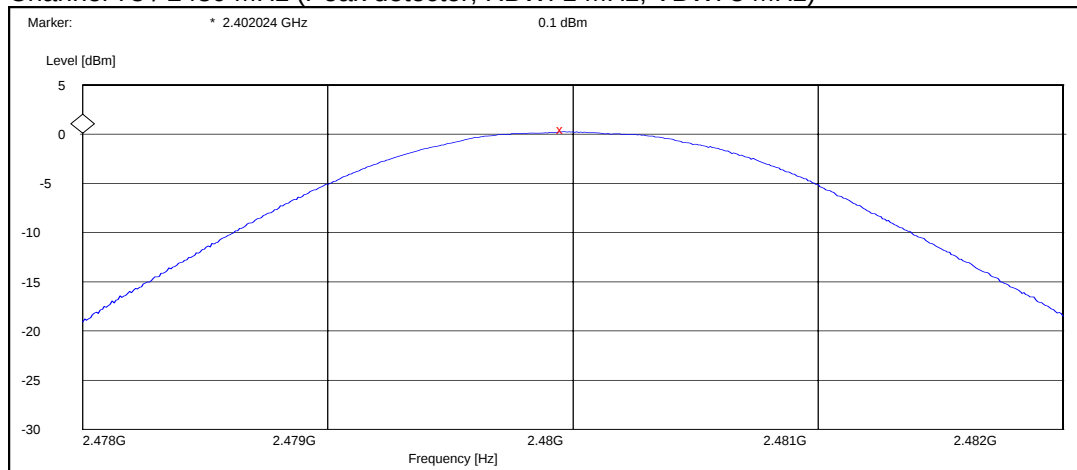
Channel 0 / 2402 MHz (Peak detector, RBW: 1 MHz, VBW: 3 MHz)



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

EUT with DUT number	RM-240 dut 27217, BP-5M dut 27216
Accessories with DUT numbers	HS-45 dut 29207, AC-4E dut 29206
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24.5 / 43.5 101.65
Date of measurements	02-08-2007
Measured by	Jan Engelbrechtsen

4.1. Test method and limit

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

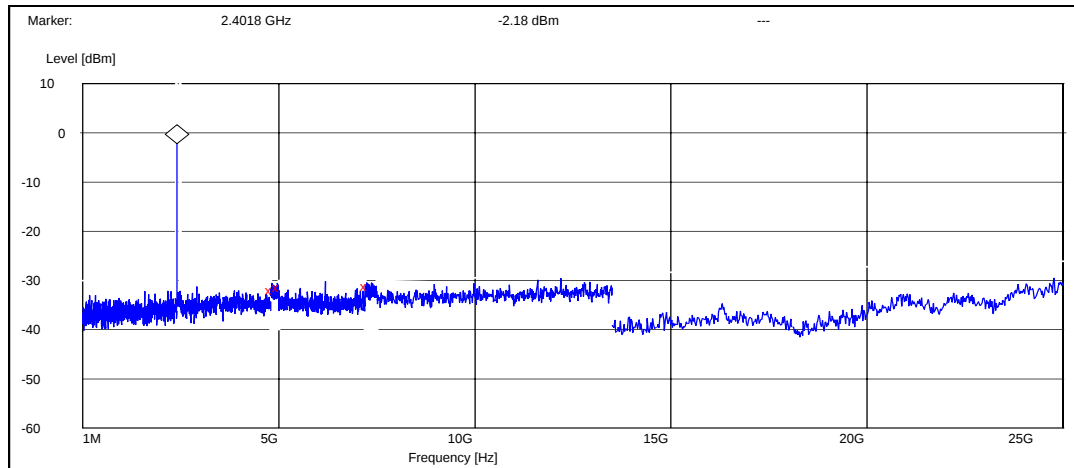
Limits for spurious RF conducted emissions measurements

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

4.2. Bluetooth Test results

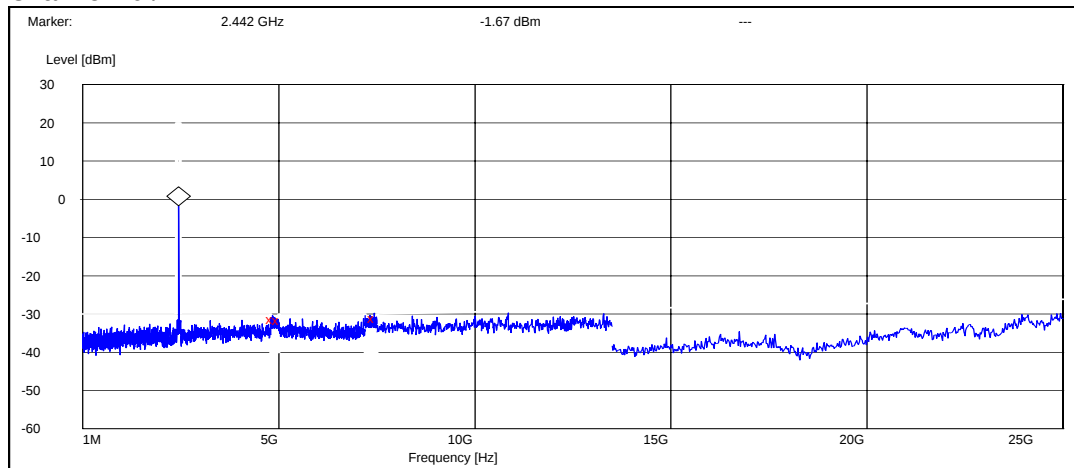
4.2.1 GFSK modulation, PRBS packet type

Channel 0 / 2402 MHz



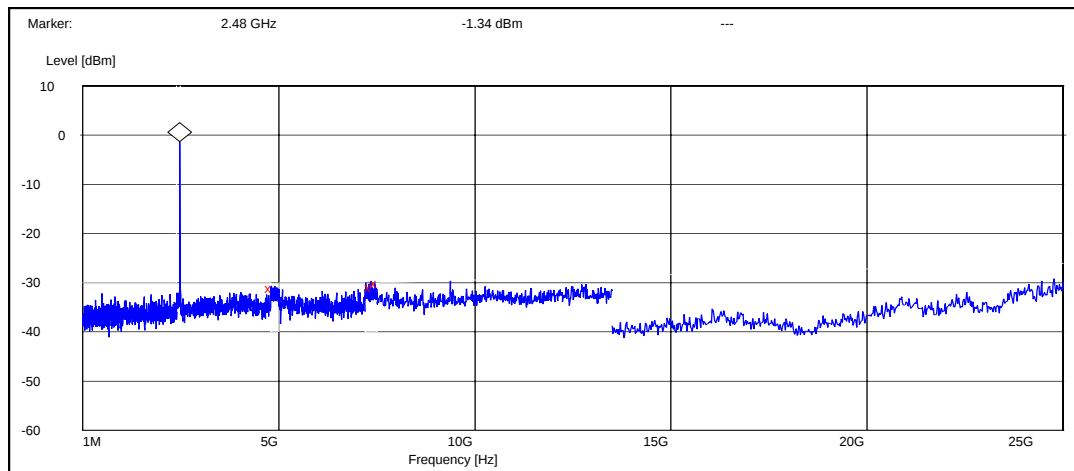
Frequency [MHz]	P [dBc]	Result
4829.200000	-29.720957	Passed
5000.000000	-29.320957	Passed
7248.600000	-29.020957	Passed

Channel 40 / 2442 MHz



Frequency [MHz]	P [dBc]	Result
4840.000000	-29.828179	Passed
5000.000000	-29.928179	Passed
7435.800000	-29.528179	Passed

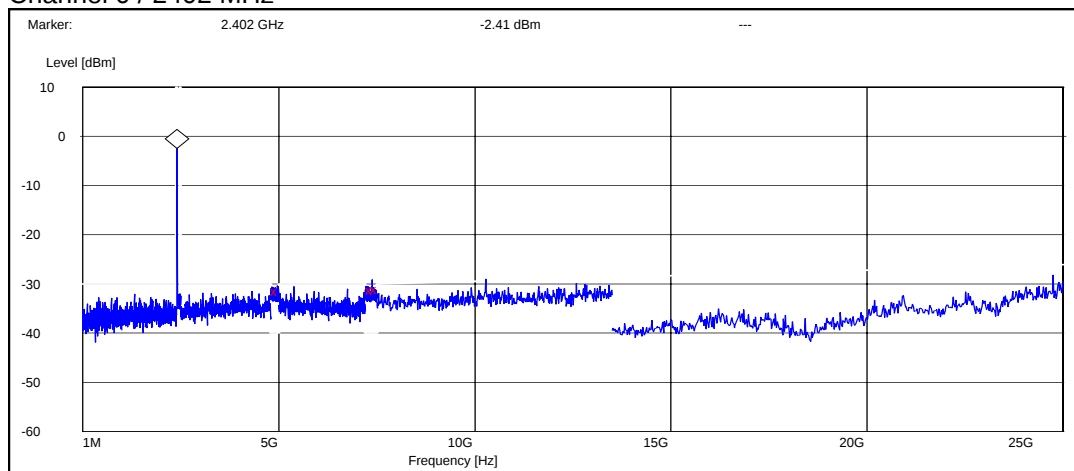
Channel 78 / 2480 MHz



Frequency [MHz]	P [dBc]	Result
4814.000000	-29.757601	Passed
7359.000000	-29.657601	Passed
7500.000000	-28.857601	Passed

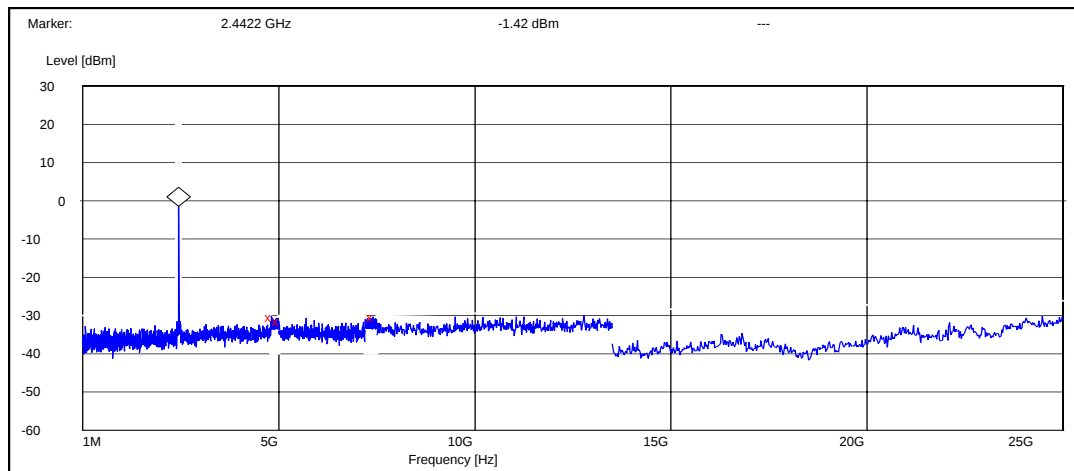
4.2.2 8DPSK modulation, PRBS packet type

Channel 0 / 2402 MHz



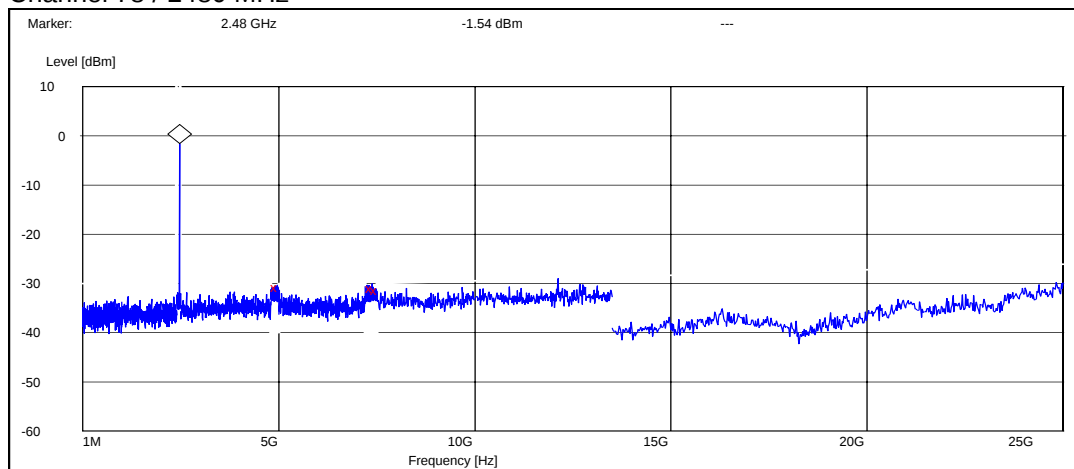
Frequency [MHz]	P [dBc]	Result
4960.000000	-28.985474	Passed
7387.200000	-28.885474	Passed
7500.000000	-28.685474	Passed

Channel 40 / 2442 MHz



Frequency [MHz]	P [dBc]	Result
4807.600000	-29.076641	Passed
5000.000000	-30.076641	Passed
7415.400000	-29.176641	Passed

Channel 78 / 2480 MHz



Frequency [MHz]	P [dBc]	Result
4959.200000	-29.159007	Passed
7387.800000	-29.359007	Passed
7500.000000	-29.759007	Passed

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

EUT with DUT number	RM-240, DUT 29204
Accessories with DUT numbers	BP-5M, DUT 29205; HS-47, DUT 29207; AC-4E, DUT 29206;
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	Phone tested slide open mode.
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 43 / 100.6
Date of measurements	31.07.2007-01.08.2007
Measured by	Kalle Hannila / Ruben Hansen

5.1. 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

5.2. Bluetooth Test results

5.2.1 GFSK modulation, PRBS packet type

Channel 0 / 2402 MHz

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
4804.000000	36.60	67.61	35.90	0.7	VERTICAL	PASSED
7206.000000	40.30	103.51	33.20	7.1	VERTICAL	PASSED

Average (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
4804.000000	24.10	16.03	23.40	0.7	VERTICAL	PASSED
7206.000000	27.60	23.99	20.50	7.1	VERTICAL	PASSED

Channel 40 / 2442 MHz

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

Frequency [MHz]	E [dB $\mu\text{V/m}$]	E [$\mu\text{V/m}$]	U _{RX} [dB μV]	A _{TOT} [dB]	Polarisation	Result
38.235872	23.40	14.79	41.40	-18.0	VERTICAL	PASSED

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
4954.905812	38.70	86.10	37.40	1.3	VERTICAL	PASSED
4956.415832	38.90	88.10	37.60	1.3	VERTICAL	PASSED
7411.827655	42.80	138.04	34.50	8.3	VERTICAL	PASSED
17454.411824	52.40	416.87	29.00	23.4	HORIZONTAL	PASSED
17817.139279	58.80	870.96	30.20	28.6	HORIZONTAL	PASSED

Average (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
4948.905812	25.20	18.20	24.00	1.2	VERTICAL	PASSED
4956.915832	25.30	18.41	24.00	1.3	VERTICAL	PASSED
7416.327655	29.40	29.51	21.30	8.1	VERTICAL	PASSED
17459.411824	39.90	98.86	16.40	23.5	HORIZONTAL	PASSED

17821.139279	46.10	201.84	17.50	28.6	HORIZONTAL	PASSED
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Channel 78 / 2480 MHz

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

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4960.000000	38.80	87.10	37.50	1.3	VERTICAL	PASSED
7440.000000	42.70	136.46	34.50	8.2	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
4960.000000	25.50	18.84	24.20	1.3	VERTICAL	PASSED
7440.000000	29.10	28.51	20.90	8.2	VERTICAL	PASSED

5.2.2 8DPSK modulation, PRBS packet type

Channel 0 / 2402 MHz

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

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4804.000000	36.90	69.98	36.20	0.7	VERTICAL	PASSED
7206.000000	40.40	104.71	33.30	7.1	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
4804.000000	24.70	17.18	24.00	0.7	VERTICAL	PASSED
7206.000000	27.80	24.55	20.70	7.1	VERTICAL	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
38.035872	24.60	16.98	42.40	-17.8	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
4953.915832	39.00	89.13	37.70	1.3	VERTICAL	PASSED
7415.829659	43.00	141.25	34.90	8.1	VERTICAL	PASSED
7438.379760	42.20	128.82	34.10	8.1	VERTICAL	PASSED
17352.203407	52.90	441.57	30.50	22.4	HORIZONTAL	PASSED
17882.767535	59.60	954.99	30.50	29.1	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4957.415832	25.90	19.72	24.60	1.3	VERTICAL	PASSED

7415.829659	29.60	30.20	21.50	8.1	VERTICAL	PASSED
7440.879760	29.30	29.17	21.10	8.2	VERTICAL	PASSED
17354.703407	39.30	92.26	16.80	22.5	HORIZONTAL	PASSED
17887.767535	46.50	211.35	17.30	29.2	HORIZONTAL	PASSED

Channel 78 / 2480 MHz

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

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4960.000000	38.70	86.10	37.40	1.3	VERTICAL	PASSED
7440.000000	41.70	121.62	33.50	8.2	HORIZONTAL	PASSED

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

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Polarisation	Result
4960.000000	25.70	19.28	24.40	1.3	VERTICAL	PASSED
7440.000000	29.20	28.84	21.00	8.2	VERTICAL	PASSED

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

EUT with DUT number	RM-240, DUT 29204
Accessories with DUT numbers	BP-5M, DUT 29205; HS-47, DUT 29207; AC-4E, DUT 29206;
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	Slide Open
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22.9 / 53.5 102.0
Date of measurements	07-08-2007
Measured by	Allan F. Henriksen

6.1. 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.

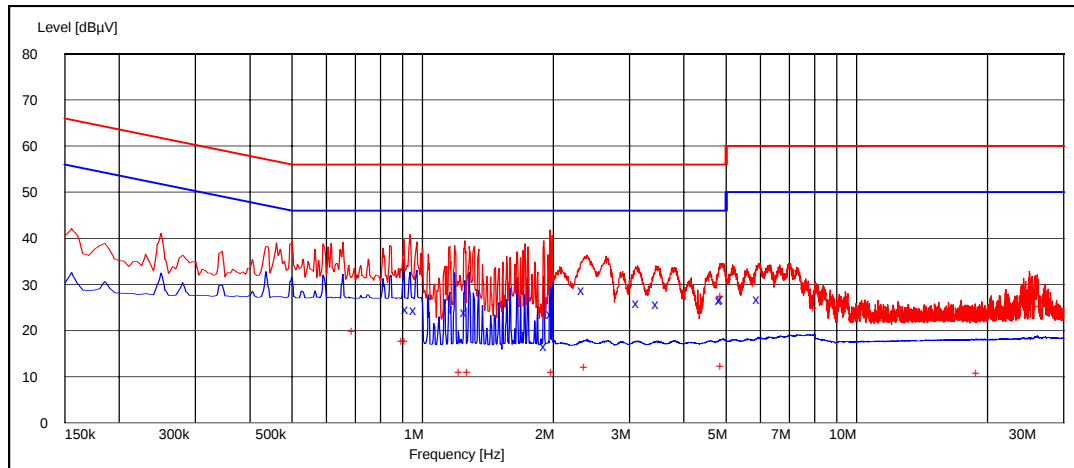
CISPR 22 Class B limits

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

6.2. Bluetooth Test results

6.2.1 GFSK modulation, PRBS packet type

Channel 40 / 2442 MHz



Quasi peak (RBW: 9 kHz)

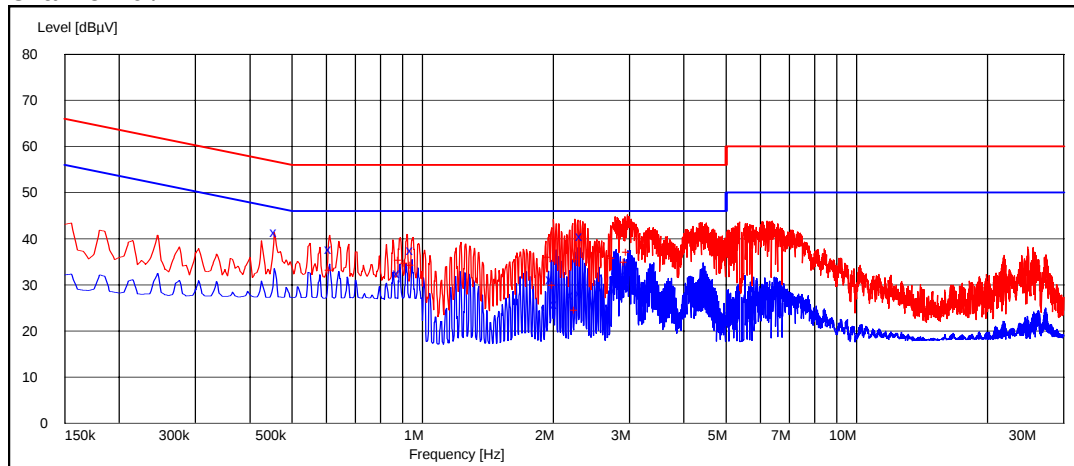
Frequency [MHz]	U [dBμV]	Line	Result
0.925000	24.60	N	Passed
0.965000	24.50	L1	Passed
1.265000	24.10	L1	Passed
1.930000	16.60	N	Passed
1.995000	23.50	L1	Passed
2.355000	28.90	N	Passed
3.150000	25.90	L1	Passed
3.500000	25.80	L1	Passed
4.895000	26.70	L1	Passed
4.920000	26.90	L1	Passed
5.965000	26.80	L1	Passed

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.695000	19.90	L1	Passed
0.905000	17.70	N	Passed
0.920000	17.70	N	Passed
1.225000	11.00	N	Passed
1.285000	11.00	N	Passed
2.000000	11.00	N	Passed
2.390000	12.20	N	Passed
4.920000	12.30	N	Passed
4.925000	27.50	N	Passed
8.055000	24.90	N	Passed
19.065000	10.70	L1	Passed
26.150000	25.30	N	Passed

6.2.2 8DPSK modulation, PRBS packet type

Channel 40 / 2442 MHz



Quasi peak (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.460000	41.50	L1	Passed
0.615000	37.80	N	Passed
0.885000	32.50	L1	Passed
0.950000	37.50	L1	Passed
1.990000	31.20	L1	Passed
2.035000	25.80	L1	Passed
2.225000	27.70	L1	Passed
2.320000	28.20	L1	Passed
2.335000	40.50	N	Passed
2.785000	29.00	L1	Passed
2.935000	32.40	N	Passed

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.615000	33.10	N	Passed
0.890000	35.30	N	Passed
0.920000	34.70	N	Passed
0.950000	34.30	N	Passed
1.965000	36.10	N	Passed
2.015000	30.00	L1	Passed
2.260000	24.60	L1	Passed
2.265000	35.50	N	Passed
2.760000	35.80	N	Passed
2.945000	35.00	N	Passed
2.980000	37.00	N	Passed

7. 20 dB bandwidth (FCC §15.247(a)(1), RSS-210 A8.1 (1))

EUT with DUT number	RM-240 dut 27217, BP-5M dut 27216
Accessories with DUT numbers	HS-45 dut 29207, AC-4E dut 29206
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24.5 / 43.5 101.65
Date of measurements	02-08-2007
Measured by	Jan Engelbrechtsen

7.1. 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

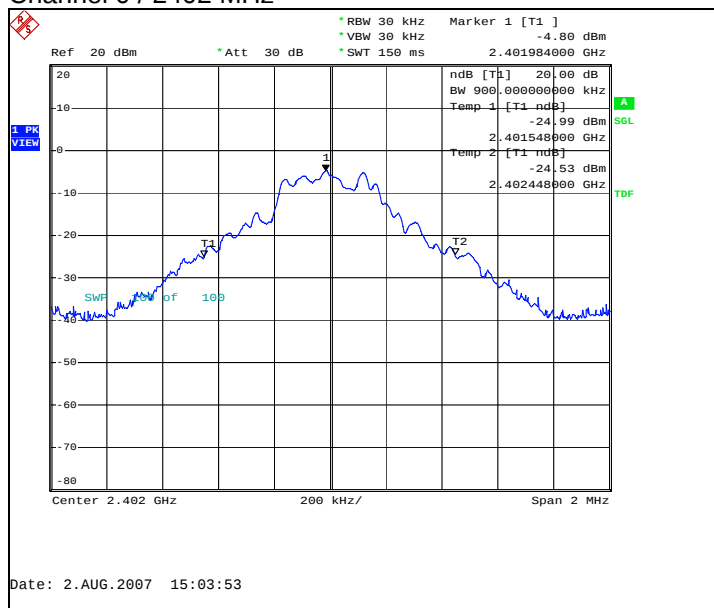
Limit [MHz]
N/A

7.2. Bluetooth Test results

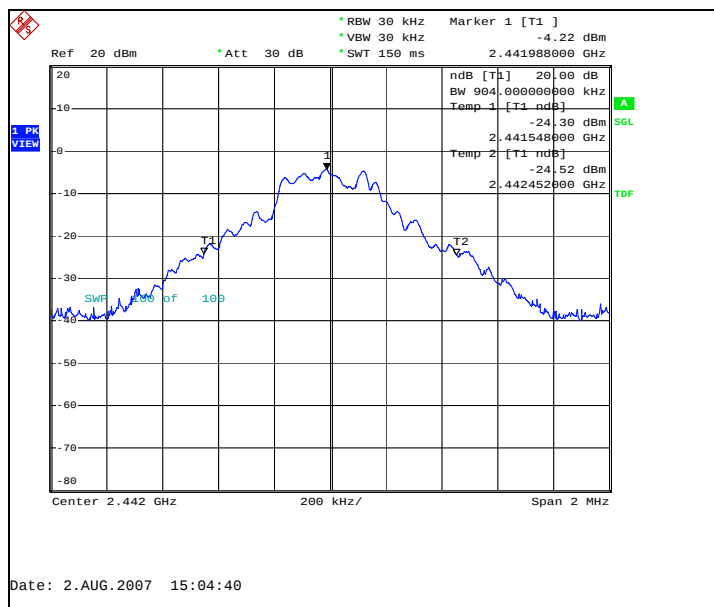
7.2.1 GFSK modulation, PRBS packet type

Channel / f_c [MHz]	20 dB bandwidth [kHz]	Result
0 / 2402	900.000	Passed
40 / 2442	904.000	Passed
78 / 2480	900.000	Passed

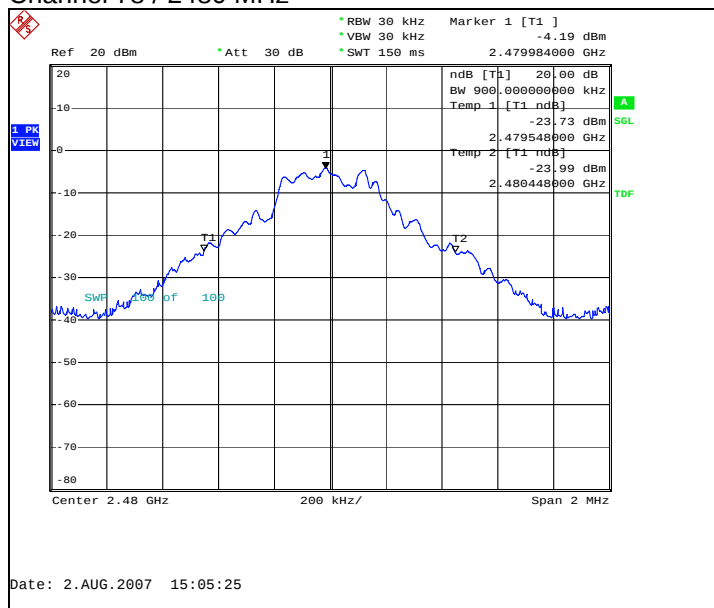
Channel 0 / 2402 MHz



Channel 40 / 2442 MHz



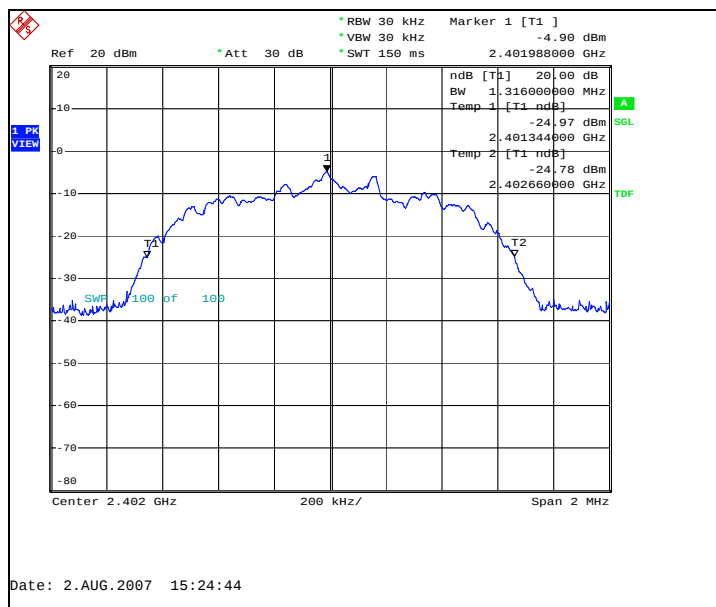
Channel 78 / 2480 MHz



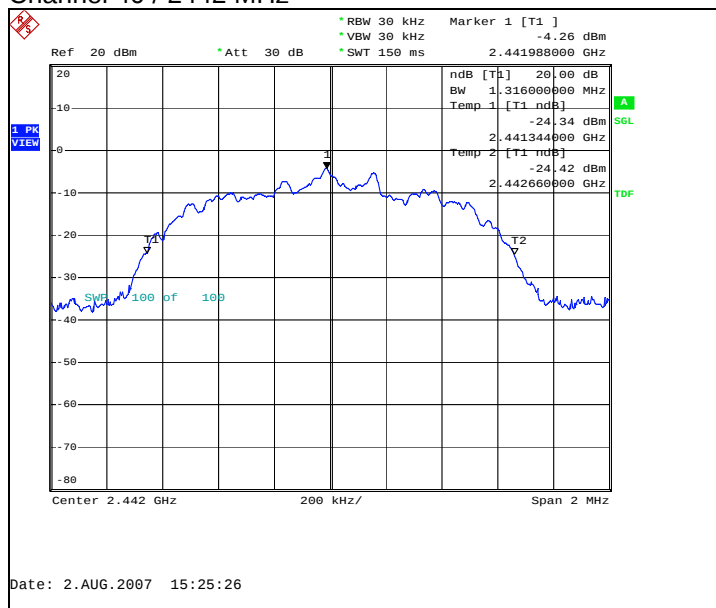
7.2.2 8DPSK modulation, PRBS packet type

Channel / f_c [MHz]	20 dB bandwidth [kHz]	Result
0 / 2402	1316.000	Passed
40 / 2442	1316.000	Passed
78 / 2480	1312.000	Passed

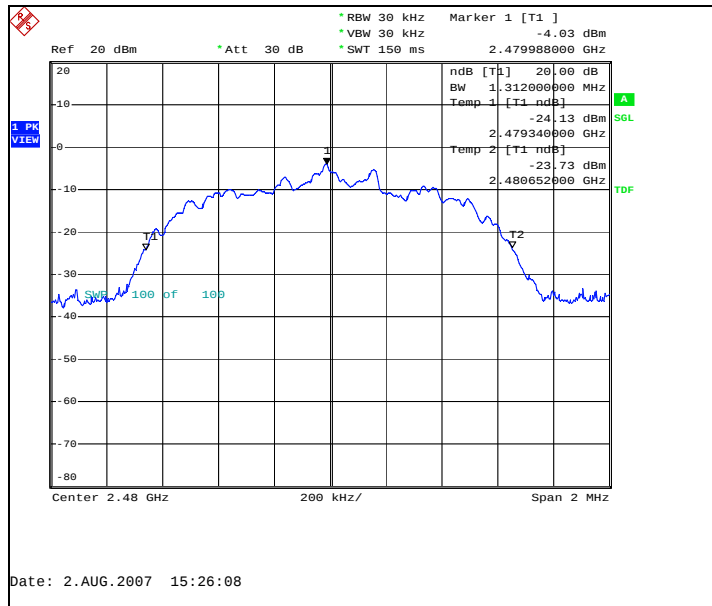
Channel 0 / 2402 MHz



Channel 40 / 2442 MHz



Channel 78 / 2480 MHz



8. Carrier frequency separation (FCC §15.247(a)(1), RSS-210 A8.1 (2))

EUT with DUT number	RM-240 dut 27217, BP-5M dut 27216
Accessories with DUT numbers	HS-45 dut 29207, AC-4E dut 29206
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24.5 / 43.5 101.65
Date of measurements	02-08-2007
Measured by	Jan Engelbrechtsen

8.1. 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

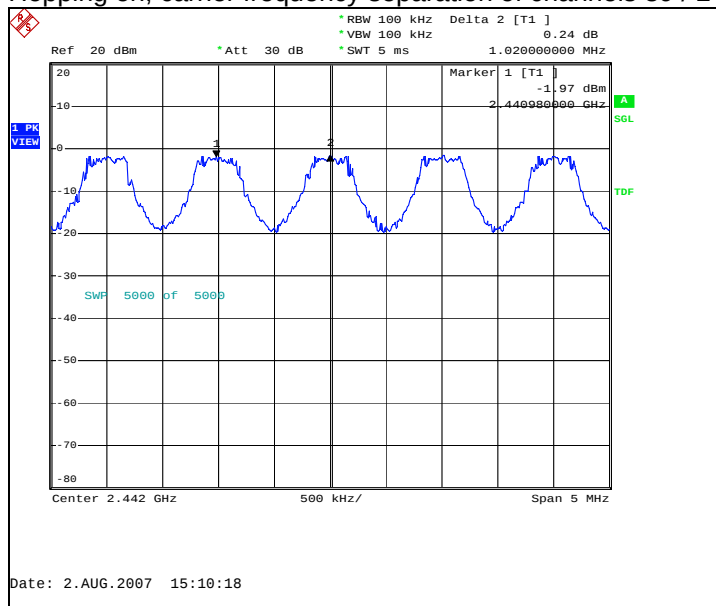
Limit [MHz]
≥ 0.025 or 2/3 of the 20 dB bandwidth

8.2. Bluetooth Test results

8.2.1 GFSK modulation, PRBS packet type

Carrier frequency separation [kHz]	Result
1020	

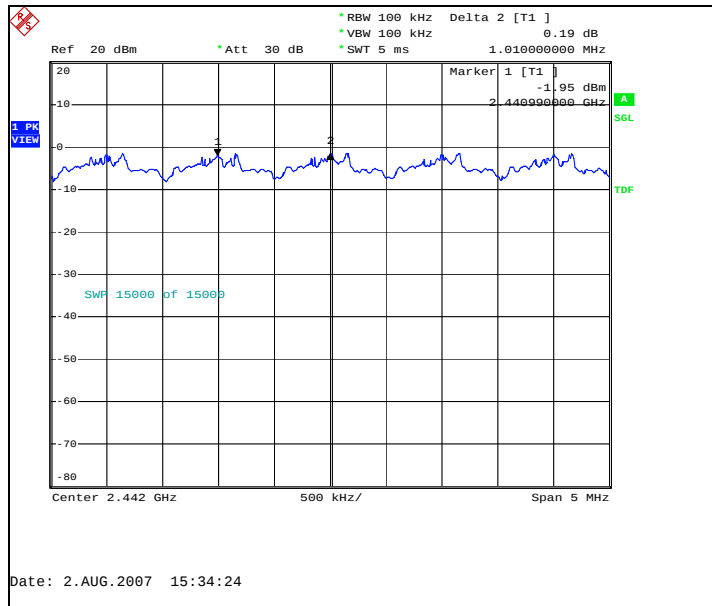
Hopping on, carrier frequency separation of channels 39 / 2441 MHz and 40 / 2442 MHz



8.2.2 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



9. Number of hopping frequencies (FCC §15.247(a)(1)(iii), RSS-210 A8.1 (4))

EUT with DUT number	RM-240 dut 27217, BP-5M dut 27216
Accessories with DUT numbers	HS-45 dut 29207, AC-4E dut 29206
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24.5 / 43.5 101.65
Date of measurements	02-08-2007
Measured by	Jan Engelbrechtsen

9.1. 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

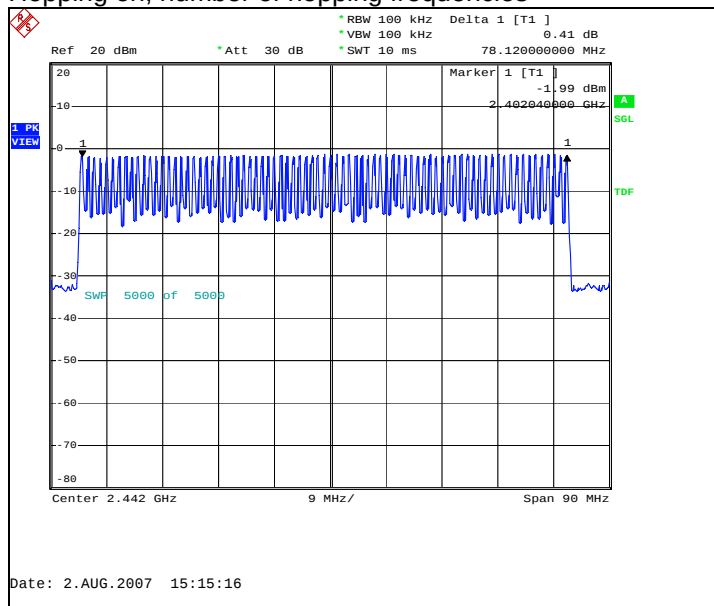
Limit [number]
≥ 15

9.2. Bluetooth Test results

9.2.1 GFSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
79	Passed

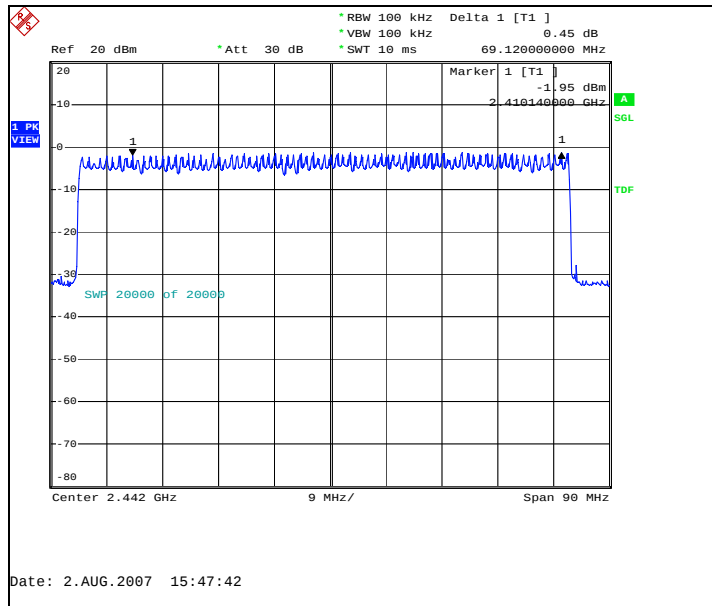
Hopping on, number of hopping frequencies



9.2.2 8DPSK modulation, PRBS packet type

Measured number of hopping frequencies	Result
79	Passed

Hopping on, number of hopping frequencies



10. Time of occupancy (FCC §15.247(a)(1)(iii), RSS-210 A8.1 (4))

EUT with DUT number	RM-240 dut 27217, BP-5M dut 27216
Accessories with DUT numbers	HS-45 dut 29207, AC-4E dut 29206
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24.5 / 43.5 101.65
Date of measurements	02-08-2007
Measured by	Jan Engelbrechtsen

10.1. 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

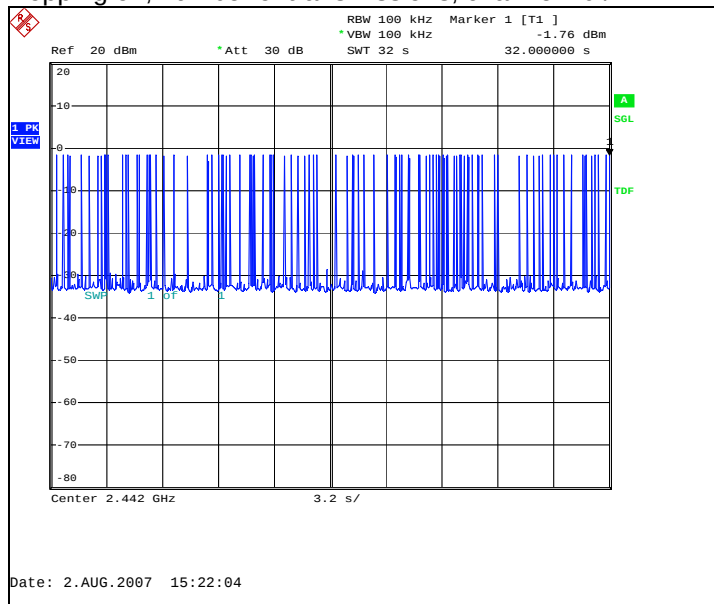
Limit [s]
≤ 0.4

10.2. Bluetooth test results

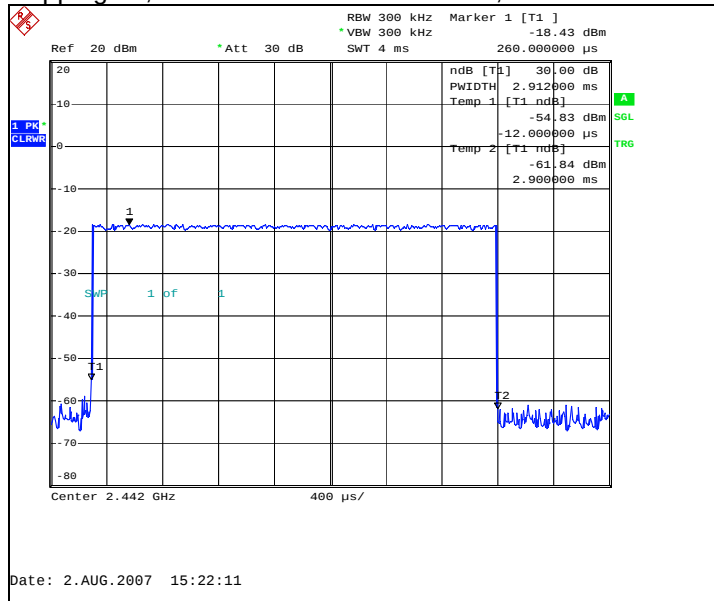
10.2.1 GFSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [μ s]	Time of occupancy [s]	Result
87	2912	0.253344	Passed

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



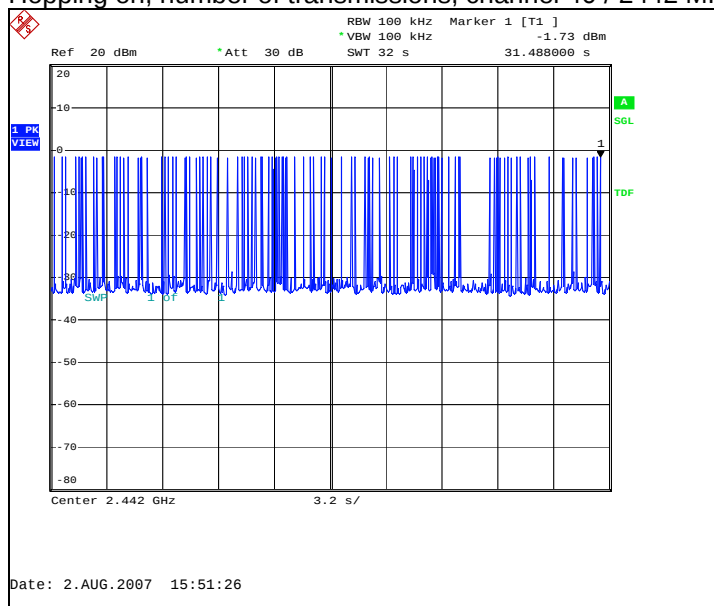
Hopping on, duration of one transmission, channel 40 / 2442 MHz



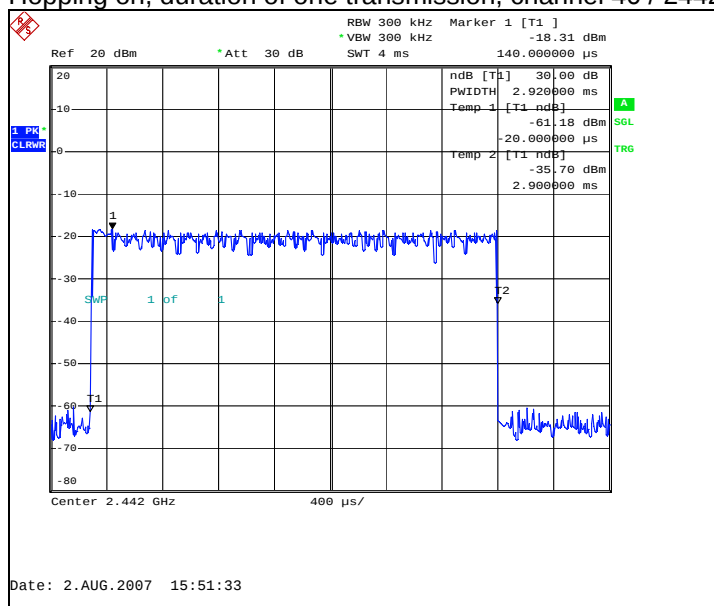
10.2.2 8DPSK modulation, PRBS packet type

Measured number of transmissions	Duration of one transmission [μ s]	Time of occupancy [s]	Result
96	2920	0.280320	Passed

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



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



11. Test Equipment

11.1. 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 Receiver 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, 15C, 15B
19678	Spectrum Analyzer 26 GHz	FSP	Rohde&Schwarz	22/24, 15C, 15B
16601	Universal Radio Communication Tester	CMU200	Rohde&Schwarz	22/24, 15C, 15B
19625	Vötsch Climatic Chamber	VT4002EMC	Vötsch	22/24, 15C, 15B
13357	Rohde & Schwartz Signal Generator	SMP02	Rohde&Schwarz	22/24, 15C, 15B

11.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
18416	Universal Radio Communication Tester	CMU200	Rohde&Schwarz	22/24, 15C, 15B
	Programmable Relay Switching System	-----	Pickering	22/24, 15C, 15B
15742	Programmable Relay Switching System	-----	Pickering	22/24, 15C, 15B
14020	Power Supply Module Relay Switching System 45W	10-910-002	Pickering	22/24, 15C, 15B
15743	Power Supply Module Relay Switching System 50W	10-910L-001	Pickering	22/24, 15C, 15B
16490	RS-232/IEEE-488.2 Interface	10-921-001	Pickering	22/24, 15C, 15B
	RS-232/IEEE-488.2 Interface	10-921-001	Pickering	22/24, 15C, 15B
20078	Relay 2x6 Chnl μ Wave Mux	10-785B-522	Pickering	22/24, 15C, 15B
14021	Relay Dual 6 Chnl μ Wave Mux	10-785-522		22/24, 15C, 15B
	Relay Dual 6 Chnl μ Wave Mux	10-785-522		22/24, 15C, 15B
17644	Dual 6 Channel MUX Microwave Relay SMA 50 Ohm	10-785-522	Pickering	22/24, 15C, 15B
16948	Dual 6 Channel MUX Microwave Relay SMA 50 Ohm	10-785-522	Pickering	22/24, 15C, 15B
16949	Dual 6 Channel MUX Microwave Relay SMA 50 Ohm	10-785-522	Pickering	22/24, 15C, 15B
18792	Multi Device Controller	2090	ETS-EMCO	22/24, 15C, 15B
14963	RF Preampifier 100MHz-4GHz (Metal Chassis)	AFS3-00100400	Miteq/NMP Cph	22/24, 15C, 15B
18861	EMI Test Receiver 20Hz-26,5GHz	ESI	Rohde&Schwarz	22/24, 15C, 15B

Eq. No	Equipment	Type	Manufacturer	Used in
18860	Ultra Broadband Antenna Ultralog 30-3000MHz	HL562	Rohde&Schwarz	22/24, 15C, 15B
19830	Ultra Broadband Antenna Ultralog 30-3000MHz	HL562	Rohde&Schwarz	22/24, 15C, 15B
18773	Shielded Chamber	RFD-100	ETS-Lindgren	22/24, 15C, 15B
18774	Shielded Chamber	RFSD-F/A-100	ETS-Lindgren	22/24, 15C, 15B
19151	High Pass Filter 3GHz WHK3.0/18G-10ss	WHJS3000-10SS	Wainwright	22/24, 15C, 15B
13937	Ultra Stable Notch Filter 850MHz	WRCA902.4-0.2/40-6SS	Wainwright Instruments	22/24, 15C, 15B
13936	Ultra Stable Notch Filter 1747,5MHz	WRCD1747.5-0.2/40- 10SS	Wainwright Instruments	22/24, 15C, 15B
13917	Highpass Filter 1000-3000MHz 50OHM SMA Conn	WHKS1000-10SS	Wainwright Instruments	22/24, 15C, 15B
14188	Ultra Stable Notch Filter 902,4MHz	WRCA902.4-0.2/40-6SS	Wainwright	22/24, 15C, 15B
14187	Ultra Stable Notch Filter 1747,5MHz	WRCD1747.5-0.2/40- 10SS	Wainwright	22/24, 15C, 15B
16633	Ultra Stable Notch Filter 1880,0MHz	WRCD1880.0-0.2/40- 10SS	Wainwright	22/24, 15C, 15B
19587	BT/WLAN Band Reject Filter	WRCG2400/2483- 2390/2493-35/10SS	Wainwright	22/24, 15C, 15B
	WDCMA Band 4 filter	WRCG1737/1743- 1733/1747-40/6SS	Wainwright	22/24, 15C, 15B
	WDCMA Band 5&6 filter	WRCG832/83/-825/845- 40/5SS	Wainwright	22/24, 15C, 15B
	WDCMA Band 8 filter	WRCG894.6/900.6- 890.6/904.6-40/80SS	Wainwright	22/24, 15C, 15B
18323	Band reject filter 1947-1953MHz 40dB	WRCG1947/1953- 1940/1960-40/6SS	Wainwright	22/24, 15C, 15B
20031	Double Ridged Broadband Horn	BBHA 9120 D	SCHWARZBECK	22/24, 15C, 15B
15190	Infra Red Remote Control Unit	4630	Emco	22/24, 15C, 15B
14993	EMI Test Receiver 9KHz- 2750MHz	ESCS30	Rohde&Schwarz	22/24, 15C, 15B
15191	Turntable Contoller Unit	G-800SDX	YAESU	22/24, 15C, 15B
14900	Antenna Controller	HD100	HD GmbH	22/24, 15C, 15B
15105	Attenuator 30dB DC-1000MHz 50 Ohm Nf - Nm	NAT-30	Mini-Circuits	22/24, 15C, 15B
13302	Spectrum Analyzer 9KHz- 12.8GHz	HP8596E	Hewlett Packard	22/24, 15C, 15B
11584	Spectrum analyzer 50Hz- 6,5GHz	HP8561B	Hewlett Packard	22/24, 15C, 15B
13134	Tracking generator	HP85645A	Hewlett Packard	22/24, 15C, 15B
19374	Resonant Dipole Antenna 850MHz SMA m Conn.	-----	NMP Cph	22/24, 15C, 15B
19375	Resonant Dipole Antenna 1900MHz SMA m Conn.	-----	NMP Cph	22/24, 15C, 15B
11487	Network analyzer 300KHz- 3,0GHz	HP8753A	Hewlett Packard	22/24, 15C, 15B
14807	S - Parameter Test Set 300KHz- 6GHz	HP85047A	Hewlett Packard	22/24, 15C, 15B
17277	Multimeter Digital 6 1/2 Digit	AT34401A	Agilent Technologies	22/24, 15C, 15B