

FCC Part 15B Compliance Test Report

Test Report no.:	FCC15B_RM-614_20.doc	Date of Report:	05-Mar-2010
Number of pages:	9	Customer's Contact person:	Hu Helen
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FCC listing no.:	975940		
IC recognition no.:	661AH-1		
Tested devices/ accessories:	Phone RM-614 / Battery BL-5J / AC-charger AC-3E / USB Data cable CA-101 / Laptop IBM T40		
FCC ID:	QTLRM-614X	IC:	661AB-RM614X
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 and IC standard 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:			
	Jia Dongsheng, System Manager		

1. Summary for FCC Part 15B Compliance Test Report

Date of receipt	12-Feb-2010
Testing completed	05-Mar-2010
The customer's contact person	Hu Helen
Test Plan referred to	T:\Projects\RM-614\TestPlan_RS\RS_testplan_RM-614.xls
Notes	-
Document name	FCC15B_RM-614_20.doc

1.1. EUT and Accessory Information

The EUT is a 4-band (GSM850/900/1800/1900) mobile phone with GPRS, EGPRS and Bluetooth. GSM bands are tested in idle mode. Bluetooth is tested with maximum rated TX power.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-614	008600080028904	0201	-	ag92_10w03	51575
Battery	BL-5J	4620409503I20270596;0670574	-	-	-	51580
AC-charger	AC-3E	4090499161171601911;0675370	-	-	-	51585
USB Data cable	CA-101	0730634730501303140	-	-	-	51018
Laptop	IBM T40	99FMPGT	-	-	-	51044

1.2. Summary of Test Results

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	PASSED

PASSED

The EUT complies with the essential requirements in the standard.

FAILED

The EUT does not comply with the essential requirements in the standard.

NP

The test was not performed by the TCC Nokia Beijing Laboratory.

The test results of QTLRM-614 are re-used for certification of the QTLRM-614X. The table above indicates the results, which will be re-used.

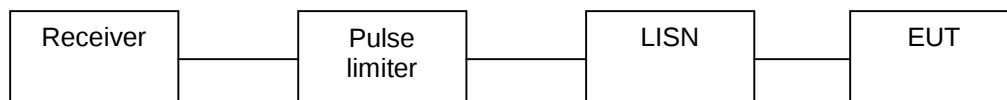
CONTENTS

1. Summary for FCC Part 15B Compliance Test Report.....	2
1.1. EUT and Accessory Information	2
1.2. Summary of Test Results	2
2. AC powerline conducted emissions (FCC §15.107, ICES-003 section 5.3)	4
2.1. Test setup	4
2.2. Test method and limit	4
2.3. Bluetooth Test results	5
3. Radiated emissions (FCC §15.109, ICES-003 section 5.5)	6
3.1. Test setup	6
3.2. Test method and limit	6
3.3. Bluetooth Test results	7
4. Test Equipment.....	9
4.1. Conducted measurements	9
4.2. Radiated measurements	9

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

EUT with DUT number	RM-614, DUT51575
Accessories with DUT numbers	BL-5J, DUT51580; AC-3E, DUT51585; CA-101, DUT51018; IBM T40, DUT51044
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	Data was transferring between PC and mobile during the test.
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 30 / 102.7
Date of measurements	05-Mar-2010
Measured by	Jia Dongsheng

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:

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

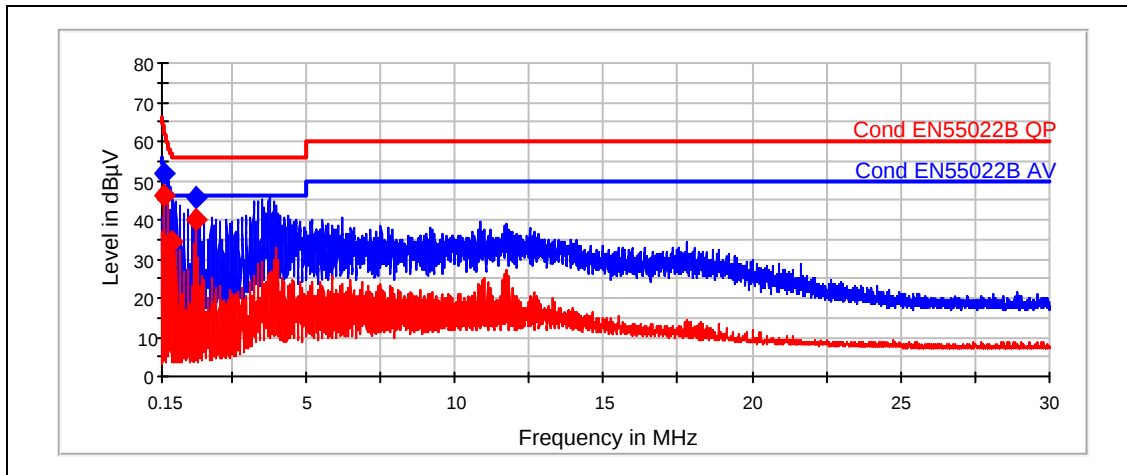
Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable and pulse limiter attenuations.

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

TX mode, channel 40 / 2442 MHz



Quasi peak (RBW: 9 kHz)

Frequency[MHz]	Level [dBμV]	Meas. time[ms]	IF-BW[kHz]	Line	Margin	Result
0.245	51.63	15000	9	N	10.32	PASSED
1.305	45.75	15000	9	N	10.2	PASSED

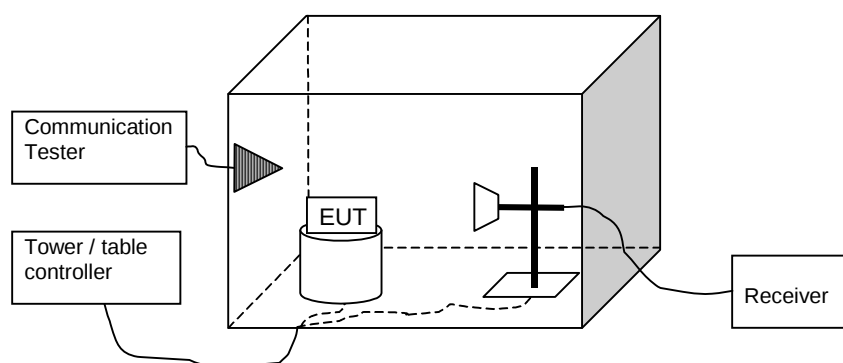
Average (RBW: 9 kHz)

Frequency[MHz]	Level [dBμV]	Meas. time[ms]	IF-BW[kHz]	Line	Margin	Result
0.245	46.16	15000	9	N	5.72	PASSED
0.52	34.6	15000	9	L1	11.4	PASSED
1.305	40.18	15000	9	N	5.8	PASSED

3. Radiated emissions (FCC §15.109, ICES-003 section 5.5)

EUT with DUT number	RM-614, DUT51575
Accessories with DUT numbers	BL-5J, DUT51580; AC-3E, DUT51585; CA-101, DUT51018; IBM T40, DUT51044
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	Data was transferring between PC and mobile during the test.
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	19 / 31 / 100.9
Date of measurements	04-Mar-2010
Measured by	Jia Dongsheng

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:

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

Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable loss, antenna factor and preamplifier gain ($A_{TOT} = L_{CABLES} + AF - G_{PREAMP}$).

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

3.3. 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	42.80	138.04	42.70	0.1	VERTICAL	PASSED
7206.000000	44.10	160.32	39.90	4.2	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U_{RX} [dBμV]	A_{TOT} [dB]	Polarisation	Result
4804.000000	27.90	24.83	27.80	0.1	VERTICAL	PASSED
7206.000000	30.50	33.50	26.30	4.2	HORIZONTAL	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
119.980361	27.90	24.83	52.50	-24.6	VERTICAL	PASSED
171.342685	26.90	22.13	52.90	-26.0	HORIZONTAL	PASSED
257.114629	33.20	45.71	56.80	-23.6	HORIZONTAL	PASSED
332.766533	23.80	15.49	44.90	-21.1	VERTICAL	PASSED
400.500401	32.00	39.81	51.40	-19.4	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
2814.787575	53.70	484.17	43.10	10.6	HORIZONTAL	PASSED
7264.535070	43.70	153.11	39.40	4.3	HORIZONTAL	PASSED
7384.771543	43.90	156.68	39.40	4.5	VERTICAL	PASSED
17499.495992	52.40	416.87	35.60	16.8	HORIZONTAL	PASSED
17960.427856	55.50	595.66	35.80	19.7	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
2817.287575	40.10	101.16	29.40	10.7	HORIZONTAL	PASSED
7267.035070	30.60	33.88	26.30	4.3	HORIZONTAL	PASSED
7389.271543	30.70	34.28	26.30	4.4	VERTICAL	PASSED
17494.995992	39.80	97.72	23.00	16.8	HORIZONTAL	PASSED
17960.427856	42.60	134.90	22.90	19.7	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	41.70	121.62	41.00	0.7	VERTICAL	PASSED
7440.000000	43.40	147.91	39.40	4.0	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Polarisation	Result
4960.000000	28.60	26.92	27.90	0.7	HORIZONTAL	PASSED
7440.000000	30.60	33.88	26.60	4.0	HORIZONTAL	PASSED

4. Test Equipment

4.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
BJPCPT0073	SIGNAL GENERATOR	SMR 20	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCTC0055	RADIO COMMUNICATION TESTER	CMU200	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCPT0039	LISN	ESH3-Z5	Rohde&Schwarz	15C, 15B
BJPCPT0040	TEST RECEIVER	ESCS30	Rohde&Schwarz	15C, 15B
BJPCPT0069	LISN	ESH3-Z5	Rohde&Schwarz	15C, 15B
BJPCPT0079	LISN	ESH3-Z5	Rohde&Schwarz	15C, 15B
BJPCPT0191	PULSE LIMITER	ESH3-Z2	Rohde&Schwarz	15C, 15B
BJPCPT0131	RADIO COMMUNICATION TESTER	CMU200	ROHDE&SCHWARZ	15C, 15B
BJPCTC0089	Temperature Test chamber	VT4002	Vötsch Industrietechnik	22/24/27, 15C
BJPCTC0090	FSP spectrum analyzer	FSP30	R&S	22/24/27, 15C
BJPCTC0067	BLUETOOTH TESTER	CBT	R&S	22/24/27, 15C
BJPCHW0020	Dc Power supply	Hp6632B	HP	22/24/27, 15C
BJPCTC0094	GPIO-RS232 convertor	GPIO-RS232	National Instruments	22/24/27, 15C

4.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
BJPCPT0129	Relay Unit	TS-RSP	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCPT0130	Relay Unit	TS-RSP	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCPT0080	Device Controller	EMCO2090	ETS-EMCO	22/24/27, 15C, 15B
BJPCTC0048	RF Preamplifier 10MHz-3GHz (Metal chassis)	AFS4-00100300-10-10P-4	MITEQ	22/24/27, 15C, 15B
BJPCTC0007	Ultra Broadband Antenna 30MHz-3000MHz	HL562	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCPT0162	Horn Antenna 1GHz-18GHz	HF906	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCTC0029	Horn Antenna 1GHz-18GHz	HF906	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCTC0049	RF preamplifier 3GHz-18GHz	BLMA-0118-1A-BT	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCTC0072	3m anechoic chamber	-	ETS-Lindgren	22/24/27, 15C, 15B
BJPCTC0075	Turntable	Model 2088	ETS-EMCO	22/24/27, 15C, 15B
BJPCPT0072	EMI Test Receiver 20Hz-26.5GHz	ESIB26	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCPT0150	High Pass filter	WHKS 1200-10SS	Wainwright instruments	22/24/27, 15C, 15B
BJPCTC0034	Notch Filter	WRCT800/880-0.2/40-5SSK	Wainwright instruments	22, 15B
BJPCPT0151	Notch Filter	WRCD1800/2000-0.2/40-5SSK	Wainwright instruments	24, 15B
BJPCTC0017	Radio Communication Tester	CMU200	Rohde&Schwarz	22/24/27, 15C, 15B
BJPCPT0154	Filter	WRCT2402/2480-2400/2483.5-30-20SS	Wainwright instruments	15C, 15B
BJPCTC0058	Bluetooth tester	CBT	Rohde&Schwarz	15C, 15B
BJPCTC0064	WCDMA II FILTER	WRCG1877/1883-1870/1890-40/6SS	Wainwright instruments	24, 15B
BJPCTC0065	WCDMA V FILTER	WRCG832/838-825/845-40/5SS	Wainwright instruments	22, 15B
BJPCTC0066	ANTENNA	SBA9113	SWARZBECK	22/24/27
BJPCTC0096	RF Preamplifier 100MHz-3GHz	AFS4-00100300-20-23P-6	MITEQ	22/24/27, 15C, 15B