

GSM 1900 Test Report for RH-6

Test Report no.:	DTX12769-EN	Date of Report:	11/08/04
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Tested devices/ accessories:	Phone; RH-6, Battery; BL-4C		
Supplement reports:			
Testing has been carried out in accordance with:	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.		
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 Copenhagen.		
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 signatures for the contents:	11/08/04  Allan Franch Henriksen Test engineer		

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1. Summary of test results

Section in CFR 47	Section in RSS-133		Result
§2.1046 (a)	6.2	Conducted RF output	-
§24.232 (b)	6.2	Radiated RF output	-
§2.1049 (h)	5.6	99% occupied bandwidth	-
§24.238 (a)	6.3	Bandedge compliance	-
§24.238 (a), §2.1051	6.3	Spurious emissions at antenna terminals	-
§24.238 (a), §2.1053	6.3	Spurious radiated emission	Passed
§24.235, §2.1055 (a)(1)(b)	7	Frequency stability, temperature variation	-
§24.235, §2.1055 (d)(1)(2)	7	Frequency stability, voltage variation	-

PASS Pass

FAIL Fail

X Measured, but there is no applicable performance criteria

NA Not Applicable

- Not Measured

2. EUT Information

Product	Type	SN	HW	MV	SW	DUT
Phone	RH-6	004400/34/179715/5	9003	-	5.08	234746
Battery	BL-4C	067038611124333232	-	-	-	232978

2.1. EUT description

The EUT is a dual band (900MHz/1800MHz/1900MHz) GSM/GPRS mobile phone.

The EUT was not modified during the tests.

3. EUT Test Setup

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

The test setup photograph is in Appendix A

4. Applicable Standards

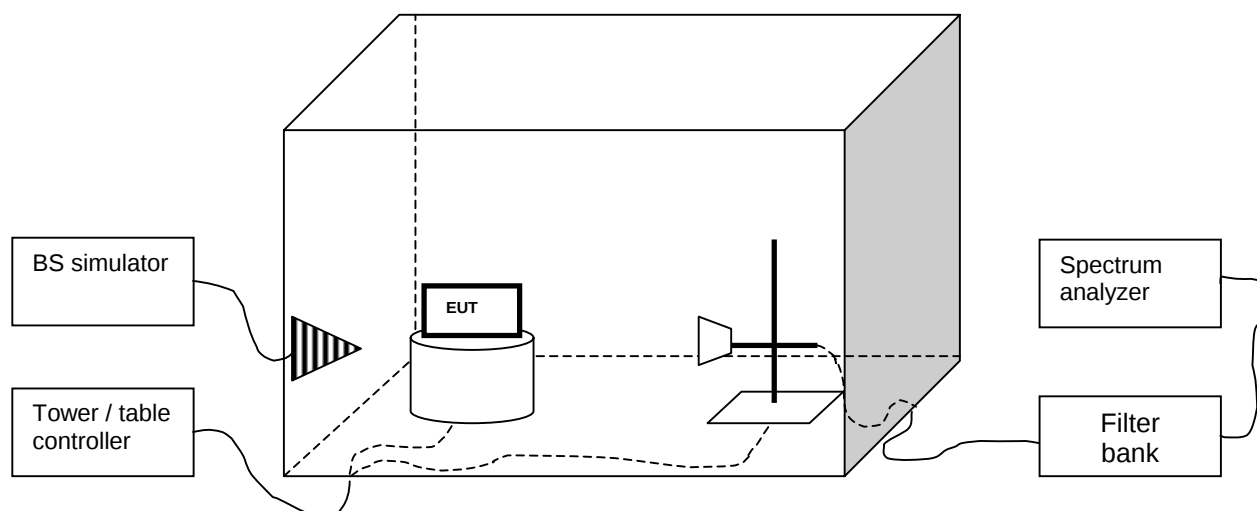
The tests were performed in guidance of CFR 47, part 24 and part 2, ANSI/TIA/EIA-603-A and RSS-133. Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method" for each test case.

5. Spurious radiated emission

EUT	RH-6 dut#234746		
Accessories	BL-4C dut#232978		
Temp, Humidity, Air Pressure	20.2 °C	36.5 RH%	1024 mbar
Date of measurement	Nov. 8 th 2004		
FCC rule part	§24.238 (a), §2.1053		
RSS-133 section	6.3		
Measured by	Jesper Nielsen		
Result	Passed		

5.1. Test setup

A set of LP/HP/BS filters was used to prevent overloading 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. The test was done manually.



5.2. Test method

- The emissions were searched and maximized by moving the turn table and measuring antenna and manipulating the EUT.
- All suspicious frequencies with emission levels were recorded.
- The EUT was replaced with a substituting antenna.
- For each frequency recorded, the substituting antenna was fed with the power (from signal generator) giving the same reading as in (b). These power levels were reported.

5.3. EUT operation mode

	GSM
EUT operation mode	TX on, 1 time slot transmission, GSM/GPRS
EUT channel	661
EUT TX power level	0 (Max)

5.4. Limit

Frequency [MHz]	Level [dBm]
30 – 19100	-13

5.5. Results

The formula below was used to calculate the EIRP of the spurious emissions. If there were no emissions closer than 20dB below the limit line, then the emission levels were documented only at the transmitter's mid-channel harmonics.

$$P_{Emission[dBm]} = P_{SubstTX[dBm]} - L_{Cable[dB]} + G_{Antenna[dBi]}$$

where the variables are as follows:

$P_{Measured}$ [dBm]	Measured emission level (from step b in 8.2)
P_{Subst_TX} [dBm]	Signal generator power (from step d in 8.2) fed to the substituting antenna
L_{Cable} [dB]	Loss of the cable between antenna and signal generator (from step d in 8.2)
$G_{Antenna}$ [dBi]	Gain of the substitutive antenna over isotropic radiator

Emission levels, channel 661, Phone closed

Frequency [MHz]	P _{Measured} [dBm]	P _{Subst TX} [dBm]	L _{Cable} [dB]	G _{Antenna} [dBi]	P _{Emission} [dBm]
3760,00	-46.09	-34.4	8.73	15.80	-27.33
5640,00	-55.35	-42.8	11.53	18.03	-36.30

Emission levels, channel 661, Phone open

Frequency [MHz]	P _{Measured} [dBm]	P _{Subst TX} [dBm]	L _{Cable} [dB]	G _{Antenna} [dBi]	P _{Emission} [dBm]
3760,00	-48.95	-37.3	8.73	15.80	-30.23
5640,00	-55.53	-43.0	11.53	18.03	-36.50

6. Test equipment

Each test equipment is calibrated once a year, except antennas which are calibrated every second year.

6.1. Radiated measurements

Equipment #	Equipment	Type	Serial #	Manufacturer
14993	EMI Test Receiver 9KHz-2750MHz	ESCS30	847124/001	Rohde&Schwarz
15191	Turntable Contoller Unit	G-800SDX	ONO10000	YAESU
14900	Antenna Controller	HD100	100\552	HD GmbH
18792	Multi Device Controller	2090	1606	ETS-EMCO
13829	Turntable Controller	4630-100	100/510	Comtest
14963	RF Preamplifier 100MHz-4GHz (Metal Chassis)	AFS3-00100400	571131	Miteq/NMP Cph
13668	BiLog Antenna 30-2000MHz	BiLog-CBL6112A	2259	Chase
18861	EMI Test Receiver 20Hz-26,5GHz	ESI	833362/004	Rohde&Schwarz
12679	Dual Log Periodic Antenna 1-26.5 GHz	HL025	-----	Rohde&Schwarz
18860	Ultra Broadband Antenna Ultralog 30-3000MHz	HL562	100154	Rohde&Schwarz
18773	Shielded Chamber	RFD-100	2420	ETS-Lindgren
18774	Shielded Chamber	RFSD-F/A-100	2425	ETS-Lindgren
18324	High Pass Filter 3GHz SMA f Conn	WHJS3000-10SS	1	Wainwright
14114	Highpass Filter 1000MHz-4500MHz	WHK1000-12SS	1	Wainwright
13918	Highpass Filter 2000-4000MHz 50OHM SMA Conn	WHKS2000-10SS		Wainwright Instruments
13937	Ultra Stable Notch Filter 902,4MHz	WRCA902.4-0.2/40-6SS		Wainwright Instruments
13936	Ultra Stable Notch Filter 1747,5MHz	WRCD1747.5-0.2/40-10SS		Wainwright Instruments
16633	Ultra Stable Notch Filter 1880,0MHz	WRCD1880.0-0.2/40-10SS		Wainwright Instruments