GSM1900 test report
For RM-30

FCC ID: PPIRM-30
IC: 661U-RM30

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CONTENTS

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1 LABORATORY INFORMATION

Test laboratory:	TCC Beijing Nokia Tower, Pacific Century Place, Chaoyang district, Beijing, China, 100027 Tel. +86 10 65392828 Fax. +86 10 65393824
FCC registration number: IC file number:	FCC 884453 (Dec.11, 2003) IC 4917 (Feb 16, 2004)

2 CUSTOMER INFORMATION

Client:	Nokia Corporation Nokia Germany/Ulm Lise Meither Strasse 10 89081 Ulm Tel. +49-731-17546736 Fax. +497311754 6806
Contact person:	Vivian Kill
Receipt of EUT:	10.11.2004
Date of testing:	11.11.2004
Date of report:	12.11.2004

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:

Tu Yuhua
Name Tu Yuhua Position EMC LAB team leader

3 SUMMARY OF TEST RESULTS

Section in CFR 47	Section in RSS-133		Result
24.232 (b)	6.2	Radiated RF output	Pass

PASS Pass
FAIL Fail
X Measured, 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	HW	SW	EUT number
EUT	GSM1900 mobile phone	RM-30	004400391638705	HW3058	SW3.01	DUT0824
Accessories	Battery	BL-5B	L162C10100725	-	-	DUT0828

Notes: -

4.1 EUT description

The EUT is a single band (1900MHZ) GSM Mobile Phone.

The EUT was not modified during the tests.

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/TIA/EIA-603-A 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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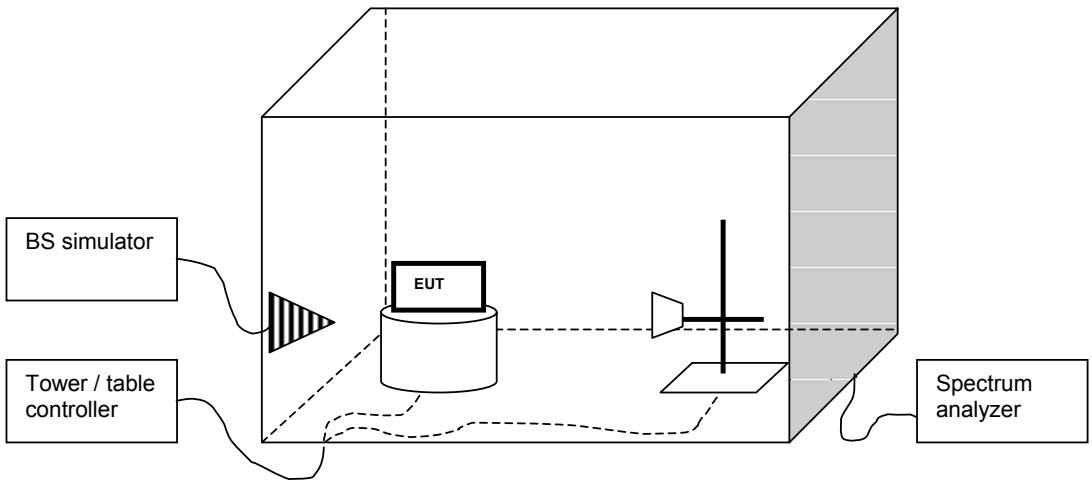
7 RADIATED RF OUTPUT POWER

EUT	D0824		
Accessories	D0828		
Temp, Humidity, Air Pressure	23 ºC	30RH%	1022mbar
Date of measurement	11.11.2004		
FCC rule part	§24.232 (b)		
RSS-133 section	6.2		
Measured by	Jia dongsheng		
Result	Complies with FCC part 24.232(b)		

7.1 Test setup

The EUT was set on a non-conductive turn table in a semi anechoic chamber. In the corner of the chamber there was a communication antenna, which was connected to the BS simulator located outside the chamber. The radiated power from the EUT was measured with an antenna fixed to a antenna tower. The tower and turn table were remotely controlled to turn the EUT and change the antenna polarization. The measured signal was routed from the measuring antenna to the spectrum analyzer. The BS simulator was used to set the TX channel and power level and modulate the TX signal with different bit patterns.



7.2 Test method

a) The maximum power level was searched by moving the turn table and measuring antenna and manipulating the EUT. This level (P_{EUT}) was recorded.

b) The EUT was replaced with a substituting antenna.

c) The substituting antenna was fed with the power (P_{Subst_TX}) giving a convenient reading on the spectrum analyzer. That reading (P_{Subst_RX}) on spectrum analyzer was recorded.

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7.3 EUT operation mode

EUT operation mode	GSM, TX on, 1 time slot, PRBS 2E9-1 modulation data
EUT channel	512, 661, 810
EUT TX power level	Maximum

7.4 Limit

EIRP [W]
≤ 2

7.5 Results

The formula below was used to calculate the EIRP of the EUT.

$$P_{EIRP[W]} = \frac{10^{(P_{Subst\_TX[dBm]}+(P_{EUT[dBm]}-P_{Subst\_RX[dBm]})+G_{Substitute\_antenna[dBi]}-L_{Cable[dB]})/10}}{1000}$$

where the variables are as follows:

$P_{EUT\ [dBm]}$	Measured power level (from step a in 7.2) from the EUT
$P_{Subst\_TX\ [dBm]}$	Power (from step c in 7.2) fed to the substituting antenna
$P_{Subst\_RX\ [dBm]}$	Power (from step c in 7.2) received with the spectrum analyzer
$G_{Substitute\_antenna\ [dBi]}$	Gain of the substitutive antenna over isotropic radiator
$L_{Cable\ [dB]}$	Loss of the cable between signal generator and the substituting antenna

EUT Channel	EIRP [dBm]	EIRP [W]
512	26.8	0.478
661	27.7	0.588
810	26.9	0.489

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7.6 EUT operation mode

EUT operation mode	GPRS call mode, 2 time slot transmission
EUT channel	512, 661, 810
EUT TX power level	Maximum

7.7 Limit

Watts, EIRP
≤ 2

7.8 Results

The formula below was used to calculate the EIRP of the EUT.

$$P_{EIRP[W]} = \frac{10^{(P_{Subst\_TX[dBm]}+(P_{EUT[dBm]}-P_{Subst\_RX[dBm]})+G_{Substitute\_antenna[dBi]}-Lcable(dB))/10}}{1000}$$

where the variables are as follows:

$P_{EUT\ [dBm]}$ Measured power level (from step a in 7.2) from the EUT

$P_{Subst\_TX\ [dBm]}$ Power (from step c in 7.2) fed to the substituting antenna

$P_{Subst\_RX\ [dBm]}$ Power (from step c in 7.2) received with the test receiver

$G_{Substitute\_antenna\ [dBi]}$ Gain of the substitutive antenna over isotropic radiator

EUT Channel	EIRP [dBm]	EIRP [W]
512	23.63	0.230
661	25.61	0.363
810	25.33	0.341

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7.9 EUT operation mode

EUT operation mode	EGPRS call mode
EUT channel	512, 661, 810
EUT TX power level	Maximum

7.10 Limit

Watts, EIRP
≤ 2

7.11 Results

The formula below was used to calculate the EIRP of the EUT.

$$P_{EIRP[W]} = \frac{10^{(P_{Subst\_TX[dBm]}+(P_{EUT[dBm]}-P_{Subst\_RX[dBm]})+G_{Substitute\_antenna[dBi]}-Lcable(dB))/10}}{1000}$$

where the variables are as follows:

$P_{EUT\ [dBm]}$	Measured power level (from step a in 7.2) from the EUT
$P_{Subst\_TX\ [dBm]}$	Power (from step c in 7.2) fed to the substituting antenna
$P_{Subst\_RX\ [dBm]}$	Power (from step c in 7.2) received with the test receiver
$G_{Substitute\_antenna\ [dBi]}$	Gain of the substitutive antenna over isotropic radiator

EUT Channel	EIRP [dBm]	EIRP [W]
512	23.21	0.209
661	25.06	0.320
810	24.74	0.297

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8 TEST EQUIPMENT

Each test equipment is calibrated once a year.

8.1 Radiated measurements

Equipment	Manufacturer	Model
AMPLIFIER	J52-00100400	ROHDE&SCHWARZ
AMPLIFIER	JS2-00100400	MITEQ
ANTENNA	HF906	ROHDE&SCHWARZ
ANTENNA	HF906	ROHDE&SCHWARZ
ANTENNA	VUBA 9117	SWARZBECK
DC SOURCE	66319B	AGILENT
FILTER	WRCD1800/2000-0	WAINWRIGHTINSTRUMENTS
REFERENCE GENERATOR	CG-520	COM-POWER
RELAY UNIT	TS-RSP	ROHDE&SCHWARZ
RELAY UNIT	TS-RSP	ROHDE&SCHWARZ
RELAY UNIT	512670	SPINNER
SIGNAL GENERATOR	SMR 20	ROHDE&SCHWARZ
TEST RECEIVER	ESI 26	ROHDE&SCHWARZ

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