

FCC Part 15B Compliance Test Report

Test Report no.:	FCC15B_RM-768_07.docx	Date of Report:	28-Mar-2012
Number of pages:	10	Customer's Contact person:	Hu Helen
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FCC listing no.:	975940		
IC recognition no.:	661AH-1		
Tested devices/ accessories:	Phone RM-768 / Battery BL-4U / AC Charger AC-11E / Headset WH-102		
FCC ID:	QTLRM-768	IC:	661AB-RM768
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), RSS-210 (Issue 8, December 2010). 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:			

Gao Sherina, Engineer, EMC

1. Summary for FCC Part 15B Compliance Test Report

Date of receipt	14-Mar-2012
Testing completed	21-Mar-2012
The customer's contact person	Hu Helen
Test Plan referred to	T:\Projects\RM-768\TestPlan\RS_testplan_RM-768.xls
Notes	-
Document name	FCC15B_RM-768_07.docx

1.1. EUT and Accessory Information

The EUT is a mobile phone with following features:

GSM/WLAN/Bluetooth

The EUT is tested with maximum rated TX power, modulated with pseudo random bit sequence (PRBS9).

Devices under tests

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-768	004402137405332	0302	-	ga12w09.2	52692
Battery	BL-4U	4955401232021186770;0670560	-	-	-	52686
AC Charger	AC-11E	4090491397970509487;0675479	-	-	-	52682
Headset	WH-102	0694323152311D23429	-	-	-	52689

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 (RSS-139)	Name of the test	Result
15.107, a	5.3	AC powerline conducted emissions	NP
15.109, a	5.5 (6.6)	Radiated emissions	NP

WLAN:

Section in CFR 47	Section in ICES-003 (RSS-139)	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

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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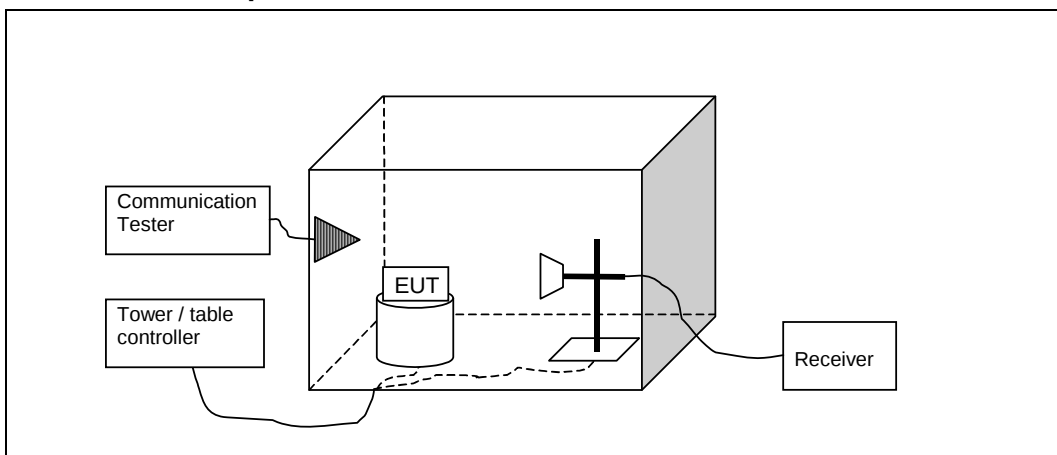
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2. Radiated emissions

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

EUT with DUT number	RM-768, DUT 52692
Accessories with DUT numbers	BL-4U, DUT 52686 ; AC-11E, DUT 52682 ; WH-102, DUT 52689
Operation Voltage [V] / [Hz]	115/60
Results	PASSED
Remarks	FM Radio active during GSM idle mode and WLAN idle mode testing.
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	20/55/102.3; 20/58/101.8
Date of measurements	20-Mar-2012;21-Mar-2012
Measured by	Gao Sherina

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:

$$E \text{ [dB}\mu\text{V/m]} = U_{RX} + A_{TOT}$$

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 [dB μ V/m]	Average limit [dB μ V/m]	Peak limit [dB μ V/m]
30 - 230	40	-	-
230 – 1000	47	-	-
Above 1000	-	54	74

2.3. GSM850 Test results, FM radio on

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
3474.9	39.12	90.407	42.27	-3.15	VERTICAL	PASSED
6951.7	49.39	294.815	44.88	4.51	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
3474.9	25.89	19.69	29.04	-3.15	VERTICAL	PASSED
6951.7	36.48	66.642	31.97	4.51	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
30.54	21.37	11.702	23.52	-2.15	VERTICAL	PASSED
31.95	15.37	5.865	24.53	-9.16	VERTICAL	PASSED
45.28	15.26	5.796	33.47	-18.21	VERTICAL	PASSED
49.37	20.12	10.14	40.8	-20.68	VERTICAL	PASSED
53.971	18.81	8.715	41.59	-22.78	VERTICAL	PASSED
97.976	26.42	20.936	48.98	-22.56	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
3000.2	39.01	89.259	41.39	-2.38	HORIZONTAL	PASSED
3526.9	38.29	82.139	41.77	-3.48	VERTICAL	PASSED
7043.083	45.58	190.195	41.02	4.56	VERTICAL	PASSED
7054.7	45.39	185.909	40.79	4.6	VERTICAL	PASSED
7054.812	45.76	193.977	41.15	4.61	VERTICAL	PASSED
7060.123	46.08	201.326	41.4	4.68	HORIZONTAL	PASSED
7817.632	45.23	182.642	40.9	4.33	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
3000.2	25.6	19.046	27.98	-2.38	HORIZONTAL	PASSED
3526.9	25.42	18.666	28.9	-3.48	VERTICAL	PASSED
7043.083	32.54	42.364	27.98	4.56	VERTICAL	PASSED
7054.7	32.73	43.296	28.13	4.6	VERTICAL	PASSED
7054.812	32.63	42.806	28.02	4.61	VERTICAL	PASSED
7060.123	32.7	43.137	28.02	4.68	HORIZONTAL	PASSED
7817.632	32.36	41.495	28.03	4.33	HORIZONTAL	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
3575	39.66	96.128	43.02	-3.36	VERTICAL	PASSED
7150.9	44.78	173.4	40.3	4.48	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
3575	25.94	19.824	29.3	-3.36	VERTICAL	PASSED
7150.9	32.01	39.852	27.53	4.48	HORIZONTAL	PASSED

2.4. GSM1900 Test results, FM radio on

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
3860.5	41.95	125.127	43.77	-1.82	VERTICAL	PASSED
7718.9	44.42	166.265	40.3	4.12	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
3860.5	27.94	24.937	29.76	-1.82	VERTICAL	PASSED
7718.9	31.91	39.396	27.79	4.12	VERTICAL	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
30.27	15.26	5.796	23.22	-7.96	VERTICAL	PASSED
31.2	21.37	11.703	23.99	-2.62	VERTICAL	PASSED
52.419	17.26	7.296	39.37	-22.11	VERTICAL	PASSED
54.101	16.31	6.542	39.14	-22.83	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
3000.7	38.76	86.706	41.15	-2.39	HORIZONTAL	PASSED
3918.2	40.16	101.883	42.27	-2.11	VERTICAL	PASSED
7041.085	45.23	182.621	40.66	4.57	VERTICAL	PASSED
7042.281	45.11	180.053	40.54	4.57	HORIZONTAL	PASSED
7070.741	45.4	186.102	40.91	4.49	HORIZONTAL	PASSED
7077.855	45.44	186.982	40.91	4.53	HORIZONTAL	PASSED
7841.7	45.03	178.361	40.67	4.36	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
3000.7	25.52	18.878	27.91	-2.39	HORIZONTAL	PASSED
3918.2	26.96	22.274	29.07	-2.11	VERTICAL	PASSED
7041.085	32.49	42.131	27.92	4.57	VERTICAL	PASSED
7042.281	32.5	42.165	27.93	4.57	HORIZONTAL	PASSED
7070.741	32.56	42.452	28.07	4.49	HORIZONTAL	PASSED
7077.855	32.63	42.825	28.1	4.53	HORIZONTAL	PASSED
7841.7	32.28	41.096	27.92	4.36	VERTICAL	PASSED

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
3979.4	41.08	113.227	43.27	-2.19	HORIZONTAL	PASSED
7960.1	45.22	182.453	40.9	4.32	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
3979.4	27.19	22.872	29.38	-2.19	HORIZONTAL	PASSED
7960.1	32.05	40.022	27.73	4.32	HORIZONTAL	PASSED

2.5. WLAN Test results, FM radio on

2.5.1 DSSS mode, QPSK modulation, 11 Mbps data rate

RX mode, Channel 1 / 2412 MHz

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

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4805.2	40.88	110.624	41.52	-0.64	VERTICAL	PASSED
7205.8	45.5	188.278	40.91	4.59	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
4805.2	28.15	25.553	28.79	-0.64	VERTICAL	PASSED
7205.8	32.21	40.794	27.62	4.59	VERTICAL	PASSED

RX mode, Channel 6 / 2437 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
30.09	21.59	12.005	23.43	-1.84	VERTICAL	PASSED
30.72	15.76	6.14	23.8	-8.04	VERTICAL	PASSED
51.033	19.46	9.4	40.89	-21.43	VERTICAL	PASSED
55.274	19.01	8.922	42.05	-23.04	VERTICAL	PASSED
85.981	11.55	3.778	34.6	-23.05	VERTICAL	PASSED
907.144	19.7	9.662	27.48	-7.78	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
1754.806	41.35	116.815	42.15	-0.8	VERTICAL	PASSED
2920.24	50.23	324.676	39.82	10.41	VERTICAL	PASSED
3000.1	39.14	90.552	41.52	-2.38	HORIZONTAL	PASSED
4882.5	41.26	115.664	41.77	-0.51	VERTICAL	PASSED
7060.419	45.82	195.501	41.15	4.67	HORIZONTAL	PASSED
7063.73	46.25	205.353	41.65	4.6	VERTICAL	PASSED
7318.8	45.82	195.524	40.9	4.92	VERTICAL	PASSED
7837.172	45.26	183.147	40.91	4.35	VERTICAL	PASSED
7843.084	45.52	188.69	41.15	4.37	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
1754.806	28.34	26.119	29.14	-0.8	VERTICAL	PASSED
2920.24	37.24	72.753	26.83	10.41	VERTICAL	PASSED
3000.1	25.82	19.537	28.2	-2.38	HORIZONTAL	PASSED
4882.5	28.57	26.832	29.08	-0.51	VERTICAL	PASSED
7060.419	32.81	43.677	28.14	4.67	HORIZONTAL	PASSED
7063.73	32.75	43.391	28.15	4.6	VERTICAL	PASSED
7318.8	32.45	41.942	27.53	4.92	VERTICAL	PASSED
7837.172	32.48	42.053	28.13	4.35	VERTICAL	PASSED
7843.084	32.5	42.15	28.13	4.37	VERTICAL	PASSED

RX mode, 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
4958.2	42.12	127.57	42.27	-0.15	HORIZONTAL	PASSED
7438.5	45.37	185.481	40.55	4.82	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
4958.2	29.36	29.38	29.51	-0.15	HORIZONTAL	PASSED
7438.5	32.62	42.761	27.8	4.82	VERTICAL	PASSED

3. Test Equipment

3.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
-	RF Emission Software	EMC32 Test Software	R&S	22/24/27, 15C, 15B
BJPCWH0020	DC Power supply	HP6632B	HP	22/24/27, 15C
BJPCPT0040	Receiver	ESCS30	R&S	15C, 15B
BJPCPT0073	Signal Generator	SMR 20	R&S	22/24/27, 15C, 15B
BJPCPT0079	LISN 50 μ H	ESH3-Z5	R&S	15C, 15B
BJPCPT0131	Communication Tester	CMU200	R&S	15C, 15B
BJPCPT0191	Pulse Limiter	ESH3-Z2	R&S	15C, 15B
BJPCTC0017	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
BJPCTC0067	Bluetooth Tester	CBT	R&S	22/24/27, 15C
BJPCTC0089	Temperature Test chamber	VT4002	Votsch industrietechnik	22/24/27, 15C
BJPCTC0090	FSP spectrum analyzer	FSP30	R&S	22/24/27, 15C
BJPCTC0094	GPB-RS232 convertor	GPB-RS232	NI	22/24/27, 15C
BJPCTC0112	Power Splitter	11667B	Agilent	22/24/27, 15C
BJPCTC0114	Signal Generator	E8357C	Agilent	22/24/27, 15C
BJPCTC0115	Communication Tester	CMU200	R&S	22/24/27, 15B, 15C

3.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	15C, 15B
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	15C, 15B
-	RF Emission Software	EMC32 Test Software	R&S	22/24/27, 15C, 15B
BJPCPT0072	Receiver	ESI B26	R&S	22/24/27, 15C, 15B
BJPCPT0130	Relay Switch Unit	TS-RSP	R&S	22/24/27, 15C, 15B
BJPCPT0150	High Pass Filter	WHKS1200-10SS	Wainwright	22/24/27, 15C, 15B
BJPCPT0151	Band Reject Filter	WRCD1880/2000-0.2/40-5SSK	Wainwright	24, 15B
BJPCPT0154	Band Reject Filter	WRCT2402/2480-2400/2483.5-30-20SS	Wainwright	15C, 15B
BJPCPT0162	Antenna	HF906	R&S	22/24/27, 15C, 15B
BJPCTC0007	Antenna	HL562	R&S	22/24/27, 15C, 15B
BJPCTC0029	Antenna	HF906	R&S	22/24/27, 15C, 15B
BJPCTC0034	Band Reject Filter	WRCT 800/880-0.2/40-5SSK	Wainwright	22, 15B
BJPCTC0049	Preamplifier	Blma 0118-1A-Bt	Bonn	22/24/27, 15C, 15B
BJPCTC0055	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
BJPCTC0058	Bluetooth Tester	CBT	R&S	15C, 15B
BJPCTC0064	Band Reject Filter	WRCG1877/1883-1870/1890-40/6SS	Wainwright	24, 15B
BJPCTC0065	Band Reject Filter	WRCG832/838-825/845-40/5SS	Wainwright	27, 15B
BJPCTC0071	Multi-Device Controller	2090	EMCO	22/24/27, 15C, 15B
BJPCTC0072	Anechoic Chamber	3 m Semi / Full Anechoic Chamber	ETS	22/24/27, 15C, 15B
BJPCTC0073	MAST	Model-TR/POL	ETS	22/24/27, 15C, 15B
BJPCTC0074	MAST	Model 2070-2	ETS	22/24/27, 15C, 15B
BJPCTC0075	Turntable	Model 2188	ETS-EMCO	22/24/27, 15C, 15B
BJPCTC0096	Preamplifier	AFS4-00100300-20-23P-6	Miteq	22/24/27, 15C, 15B
BJPCTC0113	Receiver	ESI B26	R&S	22/24/27, 15B, 15C
BJPCTC0115	Communication Tester	CMU200	R&S	22/24/27, 15B, 15C
BJPCTC0124	Attenuator	SA18N200W-40	Fairview Microwave	-