

FCC Part 22/24 Compliance Test Report

Test Report no.: Cph_FCC_0517_03.doc **Date of Report:** 26-04-2005
Number of pages: 9 **Customer's Contact person:** Jukka K. Pekkala

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FCC listing no.: 99059
IC recognition no.: 4820 and 4820-1

Tested devices/ accessories: **Phone; RH-37 (HW: 6258), Battery; BL-5B, AC-Charger; ACP-7E, Headset; HS-5**

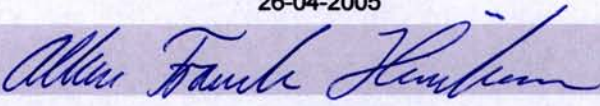
FCC ID: PPIRH-37 **IC:** 661U-RH37

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: 26-04-2005

Allan F. Henriksen
Test Engineer

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

Date of receipt	April 20 th 2005
Testing completed	April 21 st 2005
The customer's contact person	Jukka K. Pekkala
Test Plan referred to	\\EMC\TESTPLAN\
Notes	Bom 1
Document name	\\satcc01nmp\tcc_salo\Projects\RH-37\results\emc\FCC\Cph_FCC_0517_03.doc

1.1. EUT and Accessory Information

The EUT is a triple band (GSM900/1800/1900) mobile phone with a camera supporting GPRS and EGPRS. The EUT is tested with maximum rated TX power, modulated with pseudo random bit sequence (PRBS9).

Product	Type	SN	HW	MV	SW	DUT
Phone	RH-37	355388/00/403297/5	6258	-	4.80	28948
Battery	BL-5B	0670455363807L341C 30355189	-	-	-	28844
Headset	HS-5	-	-	-	-	28949
AC Charger	ACP-7E	01348900A103115555	-	-	-	28950

1.2. Summary of Test Results

GSM 1900:

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

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 Copenhagen Laboratory.

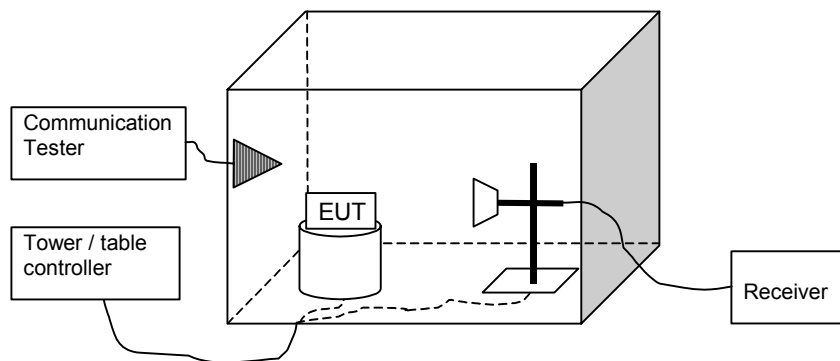
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2. Band edge compliance
(FCC §22.917(a), 24.238(a), RSS-132 4.5, RSS-133 6.3)

EUT with DUT number	RH-37 Dut#28948
Accessories with DUT numbers	BL-5B Dut#28844, ACP-7E Dut#28950, HS-5 Dut#28949
Operation Voltage V / Hz	230 VAC / 50 Hz
Result	Passed
Remarks	Bom 1
Temp °C / Humidity RH % / Air Pressure mbar	20°C / 38%RH / 1019mbar
Date of measurements	April 20 th 2005
Measured by	Jesper Nielsen

2.1. Test setup



2.2. Test method and limit

The measurement is made according to FCC rules part 22 and 24 and IC standards RSS-132 and RSS-133.

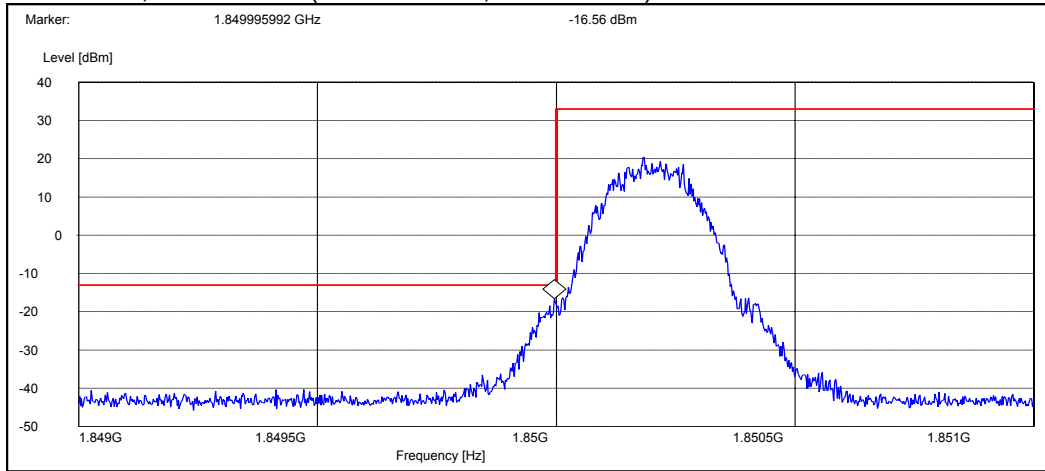
Limits for band edge compliance measurements

Operation band	Frequency range / MHz	Limit / dBm
GSM 850	Below 824 and above 849	-13
GSM 1900	Below 1850 and above 1910	-13

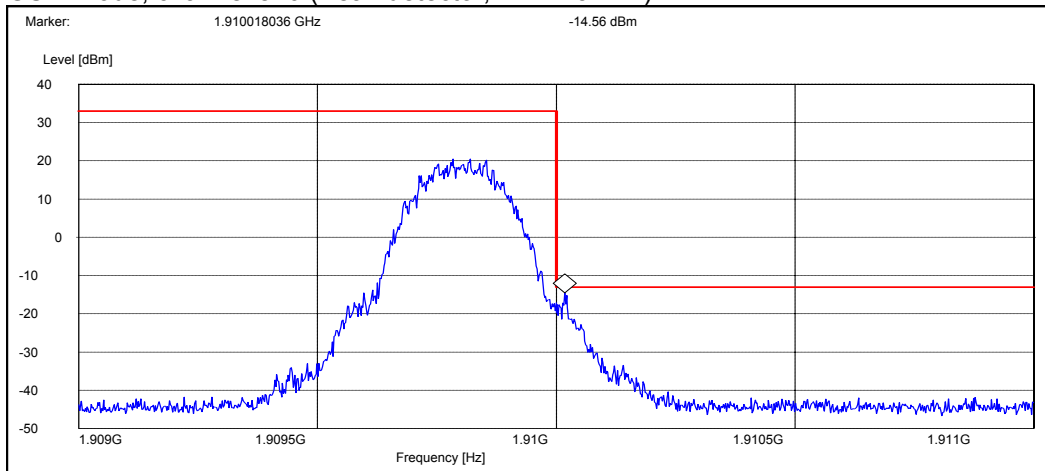
2.3. GSM 1900 Test results

Operation mode (TX on)	Channel	Level / dBm
GSM	512	-16.56
GSM	810	-14.56
EGPRS	512	-22.08
EGPRS	810	-23.50

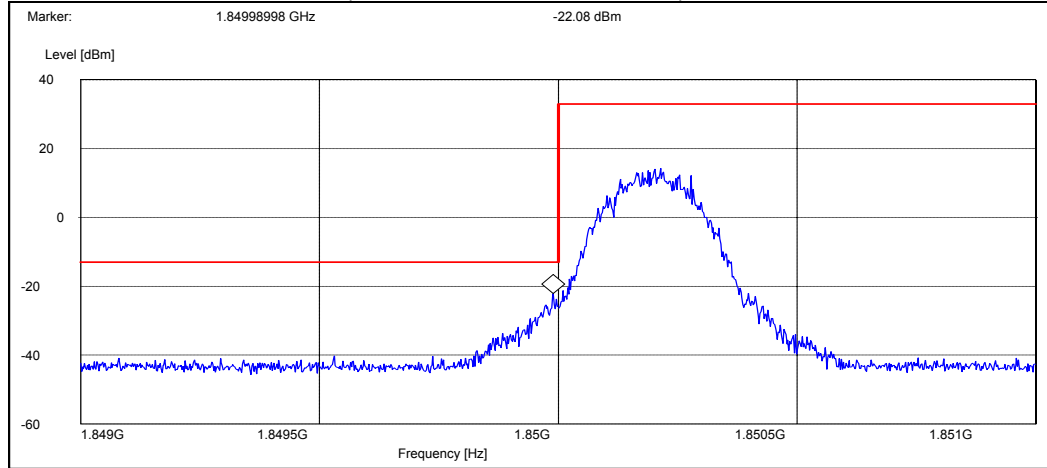
GSM mode, channel 512 (Peak detector, RBW: 3 kHz)



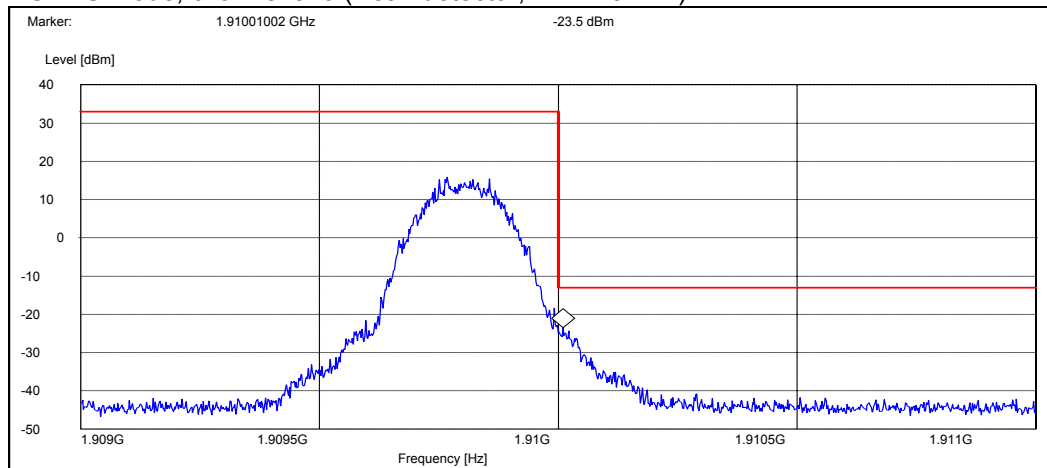
GSM mode, channel 810 (Peak detector, RBW: 3 kHz)



EGPRS mode, channel 512 (Peak detector, RBW: 3 kHz)



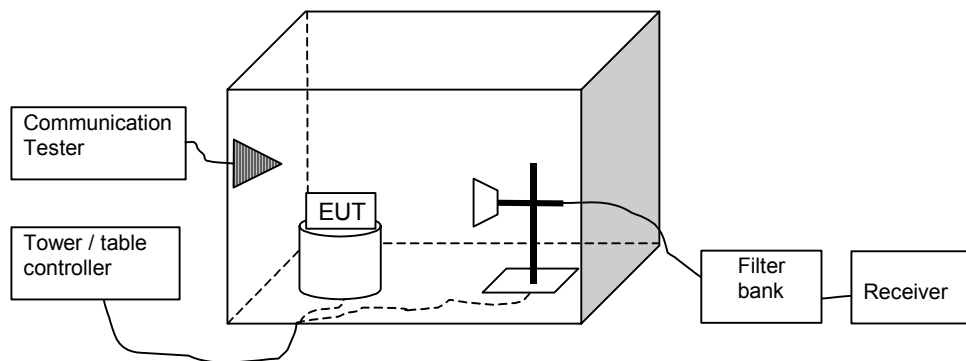
EGPRS mode, channel 819 (Peak detector, RBW: 3 kHz)



3. Spurious radiated emissions
(FCC §22.917(a), §24.238(a), §2.1053, RSS-132 4.5, RSS-133 6.3)

EUT with DUT number	RH-37 Dut#28948
Accessories with DUT numbers	BL-5B Dut#28844, ACP-7E Dut#28950, HS-5 Dut#28949
Operation Voltage V / Hz	230 VAC / 50 Hz
Result	Passed
Remarks	Bom 1
Temp °C / Humidity RH % / Air Pressure mbar	20°C / 38%RH / 1019mbar
Date of measurements	April 20 th 2005
Measured by	Jesper Nielsen

3.1. Test setup



3.2. Test method and limit

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

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with absorbers on the floor and measuring antenna at fixed height using 2-axis EUT position system.

The Final Measurement is performed in the Semi-Anechoic Chamber with conducting metal floor, if the Preliminary Measurement results are closer than 20 dB to the permissible value.

The EUT is placed at nonconductive plate at the turntable center.

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.

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, preamplifier gain and substitution correction ($A_{CORRECTIONS} = L_{CABLES} - G_{PREAMP} + A_{SUBST}$).

Limits for spurious radiated emissions measurements

Operation band	Frequency range / MHz	Limit / dBm
GSM 850	30 - 8500	-13
GSM 1900	30 - 18000	-13

3.3. GSM 1900 Test results

GSM mode, channel 661

Frequency / MHz	Level / dBm	Level / μ W	$A_{CORRECTION}$ / dB	Polarisation	Result
3760.023046	-33.60	0.43652	16.90	HORIZONTAL	Passed
5650.798597	-45.70	0.02692	20.10	HORIZONTAL	Passed
7532.566132	-45.60	0.02754	24.30	VERTICAL	Passed

EGPRS mode, channel 661

Frequency / MHz	Level / dBm	Level / μ W	$A_{CORRECTION}$ / dB	Polarisation	Result
3760.023046	-41.60	0.06918	16.90	HORIZONTAL	Passed
5650.298597	-46.70	0.02138	20.10	HORIZONTAL	Passed
7537.066132	-46.40	0.02291	24.30	VERTICAL	Passed

4. Test Equipment

4.1. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
14020	Programmable Relay Switching System	-	Pickering	15B,15C,22,24
18792	Multi Device Controller	2090	ETS-EMCO	15B,15C,22,24
13829	Turntable Controller	4630-100	Comtest	15B,15C,22,24
14963	RF Preampifier 100MHz-4GHz (Metal Chassis)	AFS3-00100400	Miteq/NMP Cph	15B,15C,22,24
13668	BiLog Antenna 30-2000MHz	BiLog-CBL6112A	Chase	15B,15C,22,24
18861	EMI Test Receiver 20Hz-26,5GHz	ESI	Rohde&Schwarz	15B,15C,22,24
12679	Dual Log Periodic Antenna 1-18 GHz	HL025	Rohde&Schwarz	15B,15C,22,24
18860	Ultra Broadband Antenna Ultralog 30-3000MHz	HL562	Rohde&Schwarz	15B,15C,22,24
18773	Shielded Chamber	RFD-100	ETS-Lindgren	15B,15C,22,24
18774	Shielded Chamber	RFSD-F/A-100	ETS-Lindgren	15B,15C,22,24
18324	High Pass Filter 3GHz SMA f Conn	WHJS3000-10SS	Wainwright	15B,15C,22,24
14114	Highpass Filter 1000MHz-4500MHz	WHK1000-12SS	Wainwright	15B,15C,22,24
13918	Highpass Filter 2000-4000MHz 50OHM SMA Conn	WHKS2000-10SS	Wainwright Instruments	15B,15C,22,24
13937	Ultra Stable Notch Filter 902,4MHz	WRCA902.4-0.2/40-6SS	Wainwright Instruments	15B,15C,22,24
13936	Ultra Stable Notch Filter 1747,5MHz	WRCD1747.5-0.2/40-10SS	Wainwright Instruments	15B,15C,22,24
13917	Highpass Filter 1000-3000MHz 50OHM SMA Conn	WHKS1000-10SS	Wainwright Instruments	15B,15C,22,24
14188	Ultra Stable Notch Filter 902,4MHz	WRCA902.4-0.2/40-6SS	Wainwright	15B,15C,22,24
14187	Ultra Stable Notch Filter 1747,5MHz	WRCD1747.5-0.2/40-10SS	Wainwright	15B,15C,22,24
16633	Ultra Stable Notch Filter 1880,0MHz	WRCD1880.0-0.2/40-10SS	Wainwright	15B,15C,22,24
18323	Band reject filter 1947-1953MHz 40dB	WRCG1947/1953-1940/1960-40/6SS	Wainwright	15B,15C,22,24
15190	Infra Red Remote Control Unit	4630	Emco	22,24,15B,15C
14993	EMI Test Receiver 9KHz-2750MHz	ESCS30	Rohde&Schwarz	22,24,15B,15C
15191	Turntable Contoller Unit	G-800SDX	YAESU	22,24,15B,15C
14900	Antenna Controller	HD100	HD GmbH	22,24,15B,15C