Test Report
for
NPL-2

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CONTENTS

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1 LABORATORY INFORMATION

Test laboratory:	Nokia Corporation Lise Meitner Strasse 10 89081 Ulm Germany Tel. +49-731-1754-0 Fax. +49-731-1754-6800
FCC registration number: IC file number:	- -

2 CUSTOMER INFORMATION

Client:	Nokia Corporation Lise Meitner Strasse 10 89081 Ulm Germany Tel. +49-731-1754-0 Fax. +49-731-1754-6800
Contact person:	Tomi Vähätiitto
Receipt of EUT:	5.1.2003
Date of testing:	5.-6.2.2003
Date of report:	6.2.2003

The tests listed in this report have been done to demonstrate compliance with the applicable requirements in FCC rules Part 24 and IC standard RSS-133.

Contents approved:

Thomas Wörz Engineer

3 SUMMARY OF TEST RESULTS

Section in CFR 47	Section in RSS-133		Result
§24.235, §2.1055 (a)(1)(b)	7	Frequency stability, temperature variation	PASS
§24.235, §2.1055 (d)(1)(2)	7	Frequency stability, voltage variation	PASS

PASS	The EUT passed that particular test
FAIL	The EUT failed that particular test
X	The measurement was done, but there is no applicable performance criteria
-	Not done

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4 EUT INFORMATION

The EUT and accessries used in the tests are listed below. Later in this report only EUT numbers are used as reference.

	Device	Type	S/N
EUT	GSM 1900 Mobile Phone	NPL-2	350991/20/000576/3
Accessories	Battery	BL-4C	-

Notes: -

4.1 EUT description

The EUT is a triple band (900MHz/1800MHz/1900MHz) GSM Mobile Phone.

The EUT was not modified during the tests.

4.2 EUT certification codes

EUT type	FCCID	IC certification number
NPL-2	PPINPL-2H	661U-NPL2

5 EUT TEST SETUPS

For each test the EUT was exercised to find out the worst case of operation modes and device configuration.

6 APPLICABLE STANDARDS

The tests were performed in guidance of CFR 47 part 24, part 2, ANSI C63.4-1992 and RSS-133. Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method" for each test case.

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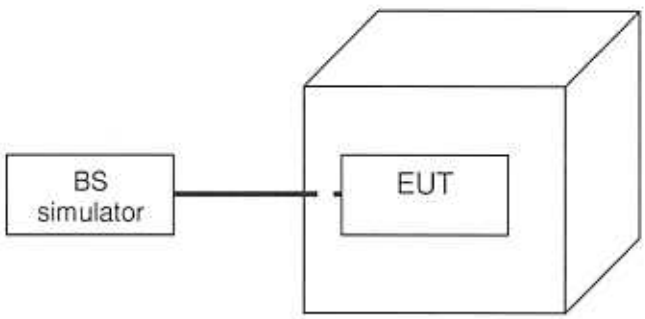
7 FREQUENCY STABILITY, TEMPERATURE VARIATION

EUT	As given in clause 4.	
Accessories	As given in clause 4.	
Temp, Humidity, Air Pressure	22 °C	29 RH%
Date of measurement	5.1.2003	
FCC rule part	§24.235, §2.1055 (a)(1)(b)	
RSS-133 section	7	
Measured by	Thomas Wörz	
Result	PASS	

7.1 Test setup

The test setup was as in the block diagram below. The BS simulator was used to set the TX channel and power level and modulate the TX signal with different bit patterns.



7.2 EUT operation mode

EUT operation mode	Tx on, 1 time slot transmission, PRBS 2E9-1 modulation
EUT channel	661
EUT TX power level	0 (+30dBm)

7.3 Limit

ppm
± 2.5

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7.4 Test method

a) The climate chamber temperature was set to the minimum value and the temperature was allowed to stabilize.

b) The EUT was placed in the chamber

c) The EUT was set in idle mode for 30 minutes.

d) The EUT was set to transmit.

e) The transmit frequency error was measured immediately

f) The steps c - e were repeated for each temperature

7.5 Results

The measured values are reported in the table below.

Temperature [ºC]	Deviation [Hz]	ppm
-30	*)	*)
-20	-35	-0,0186
-10	-29	-0,0154
0	-40	-0,0213
10	-31	-0,0165
20	30	0,0159
30	26	0,0138
40	20	0,0106
50	14	0,0074

Table 15. Frequency deviation, temperature variation

*) The mobile turns off during call to mobile in progress

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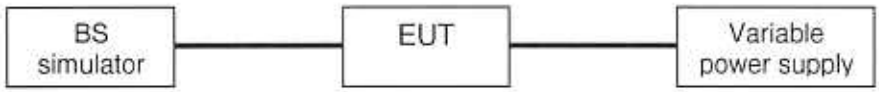
8 FREQUENCY STABILITY, VOLTAGE VARIATION

EUT	As given in clause 4.	
Accessories	As given in clause 4.	
Temp, Humidity, Air Pressure	22 °C	24 RH%
Date of measurement	6.1.2003	
FCC rule part	§24.235, §2.1055 (d)(1)(2)	
RSS-133 section	7	
Measured by	Thomas Wörz	
Result	PASS	

8.1 Test setup

The test setup was as in the block diagram below. The BS simulator was used to set the TX channel and power level and modulate the TX signal with different bit patterns.



8.2 EUT operation mode

EUT operation mode	Tx on, 1 time slot transmission, PRBS 2E9-1 modulation
EUT channel	661
EUT TX power level	0 (+30dBm)

8.3 Limit

ppm
± 2.5

8.4 Test method

The EUT battery was replaced with an adjustable power supply. The frequency stability was measured at nominal voltage and at the battery cut-off point.

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8.5 Results

The measured values are reported in the table below.

Level	Voltage [V]	Deviation [Hz]	ppm
Nominal	3.70	43	0,0229
Battery cut-off point	3.20	31	0,0165

Table 16. Frequency deviation, voltage variation

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9 TEST EQUIPMENT

Each test equipment is calibrated once a year.

9.1 Conducted measurements

Equipment	Manufacturer	Model
Radio communication tester	Rohde & Schwarz	CMU200
Temperature chamber	Vötsch	VT4002
DC power supply	Agilent	E3631

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