

Go/No Go Test Script Specification, Electrical

Applicable for C905, C905a, C905c

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1 General

1.1 About This Document

This document contains the test requirements for a 3G GSM (850/900/1800/1900) pocket transceiver using an antenna coupler (Radiated) or RF cable (Conducted) 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 Traffic Channel (TCH) Allocation Table

Band	Ch definition	Any ARFCN of:
GSM 850	Low	128-132
GSM 850	Mid	187-191
GSM 850	High	247-251
GSM 900	Low	975-979
GSM 900	Mid	36-40
GSM 900	High	120-124
GSM 1800	Low	512-516
GSM 1800	Mid	697-701
GSM 1800	High	881-885
GSM 1900	Low	512-516
GSM 1900	Mid	658-662
GSM 1900	High	806-810
WCDMA I	Low	9612
WCDMA I	Mid	9750
WCDMA I	High	9888
WCDMA II	Low	9262
WCDMA II	Mid	9400
WCDMA II	High	9538
WCDMA V	Low	4132
WCDMA V	Mid	4175
WCDMA V	High	4233

1.4 Power Level Allocation Table

Band	PL definition	Power level (PL)
GSM 850	Lowest	19
GSM 850	Mid	12
GSM 850	Highest	7
GSM 900	Lowest	19
GSM 900	Mid	12
GSM 900	Highest	5
GSM 1800/1900	Lowest	15
GSM 1800/1900	Mid	8
GSM 1800/1900	Highest	0

1.5 Test Limits

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

1. Since a coupler introduces higher measurement inaccuracy, some measurements in the radiated test sequences may have wider limits than stated in the 3GPP specifications.
2. The conducted limits conform to the phase 3GPP 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.

2 Test Sequence - Radiated

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 850	



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.



C905c

Rohde & Schwarz Shield Box and Coupler (B14)



C905, C905a

Rohde & Schwarz Shield Box and Coupler (A13)

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 GSM 850 Low TCH Measurements

Parameter	Value	Unit
TCH	Low	Ch
TX power level	High	PL
RF output power	-68	dBm
System	GSM 850	

2.3.1 GSM 850 Low TCH Test Limits

Measurement	Test Limits	Unit
TX power	29 +/-4	dB
RMS Phase error	0 +/-5	deg
Rx Level	34-50	dB
Rx Quality	0-3	Units

2.4 GSM 850 Mid TCH Measurements

Parameter	Value	Unit
TCH	Mid	Ch
TX power level	Mid	PL
RF output power	-102	dBm
System	GSM 850	

2.4.1 GSM 850 Mid TCH Test Limits

Measurement	Test Limits	Unit
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 GSM 850 High TCH Measurements

Parameter	Value	Unit
TCH	High	Ch
TX power level	Low	PL
RF output power	-68	dBm
System	GSM 850	

2.5.1 GSM 850 High TCH Test Limits

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

2.6 GSM 1900 Low TCH Measurements

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

2.6.1 GSM 1900 Low TCH Test Limits

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

2.7 GSM 1900 Mid TCH Measurements

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

2.7.1 GSM 1900 Mid TCH Test Limits

Measurement	Test Limits	Unit
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 GSM 1900 High TCH Measurements

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

2.8.1 GSM 1900 High TCH Test Limits

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

2.9 GSM 1800 Low TCH Measurements

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

2.9.1 GSM 1800 Low TCH Test Limits

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

2.10 GSM 1800 Mid TCH Measurements

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

2.10.1 GSM 1800 Mid TCH Test Limits

Measurement	Test Limits	Unit
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 GSM 1800 High TCH Measurements

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

2.11.1 GSM 1800 High TCH Test Limits

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

2.12 GSM 900 Low TCH Measurements

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

2.12.1 GSM 900 Low TCH Test Limits

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

2.13 GSM 900 Mid TCH Measurements

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

2.13.1 GSM 900 Mid TCH Test Limits

Measurement	Test Limits	Unit
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



2.14 GSM 900 High TCH Measurements

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

2.14.1 GSM 900 High TCH Test Limits

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

2.15 WCDMA Low TCH Measurements

Parameter	Value	Unit
TCH	Low	Channel
Power Level	Maximum	dBm
RF out	-93	dBm

2.15.1 WCDMA Low TCH Test Limits

Measurement	Test Limits	Unit
Tx Maximum Output Power	19 to 27	dBm
EVM	17.5 max	%
Frequency Error	-0.1 to 0.1	ppm
Tx Adjacent Channel Level Ratio +/- 5MHz	-36	dBc
Tx Adjacent Channel Level Ratio +/- 10MHz	-46	dBc

2.16 WCDMA Mid TCH Measurements

Parameter	Value	Unit
TCH	Mid	Channel
Power Level	Maximum	dBm
RF out	-93 (* -104)	dBm

2.16.1 WCDMA Mid TCH Test Limits

Measurement	Test Limits	Unit
Tx Maximum Output Power	19 to 27	dBm
EVM	17.5 max	%
Frequency Error	-0.1 to 0.1	ppm
Tx Adjacent Channel Level Ratio +/- 5MHz	-36	dBc
Tx Adjacent Channel Level Ratio +/- 10MHz	-46	dBc
Rx Reference Sensitivity Level* (RF out: -104)	-0.1 to 0.1	%

2.17 WCDMA High TCH Measurements

Parameter	Value	Unit
TCH	High	Channel
Power Level	Maximum	dBm
RF out	-93	dBm

2.17.1 WCDMA High TCH Test Limits

Measurement	Test Limits	Unit
Tx Maximum Output Power	19 to 27	dBm
EVM	17.5 max	%
Frequency Error	-0.1 to 0.1	degree
Tx Adjacent Channel Level Ratio +/- 5MHz	-36	dBc
Tx Adjacent Channel Level Ratio +/- 10MHz	-46	dBc

2.18 Call Disconnect Sequence

1. Disconnect call.
2. End test.

3 Test Sequence - Conducted

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 850	

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. Remove the battery cover and 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 GSM 850 Low TCH Measurements

Parameter	Value	Unit
TCH	Low	Ch
TX power level	High	PL
RF output power	-68	dBm
System	GSM 850	

3.3.1 GSM 850 Low TCH Test Limits

Measurement	Test Limits	Unit
TX power	29 +/-2	dB
RMS Phase error	0 +/-5	deg
Rx Level	36-48	dB
Rx Quality	0-3	Units

3.4 GSM 850 Mid TCH Measurements

Parameter	Value	Unit
TCH	Mid	Ch
TX power level	Mid	PL
RF output power	-102	dBm
System	GSM 850	

3.4.1 GSM 850 Mid TCH Test Limits

Measurement	Test Limits	Unit
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 GSM 850 High TCH Measurements

Parameter	Value	Unit
TCH	High	Ch
TX power level	Low	PL
RF output power	-68	dBm
System	GSM 850	

3.5.1 GSM 850 High TCH Test Limits

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

3.6 GSM 1900 Low TCH Measurements

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

3.6.1 GSM 1900 Low TCH Test Limits

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

3.7 GSM 1900 Mid TCH Measurements

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

3.7.1 GSM 1900 Mid TCH Test Limits

Measurement	Test Limits	Unit
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 GSM 1900 High TCH Measurements

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

3.8.1 GSM 1900 High TCH Test Limits

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

3.9 GSM 1800 Low TCH Measurements

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

3.9.1 GSM 1800 Low TCH Test Limits

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

3.10 GSM 1800 Mid TCH Measurements

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

3.10.1 GSM 1800 Mid TCH Test Limits

Measurement	Test Limits	Unit
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 GSM 1800 High TCH Measurements

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

3.11.1 GSM 1800 High TCH Test Limits

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

3.12 GSM 900 Low TCH Measurements

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

3.12.1 GSM 900 Low TCH Test Limits

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

3.13 GSM 900 Mid TCH Measurements

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

3.13.1 GSM 900 Mid TCH Test Limits

Measurement	Test Limits	Unit
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



3.14 GSM 900 High TCH Measurements

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

3.14.1 GSM 900 High TCH Test Limits

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

3.15 WCDMA Low TCH Measurements

Parameter	Value	Unit
TCH	Low	Channel
Power Level	Maximum	dBm
RF out	-93	dBm

3.15.1 WCDMA Low TCH Test Limits

Measurement	Test Limits	Unit
Tx Maximum Output Power	21 to 25	dBm
EVM	17.5 max	%
Frequency Error	-0.1 to 0.1	ppm
Tx Adjacent Channel Level Ratio +/- 5MHz	-36	dBc
Tx Adjacent Channel Level Ratio +/- 10MHz	-46	dBc

3.16 WCDMA Mid TCH Measurements

Parameter	Value	Unit
TCH	Mid	Channel
Power Level	Maximum	dBm
RF out	-93 (* -104)	dBm

3.16.1 WCDMA Mid TCH Test Limits

Measurement	Test Limits	Unit
Tx Maximum Output Power	21 to 25	dBm
EVM	17.5 max	%
Frequency Error	-0.1 to 0.1	ppm
Tx Adjacent Channel Level Ratio +/- 5MHz	-36	dBc
Tx Adjacent Channel Level Ratio +/- 10MHz	-46	dBc
Rx Reference Sensitivity Level* (RF out: -104)	-0.1 to 0.1	%

3.17 WCDMA High TCH Measurements

Parameter	Value	Unit
TCH	High	Channel
Power Level	Maximum	dBm
RF out	-93	dBm

3.17.1 WCDMA High TCH Test Limits

Measurement	Test Limits	Unit
Tx Maximum Output Power	21 to 25	dBm
EVM	17.5 max	%
Frequency Error	-0.1 to 0.1	degree
Tx Adjacent Channel Level Ratio +/- 5MHz	-36	dBc
Tx Adjacent Channel Level Ratio +/- 10MHz	-46	dBc

3.18 Call Disconnect Sequence

1. Disconnect call.
2. End test.

4 Attenuation Factors

4.1 Radiated Loss Values

The following values shall be used when testing the Sony Ericsson C905c 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.

NOTE! These values are only valid if you are using the Grid Positioning Plate (R&S part number 1158.9789.00)

Band	Channel	C905c		C905		C905a	
		Attenuation		Attenuation		Attenuation	
		RX	TX	RX	TX	RX	TX
GSM 850	Low	8.90	7.87	6.5	7.05	5	7.33
	Mid	7.57	7.53	5	5.51	5	5.5
	High	7.07	8.98	5.25	5.83	3.5	4.04
GSM 900	Low	6.23	8.46	5.25	6.26	5	4.99
	Mid	5.57	7.88	4.5	6.18	4	5.35
	High	5.73	6.40	4	5.61	3.75	5.79
GSM 1800	Low	13.33	13.37	11.8	16.17	9.25	15.41
	Mid	11.00	12.09	10.3	14.1	9.25	14.29
	High	10.83	14.06	10.55	11.51	9.5	9.7
GSM 1900	Low	12.00	12.93	11.3	12.13	9.5	8.34
	Mid	10.50	12.11	10.8	11.94	9.5	9.25
	High	11.17	10.89	11.3	10.7	9.5	9.04
WCDMA I	Low	-	-	15.75	11.73	13	8.28
	Mid	-	-	18.5	11.84	16	9.25
	High	-	-	20	11.75	17.5	9.28
WCDMA II	Low	-	-	-	-	8.5	8.47
	Mid	-	-	-	-	9	8.54
	High	-	-	-	-	9	7.59
WCDMA V	Low	-	-	-	-	5	7.78
	Mid	-	-	-	-	4	6.11
	High	-	-	-	-	5	5.97

4.2 Conducted Loss Values

- The following values shall be used when testing the Sony Ericsson C905c with a Direct Line connection. The Direct Line connection shall consist of a SEMC RF-cable (**SEMC part # RPM 119 855**) and RF Probe (**SEMC part # SXA 109 7057**).

Band	Channel*	C905c		C905		C905a	
		Attenuation		Attenuation		Attenuation	
		RX	TX	RX	TX	RX	TX
GSM 850	ALL	0.9	0.9	1.0	1.0	0.8	0.8
GSM 900	ALL	0.9	0.9	1.0	1.0	0.8	0.8
GSM 1800	ALL	1.5	1.5	2.3	2.3	1.3	1.3
GSM 1900	ALL	2.5	2.5	2.3	2.3	1.3	1.3
WCDMA I	ALL	-	-	2.5	2.5	1.5	1.5
WCDMA II	ALL	-	-	-	-	1.3	1.3
WCDMA V	ALL	-	-	-	-	0.8	0.8

5 Revision history

Rev.	Date	Changes / Comments
1	2008-12-04	Initial Release
2	2008-12-05	C905, C905a and WCDMA values added
3	2008-12-09	Chapter 1.3 updated
4	2010-03-10	Changed RF-probe number from SXA 109 6356 to SXA 109 7057