EMC Test Report
for

RH-60

T183 (EN ISO/IEC 17025)

TCC Tampere
Box 68
FIN-33721 TAMPERE
FINLAND

Tel. +358 7180 08000
Fax. +358 7180 46880

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TCC Tampere
Box 68
FIN-33721 TAMPERE
FINLAND

Tel. +358 7180 08000
Fax. +358 7180 46880

1 CUSTOMER INFORMATION

Test laboratory: FCC registration number IC file number:	TCC Tampere Nokia Oyj Sinitaival 5 FIN-33720 TAMPERE Tel. +358 7180 08000 Fax. +358 7180 46800 94436 (June 14, 2002) IC 3608 (March 5, 2003)
Client:	Nokia Corporation Nokia Tower Pacific Century Place 2A Gong Ti Bei Lu Chaoyang District 100027 Beijing China Tel. +861065392828 Fax. +861065393824
Contact person:	Liu Haiping tel: +8610 65392828
Receipt of EUT:	24.6.2004
Date of testing:	5.-6.7.2004
Date of report:	7.7.2004

The tests listed in this report have been done to demonstrate compliance with the applicable requirements in FCC rules Part 15 and IC standard ICES-003.

Contents approved:

Jari Jantunen EMC test engineer

2 EUT AND ACCESSORY INFORMATION

2.1 EUT description

The EUT is a dual band (850 MHz/1900MHz) GSM mobile phone.

The highest internal frequency of the EUT is 3980 MHz.

2.2 EUT and accessories

The table below lists all EUTs and accessories used in the tests. Later in this test report, only numbers in the last column are used to refer to the devices in each test.

	Name	Type	S/N	Number
EUT	GSM Phone	RH-60	001004001742205	40005
Accessories	Battery	BL-5C	L076311842803	40009
	Battery	BL-5C	L076311842756	40010
	AC Charger	ACP-12U	15.1694	40013

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SUMMARY OF TEST RESULTS

Section in CFR 47	Section in ICES-003		Result
15.107,a	5.3	AC powerline conducted emissions	PASS
15.109,a	5.5	Radiated emissions	PASS

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3 STANDARDS AND MEASUREMENT METHODS

The tests were performed in guidance of CFR 47 Part 15 Subpart B, ANSI C63.4 (2001), ICES-003 and CISPR 22. Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method".

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4 TEST RESULTS

4.1 AC powerline conducted emissions

EUT	40005		
Accessories	40010, 40013		
Temp, Humidity, Air Pressure	18ºC	53 % RH	1005 mbar
Date of measurement	6.7.2004		
FCC rule part	§15.107		
ICES-003 section	5.3		
Measured by	Jari Jantunen		
Result	**PASS**		

4.1.1 Limit

CISPR 22 Class B limit

Frequency band (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

4.1.2 EUT operation mode

EUT operation mode	GSM 1900, Idle
EUT operation voltage	115V/60Hz

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4.1.3 EUT test setup

Picture 1 Test setup

TCC Tampere
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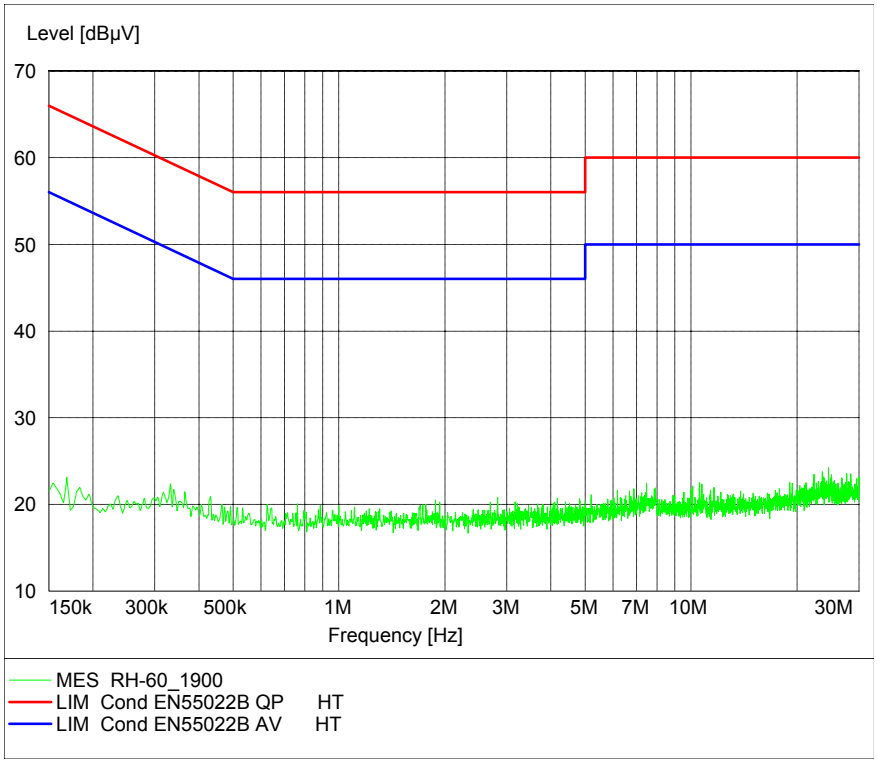
4.1.4 Emission measurement data



Picture 2 AC powerline conducted emission

Table 1 Highest emissions on selected frequencies.

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.300000	6.80	10.10	50.20	43.40	AV	L1	GND
0.600000	3.40	10.20	46.00	42.60	AV	N	GND
1.500000	3.40	10.40	46.00	42.60	AV	N	GND
5.000000	5.30	10.70	46.00	40.70	AV	L1	GND
0.300000	11.70	10.10	60.20	48.50	QP	L1	GND
0.600000	8.10	10.20	56.00	47.90	QP	L1	GND
1.500000	7.70	10.40	56.00	48.30	QP	L1	GND
5.000000	9.70	10.70	56.00	46.30	QP	N	GND

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4.2 Radiated emissions

EUT	40005		
Accessories	40009, 40013		
Temp, Humidity, Air Pressure	21 °C	44 %RH	1010 mbar
Date of measurement	5.7.2004		
FCC rule part	§15.109		
ICES-003 section	5.5		
Measured by	Jari Jantunen		
Result	**PASS**		

4.2.1 Test method and level, 30MHz – 8500 MHz

The test was made according to ANSI C63.4 (2001) with following execptions and additions:
1) The measurement was made in semi-anechoic chamber at measurement distance of 3m. The chamber had ferrite and absorber lining in all walls and ceiling, the floor was metal covered.
2) The measurement was divided in two parts; prescan and final measurement.

4.2.1.1 Prescan

a) The EUT was set on the turntable and measuring antenna in horizontal polarization at 1m.
b) The turntable was set to 0 degrees.
c) The receiver was set to record the maximum level using peak detector.
d) The antenna was raised from 1m to 4m in 1 meter steps.
e) For each antenna height the table was rotated full turn in 30 degree steps.
f) Antenna polarization was changed to vertical and phases b - e repeated.
g) All suspect frequencies were recorded in a file.
h) At every suspect frequency the turntable was rotated around, antenna scanned and the polarization changed to find the maximum levels.

4.2.1.2 Final measurement

a) The final measurement was run at suspect frequencies only using peak, quasipeak and average detector.
b) The turntable was rotated full turn to find out the worst azimuth.
c) On those azimuths obtained in b, the antenna was scanned from 1m to 4m to find out the worst elevation.
d) Phases b and c were repeated with another antenna polarization.
e) Obtained values were reported

CISPR 22 Class B limit (3m measuring distance)

Frequency band (MHz)	Quasi-peak limit (dBµV/m)
30 – 230	40
230 – 1000	47

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Class B limit (3m measuring distance)

Frequency band (MHz)	Limit (µV/m)	Limit (dBµV/m)	Detector
1000-8500	500 / 5000	54 / 74	AV / PK

4.2.2 EUT operation mode

EUT operation mode	GSM 1900, Idle
EUT operation voltage	115V/60Hz

4.2.3 EUT test setup

Picture 3 Test setup

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4.2.4 Emission measurement data, 30MHz – 8500 MHz

The measurement results were obtained as described below.

$$E[uV/m] = U_{RX} + A_{CABLE} + AF - G_{PREAMP}$$

Where

U_{RX}	receiver reading
A_{CABLE}	Attenuation of the cable
AF	Antenna factor
G_{PREAMP}	Gain of the preamplifier

Table 2

Freq [MHz]	EMI QP [dBμV/m]	Polarization
38.857315	6.40	VERTICAL
41.983567	8.00	VERTICAL
199.499198	14.10	VERTICAL
213.727455	19.90	VERTICAL
228.056313	15.10	VERTICAL

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