



# Go/No Go Test Script Specification, Electrical

Applicable for J220 and J230

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# 1 General

## 1.1 About This Document

This document contains the test requirements for both Sony Ericsson J220 and J230 mobile phones 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:
GSM850	Low	128-132
GSM850	Mid	187-191
GSM850	High	247-251
GSM 900	Low	975-979
GSM 900	Mid	36-40
GSM 900	High	120-124
GSM 1800	Low	512-517
GSM 1800	Mid	697-702
GSM 1800	High	880-885
GSM1900	Low	512-517
GSM1900	Mid	658-663
GSM1900	High	805-810

### 1.4 Power Level Allocation Table

Band	PL definition	Powerlevel (PL)
GSM850	Lowest	19
GSM850	Mid	12
GSM850	Highest	7
GSM 900	Lowest	19
GSM 900	Mid	12
GSM 900	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 6.

## **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 and GSM850/1900 and might therefore be used to decrease test time.



## 2 J230i 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-SIM 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 Figure 3

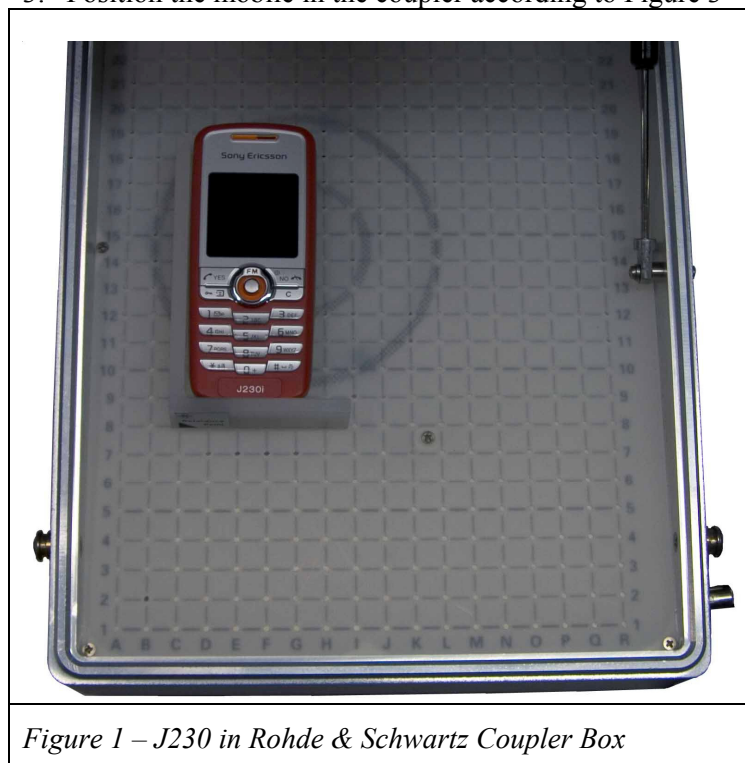


Figure 1 – J230i in Rohde & Schwartz Coupler Box

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.
7. If all measurements are approved, it will be confirmed. If any faults are discovered, it will be presented either on the screen or can be printed.

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

## 2.4 Measurement Group MID CHANNEL 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	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 Measurement Group HIGH CHANNEL 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	Test Limits	Unit
TX power	5 +/-7	dB
RMS Phase error	0 +/-5	deg

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

## 2.7 Measurement Group MID CHANNEL 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	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 Measurement Group HIGH CHANNEL 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	Test Limits	Unit
TX power	0 +/-7	dB
RMS Phase error	0 +/-5	deg



### 3 J220i and J230i 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-SIM 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 Test Cable according to the Figure 4.

**NOTE!** Make sure you hear a snap sound to confirm it is properly connected.



Figure 1 – RF Test Cable

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. If all measurements are approved, it will be confirmed. If any faults are discovered, it will be presented either on the screen or can be printed.



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

## 3.4 Measurement Group MID CHANNEL 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	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 Measurement Group HIGH CHANNEL 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	Test Limits	Unit
TX power	5 +/-5	dB
RMS Phase error	0 +/-5	deg

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



### 3.7 Measurement Group MID CHANNEL 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	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 Measurement Group HIGH CHANNEL 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	Test Limits	Unit
TX power	0 +/-5	dB
RMS Phase error	0 +/-5	deg

## 4 J220a Test Sequence using an RF Shield Box and Coupler

### 4.1 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	

#### 4.1.1 Sequence

1. Initialize instrument
2. Insert a test-SIM 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 Figure 7.



Figure 2 – J220 in Rohde & Schwartz Coupler Box

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.
7. If all measurements are approved, it will be confirmed. If any faults are discovered, it will be presented either on the screen or can be printed.





## 4.2 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.

## 4.3 Measurement Group LOW CHANNEL 850

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

### 4.3.1 Sequence

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

## 4.4 Measurement Group MID CHANNEL 850

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

### 4.4.1 Sequence

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



## 4.5 Measurement Group HIGH CHANNEL 850

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

### 4.5.1 Sequence

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

## 4.6 Measurement Group LOW CHANNEL 1900

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

### 4.6.1 Sequence

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

## 4.7 Measurement Group MID CHANNEL 1900

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



#### 4.7.1 Sequence

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

### 4.8 Measurement Group HIGH CHANNEL 1900

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

#### 4.8.1 Sequence

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

## 5 J220a and J230a Test Sequence using a Direct Line Connection

### 5.1 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	

#### 5.1.1 Sequence

1. Initialize instrument
2. Insert a test-SIM 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 Test Cable according to the Figure 4.

**NOTE!** Make sure you hear a snap sound to confirm it is properly connected.



*Figure 3 – RF Test Cable*

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. If all measurements are approved, it will be confirmed. If any faults are discovered, it will be presented either on the screen or can be printed.



## 5.2 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.

## 5.3 Measurement Group LOW CHANNEL 850

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

### 5.3.1 Sequence

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

## 5.4 Measurement Group MID CHANNEL 850

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

### 5.4.1 Sequence

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



## 5.5 Measurement Group HIGH CHANNEL 850

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

### 5.5.1 Sequence

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

## 5.6 Measurement Group LOW CHANNEL 1900

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

### 5.6.1 Sequence

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



## 5.7 Measurement Group MID CHANNEL 1900

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

### 5.7.1 Sequence

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

## 5.8 Measurement Group HIGH CHANNEL 1900

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

### 5.8.1 Sequence

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

## 6 Attenuation Factors for Sony Ericsson J220 and J230

### 6.1 J220a in the Rohde & Schwarz RF Shield Box and Coupler

The following values shall be used when testing the Sony Ericsson J220a in the Rohde & Schwartz Shield Cover (CMU-Z11) using the Rohde & Schwartz Antenna Coupler (CMU-Z10) with spare parts for mobile phone fixation (see Equipment List, Electrical for J220 for more details). A precision type N Male to SMA Female adapter is required to connect the cable to the RF shield box.

Band	Channel*	Attenuation	
		RX	TX
GSM 850	Low	11.25	9.521
	Mid	14.8	11.542
	High	14.6	12.933
GSM 1900	Low	8.45	7.569
	Mid	9.2	7.374
	High	9.8	6.506

- See Channel Allocation Table

### 6.2 J220a using a Direct Line Connection

The following values shall be used when testing the Sony Ericsson J220 with a Direct Line connection. The Direct Line connection shall consist of a SEMC RF-cable (**SEMC part # RPM 119 855**) and RF Probe assembly (**SEMC part # RPM 119 854/1**)

Band	Channel*	Attenuation	
		RX	TX
GSM 850	ALL	0.8	0.8
GSM 1900	ALL	1.3	1.3

- \* See Channel Allocation Table



### 6.3 J220i using a Direct Line Connection

The following values shall be used when testing the Sony Ericsson J220 with a Direct Line connection. The Direct Line connection shall consist of a SEMC RF-cable (**SEMC part # RPM 119 855**) and RF Probe assembly (**SEMC part # RPM 119 854/1**)

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

\* See Channel Allocation Table



## 6.4 J230i in the Rohde & Schwarz RF Shield Box and Coupler

The following values shall be used when testing the Sony Ericsson J230i in the Rohde & Schwarz Shield Cover (CMU-Z11) using the Rohde & Schwarz Antenna Coupler (CMU-Z10) with spare parts for mobile phone fixation (see Equipment List, Electrical for J230 for more details). A precision type N Male to SMA Female adapter is required to connect the cable to the RF shield box.

Band	Channel*	Attenuation	
		RX	TX
GSM 900	Low	6.57	8.41
	Mid	7.96	7.76
	High	11.3	7.54
GSM 1800	Low	6.46	7.65
	Mid	6.57	7.53
	High	8.24	6.95

- See Channel Allocation Table

## 6.5 J230i using a Direct Line Connection

The following values shall be used when testing the Sony Ericsson J230 with a Direct Line connection. The Direct Line connection shall consist of a SEMC RF-cable (**SEMC part # RPM 119 855**) and RF Probe assembly (**SEMC part # RPM 119 854/1**)

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

- \* See Channel Allocation Table

## 7 Revision history

Rev.	Date	Changes / Comments
A	2007-04-19	First Release