



Go/No Go Test Script Specification, Electrical

Applicable for W950

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1 General

1.1 About This Document

This document contains the test requirements for a 3G Quad-band (900/1800/1900/WCDMA) pocket transceiver using an antenna coupler or direct line connection. These test sequences should be used as an arrival and verification test of radio functionality.

Tests are done in signaling mode, i.e. a call has been established to the test instrument. The test instrument controls the transceiver unit. RF performance is measured with an antenna coupler or the direct line connection, whichever method is selected.

1.2 Script Requirements

- The test should be designed so those users with little or no system expertise can perform accurate testing.
- The measurements should run automatically, though a certain amount of manual work is included (and mandatory), such as MS call setup (i.e. dialling number).
- It should be possible to print or store the measurement results.
- It should be possible to change the channels used in testing due to possible local radio interference. The ranges for these settings are specified under the *Channel Allocation Table*.
- All functions and settings should be protected in such a manner that the end-user cannot directly change them. (For example, a password or encrypted settings file.)
- The attenuation factors that should be used are stated in section 4. The test instrument must be capable of using different attenuation factors for RX and TX. It must also be possible to use various attenuation factors for different channels in each band.

NOTE! Any setups other than the one stated in this document must be discussed and exempted by Sony Ericsson to be approved.

1.3 Channel Allocation Table

Band	Ch definition	Any ARFCN of:
GSM900	Low	975-979
GSM900	Mid	36-40
GSM900	High	120-124
GSM 1800	Low	512-516
GSM 1800	Mid	697-701
GSM 1800	High	881-885
GSM1900	Low	512-516
GSM1900	Mid	658-662
GSM1900	High	806-810
WCDMA	Low	10562
WCDMA	Mid	10700
WCDMA	High	10838

1.4 Power Level Allocation Table

Band	PL definition	Powerlevel (PL)
GSM900	Lowest	19
GSM900	Mid	12
GSM900	Highest	5
GSM1800/1900	Lowest	15
GSM1800/1900	Mid	8
GSM1800/1900	Highest	0

1.5 Test Limits

The test limits for each measurement are specified in the Sequence Tables.

1. Since the coupler introduces higher measurement inaccuracy, some measurements may have wider limits than stated in the GSM specifications.
2. The direct line connection limits conform to the phase 2 GSM specification.

1.6 Attenuation Factors

The different scripts must be configured with the correct attenuation factors and named after the product that they are designed to test. The attenuation factors to be used are stated in section 4.

1.7 Scripts

General scripts for the different system/system combinations may be developed. No hand-over is necessary if not stated, however, Sony Ericsson mobiles are capable of hand-over between GSM900/1800/WCDMA and might therefore be used to decrease test time.

2 Test Sequence using an RF Shield Box and Coupler

2.1 Initializing and Call Setup

Parameter	Value	Unit
BCCH	Mid	Ch
TCH	Mid	Ch
TX power level	High	PL
RF output power	-40	dBm
System	GSM 900	



2.1.1 Sequence

1. Initialize instrument
2. Insert a test-USIM and attach a fully charged standard battery to the mobile. It's very important that a fully charged battery is used otherwise there is a high risk for incorrect test results.
3. Position the mobile in the coupler according to the picture.



Rohde & Schwarz Shield Box and Coupler

4. Turn on the mobile and wait for registration.
5. Set up a call to the instrument or let the instrument call the MS.
6. Close the lid on the shielding box.



2.2 Audio Loopback

1. Set power level to high.
2. Activate audio loopback in the instrument.
3. Operator must acknowledge passed or failed before the test is continued.

2.3 Measurement Group ALLMEAS LCH 900

Parameter	Value	Unit
TCH	Low	Ch
TX power level	High	PL
RF output power	-68	dBm
System	GSM 900	

2.3.1 Sequence

Measurement		Unit
	Test Limits	
TX power	33 +/-4	dB
RMS Phase error	0 +/-5	deg
Rx Level	34-50	dB
Rx Quality	0-3	Units

2.4 Measurement Group ALLMEAS MCH 900

Parameter	Value	Unit
TCH	Mid	Ch
TX power level	Mid	PL
RF output power	-102	dBm
System	GSM 900	



2.4.1 Sequence

Measurement		Unit
	Test Limits	
TX power	19 +/-5	dB
RMS Phase error	0 +/-5	deg
Peak Phase error	0 +/-20	deg
Freq error	+/-0.1 ppm	Hz
Rx Level	2-14	dB
Rx Quality	0-3	Units

2.5 Measurement Group ALLMEAS HCH 900

Parameter	Value	Unit
TCH	High	Ch
TX power level	Low	PL
RF output power	-68	dBm
System	GSM 900	

2.5.1 Sequence

Measurement		Unit
	Test Limits	
TX power	5 +/-7	dB
RMS Phase error	0 +/-5	deg

2.6 Measurement Group ALLMEAS LCH 1800

Parameter	Value	Unit
TCH	Low	Ch
TX power level	High	PL
RF output power	-68	dBm
System	GSM 1800	



2.6.1 Sequence

Measurement		Unit
	Test Limits	
TX power	30 +/-4	dB
RMS Phase Error	0 +/-5	deg
Rx Level	34-50	dB
RX Quality	0-3	Units

2.7 Measurement Group ALLMEAS MCH 1800

Parameter	Value	Unit
TCH	Mid	Ch
TX power level	Mid	PL
RF output power	-102	dBm
System	GSM 1800	

2.7.1 Sequence

Measurement		Unit
	Test Limits	
TX power	14 +/-5	dB
RMS Phase error	0 +/-5	deg
Peak Phase error	0 +/-20	deg
Freq. error	+/-0.1 ppm	Hz
Rx Level	2-14	dB
Rx Quality	0-3	Units



2.8 Measurement Group ALLMEAS HCH 1800

Parameter	Value	Unit
TCH	High	Ch
TX power level	Low	PL
RF output power	-68	dBm
System	GSM 1800	

2.8.1 Sequence

Measurement		Unit
	Test Limits	
TX power	0 +/-7	dB
RMS Phase error	0 +/-5	deg

2.9 Measurement Group ALLMEAS LCH 1900

Parameter	Value	Unit
TCH	Low	Ch
TX power level	Low	PL
RF output power	-68	dBm
System	GSM 1900	

2.9.1 Sequence

Measurement		Unit
	Test Limits	
TX power	0 +/-7	dB
RMS Phase Error	0 +/-5	deg
Rx Level	34-50	dB
RX Quality	0-3	Units



2.10 Measurement Group ALLMEAS MCH 1900

Parameter	Value	Unit
TCH	Mid	Ch
TX power level	Mid	PL
RF output power	-102	dBm
System	GSM 1900	

2.10.1 Sequence

Measurement		Unit
	Test Limits	
TX power	14 +/-5	dB
RMS Phase error	0 +/-5	deg
Peak Phase error	0 +/-20	deg
Freq. error	+/-0.1 ppm	Hz
Rx Level	2-14	dB
Rx Quality	0-3	Units

2.11 Measurement Group ALLMEAS HCH 1900

Parameter	Value	Unit
TCH	High	Ch
TX power level	Low	PL
RF output power	-68	dBm
System	GSM 1900	

2.11.1 Sequence

Measurement		Unit
	Test Limits	
TX power	30 +/-4	dB
RMS Phase error	0 +/-5	deg



2.12 Measurement Group ALLMEAS WCDMA

Parameter	Value	Unit
Uplink channel (TX)	9750	ch
Downlink channel (RX)	10700	ch
Downlink power	-75.0	dBm
Downlink power in sensitivity test(BER)	-100.0	dBm
Downlink power in max input(BER)	-25.0	dBm
System	WCDMA	

2.12.1 Sequence

Measurement		Unit
	Test Limits	
Open Loop Power	-23.0 - -5.0	dBm
Maximum output power	21.5 – 24.5	dBm
Minimum output power	-50.5	dBm
Inner Loop Power (1 cmd)	-1,5 – -0.5	dB
Inner Loop Power (10 cmd)	-12.0 - -8.0	dB
Frequency error	0.100	PPM
EVM rms (1)	17.5% or less	%
UL Power EVM (2)	-22.0 - -18.0	dBm
EVM rms (2)	17.5% or less	%
Sensitivity (BER)	0.10% or less	%
Maximum input (BER)	0.10% or less	%

2.12.2 Call Disconnect Sequence

1. Disconnect call.
2. End test.

3 Test Sequence using a Direct Line Connection

3.1 Initializing and Call Setup

Parameter	Value	Unit
BCCH	Mid	Ch
TCH	Mid	Ch
TX power level	High	PL
RF output power	-40	dBm
System	GSM 900	

3.1.1 Sequence

1. Initialize instrument
2. Insert a test-USIM and attach a fully charged standard battery to the mobile. It's very important that a fully charged battery is used otherwise there is a high risk for incorrect test results. A dummy battery can also be used.
3. Connect the mobile to the RF fixture according to the picture.



4. Turn on the mobile and wait for registration.
5. Set up a call to the instrument or let the instrument call the MS.



3.2 Audio Loopback

1. Set power level to high.
2. Activate audio loopback in the instrument.
3. Operator must acknowledge passed or failed before the test is continued.

3.3 Measurement Group ALLMEAS LCH 900

Parameter	Value	Unit
TCH	Low	Ch
TX power level	High	PL
RF output power	-68	dBm
System	GSM 900	

3.3.1 Sequence

Measurement		Unit
	Test Limits	
TX power	33 +/-2	dB
RMS Phase error	0 +/-5	deg
Rx Level	36-48	dB
Rx Quality	0-3	Units

3.4 Measurement Group ALLMEAS MCH 900

Parameter	Value	Unit
TCH	Mid	Ch
TX power level	Mid	PL
RF output power	-102	dBm
System	GSM 900	



3.4.1 Sequence

Measurement		Unit
	Test Limits	
TX power	19 +/-3	dB
RMS Phase error	0 +/-5	deg
Peak Phase error	0 +/-20	deg
Freq error	+/-0.1 ppm	Hz
Rx Level	4-12	dB
Rx Quality	0-3	Units

3.5 Measurement Group ALLMEAS HCH 900

Parameter	Value	Unit
TCH	High	Ch
TX power level	Low	PL
RF output power	-68	dBm
System	GSM 900	

3.5.1 Sequence

Measurement		Unit
	Test Limits	
TX power	5 +/-5	dB
RMS Phase error	0 +/-5	deg

3.6 Measurement Group ALLMEAS LCH 1800

Parameter	Value	Unit
TCH	Low	Ch
TX power level	High	PL
RF output power	-68	dBm
System	GSM 1800	



3.6.1 Sequence

Measurement		Unit
	Test Limits	
TX power	30 +/-2	dB
RMS Phase error	0 +/-5	deg
Rx Level	36-48	dB
RX Quality	0-3	Units

3.7 Measurement Group ALLMEAS MCH 1800

Parameter	Value	Unit
TCH	Mid	Ch
TX power level	Mid	PL
RF output power	-102	dBm
System	GSM 1800	

3.7.1 Sequence

Measurement		Unit
	Test Limits	
TX power	14 +/-3	dB
RMS Phase error	0 +/-5	deg
Peak Phase error	0 +/-20	deg
Freq. error	+/-0.1 ppm	Hz
Rx Level	4-12	dB
Rx Quality	0-3	Units

3.8 Measurement Group ALLMEAS HCH 1800

Parameter	Value	Unit
TCH	High	Ch
TX power level	Low	PL
RF output power	-68	dBm
System	GSM 1800	



3.8.1 Sequence

Measurement		Unit
	Test Limits	
TX power	0 +/-5	dB
RMS Phase error	0 +/-5	deg

3.9 Measurement Group ALLMEAS LCH 1900

Parameter	Value	Unit
TCH	Low	Ch
TX power level	Low	PL
RF output power	-68	dBm
System	GSM 1900	

3.9.1 Sequence

Measurement		Unit
	Test Limits	
TX power	0 +/-5	dB
RMS Phase Error	0 +/-5	deg
Rx Level	36-48	dB
RX Quality	0-3	Units

3.10 Measurement Group ALLMEAS MCH 1900

Parameter	Value	Unit
TCH	Mid	Ch
TX power level	Mid	PL
RF output power	-102	dBm
System	GSM 1900	



3.10.1 Sequence

Measurement		Unit
	Test Limits	
TX power	14 +/-3	dB
RMS Phase error	0 +/-5	deg
Peak Phase error	0 +/-20	deg
Freq. error	+/-0.1 ppm	Hz
Rx Level	4-12	dB
Rx Quality	0-3	Units

3.11 Measurement Group ALLMEAS HCH 1900

Parameter	Value	Unit
TCH	High	Ch
TX power level	High	PL
RF output power	-68	dBm
System	GSM 1900	

3.11.1 Sequence

Measurement		Unit
	Test Limits	
TX power	30 +/-2	dB
RMS Phase error	0 +/-5	deg



3.12 Measurement Group ALLMEAS WCDMA

Parameter	Value	Unit
Uplink channel (TX)	9750	ch
Downlink channel (RX)	10700	ch
Downlink power	-65.0	dBm
Downlink power in sensitivity test(BER)	-106.7	dBm
Downlink power in max input(BER)	-25.0	dBm
System	WCDMA	

3.12.1 Sequence

Measurement		Unit
	Test Limits	
Open Loop Power	-23.0 - -5.0	dBm
Maximum output power	21.5 – 24.5	dBm
Minimum output power	-50.5	dBm
Inner Loop Power (1 cmd)	-1,5 – -0.5	dB
Inner Loop Power (10 cmd)	-12.0 - -8.0	dB
Frequency error	0.100	PPM
EVM rms (1)	17.5% or less	%
UL Power EVM (2)	-22.0 - -18.0	dBm
EVM rms (2)	17.5% or less	%
Sensitivity (BER)	0.10% or less	%
Maximum input (BER)	0.10% or less	%

3.12.2 Call Disconnect Sequence

1. Disconnect call.
2. End test.

4 Attenuation Factors

4.1 Using the Rohde & Schwarz RF Shield Box and Coupler

The following values shall be used when testing the in the Rohde & Schwarz RF shield box (**R&S part # 1150.1008.02**) using the Rohde & Schwarz coupler (**R&S part # 1150.0801.02**) and SEMC RF-cable (**SEMC part # RPM 119 855**). A precision type N Male to SMA Female adapter is required to connect the cable to the RF shield box.

4.1.1 W950i

Band	Channel*	Attenuation	
		RX	TX
GSM 900	Low	8.45	8.75
	Mid	9.65	7.4
	High	10.0	7.25
GSM 1800	Low	8.3	11.89
	Mid	9.55	9.68
	High	8.7	9.06
GSM 1900	Low	11.3	9.41
	Mid	14.0	8.08
	High	14.45	8.66
WCDMA	Low	15.6	12.03
	Mid	13.9	14.46
	High	12.5	15.27

- See Channel Allocation Table

4.2 Using a Direct Line Connection

1. The following values shall be used when testing with a Direct Line connection. The Direct Line connection shall consist of a SEMC RF-cable (**SEMC part # RPM 119 855**), RF Probe (**SEMC part # RNT 403 303/001**) and RF Fixture (**SEMC part # NTZ 112 556**).

Band	Channel*	Attenuation	
		RX	TX
GSM 900	ALL	0.8	0.8
GSM 1800	ALL	1.3	1.3
GSM 1900	ALL	1.3	1.3
WCDMA	ALL	1.5	1.5

* See Channel Allocation Table

5 Revision history

Rev.	Date	Changes / Comments
A	2006-11-15	First release