

FCC Part 15B Compliance Test Report

Test Report no.:	FCC15B_RM-709_05.docx	Date of Report:	14-Sep-2010
Number of pages:	12	Customer's Contact person:	Qiu Rain
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FCC listing no.:	99059		
IC recognition no.:	661AL-1		
Tested devices/ accessories:	Phone RM-709 / Battery BL-5C / AC-Charger AC-3E / Headset WH-102		
FCC ID:	QTLRM-709	IC:	661AB-RM709
Supplement reports:	-		
Testing has been carried out in accordance with:	CFR 47, FCC rules Part 15 Subpart B, ANSI C63.4 (2003), ICES-003, CISPR 22, RSS-132 (Issue 2, September 2005), RSS-133 (Issue 5, February 2009). 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 15B Compliance Test Report

Date of receipt	24-Aug-2010
Testing completed	02-Sep-2010
The customer's contact person	Qiu Rain
Test Plan referred to	T:\Projects\RM-709\TestPlan\RS_testplan_RM-709.xls
Notes	-
Document name	T:\Projects\RM-709\EMC\FCC15B_RM-709_05.docx

1.1. EUT and Accessory Information

The EUT is a 4-band (GSM850/900/1800/1900) mobile phone with GPRS, EGPRS and Bluetooth.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-709	004402/13/227236/4	0201	-	V tw92_10w31SSC	24135
Battery	BL-5C	0670400382066R12405GL61927	-	-	-	24117
AC-Charger	AC-3E	4419298432052200058;0675370	-	-	-	24104
Headset	WH-102	06943249041E2607011	-	-	-	24110
Phone	RM-709	004402/13/168893/3	0201	-	V tw92_10w31SSC	24134
Battery	BL-5C	0670400382066R12405GL62092	-	-	-	24123
AC-Charger	AC-3E	4419298432052200002;0675370	-	-	-	24105
Headset	WH-102	06943249132U4102635	-	-	-	24109

1.2. Summary of Test Results

GSM850:

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 (4.6)	Radiated emissions	Passed

GSM1900:

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 (6.6)	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	Passed
15.109, a	5.5	Radiated emissions	NP

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 Laboratory.

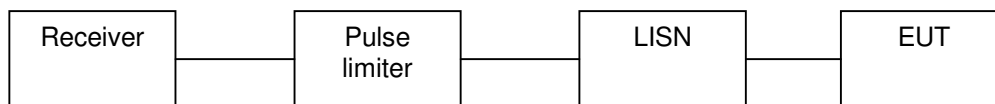
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2. AC powerline conducted emissions (FCC §15.107, ICES-003 section 5.3)

EUT with DUT number	RM-709, DUT 24134
Accessories with DUT numbers	BL-5C, DUT 24123 ; AC-3E, DUT 24105 ; WH-102, DUT 24109
Operation Voltage [V] / [Hz]	116 / 60
Result	Passed
Remarks	none
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 45 / 108
Date of measurements	03-Sep-2010
Measured by	Bo Moltved Christiansen

2.1. Test setup



2.2. Test method and limit

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

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

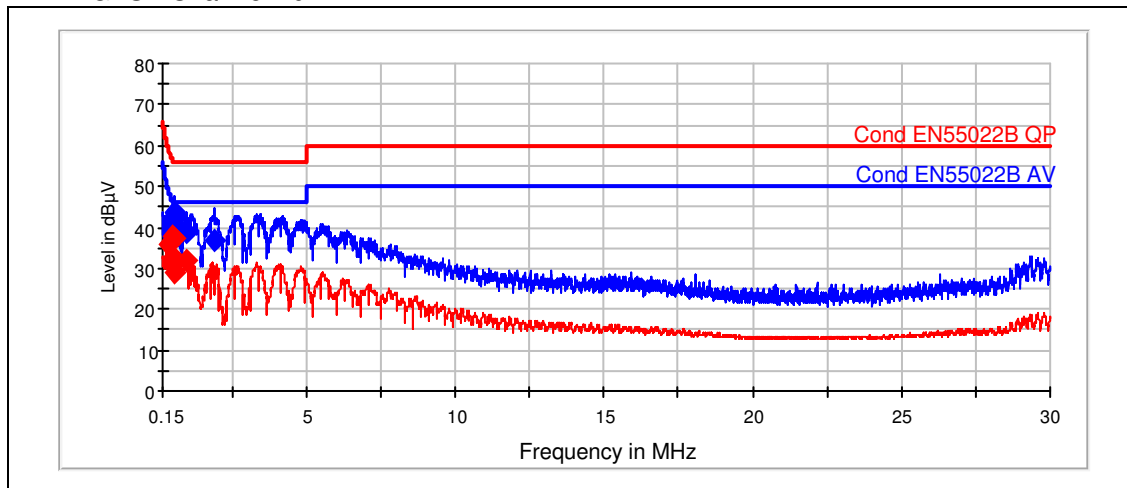
Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable and pulse limiter attenuations.

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

2.3. Bluetooth Test results

BT TX GFSK Channel 40



Quasi peak

Frequency [MHz]	Level [dBμV]	IF-BW[kHz]	Line	Margin	Result
0.525	40.82	10	N	15.2	Passed
0.54	42.6	10	N	13.4	Passed
0.56	43.65	10	N	12.4	Passed
0.57	41.97	10	N	14	Passed
0.98	38.69	10	N	17.3	Passed
1.915	37.05	10	N	19	Passed

Average

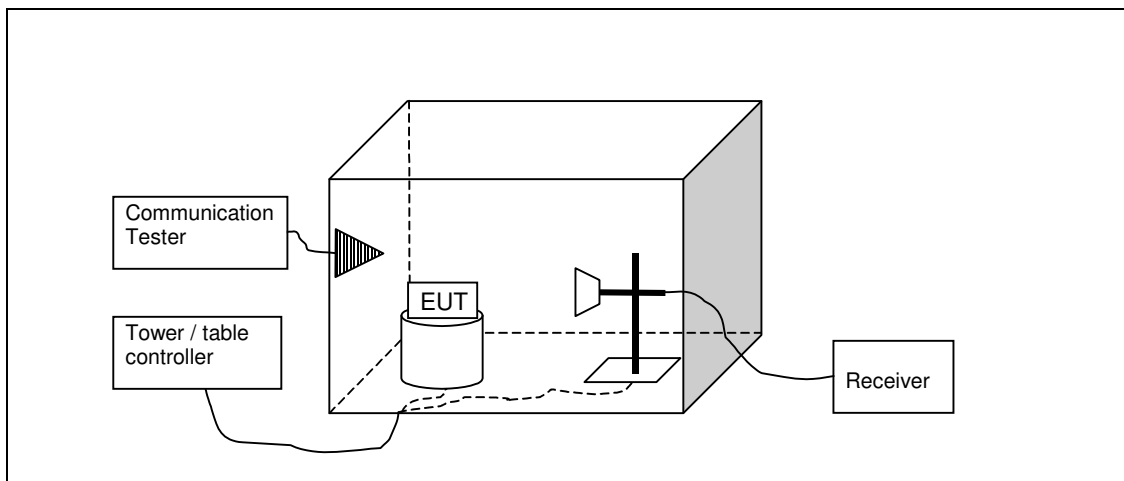
Frequency [MHz]	Level [dBμV]	IF-BW[kHz]	Line	Margin	Result
0.36	36	10	N	12.73	Passed
0.515	37.73	10	N	8.3	Passed
0.535	28.81	10	N	17.2	Passed
0.565	37.22	10	N	8.8	Passed
0.62	32.06	10	N	13.9	Passed
0.98	32.06	10	N	13.9	Passed

3. Radiated emissions

(FCC §15.109, ICES-003 section 5.5, RSS-132 4.6, RSS-133 6.6)

EUT with DUT number	RM-709, DUT 24135
Accessories with DUT numbers	BL-5C, DUT 24117 ; AC-3E, DUT 24104 ; WH-102, DUT 24110
Operation Voltage [V] / [Hz]	115 / 60
Results	Passed
Remarks	Phone tested with FM radio active.
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 46 / 101
Date of measurements	02-Sep-2010
Measured by	Christian Andersen

3.1. Test Setup



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

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

3.3. GSM850 Test results

RX mode, channel 128 / 869.2 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3475.2	37.18	72.294	40.01	-2.83	HORIZONTAL	Passed
6954.7	55.3	582.371	45.3	10	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
3475.2	24.66	17.094	27.49	-2.83	HORIZONTAL	Passed
6954.7	42.92	140.023	32.92	10	VERTICAL	Passed

RX mode, channel 190 / 881.6 MHz

Quasi peak (RBW: 120 kHz, VBW: 300 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
32.384	16.1	6.384	28.78	-12.68	VERTICAL	Passed
38.478	19.03	8.941	35.78	-16.75	VERTICAL	Passed
44.177	16.27	6.506	36.76	-20.49	VERTICAL	Passed
53.136	21.8	12.297	48.81	-27.01	HORIZONTAL	Passed
75.12	27.37	23.372	52.77	-25.4	VERTICAL	Passed
88.006	18.58	8.495	42.78	-24.2	VERTICAL	Passed
98.046	54.54	533.089	78.57	-24.03	VERTICAL	Passed
110.6	23.46	14.899	47.17	-23.71	VERTICAL	Passed

*98.0 MHz frequency is coming from FM-Radio 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
3545.293	37.84	78.001	40.13	-2.29	VERTICAL	Passed
3899.9	38.94	88.501	40.01	-1.07	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
3545.293	25.29	18.382	27.58	-2.29	VERTICAL	Passed
3899.9	26.28	20.604	27.35	-1.07	VERTICAL	Passed

RX mode, channel 251 / 893.8 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3576.7	38.9	88.135	41.01	-2.11	VERTICAL	Passed
7149.2	49.47	297.577	38.81	10.66	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
3576.7	25.17	18.136	27.28	-2.11	VERTICAL	Passed
7149.2	36.6	67.639	25.94	10.66	HORIZONTAL	Passed

3.4. GSM1900 Test results

RX mode, channel 512 / 1930.2 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3858.6	39.51	94.46	40.64	-1.13	HORIZONTAL	Passed
7719.4	50	316.119	38.44	11.56	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
3858.6	26.28	20.599	27.41	-1.13	HORIZONTAL	Passed
7719.4	37.43	74.422	25.87	11.56	HORIZONTAL	Passed

RX mode, channel 661 / 1960.0 MHz

Quasi peak (RBW: 120 kHz, VBW: 300 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
31.65	14.85	5.53	27.04	-12.19	VERTICAL	Passed
38.758	20.55	10.65	37.48	-16.93	VERTICAL	Passed
44.048	15.9	6.236	36.3	-20.4	VERTICAL	Passed
74.138	23.64	15.204	49.17	-25.53	VERTICAL	Passed
88.006	16.38	6.594	40.58	-24.2	VERTICAL	Passed
98.016	45.37	185.503	69.4	-24.03	VERTICAL	Passed
110.02	16.65	6.801	40.37	-23.72	VERTICAL	Passed
845.137	14.51	5.316	27.42	-12.91	HORIZONTAL	Passed
948.406	15.92	6.252	27.6	-11.68	HORIZONTAL	Passed

*98.0 MHz frequency is coming from FM-Radio 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
1960.019	49.49	298.263	53.84	-4.35	VERTICAL	Passed

*1960 MHz frequency is coming from communication tester and thus ignored.

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
1960.019	46.73	216.92	51.08	-4.35	VERTICAL	Passed

*1960 MHz frequency is coming from communication tester and thus ignored.

RX mode, channel 810 / 1989.8 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
3979	39.59	95.378	40.51	-0.92	VERTICAL	Passed
7959.3	52.22	408.084	39.42	12.8	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
3979	26.44	20.999	27.36	-0.92	VERTICAL	Passed
7959.3	38.64	85.517	25.84	12.8	HORIZONTAL	Passed

4. Test Equipment

4.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
20168	Bluetooth Tester	CBT	Rohde&Schwarz	22/24/27, 15C, 15B
18772	Shielded Chamber	RFD-100	ETS-Lindgren	15C, 15B
13037	Power Supply 0-15V 10A	EA3012	LP Instruments	15C, 15B
13513	Pulse Limiter	ESH3Z2	Rohde&Schwarz	15C, 15B
13666	Receiver	ESPC	Rohde&Schwarz	15C, 15B
13935	LISN	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	Communication Tester	CMU200	Rohde&Schwarz	15C, 15B
11386	DC Power Supply	HP6632A	Hewlett Packard	22/24/27, 15C, 15B
19678	Spectrum Analyzer	FSP	Rohde&Schwarz	22/24/27, 15C, 15B
16601	Communication Tester	CMU200	Rohde&Schwarz	22/24/27, 15C, 15B
19625	Climatic Chamber	VT4002EMC	Vötsch	22/24/27, 15C, 15B
13357	Signal Generator	SMP02	Rohde&Schwarz	22/24/27, 15C, 15B
19116	Power splitter	-	various	22/24/27, 15C, 15B
20544	Transformer. 230/115V	-	Nokia	22/24/27, 15C, 15B
20543	UPS. 700V/A 490W	PW 9120 700i	Powerware	22/24/27, 15C, 15B

4.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
18792	Mast/turntable controller	2090	ETS-EMCO	22/24/27, 15C, 15B
18416	Communication Tester	CMU200	Rohde&Schwarz	22/24/27, 15C, 15B
20168	Bluetooth Tester	CBT	Rohde&Schwarz	22/24/27, 15C, 15B
13077	Power Supply	EA-3016	-	22/24/27, 15C, 15B
15742	Programmable Relay Switching System	-----	Pickering	22/24/27, 15C, 15B
20078	Relay 2x6 Chnl μ Wave Mux	10-785B-522	Pickering	22/24/27, 15C, 15B
14021	Relay Dual 6 Chnl μ Wave Mux	10-785-522	-	22/24/27, 15C, 15B
-	Relay Dual 6 Chnl μ Wave 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
1999	Receiver	EMI Test Receiver 20Hz-26,5GHz ESI	Rohde&Schwarz	22/24/27, 15C, 15B
18860	Antenna	HL562	Rohde&Schwarz	22/24/27, 15C, 15B
18773	Anechoic chamber	RFD-100	ETS-Lindgren	22/24/27, 15C, 15B
18774	Anechoic chamber	RFSD-F/A-100	ETS-Lindgren	22/24/27, 15C, 15B
19151	High Pass Filter	WHJS3000-10SS	Wainwright	22/24/27, 15C, 15B
13937	Band reject filter	WRCA902.4-0.2/40-6SS	Wainwright Instruments	22/24/27, 15C, 15B
13936	Band reject filter	WRCD1747.5-0.2/40-10SS	Wainwright Instruments	22/24/27, 15C, 15B

Eq. No	Equipment	Type	Manufacturer	Used in
14114	Highpass Filter	WHK1000-12SS	Wainwright Instruments	22/24/27, 15C, 15B
14188	Band reject filter	WRCA902.4-0.2/40-6SS	Wainwright	22/24/27, 15C, 15B
14187	Band reject filter	WRCD1747.5-0.2/40-10SS	Wainwright	22/24/27, 15C, 15B
16633	Band reject filter	WRCD1880.0-0.2/40-10SS	Wainwright	22/24/27, 15C, 15B
19587	Band reject filter	WRCG2400/2483-2390/2493-35/10SS	Wainwright	22/24/27, 15C, 15B
20115	Band reject filter	-	Wainwright	22/24/27, 15C, 15B
20114	Band reject filter	WRCG1737/1743-1733/1747-40/6SS	Wainwright	22/24/27, 15C, 15B
20116	Band reject filter	WRCG832/83/-825/845-40/5SS	Wainwright	22/24/27, 15C, 15B
20698	Antenna	BBHA 9120 D	SCHWARZBECK	22/24/27, 15C, 15B
19966	Antenna	HFH2-Z2	Rohde&Schwarz	15C, 15B
13799	Signal Generator	SMP02	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
20544	Transformer. 230/115V	-	Nokia	22/24/27, 15C, 15B
20543	UPS. 700V/A 490W	PW 9120 700i	Powerware	22/24/27, 15C, 15B