

FCC Part 15C Compliance Test Report

Test Report no.:	Cph_FCC_0734_02.doc	Date of Report:	24-08-2007
Number of pages:	21	Customer's Contact person:	Thomas Reitmayer
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FCC listing no.:	99059		
IC recognition no.:	661AD-1		
Tested devices/ accessories:	Phone; RM-322 (HW: 0211), Battery; BL-4C, AC-Charger; AC-5E, Headset; HS-47		
FCC ID:	PPIRM-322	IC:	661U-RM322
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 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	15-08-2007
Testing completed	24-08-2007
The customer's contact person	Thomas Reitmayer
Test Plan referred to	T:\Projects\RM-322\TestPlan_RS\RS_Testplan_RM-322.xls
Notes	None
Document name	\\satcc01nmp\tcc_salo\Projects\RM-322\EMC\Results\FCC\Cph_FCC_0734_02.doc

1.1. EUT and Accessory Information

The EUT is a 3-band (GSM900/1800/1900) 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-322	004401/01/363534/3	0211	-	pr3.50.1	27199
Pronto	RM-322	004401/01/363491/6	0211	-	pr3.50.1	27198
Battery	BL-4C	0670389382066N524F1AW00979	-	-	-	27187
Battery	BL-4C	0670389382066N524F1AW00261	-	-	-	27194
AC-Charger	AC-5E	3943497104090614544;0675540	-	-	-	27186
AC Charger	AC-5E	3943497104090614625;0675540	-	-	-	27192
Headset	HS-47	0694579706512111703	-	-	-	27193

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

WLAN:

Section in CFR 47	Section in RSS-210	Name of the test	Result
15.247(b)(1)	A8.4 (4)	Conducted peak output power	NP
15.247(c)	A8.5	Band edge compliance of RF emissions	NP
15.247(c)	A8.5	Spurious RF conducted emissions	NP
15.247(c), 15.209	A8.5	Spurious radiated emissions	Passed
15.207	7.2.2	AC powerline conducted emissions	Passed
15.247(a)(2)	A8.2 (1)	6 dB bandwidth	NP
15.247(e)	A8.2 (2)	Power spectral density	NP

PASSED

The EUT complies with the essential requirements in the standard.

FAILED
NP

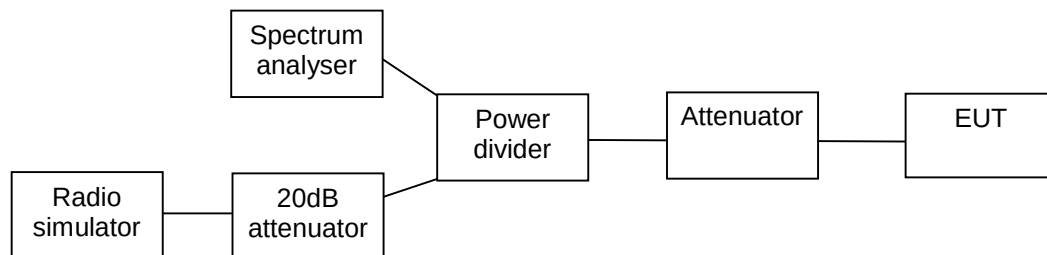
The EUT does not comply with the essential requirements in the standard.
The test was not performed by the TCC Nokia Copenhagen Laboratory.

CONTENTS

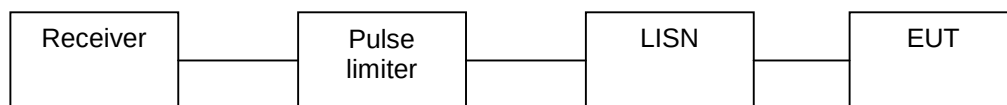
1. Summary for FCC Part 15C Compliance Test Report.....	2
1.1. EUT and Accessory Information	2
1.2. Summary of Test Results	2
2. Test setups.....	5
2.1. Conducted RF test setup	5
2.2. AC powerline conducted emissions test setup.....	5
2.3. Spurious radiated emissions test setup	5
3. Spurious radiated emissions (FCC §15.247(c), §15.209, RSS-210 A8.5).....	6
3.1. Test method and limit.....	6
3.2. Bluetooth Test results	7
4. AC powerline conducted emissions (FCC §15.207, RSS-GEN 7.2.2)	10
4.1. Test method and limit.....	10
4.2. Bluetooth Test results	11
Spurious radiated emissions (FCC §15.247(c), §15.209, RSS-210 A8.5).....	13
4.3. Test method and limit.....	13
4.4. WLAN Test results	14
AC powerline conducted emissions (FCC §15.207, RSS-GEN 7.2.2)	17
4.5. Test method and limit.....	17
4.6. WLAN Test results	18
5. Test Equipment.....	20
5.1. Conducted measurements	20
5.2. Radiated measurements	20

2. Test setups

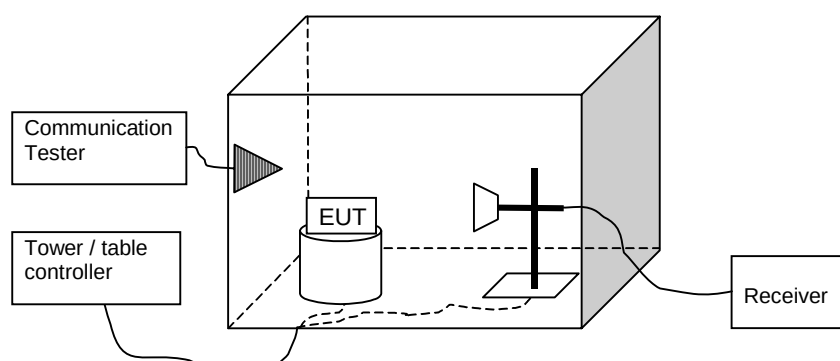
2.1. Conducted RF test setup



2.2. AC powerline conducted emissions test setup



2.3. Spurious radiated emissions test setup



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

EUT with DUT number	RM-322 Dut 27199
Accessories with DUT numbers	BL-4C Dut 27194 + AC-5E Dut 27192 + HS-47 Dut 27193
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23.2 / 55.0 100.9
Date of measurements	21-08-2007
Measured by	Allan F. Henriksen

3.1. 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

3.2. Bluetooth Test results

3.2.1 GFSK modulation, PRBS packet type

Channel 0 / 2402 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
4804.000000	37.60	75.86	36.90	0.7	VERTICAL	Passed
7206.000000	40.70	108.39	33.60	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	24.70	17.18	24.00	0.7	VERTICAL	Passed
7206.000000	28.10	25.41	21.00	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
37.795391	24.90	17.58	42.60	-17.7	VERTICAL	Passed
62.724449	18.00	7.94	48.20	-30.2	VERTICAL	Passed
73.046092	14.70	5.43	42.00	-27.3	HORIZONTAL	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
4955.909820	39.60	95.50	38.30	1.3	VERTICAL	Passed
7345.195391	42.20	128.82	34.20	8.0	VERTICAL	Passed
7412.331663	42.50	133.35	34.30	8.2	VERTICAL	Passed
17501.495992	53.70	484.17	29.70	24.0	VERTICAL	Passed
17857.719439	59.90	988.55	30.90	29.0	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
4956.409820	26.20	20.42	24.90	1.3	VERTICAL	Passed

7350.695391	29.50	29.85	21.30	8.2	VERTICAL	Passed
7418.331663	30.10	31.99	22.00	8.1	VERTICAL	Passed
17501.495992	40.60	107.15	16.60	24.0	VERTICAL	Passed
17857.719439	46.90	221.31	17.90	29.0	VERTICAL	Passed

Channel 78 / 2480 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	39.10	90.16	37.80	1.30	VERTICAL	Passed
7440.000000	41.80	123.03	33.60	8.20	HORIZONTAL	Passed

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	26.10	20.18	24.80	1.30	VERTICAL	Passed
7440.000000	29.60	30.20	21.40	8.20	VERTICAL	Passed

3.2.2 8DPSK modulation, PRBS packet type

Channel 0 / 2402 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	37.20	72.44	36.50	0.7	VERTICAL	Passed
7206.000000	41.10	113.50	34.00	7.1	VERTICAL	Passed

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	24.60	16.98	23.90	0.7	VERTICAL	Passed
7206.000000	28.00	25.12	20.90	7.1	VERTICAL	Passed

Channel 40 / 2442 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
38.195391	23.50	14.96	41.40	-17.9	VERTICAL	Passed
62.224449	24.40	16.60	54.70	-30.3	VERTICAL	Passed

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4958.411824	38.80	87.10	37.50	1.3	VERTICAL	Passed
7343.689379	42.10	127.35	34.10	8.0	VERTICAL	Passed
7408.309619	42.10	127.35	33.70	8.4	HORIZONTAL	Passed
7413.323647	42.90	139.64	34.70	8.2	VERTICAL	Passed
17475.443888	53.30	462.38	29.50	23.8	HORIZONTAL	Passed

17847.697395	60.60	1071.52	31.60	29.0	HORIZONTAL	Passed
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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
4958.911824	25.90	19.72	24.60	1.3	VERTICAL	Passed
7348.189379	29.30	29.17	21.10	8.2	VERTICAL	Passed
7408.809619	29.10	28.51	20.80	8.3	HORIZONTAL	Passed
7414.823647	29.90	31.26	21.70	8.2	VERTICAL	Passed
17468.443888	40.30	103.51	16.60	23.7	HORIZONTAL	Passed
17847.197395	46.80	218.78	17.80	29.0	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	38.30	82.22	37.00	1.3	VERTICAL	Passed
7440.000000	42.20	128.82	34.00	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	25.90	19.72	24.60	1.3	VERTICAL	Passed
7440.000000	29.50	29.85	21.30	8.2	VERTICAL	Passed

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

EUT with DUT number	RM-322 Dut 27198
Accessories with DUT numbers	BL-4C Dut 27187 + AC-5E Dut 27186 + HS-47 Dut 27193
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24.3 / 53.5 101.8
Date of measurements	24-08-2007
Measured by	Allan F. Henriksen

4.1. 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.

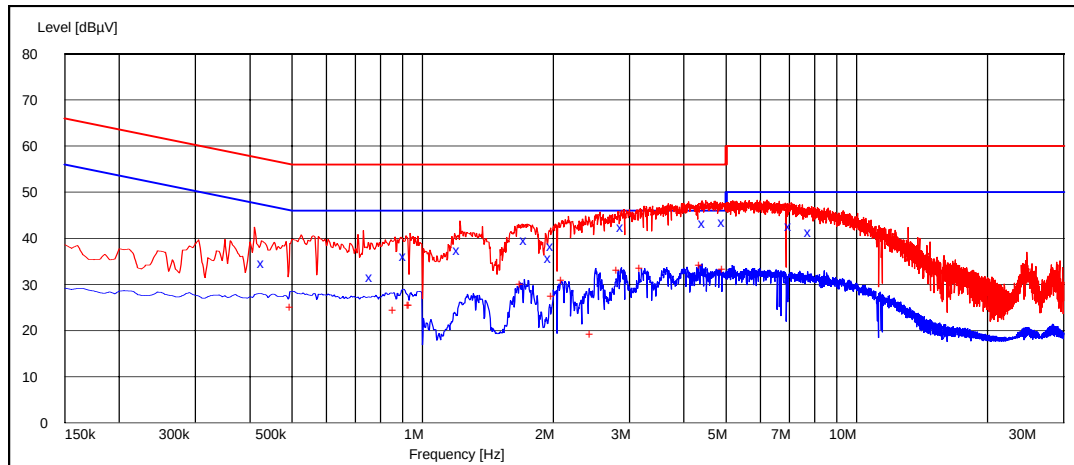
CISPR 22 Class B limits

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

4.2. Bluetooth Test results

4.2.1 GFSK modulation, PRBS packet type

Channel 40 / 2442 MHz



Quasi peak (RBW: 9 kHz)

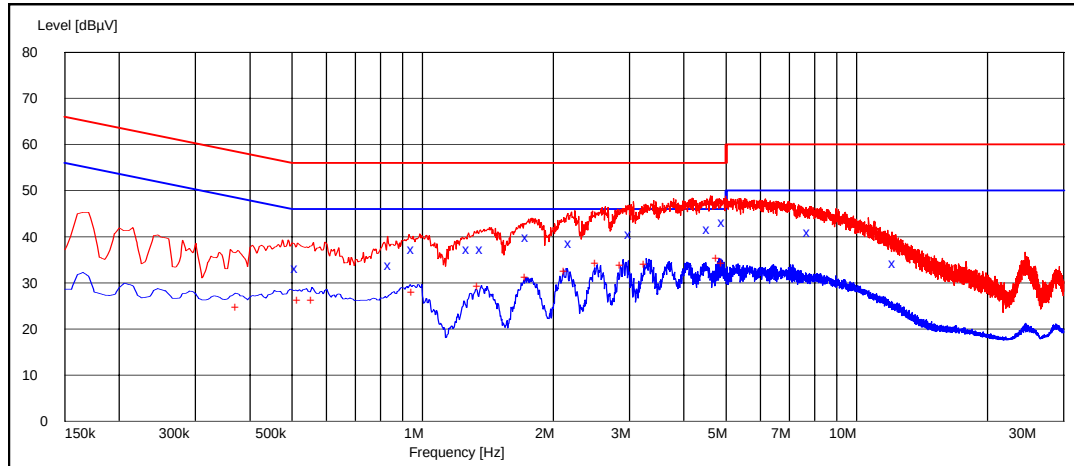
Frequency [MHz]	U [dBμV]	Line	Result
0.430000	34.60	L1	Passed
0.765000	31.60	N	Passed
0.915000	36.20	L1	Passed
1.215000	37.40	L1	Passed
1.735000	39.60	N	Passed
1.970000	35.70	N	Passed
2.000000	38.30	N	Passed
2.900000	42.40	N	Passed
4.465000	43.30	N	Passed
4.960000	43.50	N	Passed
7.070000	42.60	N	Passed
7.840000	41.30	N	Passed

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.500000	25.10	N	Passed
0.865000	24.40	N	Passed
0.935000	25.60	N	Passed
0.940000	25.50	N	Passed
1.695000	30.20	N	Passed
2.000000	27.50	N	Passed
2.115000	30.90	N	Passed
2.455000	19.20	N	Passed
2.830000	33.10	N	Passed
3.205000	33.50	N	Passed
4.390000	34.30	N	Passed
4.960000	33.40	N	Passed

4.2.2 8DPSK modulation, PRBS packet type

Channel 40 / 2442 MHz



Quasi peak (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.515000	33.20	L1	Passed
0.845000	33.90	L1	Passed
0.955000	37.20	N	Passed
1.280000	37.30	N	Passed
1.375000	37.30	N	Passed
1.750000	39.90	N	Passed
2.200000	38.60	N	Passed
3.020000	40.50	N	Passed
4.585000	41.70	N	Passed
4.965000	43.20	N	Passed
7.800000	41.00	N	Passed
12.265000	34.30	L1	Passed

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.375000	24.80	N	Passed
0.520000	26.30	N	Passed
0.560000	26.30	N	Passed
0.955000	28.00	N	Passed
1.350000	29.30	N	Passed
1.740000	31.20	N	Passed
2.145000	32.50	N	Passed
2.525000	34.20	N	Passed
2.880000	33.70	N	Passed
3.270000	34.00	N	Passed
4.805000	35.30	N	Passed
4.930000	34.20	N	Passed

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

EUT with DUT number	RM-322 Dut 27199
Accessories with DUT numbers	BL-4C Dut 27194 + AC-5E Dut 27192 + HS-47 Dut 27193
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23.2 / 55.0 100.9
Date of measurements	21-08-2007
Measured by	Allan F. Henriksen

4.3. Test method and limit

The measurement is made according to DTS procedures KDB 558074 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

4.4. WLAN Test results

4.4.1 DSSS mode, QPSK modulation, 11 Mbps data rate

Channel 1 / 2412 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
4824.000000	37.50	74.99	36.90	0.6	VERTICAL	Passed
7236.000000	41.90	124.45	34.70	7.2	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
4824.000000	24.90	17.58	24.30	0.6	VERTICAL	Passed
7236.000000	28.90	27.86	21.70	7.2	VERTICAL	Passed

Channel 7 / 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
37.776353	25.20	18.20	42.90	-17.7	VERTICAL	Passed
61.222044	19.70	9.66	50.10	-30.4	VERTICAL	Passed
73.146092	16.00	6.31	43.30	-27.3	HORIZONTAL	Passed
93.667936	14.20	5.13	39.80	-25.6	HORIZONTAL	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
4837.171343	36.90	69.98	36.30	0.6	VERTICAL	Passed
4959.421844	39.70	96.61	38.40	1.3	VERTICAL	Passed
7278.557114	42.80	138.04	35.90	6.9	HORIZONTAL	Passed
7436.871743	43.40	147.91	35.30	8.1	VERTICAL	Passed
17451.399800	52.90	441.57	29.60	23.3	VERTICAL	Passed
17888.277555	59.50	944.06	30.30	29.2	HORIZONTAL	Passed

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4832.671343	24.60	16.98	24.00	0.6	VERTICAL	Passed
4961.921844	26.10	20.18	24.80	1.3	VERTICAL	Passed
7282.557114	28.00	25.12	21.00	7.0	HORIZONTAL	Passed
7437.871743	29.50	29.85	21.40	8.1	VERTICAL	Passed
17449.399800	39.90	98.86	16.60	23.3	VERTICAL	Passed
17891.277555	46.40	208.93	17.10	29.3	HORIZONTAL	Passed

Channel 11 / 2462 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4924.000000	38.50	84.14	37.40	1.1	VERTICAL	Passed
7386.000000	43.80	154.88	35.70	8.1	VERTICAL	Passed

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4924.000000	25.60	19.05	24.50	1.1	VERTICAL	Passed
7386.000000	28.90	27.86	20.80	8.1	VERTICAL	Passed

4.4.2 OFDM mode, BPSK modulation, 6 Mbps data rate

Channel 1 / 2412 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4824.000000	41.50	118.85	40.90	0.6	HORIZONTAL	Passed
7236.000000	58.00	794.33	50.80	7.2	VERTICAL	Passed

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4824.000000	28.30	26.00	27.70	0.6	HORIZONTAL	Passed
7236.000000	40.50	105.93	33.30	7.2	VERTICAL	Passed

Channel 7 / 2442 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
37.795391	24.70	17.18	42.40	-17.7	VERTICAL	Passed
62.283968	21.20	11.48	51.50	-30.3	VERTICAL	Passed
73.146092	13.40	4.68	40.70	-27.3	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
2492.500000	56.00	630.96	50.00	6.0	VERTICAL	Passed
4888.769539	38.70	86.10	37.80	0.9	VERTICAL	Passed
4912.329659	38.70	86.10	37.70	1.0	VERTICAL	Passed
7324.153307	53.10	451.86	45.90	7.2	VERTICAL	Passed
7328.163327	52.90	441.57	45.60	7.3	VERTICAL	Passed
17498.491984	53.50	473.15	29.50	24.0	VERTICAL	Passed
17896.295591	59.40	933.25	30.10	29.3	VERTICAL	Passed

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2491.500000	43.30	146.22	36.20	7.1	VERTICAL	Passed
4884.769539	26.00	19.95	25.10	0.9	VERTICAL	Passed
4913.329659	25.60	19.05	24.60	1.0	VERTICAL	Passed
7324.653307	35.00	56.23	27.80	7.2	VERTICAL	Passed
7327.663327	34.90	55.59	27.60	7.3	VERTICAL	Passed
17499.991984	40.40	104.71	16.40	24.0	VERTICAL	Passed
17894.795591	46.40	208.93	17.10	29.3	VERTICAL	Passed

Channel 11 / 2462 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4924.000000	40.90	110.92	39.80	1.1	HORIZONTAL	Passed
7386.000000	51.30	367.28	43.20	8.1	VERTICAL	Passed

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4924.000000	27.90	24.83	26.80	1.1	HORIZONTAL	Passed
7386.000000	34.90	55.59	26.80	8.1	VERTICAL	Passed

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

EUT with DUT number	RM-322 Dut 27198
Accessories with DUT numbers	BL-4C Dut 27187 + AC-5E Dut 27186 + HS-47 Dut 27193
Operation Voltage [V] / [Hz]	115 / 60
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24.3 / 53.5 101.8
Date of measurements	22-08-2007
Measured by	Allan F. Henriksen

4.5. Test method and limit

The measurement is made according to DTS procedures KDB 558074 and IC standard RSS-GEN as follows:

The EUT is placed on a wooden table 80 cm above the reference groundplane.

The EUT is connected via LISN to a test power supply.

The measurement results are obtained as described below:

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

Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable and pulse limiter attenuations.

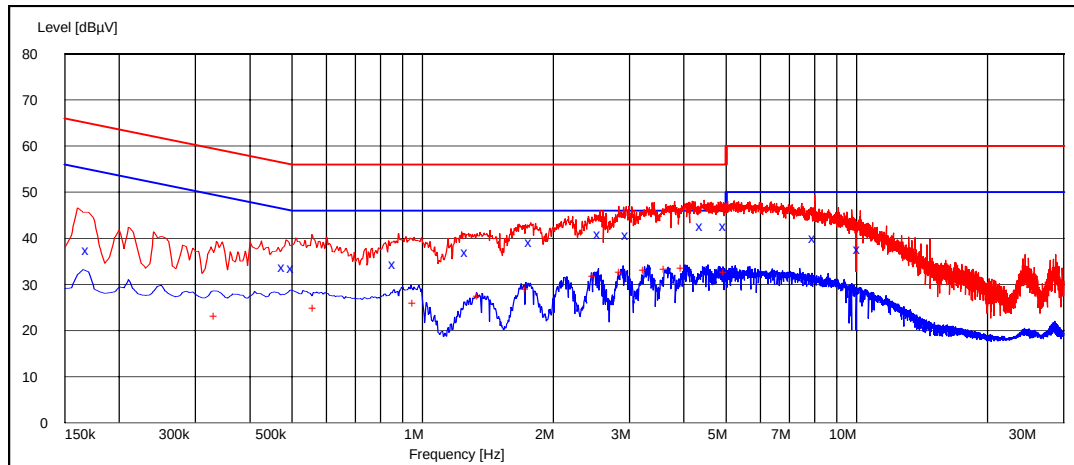
CISPR 22 Class B limits

Frequency range [MHz]	Quasi peak limit [dBμV]	Average limit [dBμV]
0.15 - 0.5	66 - 56	56 - 46
0.5 - 5	56	46
5 - 30	60	50

4.6. WLAN Test results

4.6.1 DSSS mode, QPSK modulation, 11 Mbps data rate

Channel 7 / 2442 MHz



Quasi peak (RBW: 9 kHz)

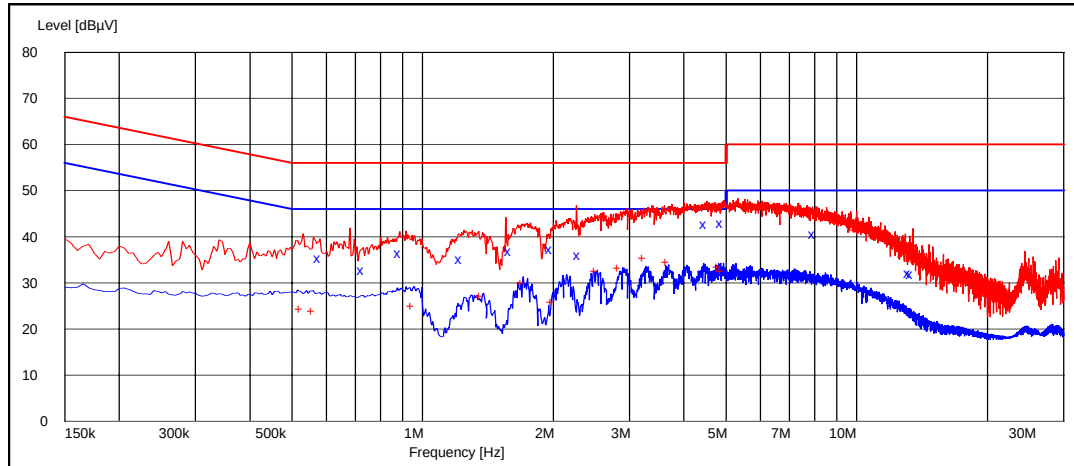
Frequency [MHz]	U [dBμV]	Line	Result
0.170000	37.50	L1	Passed
0.480000	33.80	L1	Passed
0.505000	33.50	L1	Passed
0.865000	34.40	L1	Passed
1.270000	37.00	N	Passed
1.780000	39.20	N	Passed
2.560000	40.90	N	Passed
2.975000	40.80	N	Passed
4.415000	42.60	N	Passed
4.995000	42.60	L1	Passed
8.035000	40.00	L1	Passed
10.180000	37.70	L1	Passed

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.335000	23.20	L1	Passed
0.565000	24.80	N	Passed
0.960000	25.90	N	Passed
1.350000	27.40	N	Passed
1.745000	29.00	N	Passed
2.495000	31.80	N	Passed
2.875000	32.70	N	Passed
3.265000	33.20	N	Passed
3.640000	33.30	N	Passed
3.980000	33.50	N	Passed
4.995000	32.70	N	Passed

4.6.2 OFDM mode, BPSK modulation, 6 Mbps data rate

Channel 7 / 2442 MHz



Quasi peak (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.580000	35.30	L1	Passed
0.730000	32.80	L1	Passed
0.890000	36.40	L1	Passed
1.230000	35.20	N	Passed
1.600000	36.80	L1	Passed
1.985000	37.40	L1	Passed
2.300000	36.10	L1	Passed
4.510000	42.70	N	Passed
4.900000	42.90	N	Passed
8.005000	40.60	L1	Passed
13.290000	32.10	L1	Passed
13.435000	32.00	L1	Passed

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.525000	24.30	N	Passed
0.560000	23.80	N	Passed
0.950000	24.90	N	Passed
1.365000	27.10	N	Passed
1.700000	30.00	N	Passed
1.995000	25.90	N	Passed
2.510000	32.60	N	Passed
2.840000	33.20	N	Passed
3.245000	35.30	N	Passed
3.665000	34.40	N	Passed
4.820000	33.40	N	Passed
4.905000	32.50	N	Passed

5. Test Equipment

5.1. 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, 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

5.2. 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 Preampfier 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