FCC Part 15B Compliance Test Report

Test Report no.:	Tre_FCC_0533_02.doc	**Date of Report:**	18.8.2005
Number of pages:	10	**Customer's Contact person:**	Hailun Shi
Testing laboratory:	TCC Nokia Tampere Laboratory P.O. Box 68 Sinitaival 5 FIN-33720 TAMPERE, FINLAND Tel. +358 (0) 7180 46800 Fax. +358 (0) 7180 46880	**Client:**	Nokia Corporation Nokia Tower Pacific Century Place 2A Gong Ti Bei Lu Chaoyang District 100027 BEIJING, PRC Tel. +86 10 65392828 Fax. +86 10 65393838
FCC listing no.: **IC recognition no.:**	94436 3608		
Tested devices/ accessories:	**Phone RM-75 / Battery BL-5C, Headset HDE-2 and AC- Charger ACP-12**		
FCC ID:	QTLRM-75	**IC:**	661AB-RM75
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 standards RSS-132, RSS-133 and RSS-210. 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 Jan-Erik Lilja DN: CN = Jan-Erik Lilja, C = FI, O = Nokia, OU = CertMt Reason: I am approving this document Date: 2005.08.18 16:49:12 +03'00'		

1. Summary for FCC Part 15B Compliance Test Report

Date of receipt	17.8.2005
Testing completed	18.8.2005
The customer's contact person	Hailun Shi
Test Plan referred to	\EMC\TESTPLAN\
Notes	-
Document name	T:\Projects\RM-75\results\emc\FCC\Tre_FCC_0533_02.doc

1.1. EUT and Accessory Information

The EUT is a dual band (GSM850/1900) mobile phone. GSM bands are tested in idle mode.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-75	001004/00/182329/4	0515	-	05w07_05w25	40307
AC-charger	ACP-12	399791L161CA0017202	-	-	-	40310
Battery	BL-5C	-	-	-	M075111010351	40309
Headset	HDE-2	-	-	-	-	40311

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	Passed
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

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 Tampere Laboratory.

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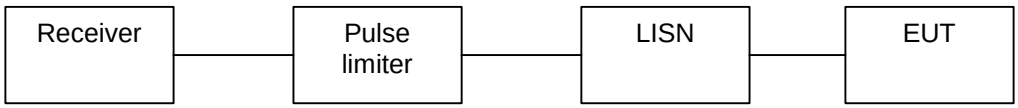
2. AC powerline conducted emissions

(FCC §15.107, ICES-003 section 5.3)

EUT with DUT number	RM-75: EUT 40307
Accessories with DUT numbers	ACP-12: EUT 40310, BL-5C: EUT 40309, HDE-2: EUT 40311
Operation Voltage [V] / [Hz]	115/60
Result	Passed
Remarks	
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	19/50/101.9
Date of measurements	18.8.2005
Measured by	Jan-Erik Lilja

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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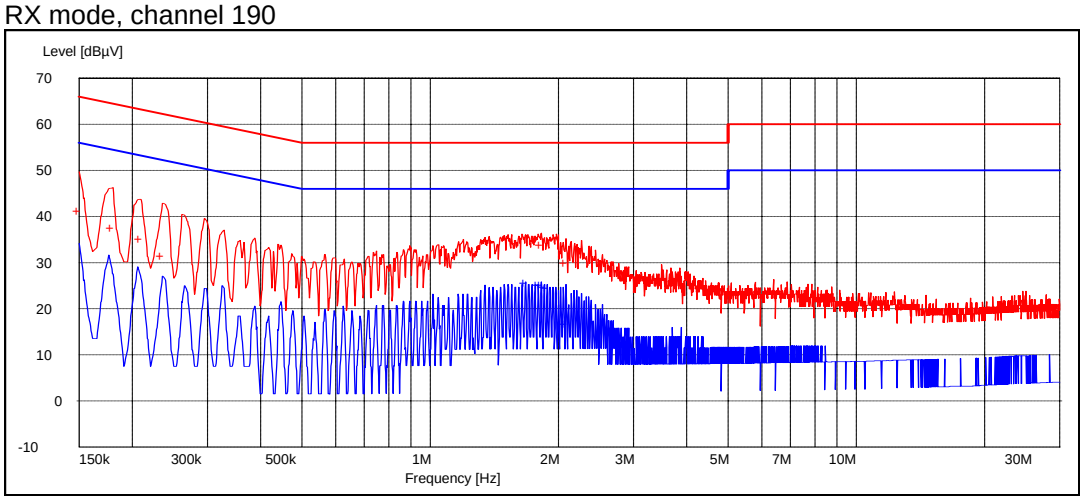
2.3. GSM 850 Test results

RX mode, channel 190



Quasi peak (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
0.150000	41.20	N	PASSED
0.179659	37.40	N	PASSED
0.209319	35.00	N	PASSED
0.235271	31.40	N	PASSED
1.822044	33.70	L1	PASSED
2.084168	30.00	L1	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBµV]	Line	Result
1.673747	25.50	L1	PASSED
1.792385	25.10	L1	PASSED
1.822044	25.10	L1	PASSED
1.851703	24.70	L1	PASSED
1.881363	24.50	L1	PASSED
2.084168	16.70	L1	PASSED

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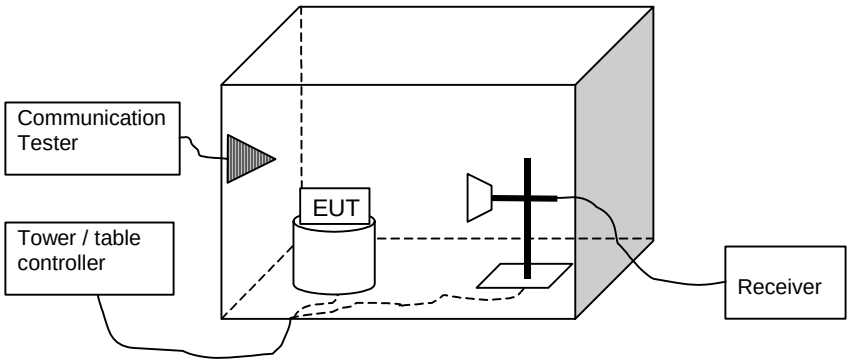
3. Radiated emissions

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

EUT with DUT number	RM-75: EUT 40307
Accessories with DUT numbers	ACP-12: EUT 40310, BL-5C: EUT 40309, HDE-2: EUT 40311
Operation Voltage [V] / [Hz]	115/60
Result	Passed
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	23 / 45 / 101.9
Date of measurements	18.08.2005
Measured by	Jan-Erik Lilja

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

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. GSM 850 Test results

RX mode, channel 128

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3476.800000	40.50	105.93	45.30	-4.80	VERTICAL	PASSED
6953.600000	50.00	316.23	48.50	1.50	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3476.800000	27.30	23.17	32.10	-4.80	VERTICAL	PASSED
6953.600000	36.70	68.39	35.20	1.50	VERTICAL	PASSED

RX mode, channel 190

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
47.155110	18.20	8.13	52.00	-33.80	VERTICAL	PASSED
53.588577	9.00	2.82	46.30	-37.30	VERTICAL	PASSED
119.961323	15.30	5.82	49.20	-33.90	VERTICAL	PASSED

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3526.400000	39.50	94.41	44.30	-4.80	VERTICAL	PASSED
7052.800000	42.60	134.90	42.40	0.20	HORIZONTAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
7431.861723	32.00	39.81	27.50	4.50	VERTICAL	PASSED
7994.981964	32.00	39.81	27.00	5.00	VERTICAL	PASSED

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RX mode, channel 251

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3575.200000	39.50	94.41	44.10	-4.60	VERTICAL	PASSED
7150.400000	44.60	169.82	42.00	2.60	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3575.200000	26.30	20.65	30.90	-4.60	VERTICAL	PASSED
7150.400000	32.10	40.27	29.50	2.60	VERTICAL	PASSED

3.4. GSM 1900 Test results

RX mode, channel 512

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3860.000000	40.70	108.39	43.00	-2.30	VERTICAL	PASSED
7720.000000	46.10	201.84	41.90	4.20	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3860.000000	28.10	25.41	30.40	-2.30	VERTICAL	PASSED
7720.000000	33.50	47.32	29.30	4.20	VERTICAL	PASSED

RX mode, channel 661

Quasi peak (RBW: 120 kHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
47.614629	19.60	9.55	53.70	-34.10	VERTICAL	PASSED
84.467735	11.10	3.59	48.10	-37.00	VERTICAL	PASSED
120.842285	17.40	7.41	51.40	-34.00	VERTICAL	PASSED

Peak (RBW: 1 MHz)

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3920.000000	42.60	134.90	44.60	-2.00	VERTICAL	PASSED
7840.000000	47.10	226.46	42.50	4.60	VERTICAL	PASSED

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Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3920.000000	28.10	25.41	30.10	-2.00	VERTICAL	PASSED
7840.000000	33.80	48.98	29.20	4.60	VERTICAL	PASSED

RX mode, channel 810

Peak (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3980.000000	43.30	146.22	45.00	-1.70	VERTICAL	PASSED
7960.000000	47.40	234.42	42.60	4.80	VERTICAL	PASSED

Average (RBW: 1 MHz)

Frequency [MHz]	E [dBµV/m]	E [µV/m]	U_{RX} [dBµV]	A_{TOT} [dB]	Polarisation	Result
3980.000000	28.90	27.86	30.60	-1.70	VERTICAL	PASSED PASSED
7960.000000	34.00	50.12	29.20	4.80	VERTICAL	

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4. Test Equipment

4.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
TM37610	Spectrum analyzer	FSU	R&S	15C,22/24
TM37678	Radio communication tester	CMU-200	R&S	15C,22/24
	Attenuator 10 dB	6251.17.A	Huber+Suhner AG	15C,22/24
TM22901	Step attenuator 110dB	8496A	Agilent	15C,22/24
TM37499	Power splitter	11667A	Agilent	15C,22/24
	Temperature chamber	VT4002	Vötsch	15C,22/24
TM38112	DC power supply	6632A	Agilent	15C,22/24
TM38111	Multimeter	34401A	Agilent	15C,22/24
TM38845	EMI receiver	ESI 40	R&S	15B,15C
TM37773	Radio communication tester	CMU-200	R&S	15B,15C
TM38631	Signal generator	83640L	Agilent	15B,15C
TM38114	DC power supply	6632A	Agilent	15B,15C
TM22835	Multimeter	87	Fluke	15B,15C
TM30600	Pulse Limiter	ESH3-Z2	R&S	15B,15C
TM26490	LISN 50 µH	ESH3-Z5/	R&S	15B,15C
TM30636	LISN 50 µH	L2-16/	PMM	15B,15C

4.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
TM30599	3m semi-anechoic chamber		TDK	15B,15C, 22/24
TM38845	EMI receiver	ESI 40	R&S	15B,15C, 22/24
TM37498	Preamplifier	AMF-5D-020180-26-10P	MITEQ	15B,15C, 22/24
TM37523	Preamplifier	AMF-4D-10M-3G-25-20P	MITEQ	15B,15C, 22/24
TM37516	Biconilog antenna	HL562	R&S	15B,15C, 22/24
TM26496	Double ridged waveguide antenna	3115	EMCO	15B,15C, 22/24
TM39158	Horn antenna	3116	EMCO	15B,15C, 22/24
TM26492	Reference dipole set	UHAP/VHAP	Schwarzbeck	15B,15C, 22/24
TM37501	Dipole antenna	3125-870	EMCO	22/24
TM37502	Dipole antenna	3125-1880	EMCO	22/24
TM37773	Radio communication tester	CMU-200	R&S	15B,15C, 22/24
TM38631	Signal generator	83640L	Agilent	15B,15C, 22/24
TM38066	High pass filter	4HC3000/18000-3-KK	Trilithic	15B,15C, 22/24
	High pass filter	WHK2010-10SS	Trilithic	15B,15C, 22/24
	Low pass filter	WLK1750-10SS	Trilithic	15B,15C, 22/24
TM26511	Tunable notch filter	WRCA870	Wainwright	22/24
TM38215	Tunable notch filter	WRCD1850/1910-0.2/40	Wainwright	22/24
TM38214	Band reject filter	WRCT 2402/2480-2400/2483.5-30	Wainwright	15C
TM30642	Turntable controller	HD-100	Deisel	15B,15C, 22/24
TM26500	Turntable	DS412	Deisel	15B,15C, 22/24
TM38842	Antenna mast controller	2090	EMCO	15B,15C, 22/24
TM38843	Antenna mast	2075	EMCO	15B,15C, 22/24
TM38114	DC power supply	6632A	Agilent	15B,15C, 22/24
TM22835	Multimeter	87	Fluke	15B,15C, 22/24

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