

FCC Part 22/24 Compliance Test Report

Test Report no.:	Oulu_FCC_0522_01.doc	Date of Report:	31.05.2005
Number of pages:	7	Customer's Contact person:	Kai Niskala
Testing laboratory:	TCC Nokia Oulu Laboratory P.O. Box 300 Yrttipellontie 6 FIN-90230 OULU, FINLAND Tel. +358 (0) 7180 08000 Fax. +358 (0) 7180 58300	Client:	Nokia Corporation P.O. Box 300 Yrttipellontie 6 FIN-90230 OULU, FINLAND Tel. +358 (0) 7180 08000 Fax. +358 (0) 7180 58300
FCC listing no.:	185671		
IC recognition no.:	4542		
Tested devices/ accessories:	Phone RM-33 / battery BL-5X, AC-charger ACP-12E and headset HS-15		
FCC ID:	P4JQTKRM-33	IC:	661Y-661AD-RM33
Supplement reports:	-		
Testing has been carried out in accordance with:	CFR 47, FCC rules Parts 22 and 24, TIA-603-B-2002 and IC standards RSS-132 and RSS-133. 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:	09-06-2005		

Erik Rundgren
Test System Manager

1. Summary for FCC Part 22/24 Compliance Test Report

Date of receipt	30.05.2005
Testing completed	07.06.2005
The customer's contact person	Kai Niskala
Test Plan referred to	T:\Projects\RM-33\testplans\EMC\TCC\RM-33_EMC_Test_Plan.xls
Notes	-
Document name	T:\Projects\RM-33\results\emc\FCC\Oulu_FCC_0522_01.doc

1.1. EUT and Accessory Information

The EUT is a dual band (GSM850/1900) mobile phone with GPRS. The EUT is tested with maximum rated TX power, modulated with pseudo random bit sequence (PRBS9).

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-33	004400/64/173126/8	551	-	3.13	30370
Battery	BL-5X	M146510100660	-	-	-	30371
AC-charger	ACP-12E	0479782	1.3	-	-	0100
Headset	HS-15	406	0.2	-	-	30374

1.2. Summary of Test Results

GSM 850:

Section in CFR 47	Section in RSS-132	Name of the test	Result
§2.1046(a), 22.913(a)	4.4	Conducted RF output power	NP
§22.913(a)	4.4, 6.4	Radiated RF output power	
§2.1049(h)	4.2	99 % occupied bandwidth	NP
§22.917(a)	4.5	Band edge compliance	NP
§22.917(a), §2.1051	4.5	Spurious emissions at antenna terminals	NP
§22.917(a), §2.1053	4.5	Spurious radiated emissions	NP
§2.1055(a)	4.3, 6.3	Frequency stability, temperature variation	NP
§2.1055(d)	4.3, 6.3	Frequency stability, voltage variation	NP

GSM 1900:

Section in CFR 47	Section in RSS-133	Name of the test	Result
§2.1046(a)	6.2	Conducted RF output power	NP
§24.232(b)	6.2	Radiated RF output power	
§2.1049(h)	5.6	99 % occupied bandwidth	NP
§24.238(a)	6.3	Band edge compliance	NP
§24.238(a), §2.1051	6.3	Spurious emissions at antenna terminals	NP
§24.238(a), §2.1053	6.3	Spurious radiated emissions	NP
§2.1055(a)	7	Frequency stability, temperature variation	NP
§2.1055(d)	7	Frequency stability, voltage variation	NP

PASSED
FAILED
NP

The EUT complies with the essential requirements in the standard.
The EUT does not comply with the essential requirements in the standard.
The test was not performed by the TCC Nokia Oulu Laboratory.

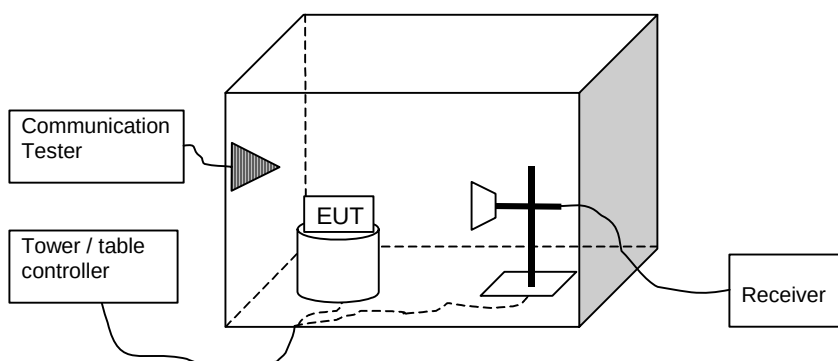
CONTENTS

1. Summary for FCC Part 22/24 Compliance Test Report	2
1.1. EUT and Accessory Information	2
1.2. Summary of Test Results	2
2. Radiated RF output power (FCC §22.913(a), §24.232(b), RSS-132 6.4, RSS-133 6.2)	4
2.1. Test setup	4
2.2. Test method and limit	4
2.3. GSM 850 Test results	5
2.4. GSM 1900 Test results	5
3. Test Equipment	7
3.1. Conducted measurements	7
3.2. Radiated measurements	7

2. Radiated RF output power (FCC §22.913(a), §24.232(b), RSS-132 6.4, RSS-133 6.2)

EUT with DUT number	RM-33; DUT 30370
Accessories with DUT numbers	BL-5X; DUT 30371, ACP-12; DUT 0100, HS-15; DUT 30374
Operation Voltage V / Hz	230 / 50
Result	PASSED
Remarks	-
Temp °C / Humidity RH % / Air Pressure hPa	19 / 45 / 1011, 19 / 48 / 1017
Date of measurements	01.06.2005, 07.06.2005
Measured by	Erik Rundgren

2.1. Test setup



2.2. Test method and limit

The measurement is made according to TIA-603-B-2002 as follows:

The measurement is performed in the Anechoic Chamber with absorbers on the floor and measuring antenna at fixed height using 2-axis EUT position system. The turntable is rotated 360 degrees and this is repeated for both horizontal and vertical receive antenna polarizations.

The EUT is placed on a nonconductive plate at 170 cm height.

The substitution method is used. Substitution values at each frequencies are measured beforehand and saved to the test software.

The substitution corrections are obtained as described below:

$$A_{SUBST} = P_{SUBST_TX} - P_{SUBST_RX} - L_{SUBST_CABLES} + G_{SUBST_TX_ANT}$$

Where A_{SUBST} is the final substitution correction including receive antenna gain. P_{SUBST_TX} is signal generator level, P_{SUBST_RX} is receiver level, L_{SUBST_CABLES} is cable losses including both TX and RX cables and $G_{SUBST_TX_ANT}$ is substitution antenna gain.

The measurement results are obtained as described below:

$$P [dBm] = P_{MEAS} + A_{CORRECTIONS}$$

Where P_{MEAS} is receiver reading in dBm and $A_{CORRECTIONS}$ is combined correction factor including cable loss and substitution correction ($A_{CORRECTIONS} = L_{CABLES} + A_{SUBST}$).

Limits for radiated RF output power measurements

Frequency range / MHz	Limit / W	Limit / dBm
824 - 849	7	38.5
1850 - 1910	2	33

2.3. GSM 850 Test results

GSM mode

Channel	Frequency / MHz	ERP / dBm	ERP / W	A _{CORRECTION} / dB	Polarisation	Result
128	824.20	24.90	0.309	32.40	HORIZONTAL	PASSED
190	836.60	26.90	0.490	32.70	HORIZONTAL	PASSED
251	848.800000	27.10	0.513	33.40	HORIZONTAL	PASSED

GPRS mode, 1 TX Slot

Channel	Frequency / MHz	ERP / dBm	ERP / W	A _{CORRECTION} / dB	Polarisation	Result
128	824.200000	24.10	0.257	32.40	HORIZONTAL	PASSED
190	836.600000	26.80	0.479	32.70	HORIZONTAL	PASSED
251	848.800000	27.50	0.562	33.40	HORIZONTAL	PASSED

2.4. GSM 1900 Test results

GSM mode

Channel	Frequency / MHz	EIRP / dBm	EIRP / W	A _{CORRECTION} / dB	Polarisation	Result
512	1850.200000	32.40	1.738	45.20	VERTICAL	PASSED
661	1880.000000	31.30	1.349	44.10	VERTICAL	PASSED
810	1909.800000	30.10	1.023	44.60	VERTICAL	PASSED

GPRS mode, 1 TX Slot

Channel	Frequency / MHz	EIRP / dBm	EIRP / W	A _{CORRECTION} / dB	Polarisation	Result
512	1850.200000	30.40	1.096	45.20	VERTICAL	PASSED
661	1880.000000	30.40	1.096	44.10	HORIZONTAL	PASSED

810	1909.800000	30.30	1.072	44.60	VERTICAL	PASSED
-----	-------------	-------	-------	-------	----------	--------

3. Test Equipment

3.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
450113	Two Line V-Network	ESH3-Z5	R&S	22/24
590230	Impulse Limiter	ESH3-Z2	R&S	22/24
640018	AC Power Source	6811B	Agilent	22/24
720017	EMI Test Receiver	ESMI-RF53	R&S	22/24
210282	Radio Communication Tester	CMU200	R&S	22/24

3.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
110167	Signal Generator	SMR27	R&S	22/24
550089	Log. Per. Antenna	HL025	R&S	22/24
550179	Mast	7-TR	EMCO	22/24
560178	Signal Switching Unit	EMCSSU	Orbis	22/24
590165	Band Reject Filter	WRCA836.0	Wainwright	22/24
590166	Ultra St. Notch Filter	WRCD1880.0	Wainwright	22/24
590167	Ultra St. Notch Filter	WRCD1747	Wainwright	22/24
590168	Band Reject Filter	WRCA902.0	Wainwright	22/24
610406	Power Supply	EL302D	Tti	22/24
720061	EMI Test Receiver	ESI26	R&S	22/24
210157	Radio Communication Tester	CMU200	R&S	22/24
450127	Two Line V-Network	3810/2	EMCO	22/24