

FCC Part 15B Compliance Test Report

Test Report no.:	Cph_FCC_0747_03.doc	Date of Report:	23-11-2007
Number of pages:	10	Customer's Contact person:	Ernest Mayer
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FCC listing no.:	99059		
IC recognition no.:	661AD-1		
Tested devices/ accessories:	Phone: RM-240 (hw9003), Battery: BP-5M, Headset: HS-47 AC charger: AC-4E		
FCC ID:	QTKRM-240	IC:	661AD-RM240
Supplement reports:	None		
Testing has been carried out in accordance with:	CFR 47, FCC rules Part 15 Subpart B, ANSI C63.4 (2003), ICES-003, CISPR 22 and IC standards RSS-132 (Issue 2, September 2005), RSS-133 (Issue 3, June 2005) 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:			

Jan Engelbrechtsen, Engineer

1. Summary for FCC Part 15B Compliance Test Report

Date of receipt	13-11-2007
Testing completed	23-11-2007
The customer's contact person	Ernest Mayer
Test Plan referred to	T:\Projects\RM-240\TestPlan_RS\RS_Testplan_for_RM-240_CR_HWID9003.xls
Notes	None
Document name	T:\Projects\RM-240\EMC\Results\FCC\Cph_FCC_0746_01.doc

1.1. EUT and Accessory Information

The EUT is a 5-band (GSM850/900/1800/1900 and WCDMA Band V(850)) mobile phone with GPRS, EGPRS and Bluetooth. GSM and WCDMA bands are tested in idle mode. Bluetooth is tested with maximum rated TX power.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-240	358675/01/057045	9003	-	03.80	27356
Battery	BP-5M	3932137163210128194;0670509	-	-	-	28530
Headset	HS-47	-	-	-	-	29207
AC Charger	AC-4E	3943497223160412310;0675384	-	-	-	29217

1.2. Summary of Test Results

GSM 850:

Section in CFR 47	Section in ICES-003 (RSS-132)	Name of the test	Result
15.107, a	5.3	AC powerline conducted emissions	NP
15.109, a	5.5 (6.6)	Radiated emissions	Passed

GSM 1900:

Section in CFR 47	Section in ICES-003 (RSS-133)	Name of the test	Result
15.107, a	5.3	AC powerline conducted emissions	NP
15.109, a	5.5 (9)	Radiated emissions	Passed

Bluetooth:

Section in CFR 47	Section in ICES-003	Name of the test	Result
15.107, a	5.3	AC powerline conducted emissions	NP
15.109, a	5.5	Radiated emissions	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.

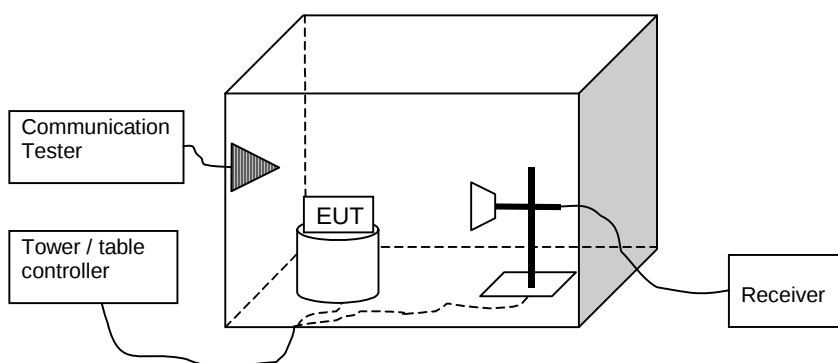
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2. Radiated emissions (FCC §15.109, ICES-003 section 5.5, RSS-132 6.6, RSS-133 9)

EUT with DUT number	RM-240 dut 27063, BP-5M dut 29216
Accessories with DUT numbers	HS-47 dut 29207, AC-4E dut 29217
Operation Voltage [V] / [Hz]	230 / 50
Result	Passed
Remarks	None
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21.1 / 39.5 102.9
Date of measurements	21-11-2007
Measured by	Jan Engelbrechtsen

2.1. Test setup



2.2. Test method and limit

The measurement is made according to ANSI C63.4-2003as follows:

The measurement is performed in the Semi-Anechoic Chamber with conducting metal floor.

The measurement distance is 3 m.

The EUT is placed on a nonconductive plate at 80 cm height.

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

CISPR 22 and FCC Part 15 Class B limits (3 m measurement distance)

Frequency range [MHz]	Quasi peak limit [dBμV/m]	Average limit [dBμV/m]	Peak limit [dBμV/m]
30 – 230	40	-	-
230 – 1000	47	-	-
Above 1000	-	54	74

2.3. GSM 850 Test results

RX mode, channel 128 / 869.2 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3476.800000	37.80	77.62	40.00	-2.2	VERTICAL	Passed
6953.600000	43.60	151.36	37.50	6.1	HORIZONTAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3476.800000	24.50	16.79	26.70	-2.2	VERTICAL	Passed
6953.600000	31.20	36.31	25.10	6.1	VERTICAL	Passed

RX mode, channel 190 / 881.6 MHz

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
30.300000	32.90	44.16	45.90	-13.0	VERTICAL	Passed
67.153106	14.00	5.01	42.80	-28.8	VERTICAL	Passed
98.037074	34.00	50.12	59.90	-25.9	VERTICAL	Passed
881.663527	67.20	2290.87	79.10	-11.9	VERTICAL	Passed

*98.056 MHz frequency is coming from FM radio transmitter and thus ignored.

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

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3527.552104	36.60	67.61	38.90	-2.3	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2469.431864	31.30	36.73	30.40	0.9	HORIZONTAL	Passed
2947.889780	34.30	51.88	28.90	5.4	VERTICAL	Passed
3526.552104	24.60	16.98	26.90	-2.3	VERTICAL	Passed

RX mode, channel 251 / 893.8 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3575.200000	38.30	82.22	40.10	-1.8	VERTICAL	Passed
7150.400000	40.40	104.71	33.40	7.0	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3575.200000	24.60	16.98	26.40	-1.8	VERTICAL	Passed
7150.400000	28.10	25.41	21.10	7.0	VERTICAL	Passed

2.4. GSM 1900 Test results

RX mode, channel 512 / 1930.2 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3860.000000	40.50	105.93	40.80	-0.3	VERTICAL	Passed
7720.000000	43.70	153.11	35.20	8.5	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3860.000000	26.90	22.13	27.20	-0.3	VERTICAL	Passed
7720.000000	28.80	27.54	20.30	8.5	VERTICAL	Passed

RX mode, channel 661 / 1960.0 MHz

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
33.045291	36.40	66.07	51.10	-14.7	VERTICAL	Passed
46.593186	23.20	14.45	46.80	-23.6	VERTICAL	Passed
98.056112	48.90	278.61	74.80	-25.9	HORIZONTAL	Passed

*98.056 MHz frequency is coming from FM radio transmitter and thus ignored.

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
1959.919840	65.00	1778.28	67.60	-2.6	VERTICAL	Passed
3919.839679	40.80	109.65	41.20	-0.4	VERTICAL	Passed
7840.179359	45.40	186.21	36.50	8.9	VERTICAL	Passed

*1960.0 MHz frequency is coming from communication tester and thus ignored.

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
1959.919840	64.20	1621.81	66.80	-2.6	VERTICAL	Passed
2465.437876	31.30	36.73	30.50	0.8	HORIZONTAL	Passed
2981.465932	34.30	51.88	28.70	5.6	VERTICAL	Passed
3919.839679	26.90	22.13	27.30	-0.4	VERTICAL	Passed
7840.179359	31.10	35.89	22.20	8.9	VERTICAL	Passed

*1960.0 MHz frequency is coming from communication tester and thus ignored.

RX mode, channel 810 / 1989.8 MHz

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3980.000000	39.10	90.16	39.50	-0.4	VERTICAL	Passed
7960.000000	42.40	131.83	33.30	9.1	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3980.000000	26.20	20.42	26.60	-0.4	VERTICAL	Passed
7960.000000	29.20	28.84	20.10	9.1	VERTICAL	Passed

2.5. Bluetooth Test results

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	38.10	80.35	37.40	0.7	VERTICAL	Passed
7206.000000	40.10	101.16	33.00	7.1	HORIZONTAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4804.000000	25.10	17.99	24.40	0.7	VERTICAL	Passed
7206.000000	27.30	23.17	20.20	7.1	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
38.135872	25.10	17.99	43.00	-17.9	VERTICAL	Passed
73.246092	15.60	6.03	42.80	-27.2	HORIZONTAL	Passed
74.569940	14.30	5.19	41.30	-27.0	HORIZONTAL	Passed
97.956112	47.50	237.14	73.00	-25.5	HORIZONTAL	Passed

*98.0MHz frequency is coming from FM radio transmitter and thus ignored.

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4884.269539	37.70	76.74	36.80	0.9	VERTICAL	Passed
4952.409820	36.80	69.18	35.50	1.3	HORIZONTAL	Passed
7332.663327	41.10	113.50	33.60	7.5	VERTICAL	Passed
7355.215431	41.40	117.49	33.30	8.1	HORIZONTAL	Passed
7415.839679	42.00	125.89	33.90	8.1	VERTICAL	Passed
17500.997996	53.60	478.63	29.60	24.0	VERTICAL	Passed
17850.197395	59.60	954.99	30.60	29.0	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4883.769539	25.20	18.20	24.30	0.9	VERTICAL	Passed
4953.409820	24.00	15.85	22.70	1.3	HORIZONTAL	Passed
7330.663327	28.50	26.61	21.10	7.4	VERTICAL	Passed
7357.215431	28.20	25.70	20.10	8.1	HORIZONTAL	Passed
7417.839679	29.10	28.51	21.00	8.1	VERTICAL	Passed
17502.997996	40.30	103.51	16.30	24.0	VERTICAL	Passed
17850.697395	46.80	218.78	17.80	29.0	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	38.30	82.22	37.00	1.3	VERTICAL	Passed
7440.000000	42.80	138.04	34.60	8.2	VERTICAL	Passed

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	25.70	19.28	24.40	1.3	VERTICAL	Passed
7440.000000	28.90	27.86	20.70	8.2	VERTICAL	Passed

3. Test Equipment

3.1. 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

3.2. 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

Eq. No	Equipment	Type	Manufacturer	Used in
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 WHK3.0/18G-10ss	WHJS3000-10SS	Wainwright	22/24/27, 15C, 15B
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