FCC Part 15B Compliance Test Report

Test Report no.:	FCC15B_RM-634_06.docx	**Date of Report:**	29-May-2010
Number of pages:	11	**Customer's Contact person:**	Shao Xu
Testing laboratory:	TCC Nokia Beijing Laboratory Beijing Economic and Technological Development Area No.5 Donghuan Zhonglu Beijing PRC China 100176 Tel. +86 10 8711 8888 Fax. +86 10 8711 4550	**Customer:**	Nokia Corporation Frederikskaj 1790 COPENHAGEN V DENMARK Tel. +45 33 292929 Fax. +45 33 292934
FCC listing no.: **IC recognition no.:**	975940 661AH-1		
Tested devices/ accessories:	**Phone RM-634 / Battery BL-4D / AC-charger AC-8E / Data cable CA-101D / Laptop IBM T40**		
FCC ID:	QTKRM-634	**IC:**	661AD-RM634
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 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:	 Digitally signed by Sami Lehtonen Date: 2010.05.29 14:11:49 +03'00'		

Sami Lehtonen, System Specialist, EMC

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1. Summary for FCC Part 15B Compliance Test Report

Date of receipt	01-Apr-2010
Testing completed	21-Apr-2010
The customer's contact person	Shao Xu
Test Plan referred to	T:\Projects\RM-632\TestPlan\RS_testplan_RM-632.xls
Notes	-
Document name	FCC15B_RM-634_06.docx

1.1. EUT and Accessory Information

The EUT is a 7-band (GSM850/900/1800/1900) and WCDMA Band (I/II(1900)/VIII) mobile phone with GPRS, EGPRS, HSDPA, HSUPA and WLAN and Bluetooth.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-632	004401109337705	0200B	-	041.007 RD	51629
Battery	BL-4D	418157916100110133;0670603	-	-	-	51399
AC-charger	AC-8E	486867946432060219 5;0675387	-	-	-	51633
Data cable	CA-101D	0730368951272F04245	-	-	-	51641
Laptop	IBM T40	99FMPGT	-	-	-	51044

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	NP

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	NP

WCDMA 1900 (Band II):

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	NP

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	PASSED
15.109, a	5.5 (6.6)	Radiated emissions	PASSED

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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	NP

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 Laboratory.

The test results of QTKRM-632 *are re-used for certification of the* QTKRM-634*. The table above indicates the results, which will be re-used.*

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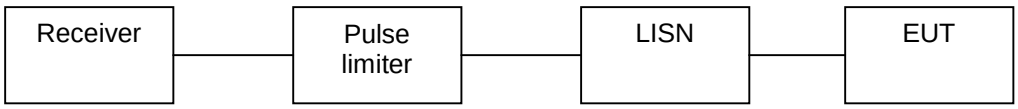
2. AC powerline conducted emissions

(FCC §15.107, ICES-003 section 5.3)

EUT with DUT number	RM-632, DUT 51629
Accessories with DUT numbers	BL-4D, DUT 51399 ; AC-8E, DUT 51633 ; CA-101D, DUT 51641 ; IBM T40, DUT 51044
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]	21 / 38 / 101.8
Date of measurements	21-Apr-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

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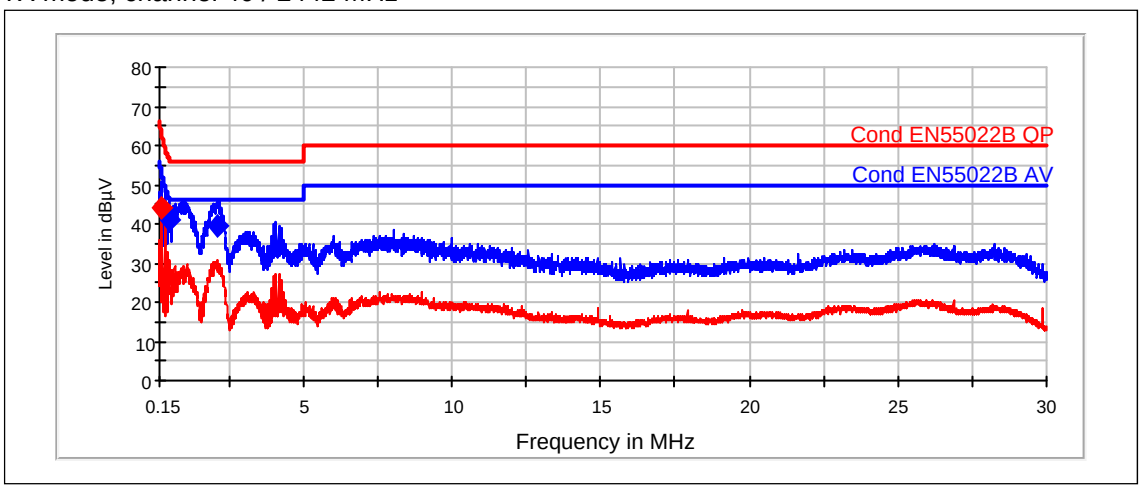
2.3. Bluetooth Test results

TX mode, channel 40 / 2442 MHz



Quasi peak

Frequency[MHz]	Level [dBµV]	Meas. time[ms]	IF-BW[kHz]	Line	Margin	Result
0.475	40.89	15000	9	L1	15.53	PASSED
2.08	39.28	15000	9	L1	16.7	PASSED

Average

Frequency[MHz]	Level [dBµV]	Meas. time[ms]	IF-BW[kHz]	Line	Margin	Result
0.245	43.98	15000	9	L1	7.92	PASSED

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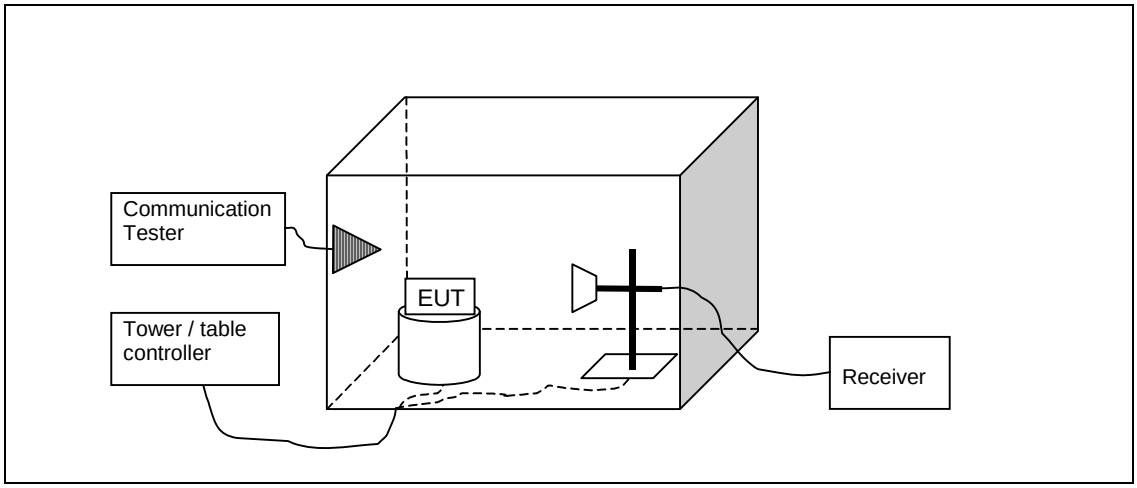
3. Radiated emissions

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

EUT with DUT number	RM-632, DUT 51629
Accessories with DUT numbers	BL-4D, DUT 51399 ; AC-8E, DUT 51633 ; CA-101D, DUT 51641; IBM T40, DUT 51044
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	Data was transferring between PC and mobile during the test.
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 38 / 101.8
Date of measurements	21-Apr-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.

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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]	Limit [µV/m]	Limit [dBµV/m]	Peak limit [dBµV/m]
30 - 230	40	-	-
230 – 1000	47	-	-
Above 1000	-	54	74

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3.3. Bluetooth Test results

3.3.1 GFSK modulation, PRBS packet type

TX mode, Channel 0 / 2402 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4801.7	29.12	28.569	29.07	0.05	VERTICAL	PASSED
7207.6	32.15	40.509	27.93	4.22	HORIZONTAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4801.7	43.65	152.177	43.6	0.05	VERTICAL	PASSED
7207.6	45.65	191.734	41.43	4.22	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
33.326	24.79	17.352	36.54	-11.75	VERTICAL	PASSED
37.214	24.19	16.198	38.81	-14.62	VERTICAL	PASSED
44.438	22.06	12.677	42.39	-20.33	VERTICAL	PASSED
171.353	25.38	18.572	51.28	-25.9	VERTICAL	PASSED
196.603	35.92	62.546	61.69	-25.77	HORIZONTAL	PASSED
257.064	34.84	55.201	58.36	-23.52	VERTICAL	PASSED
400.501	33.02	44.746	52.24	-19.22	HORIZONTAL	PASSED
801.012	37.14	71.961	49.45	-12.31	HORIZONTAL	PASSED

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
2364.961	34.71	54.381	29.46	5.25	VERTICAL	PASSED
2930.46	40.12	101.344	28.92	11.2	HORIZONTAL	PASSED
3934.369	28.24	25.832	29.23	-0.99	VERTICAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
2364.961	47.75	243.95	42.5	5.25	VERTICAL	PASSED
2930.46	53.57	477.035	42.37	11.2	HORIZONTAL	PASSED
3934.369	41.12	113.723	42.11	-0.99	VERTICAL	PASSED

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TX mode, Channel 78 / 2480 MHz

Average(RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4958.6	30.51	33.527	30.09	0.42	VERTICAL	PASSED
7440.3	32.47	42	28.36	4.11	VERTICAL	PASSED

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
4958.6	43.44	148.576	43.02	0.42	VERTICAL	PASSED
7440.3	45.27	183.464	41.16	4.11	VERTICAL	PASSED

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4. Test Equipment

4.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
BJPCHW0020	DC Power supply	Hp6632B	HP	22/24/27, 15C
BJPCPT0040	Receiver	ESCS30	R&S	15C,15B
BJPCPT0069	LISN 50 µH	ESH3-Z5	R&S	15C,15B
BJPCPT0073	Signal Generator	SMR 20	R&S	22/24/27, 15C, 15B
BJPCPT0079	LISN 50 µH	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	22/24/27, 15C
BJPCTC0090	FSP spectrum analyzer	FSP30	R&S	22/24/27, 15C
BJPCTC0094	GPIB-RS232 convertor	GPIB-RS232	NI	22/24/27, 15C

4.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	15C, 15B
-	RF Emission Software	ES-K1 v.1.71	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-	Wainwright	24, 15B
BJPCPT0154	Band Reject Filter	WRCT2402/2480-	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-	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-	Wainwright	24, 15B
BJPCTC0065	Band Reject Filter	WRCG832/838-	Wainwright	27, 15B
BJPCTC0071	Multi-Device Controller	2090	EMCO	22/24/27, 15C, 15B
BJPCTC0072	Anechoic Chamber	3 m Semi / Full	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-	Miteq	22/24/27, 15C, 15B

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