

**HP/Agilent 8922 Single-Slot Data Test  
System  
Option #K18**

**Supplementary User's Guide**



**Manufacturing Part Number: 08922-90222**

**October 1998**

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# **1** **Single-Slot Data Testing**

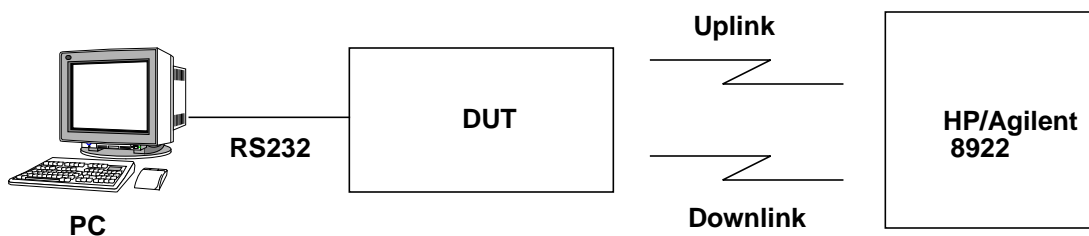
This chapter briefly describes how the HP/Agilent 8922 performs Single-Slot data testing.

**Test overview**

The HP/Agilent 8922 option K18 allows Single-Slot data products to be tested in production. The test performed verifies the complete data path (transmit and receive) through a mobile station containing an integrated modem and ensures the integrity of the data path within the Device Under Test (DUT).

Note that the Single-Slot data test performed by the HP/Agilent 8922 is a functional test and all existing functionality within the HP/Agilent 8922 is maintained with all parametric testing of the DUT (such as, TX Power Level, Phase & Frequency etc.) being performed in normal Speech mode. While in loopback mode for Single-Slot data testing, the HP/Agilent 8922 is unable to perform BER and Fast BER tests and Dual-Band Handover.

The test involves generating a data file, sending it to the data port on the DUT and transmitting it on the GSM air interface to the HP/Agilent 8922. The HP/Agilent 8922 then loops back the data received on the uplink to the downlink and transmits an identical copy of the data on the GSM air interface back to the DUT. This file can then be output on the DUT data port for analysis and comparison with the original file. This type of test verifies that a given data file can be presented to the DUT and transmitted and received correctly.

**HP 8922 functionality**

The HP/Agilent 8922 performs a loopback function when performing Single-Slot data test by retransmitting on the downlink any data bursts received on the uplink. Note that data bursts (received or transmitted) are not channel coded.

Data bursts are buffered in the HP/Agilent 8922 for a fixed period of four frames before they are retransmitted on the downlink. This allows for processing time within the HP/Agilent 8922 to determine if the received burst is data or signalling information. It also allows for processing SACCH frames which contain no data. If the burst is data, then it is buffered, if the burst is SACCH information, then it is decoded as normal. The HP/Agilent 8922 inserts valid SACCH frames back into the downlink.



FACCH frames are not processed by the HP/Agilent 8922; they are simply echoed back on the downlink.

As there is no FACCH signalling once the call is established, the HP/Agilent 8922 must be in data channel mode before a data call is established and will not perform channel assignments or handovers during a data call.

After loopback within the HP/Agilent 8922, the data transmitted back on the downlink is an exact copy (delayed, but in order) of any data bursts transmitted by the DUT on the uplink.





## Checking the prerequisites

### Checking the package contents

Your HP/Agilent 8922 option K18 kit contains the following items:

- 1 set of labels to label the HP/Agilent 8922
- 1 x software licence certificate
- 1 x keycard to enable the Single-Slot data test functionality
- 1 x HP/Agilent 8922 Single-Slot Data Supplementary User's Guide (this manual)

If any of the above items are missing or damaged contact your local HP/Agilent representative.

### Checking the HP/Agilent 8922 firmware version

To operate the HP/Agilent 8922 Single-Slot Data functionality the HP/Agilent 8922 must contain firmware version C.01.05 (HP/Agilent 892 P/R) or B.07.09 (HP/Agilent 8922 M/S) or later. To check which firmware version the HP/Agilent 8922 is running, go to the CONFIGURE screen.

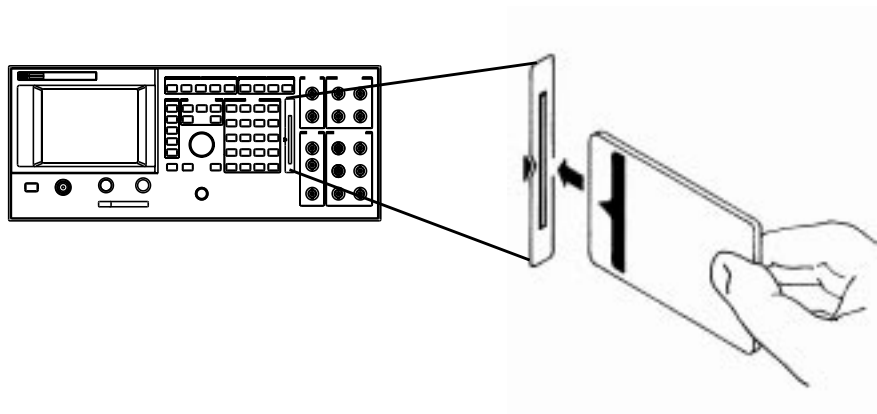
To upgrade the HP/Agilent 8922 firmware contact your local Agilent Technologies Sales Representative.

## Enabling the Single-Slot Data functionality

You must enable the Single-Slot data test functionality within the HP/Agilent 8922 using the keycard supplied as follows.

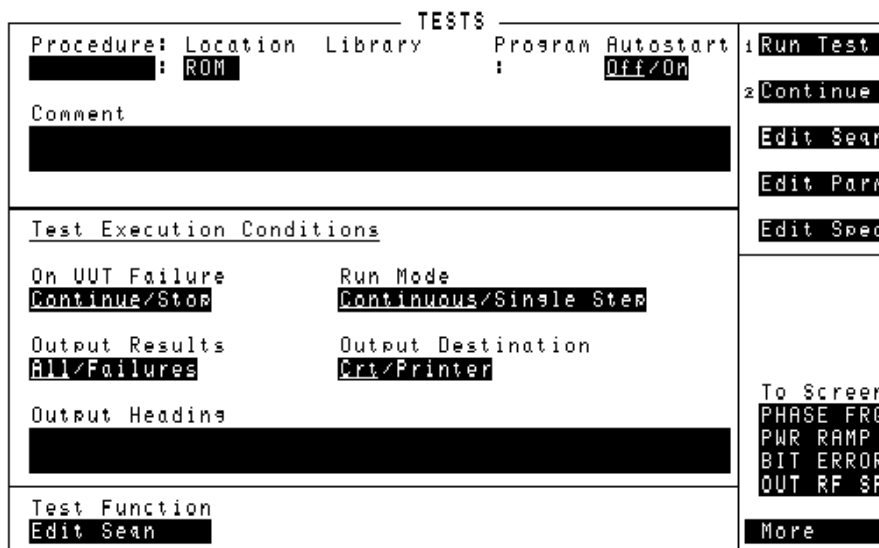
**Step 1.** Power on the HP/Agilent 8922.

**Step 2.** Insert the keycard into the HP/Agilent 8922.



**Step 3.** Press the **TESTS** key on the front panel of the HP/Agilent 8922 to access the TESTS screen.

HP 8922P GSM MS Test Set: 10/29/98 05:31:00 PM



**Step 4.** Set Location to CARD.

**Step 5.** Select the Procedure field and select ENABLE as the procedure.

**Step 6.** Select the Run Test field or press the **LT** key on the front panel of the HP/Agilent 8922 to run the program.

The option Data 9.6k is now present in the Instrument Type field

Enabling the HP/Agilent 8922 for Single-Slot Data Testing  
 Checking the prerequisites

in the CONFIGURE screen indicating that the Single-Slot data functionality is correctly enabled.

HP 8922P GSM MS Test Set: 10/29/98 06:08:00 PM

L

CONFIGURE				
Radio Type GSM900	Reference 10 MHz Normal Calibrate	Intensity 7	RF Level Offset dB On/Off	Meas Cntl MeasReset
Instrument Type Data 9.6k	Offset 0.0 PPM	Beeper Quiet	RF In/Out 0.0	OPT 001 REF OUT On/Off
Compatible 8922P/8922G	RFGen Volts 50 ohm/ewf	Date 1998 10 29 YYYY MM DD	Aux RFOut 0.0	Screen Freeze Off/On
	Range Hold Auto All Hold All State:Auto	Time 18.08 HH.MM	Aux RF In 0.0	IO Confie SERVICE
	Serial Number Info 0000000000000000 0 0		Firmware C.01.05	To Screen PHASE FRQ PWR RAMP BIT ERROR OUT RF SP
				More

**To disable Single Slot data functionality**

To disable the Single-Slot Data functionality, repeat steps 1 to 4 of the procedure for enabling the functionality, set the Procedure field to DISABLE in step 5 and complete the rest of the procedure.



## Setting up the Single-Slot data test

- Step 1.** Connect the mobile station to the laptop PC or other device.
- Step 2.** Connect the mobile station using its RF cable to the GSM/DCS/PCS RF IN/OUT port on the HP/Agilent 8922 (or HP/Agilent 83220 if you are using a Multi-Band system) and power it on.
- Step 3.** On the HP/Agilent 8922, navigate to the CONFIGURE screen and configure the Instrument Type field to DATA 9.6k.
- Step 4.** Power up the laptop PC or other device and ensure that the modem is configured and initialized correctly (see the modem documentation for details).
- Step 5.** Create an ASCII text file on the laptop PC or other device containing approximately 100 lines of text.

You are now ready to perform the Single-Slot data test.



## Manual operation

### Performing the test

- Step 1.** On the laptop PC or other device, via the modem software, instruct the mobile station to establish a call with the HP/Agilent 8922.
- Step 2.** Transmit the prepared ASCII text file to the HP/Agilent 8922.
- Step 3.** Compare the received copy of the ASCII text file with the transmitted copy.  
  
Identical files mean that the test is successful.
- Step 4.** End the call with the HP/Agilent 8922. either via the modem software or on the HP/Agilent 8922.

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## Remote operation

Remote operation is performed using GPIB commands issued typically from a PC or workstation over the GPIB bus.

### GPIB commands for Single-Slot Data

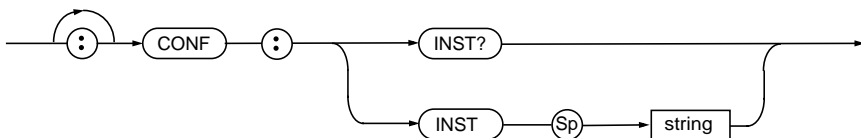
The following GPIB command for Single-Slot data has been added to the existing GPIB command set for the HP/Agilent 8922. For details on the rest of the commands, see the *HP/Agilent 8922 GSM Test Set User's Guide* and the *HP/Agilent 8922 Multi-Band Test System Supplementary User's Guide*.

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**NOTE** While in loopback mode for Single-Slot data testing, the HP/Agilent 8922 is unable to perform BER and Fast BER tests and Dual-Band Handover.

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#### CONF:INST?



**Description** Configures the HP/Agilent 8922 to be either in Speech mode or Data mode. For Single-Slot data testing, the HP/Agilent 8922 must be in 9.6K data mode before the call is established.

**Syntax** CONF:INST?  
CONF:INST <string>

**Options** "SPEECH" | "DATA 9.6K"