Agilent Technologies

E6393B CDMA MS Test Set

Programmer's Guide

Serial Numbers
This manual applies directly to instruments with serial number prefix JP1KJ, or firmware revision B.01.10 and above.

Agilent Technologies

Agilent Part No. E6393-90017
Printed in Japan

Manual Part Number
E6393-90017

Edition/Print Date

All Editions and Updates of this manual and their creation dates are listed below.

First Edition.....January 2002
Second Edition .....April 2002

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To minimize electric shock hazard, the instrument chassis and cabinet must be connected to an electrical protective earth ground. The instrument must be connected to ac power through a grounded power cable, with the ground wire firmly connected to an electrical ground (safety ground) at the power outlet. Any interruption of the protective (grounding) conductor or disconnection of the protective earth terminal will cause a potential shock hazard that could result in personal injury.

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Operating personnel must not remove instrument covers. Component replacement and internal adjustments must be made by qualified maintenance personnel. Do not replace components with the power cable connected. Under certain conditions, dangerous voltages may exist even with the power cable removed. To avoid injuries, always disconnect power and discharge circuits before touching them.

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General definitions of safety symbols used on equipment or in manuals are listed below.


Refer to the instruction manual when you see this symbol.


Alternating current.


Direct current.

| On (Supply).

O Off (Supply).


In position of push-button switch.


Out position of push-button switch.

WARNING: **This WARNING notice denotes a hazard. It calls attention to a procedure, practice, condition or the like, which, if not correctly performed or adhered to, could result in injury or death to personnel.**

CAUTION: This CAUTION notice denotes a hazard. It calls attention to a procedure, practice, condition or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the product.

NOTE: *NOTE* denotes important information. It calls attention to a procedure, practice, condition or the like, which is essential to highlight.

In this Book

This guide describes how to program the Agilent E6393B CDMA MS Test Set. If you need operational information, refer to the User's Guide.

Throughout this manual the term "Test Set" is used to denote the Agilent E6393B.

This guide contains the following information:

Chapter 1, "Preparing for Use"

This chapter describes how to set up an automated test system.

Chapter 2, "Programming Command Guidelines"

This chapter describes the rules and guidelines for using the remote programming commands via the RS-232C serial port interface.

Chapter 3, "Programming Command Reference"

This chapter provides a brief description of the syntax for each programming command.

Chapter 4, "Programming Command Cross Reference"

This chapter provides cross reference tables for the softkeys, test parameters, test items, and their corresponding syntax.

Chapter 5, "Example Programs"

This chapter includes basic test programs to test mobile phones with the Test Set.

Appendix A, "Syntax Diagrams"

This appendix shows a syntax diagram for each subsystem or command group.

Appendix B, "Radio System Combinations"

This appendix describes allowable settings of the sequences for the Automatic Test and the hard handoff settings for the Manual Test.

Appendix A, "Syntax Diagrams"

This appendix describes allowable settings of the test flows for the Automatic Test.

Contents

1 Preparing for Use

This chapter is a quick overview of how to set up an automated test system with the Agilent E6393B CDMA MS Test Set.

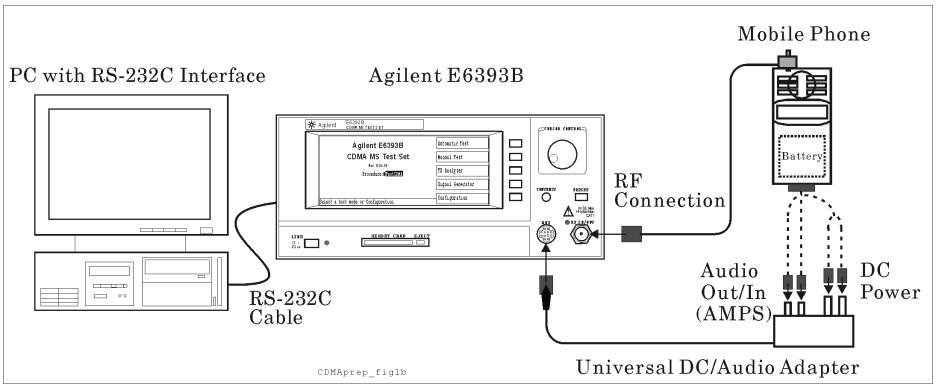
Equipment for Automated Test System

The following equipment is required to construct an automated test system:

- The Agilent E6393B CDMA MS Test Set (called the Test Set hereafter)
- System controller with the RS-232C interface
- RS-232C cable
- RF cable (user-supplied), Antenna Coupler (Agilent P/N: E6392-60002), or Shield Box (Agilent N4678A) to connect RF signal to the mobile phone
- Universal DC/Audio Adapter (Agilent P/N: E6393-60001) to connect between the AUX connector of the Test Set and the mobile phone, and appropriate cable assemblies to supply the dc power to the mobile phone from the Test Set and to make audio tests for AMPS mobile phones (optional)
- Printer (optional)

Figure 1-1 illustrates a typical setup for an automated test system.

Figure 1-1 Typical Setup for Automated Test System



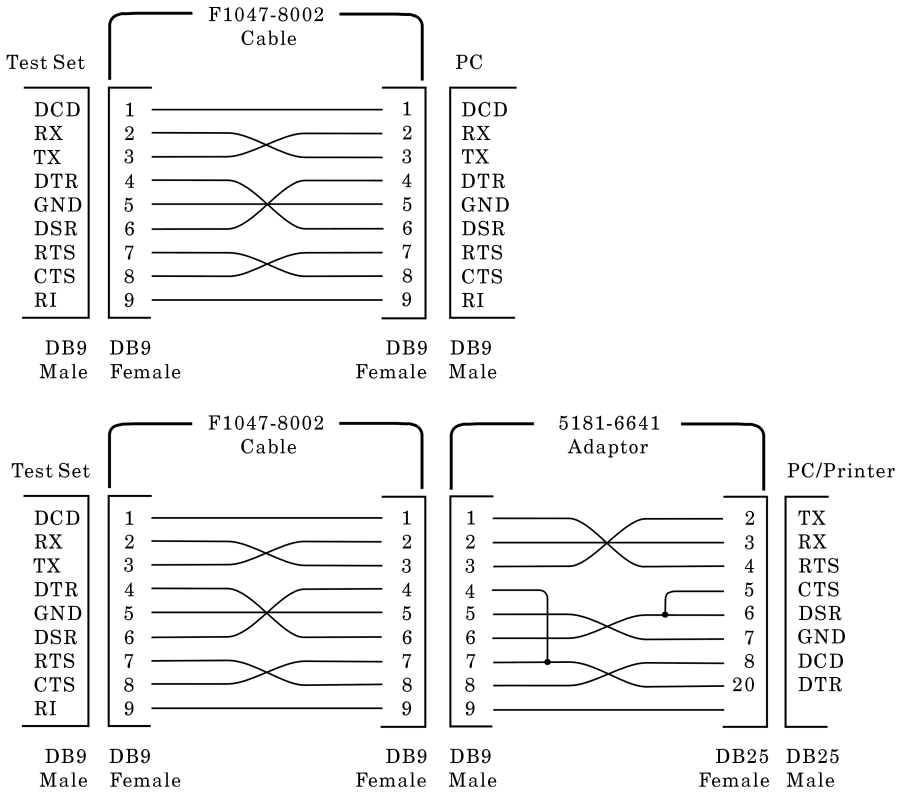
Connecting to Controller

A DB-9 male connector is provided with the Test Set as the serial interface to a controller.

- If your PC controller has a DB-9 male connector, use the 9-pin female to 9-pin female RS-232C cable between the PC and the Test Set. This cable must have the pin assignments shown in the upper illustration of Figure 1-2.
- If your PC controller has a DB-25 male connector, insert the 9-pin male to 25-pin female adapter between the RS-232C cable and the 25-pin male connector. This adapter must have the pin assignments shown in the lower diagram of Figure 1-2.

Agilent Technologies 34398A RS-232 Cable Kit contains a 9-pin female to 9-pin female cable (Agilent P/N: F1047-8002) and 9-pin male to 25-pin female adapter (Agilent P/N: 5181-6641) as shown in Figure 1-2.

Figure 1-2 RS-232C Cable and Adapter Pin Assignments



2 Programming Command Guidelines

This chapter contains a brief overview of the programming commands.

Getting Started with Programming Commands

Understanding Common Terms

The following terms are used throughout this chapter.

Controller	A controller is any computer used to communicate with an instrument. A controller can be a personal computer (PC), a minicomputer, or a plug-in card in a card cage. Some intelligent instruments can also function as controllers.
Program Message	A program message is a combination of one or more properly formatted commands. Program messages always go from a controller to an instrument. Program messages tell the instrument how to make measurements and output signals.
Response Message	A response message is a collection of data in specific formats. Response messages always go from an instrument to a controller. Response messages tell the controller about the internal state of the instrument and about measured values.
Command	A command is an instruction. Combinations of commands form messages that control instruments. In general, a command consists of mnemonics (keywords), parameters, and punctuation.
Query	A query is a special type of command. Queries instruct the instrument to make response data available to the controller. Queries always end with a question mark, “?”. They do not influence the status of the Test Set.

Correspondence Data Format

All the correspondence between the Test Set and the controller is done using ASCII code only.

This means that sending any command from the controller to the Test Set is done in characters like `OUTPUT Serial_port;"DISP:AUTO:STBY"`.

In this example, `OUTPUT` is an HP BASIC command of the controller, and `"Serial_port"` is the numerical variable representing the port number previously assigned to determine the RS232C port of the controller. The ASCII codes of `"DISP:AUTO:STBY"` are sent to the Test Set.

The expressions used in Chapter 3, “Programming Command Reference" are similar to those introduced above, except for the “IEEE Common Commands.”

Standard Notation

This section uses several forms of notation that have specific meaning:

Command Mnemonics

Many commands have both a long and a short form. You can use either form, but not a combination of the two commands.

Consider the `:FREQuency` command. The short form is `:FREQ` and the long form is `:FREQUENCY`.

Programming commands are not case sensitive, so `:fREquEnCy` means the same as `:FREQUENCY`. Both `:FREQ` and `:FREQUENCY` are valid forms of the `:FREQuency` command, however `:FREQu` is not.

Angle Brackets

Angle brackets indicate that the word or words enclosed represent something other than themselves.

For example, `<string>,<int>` might represent the ASCII characters “CELLR-IS95A,3”.

Words in angle brackets have more rigidly defined meaning than words shown in ordinary text. For example, this section uses the word “message” to talk about messages, generally. But, the bracketed words `<program message>` indicate a precisely defined element of the commands. Refer to Appendix A, “Syntax Diagrams,” on page 173 for exact definitions of the command elements.

Query and Event Commands

You can query any value that you can send to the Test Set. For example, if you find the command
`CONFigure:BEEPer <bool>`,
you can expect the query
`CONFigure:BEEPer?`

Any command ending with a question mark is a query-only command. Some commands are for triggering events and have no query command. For example, an event, which causes something to happen inside the instrument at a particular instant, has no corresponding query command.

Command Syntax

An entry following the heading for a programming command is a syntax statement, for example, `:CONFigure:PRINter HPCL|ESCP`.

Syntax statements read from left to right. In this example, the `:PRINter` portion of the statement immediately follows the `:CONFigure` portion of the statement with no separating space. A separating space is legal only between the command and its argument. In this example, `HPCL|ESCP` is the argument. `<string>` can be substituted for either `HPPCL` or `ESCP`.

Additional conventions used in the syntax statements are defined as follows:

- | (vertical bar) indicates a choice of one element from a list. For example, A | B indicates that either A or B can be chosen, but not both.
- <> (angle brackets) enclose a variable item that represents a user choice (parameter) to be entered. For example, in the command `SYSTem:KLOCk <bool>`, a boolean value 0 (OFF) or 1 (ON) is substituted for `<bool>`.
- Upper-case portion of the command indicates that it is the minimum required for the command. For example, in the command `:FREQuency`, `:FREQ` is the minimum requirement.
- Lower-case portion of the command indicates that it is optional; it can be either included with the upper-case portion of the command or omitted as a whole. For example, in the command `:FREQuency`, either `:FREQ` or `:FREQUENCY` is correct, but `:FREQu` is incorrect.
- Question mark "?" after a subsystem command indicates that the command is a query. Most commands accept this command when it is entered immediately after the command name. Some query commands require additional argument(s) after the question mark. The format of the response for the query depends on the type of the query. The format is shown after each syntax statement.

Units of Measure

- Units for settings:

  It is allowed to send numeric data with or without its multiplier and unit as follows. (The units may be omitted if they are the default settings.)

  `A` (A; default), `MA` (mA)

  `DB` (dB; default)

  `DBM` (dBm; default)

  `DBV` (dBV; default)

  `HZ` (Hz; default), `KHZ` (kHz), `MHZ` and `MAHZ` (MHz)

  `PCT` (%; default)

  `PPM` (ppm; default)

  `S` (sec; default), `MS` (msec), `US` (µsec)

  `V` (V; default)

NOTE An expression of power type such as 896.2E6 (representing 896.2×10^{6}) is acceptable.

The multiplier M is usually used as "milli" except when used with Hz for "mega".

For example, the following commands can set the same value:

```
RFG:RFFR 896200000
RFG:RFFR 896.2E6
RFG:RFFR 896.2MHZ
```

- Units for measurements:

  The query responses for any parameters have either numerical or alphanumeric data depending on the default unit. For example, the query command
  `RFG:RFFR?`
  returns “896200000”.

Overview of the RS-232C Serial Interface

Serial interface programming techniques are similar with most general RS-232C I/O applications. Refer to the programming language documentation for more information on how to initiate the card and verify the status.

Due to the asynchronous nature of serial I/O operations, special care must be exercised to make sure if the device is ready to receive the data without any loss, by sending commands. Modem line handshaking can be used to help solve this problem. Refer to "Modem Line Handshaking" on page 19.

Settings for the Serial Interface

Refer to the documentation on your computer, programming language, and I/O card to configure the serial bus.

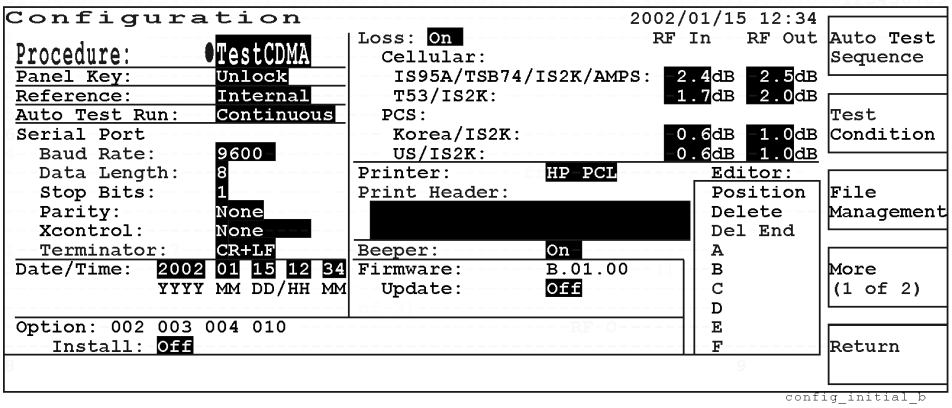
The serial port can be only manually set. The default settings are as follows:

Table 2-1 Serial Port Configuration

Item	Default	Other Choices
Baud Rate:	9600	19200
Data Length:	8	7
Stop Bits:	1	2
Parity:	None	Odd, Even
Xcontrol:	None	Xon/Xoff
Terminator:	CR+LF	CR, LF

Use the following procedure to set the serial port configuration.

Step 1. Press the Configuration softkey in the Initial screen to obtain the Configuration screen:



Step 2. Make sure that the Serial Port fields are correctly set.

Character Format Parameters

To define the character format, you must know the requirements of the peripheral device for the following parameters:

- Data Length - Eight data bits are used for each character excluding start, stop, and parity bits.
- Stop Bits - One stop bit is included with each character.
- Parity - Parity is disabled (absent) for each character.

Modem Line Handshaking

To use modem line handshaking for data transfer, set the Request-to-Send (RTS) and Clear-to-Send (CTS) modem lines to active states on your controller.

Setting Xcontrol to Xon/Xoff allows the Test Set to stop data transmission from the controller when the buffer of the Test Set is full and then start it when the Test Set is ready.

Data Transfer Errors

The serial interface can generate several types of errors when certain conditions are encountered while receiving data from the peripheral device. Errors can be generated by any of the following conditions:

- Parity error - The parity bit on an incoming character does not match the parity expected by the receiver. This condition is most commonly caused by line noise.
- Framing error - Start and stop bits do not match the timing expectations of the receiver. This can occur when line noise causes the receiver to miss the start bit or obscure the stop bits.
- Overrun error - Incoming data buffer overrun caused a loss of one or more data characters. This is usually caused when data is received by the interface, but no ENTER statement has been activated to input the information.
- Break received - A BREAK was sent to the interface by the peripheral device. The computer program must be able to properly interpret the meaning of a break and take appropriate action.

Programming Guidelines

To make a test program, follow these guidelines.

- The program flow should follow the steps of the front panel operation of the Test Set. That is, display the corresponding screen using the DISPlay subsystem commands before setting parameters, performing tests, or querying the test results.

  For example, when you want to execute the Paging (BS call) in the Manual Test mode using the command
  `TESTs:MANual:PAGE`,
  first send the command
  `DISPlay:MANual:STBY`
  to display the Manual Test: Stand-by screen before sending Paging command.

- The number of query commands and the number of corresponding ENTER commands to a controller should be the same. To avoid mismatching, enter a value to the controller immediately after a query command has been sent.

  For example, when you want to enter the radio system and the channel numbers in the Automatic Test mode using HP BASIC, make a test program as follows:

```
OUTPUT Serial_port;"DISP:CONF:SEQ"
OUTPUT Serial_port;"CONF:SEQ:RSYS
CELL-US-IS2K,OFF,OFF"
{ OUTPUT Serial_port;"CONF:SEQ:RSYS?"
ENTER Serial_port;a
OUTPUT Serial_port;"CONF:SEQ:CDMA:RFCH
1,1199,801,799"
{ OUTPUT Serial_port;"CONF:SEQ:CDMA:RFCH? 1"
ENTER Serial_port;b
```

- To receive the measurement results, wait until the measurement ends. To see the measurement status, monitor both status of Measurement Data Ready Bit "bit 0" and Measuring Status Bit "bit 1" using the `*STB?` command.

- To perform measurements using the Automatic Test or Manual Test mode, wait until the test flow proceeds to the step where the measurement can be performed. To monitor the test flow steps executed, for example, use the following query command for the signaling state of the CDMA radio system in the Automatic Test mode:
  `TESTs:AUTO:CDMA:SIGNaling:STATe?`

Using the Status Registers

The status system comprises multiple registers which are arranged in a hierarchical order. The lower-priority status registers propagate their data to the higher-priority registers in the data structures by means of summary bits. The status byte register is at the top of the hierarchy and contains the general status information for the instrument's events and conditions. All other individual registers are used to determine the specific events or conditions.

You can determine the state of certain instrument hardware and firmware events and conditions by programming the status register system.

Individual status registers can be set and queried using the commands in the IEEE common commands reference. A status register is actually composed of the following five physical registers:

- 1 condition register
- 2 transition registers
- 1 event enable register
- 1 event register

A standard event status register is composed of an event enable register and an event register.

Why Would You Use the Status Registers?

Your program often needs to be able to detect and manage error conditions or changes in instrument status. To detect a change using the polling method, the program must repeatedly read the registers to monitor a condition as follows:

1. Determine which register contains the bit that reports the condition.
2. Send the unique query that reads that register.
3. Examine the bit to see if the condition has changed.

Using the Status Registers

Most monitoring of the instrument conditions is done at the highest level using the IEEE common commands indicated below for the Test Set. Refer to "IEEE Common Commands" on page 75 for more information about common commands.

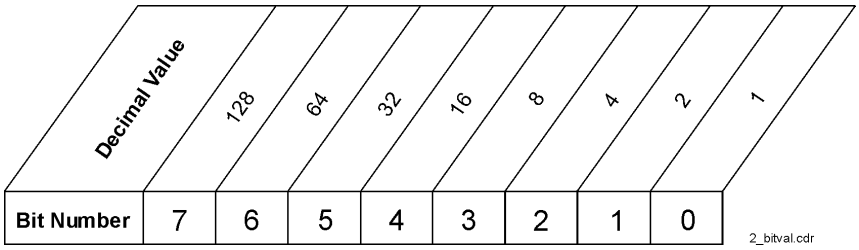
- `*CLS` (clear status) - Clears the status byte by emptying the error queue and clearing all the event registers.
- `*ESE`, `*ESE?` (event status enable) - Sets and queries the bits in the enable register part of the standard event status register.

- *ESR? (event status register) - Queries and clears the event register part of the standard event status register.
- *OPC, *OPC? (operation complete) - Sets or queries the standard event status register to monitor the completion of all commands. The *OPC command sets the OPC “bit 0” of the standard event status register (SESR). The *OPC? query command stops any new commands from being processed until the current processing is complete and then returns ASCII code “1” to the output queue.
- *STB? (status byte) - Queries the value of the status byte register without erasing its contents.

Setting and Querying the Registers

Each bit in a register is represented by a decimal value based on its location. Refer to Figure 2-1. Each value can be sent with the command to enable (set) or disable (reset) a particular bit. To enable or disable more than one bit, send the sum of all those decimal values as a numerical value.

Figure 2-1 Status Register Bit Values



For example, to enable bit 0 and bit 6 (1 + 64) of the standard event status register, you would send the command *ESE 65 (= 1 + 64).

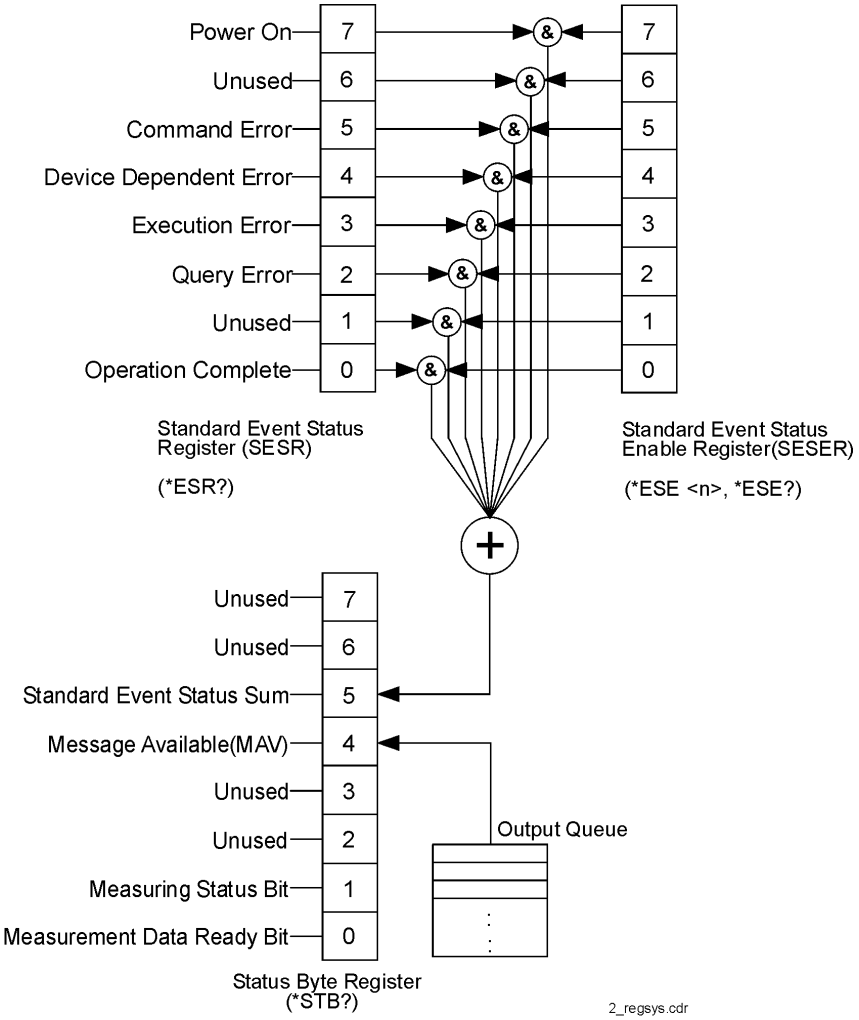
The results of a query are evaluated in a similar way. If you receive a decimal value of 140 (= 128 + 8 + 4) as the response for the query command *STB?, it means that the bits 7, 3 and 2 are true (enabled).

Under this condition, you can also enable and disable some bits at the same time. For example, the command *ESE 76 (= 64 + 8 + 4) disables the bit 7 (128) and enables the bit 6 (64).

Status Register System

Figure 2-2 shows all of the instrument status registers and their hierarchy incorporated with the Test Set.

Figure 2-2 Overall Status Byte Register System

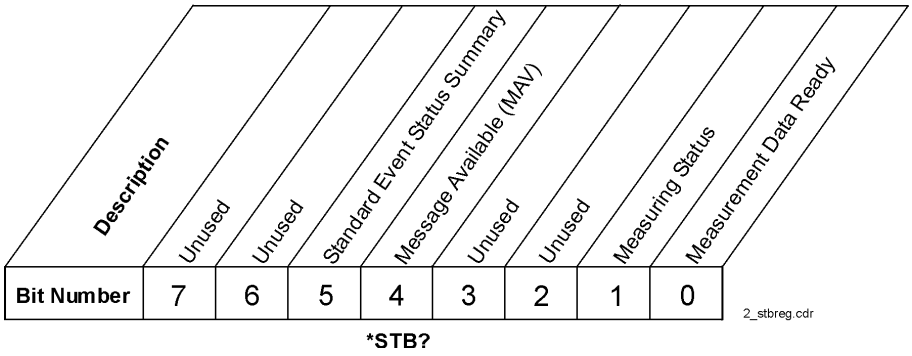


Each of these status registers is explained in detail in the following sections.

Status Byte Register (STBR)

The status byte register of the Test Set uses the bits 0, 1, 4, and 5 as shown in Figure 2-3.

Figure 2-3 Status Byte Register



The STBR contains the following bits:

Table 2-2 Bits in the Status Byte Register

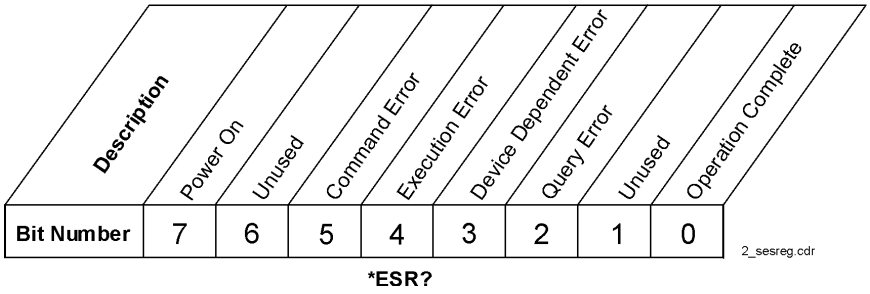
Bit	Name	Description
0	Measurement Data Ready	If the instrument has data ready in the output queue, this bit is set to 1. After responding to a query this bit becomes 0.
1	Measuring Status	While the instrument is in the measuring state, this bit is set to 1. At the completion of one measurement, this bit is set to 0.
2, 3	(unused)	These bits are always set to 0.
4	Message Available	If the instrument has message data ready in the output queue, this bit is set to 1. There are no lower status groups that provide input to this bit.
5	Standard Event Status Summary	If the standard event summary bit has been set, this bit is set to 1. The standard event status register can then be read to determine the specific event that caused this bit to be set.
6, 7	(unused)	These bits are always set to 0.

To query the status byte register, send the command *STB? The response will be the decimal sum of the enabled bits. For example, if the bit 5 and bit 4 are set to 1, the decimal sum of these two bits is 48 (32+16) (see Figure 2-1 on page 22).

Standard Event Status Register (SESR)

The standard event status register of the Test Set is used to determine the specific event that sets bit 5 in the status byte register.

Figure 2-4 Standard Event Status Register



The standard event status register contains the following bits:

Table 2-3 Bits in the Standard Event Status Register

Bit	Name	Description
0	Operation Complete	If all pending operations were completed after execution of the *OPC command, this bit is set to 1.
1	(unused)	This bit is always set to 0.
2	Query Error	If a query error has occurred due to the overflow of output queue, this bit is set to 1.
3	Device Dependent Error	If an error other than a command error, execution error or query error has occurred, this bit is set to 1.
4	Execution Error	If an execution error, error number –200, due to receiving an unexecutable command has occurred, this bit is set to 1.
5	Command Error	If a command error with an error number other than –200, has occurred, this bit is set to 1.
6	(unused)	This bit is always set to 0.
7	Power On	If the instrument has been turned off and then on, this bit is set to 1.

To query the standard event status register, send the command *ESR? The response will be the decimal sum of the enabled bits. For example, if the bit 7 and bit 3 are set to 1, the decimal sum of these two bits is 136 (128 + 8) (see Figure 2-1 on page 22).

Error Messages

The following table shows the error messages for the Test Set.

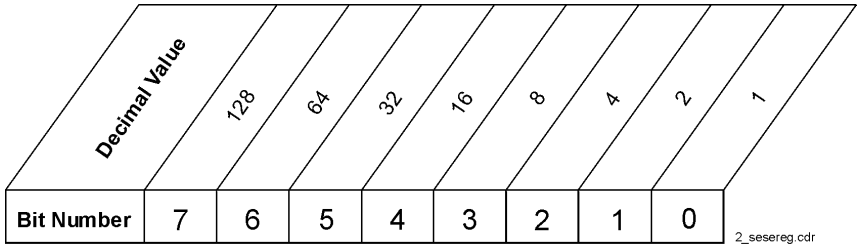
Table 2-4 Error Messages

Error No.	Error Message	Description
0	No error	No error exists.
−100	Command error	Other command error than defined has occurred.
−103	Invalid separator	Syntax analyzer expected a separator but encountered an illegal character.
−112	Program mnemonic too long	Command error due to a too long program mnemonic
−113	Undefined header	Command error due to an undefined header
−120	Numeric data error	Error due to non-numeric type or non-decimal numeric type data
−123	Exponent too large	Error due to the too large exponent
−124	Too many digits	Numeric data element contains too many digits.
−131	Invalid suffix	The suffix does not follow the syntax or is inappropriate.
−141	Invalid character data	Either the character data element contains an invalid character or the particular element received is not valid for the header.
−144	Character data too long	Character data element contains more data than specified.
−200	Execution error	Execution error due to an invalid command
−222	Data out of range	Execution error due to data that is out of range
−350	Queue overflow	Device dependent error due to a queue overflow

Standard Event Status Enable Register (SESER)

In addition to the SESR, the standard event status group also contains an SESER as follows:

Figure 2-5 Standard Event Status Enable Register



This register lets you choose which bits in the standard event status register will set the summary bit (bit 5 of the STBR) to 1. Send the `*ESE <num>` command where `<num>` is the sum of the decimal values of the bits you want to enable.

For example, to enable the bit 5 (Standard Event Status Sum) of STBR whenever at least one of bits 5 and 7 of SESR is set to 1, enable the bits 5 and 7 (32 + 128) of SESER by sending the command

`*ESE 160`.

Refer to Figure 2-1 on page 22. The command `*ESE?` returns the decimal value for the sum of the SESER bits previously enabled with the `*ESE <num>` command.

3 Programming Command Reference

This chapter lists all of the SCPI subsystem commands and subcommands in alphabetical order. The descriptions include syntax requirements, ranges, restrictions, query responses, and status at instrument preset.

CONFigure Subsystem

This subsystem sets or queries the controls and parameters on the Configuration screen.

Send the “DISPlay:CONFigure” command to display the Configuration screen before sending the following commands.

CONFigure Subsystem Command Reference

10 MHz Reference Oscillator

```
CONFigure:ROSCillator <string>
CONFigure:ROSCillator?
```

Defines which reference signal is to be used. When EXT is selected, an appropriate signal needs to be supplied to the 10 MHz reference port on the rear panel of the Test Set.

Parameter	Range/Selection	*RST	Resolution
<string>	INTernal, EXTernal	INT	—

Automatic Run Mode

```
CONFigure:ATMode <string>
CONFigure:ATMode?
```

Sets the execution mode to “continuous” or “pause-on-failure” if a fail result occurs at a test item in the Automatic Test mode.

Parameter	Range/Selection	*RST	Resolution
<string>	CONTinuous, or POFailure for pause-on-failure	CONT	—

Beeper Control

```
CONFigure:BEEPer <bool>
CONFigure:BEEPer?
```

Defines the beeper function. The choice are ON (1) and OFF (0). If set to ON (1), it beeps at every press of the softkeys and the knob. If set to OFF (0), the beeping sound is suppressed except for some errors and warnings.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1), OFF (0)	1	—

Calendar Date

```
CONFigure:DATE <int y>,<int m>,<int d>
CONFigure:DATE?
```

Specifies the test date to be displayed in the upper right screen of the Test Set. Once the date is set, the current date with the internal clock will be displayed at power-on, preset, or *RST.

Parameter	Range/Selection	*RST	Resolution
<int y>	Year: 1990 to 2089	(disabled)	1
<int m>	Month: 1 to 12	(disabled)	1
<int d>	Day: 1 to 31	(disabled)	1

Enabling Option

```
CONFigure:OPTion:INSTall <string>
```

Enables the option designated by the option number. To enable the option of the Test Set, a codeword assigned to each option for the specific Test Set needs to be entered. Option 004 and Option 010 are pre-installed at factory shipment.

Parameter	Range/Selection	*RST	Resolution
<string>	Codeword up to 16 characters	—	—

Even Second Source

```
CONFigure:ESECond <string>
```

Specifies the source of the even second signal to either the internal signal or the external signal. If set to INT, the internal even second signal is used. If set to EXT, it is required to connect the appropriate signal to the BNC-type connector on the rear panel.

Parameter	Range/Selection	*RST	Resolution
<string>	INTernal, EXTernal	INT	—

Panel Key Lock

```
CONFigure:PKEY <string>
CONFigure:PKEY?
```

Defines the lock state of the panel key control. The lock state disables all functions other than Automatic Test and Configuration.

Parameter	Range/Selection	*RST	Resolution
<string>	UNLOCK, LOCK	UNLOCK	—

Print Header

```
CONFigure:PRINter:HEADing <string 1>,<string 2>
CONFigure:PRINter:HEADing?
```

Defines the header lines for print out. These strings must be in double quotation marks.

Parameter	Range/Selection	*RST	Resolution
<string 1>	First line up to 28 alphanumeric characters	(blank)	—
<string 2>	Second line up to 28 alphanumeric characters	(blank)	—

Printer Protocol

```
CONFigure:PRINter <string>
CONFigure:PRINter?
```

Specifies the protocol type of the applicable printer to HP PCL or ESC/P.

Parameter	Range/Selection	*RST	Resolution
<string>	HPPCL, ESCP	HPPCL	—

Real Time Clock

```
CONFigure:TIME <int h>,<int m>
CONFigure:TIME?
```

Specifies the time to be displayed in the upper right screen of the Test Set. Once the time is set, the current internal clock will be displayed at power-on, preset, or *RST.

Parameter	Range/Selection	*RST	Resolution
<int h>	Hour: 0 to 23	(disabled)	1
<int m>	Minute: 0 to 59	(disabled)	1

RF In/Out Losses for Cellular IS95A/TSB74/IS2K/AMPS

```
CONFigure:LOSS:CELLular:US <real in>,<real out>
CONFigure:LOSS:CELLular:US?
```

Specifies the loss values caused by RF input (in) and output (out) paths for the IS2K, IS95A, TSB74 and AMPS bands. Losses for RF In and RF Out are set to <real in> and <real out>, respectively.

Parameter	Range/Selection	*RST	Resolution
<real in>	RF In: 0.0 to 99.9 (dB)	0.0	0.1
<real out>	RF Out: 0.0 to 99.9 (dB)	0.0	0.1

RF In/Out Losses for Cellular T53/IS2K

```
CONFigure:LOSS:CELLular:JAPan <real in>,<real out>
CONFigure:LOSS:CELLular:JAPan?
```

Specifies the loss values caused by RF input (in) and output (out) paths for the T53 and IS2K bands. Losses for RF In and RF Out are set to <real in> and <real out>, respectively.

Parameter	Range/Selection	*RST	Resolution
<real in>	RF In: 0.0 to 99.9 (dB)	0.0	0.1
<real out>	RF Out: 0.0 to 99.9 (dB)	0.0	0.1

RF In/Out Losses for PCS KR/IS2K

```
CONFigure:LOSS:PCS:KOREa <real in>,<real out>
CONFigure:LOSS:PCS:KOREa?
```

Specifies the loss values caused by RF input (in) and output (out) paths for the PCS Korea P0, PCS Korea P1, and PCS KR/IS2K bands. Losses for RF In and RF Out are set to <real in> and <real out>, respectively.

Parameter	Range/Selection	*RST	Resolution
<real in>	RF In: 0.0 to 99.9 (dB)	0.0	0.1
<real out>	RF Out: 0.0 to 99.9 (dB)	0.0	0.1

RF In/Out Losses for PCS US/IS2K

```
CONFigure:LOSS:PCS:US <real in>,<real out>
CONFigure:LOSS:PCS:US?
```

Specifies the loss values caused by RF input (in) and output (out) paths for the PCS US and PCS IS2K bands. Losses for RF In and RF Out are set to <real in> and <real out>, respectively.

Parameter	Range/Selection	*RST	Resolution
<real in>	RF In: 0.0 to 99.9 (dB)	0.0	0.1
<real out>	RF Out: 0.0 to 99.9 (dB)	0.0	0.1

RF Loss Function

```
CONFigure:LOSS <bool>
CONFigure:LOSS?
```

Sets whether the loss function is enabled or disabled.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1), OFF (0)	0	—

Automatic Test Sequence Command Reference

The Automatic Test Sequence commands are used to control the test flow and test sequences, and also to define whether or not to execute Pass/Fail tests for three-channel measurements. The query commands return the settings of those controls and parameters.

Send the “DISPlay:CONFigure:SEQuence” command to display the Test Setup: Test Sequence screen for Automatic Test before sending the following commands.

Radio System

```
CONFigure:SEQuence:RSYStem
<string 1>,<string 2>,<string 3>
CONFigure:SEQuence:RSYStem?
```

Defines a set of three radio systems in the sequence fields, respectively. The first sequence should have a radio system to be tested but the other two can be set to OFF. The valid radio systems are dependent on the options installed with the Test Set.

Parameter	Range/Selection	*RST	Resolution
<string 1> <string 2> <string 3>	For Test Sets without Option 013: CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1, OFF For Test Sets with Option 013: CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1, AMPS, OFF	CEL-US-IS2K	—

For AMPS Tests (Option 013)

NOTE This section is applicable only for Test Sets with Option 013.

1st Call Setup

```
CONFigure:SEQuence:AMPS:SIGNaling:CALL1
<int seq>,<bool>
CONFigure:SEQuence:AMPS:SIGNaling:CALL1? <int seq>
```

Defines whether or not to make first call setup tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<bool>	ON (1) for run, OFF (0) for skip	1	—

1st Call Type

```
CONFigure:SEQuence:AMPS:SIGNaling:CALL1:TYPE
<int seq>,<string>
CONFigure:SEQuence:AMPS:SIGNaling:CALL1:TYPE? <int seq>
```

Specifies a type of the first call setup to either Paging or MS Origination for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<string>	PAGE for Paging, ORIGination for MS origination	ORIG	—

Amplitude for Other Tests

```
CONFigure:SEQuence:AMPS:AMPLitude:OTESt
<int seq>,<real>
CONFigure:SEQuence:AMPS:AMPLitude:OTESt? <int seq>
```

Specifies the amplitude level for test items other than sensitivity for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<real>	–120.0 to –40.0 (dBm)	–50.0	0.1

Amplitude for Sensitivity Tests

```
CONFigure:SEQuence:AMPS:AMPLitude:SENSitivity
<int seq>,<real>
CONFigure:SEQuence:AMPS:AMPLitude:SENSitivity?
<int seq>
```

Specifies the amplitude level to make sensitivity tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<real>	–120.0 to –40.0 (dBm)	–116.0	0.1

Audio Output Adjustment Mode

```
CONFigure:SEQuence:AMPS:AOUT:MODE <int seq>,<string>
CONFigure:SEQuence:AMPS:AOUT:MODE? <int seq>
```

Sets the audio signal output mode to make audio signal measurements for the sequence number set by <int seq>. If set to AUTO, the audio signal level is automatically adjusted to have 8.0 kHz FM deviation for making TX distortion measurements.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<string>	AUTO, MANUAL	AUTO	—

Audio Output Level

```
CONFigure:SEQuence:AMPS:AOUT:LEVel <int seq>,<int lev>
CONFigure:SEQuence:AMPS:AOUT:LEVel? <int seq>
```

Specifies the audio signal output level to make audio signal measurements for the sequence number set by <int seq>, in conjunction with the Audio Output Adjustment Mode command.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int lev>	–48 to +12 (dBV)	–48	1

DC Current at Idle

```
CONFigure:SEQuence:AMPS:CURRent:IDLE <int seq>,<int>
CONFigure:SEQuence:AMPS:CURRent:IDLE? <int seq>
```

Defines whether or not to make idle dc current tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	0 (skip) or 1 (run)	1	—

DC Current at Talk

```
CONFigure:SEQuence:AMPS:CURRent:TALK <int seq>,<int>
CONFigure:SEQuence:AMPS:CURRent:TALK? <int seq>
```

Defines whether or not to make talk dc current tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	0 to 7 (bit-weighted decimal) RFCH1: bit 0 (1) to 0 (skip) or 1 (run), RFCH2: bit 1 (2) to 0 (skip) or 1 (run), RFCH3: bit 2 (4) to 0 (skip) or 1 (run)	7	1

FM Deviation Limiting

```
CONFigure:SEQuence:AMPS:FMDLimit <int seq>,<int>
CONFigure:SEQuence:AMPS:FMDLimit? <int seq>
```

Defines whether or not to make FM deviation limiting performance tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	0 to 7 (bit-weighted decimal) RFCH1: bit 0 (1) to 0 (skip) or 1 (run), RFCH2: bit 1 (2) to 0 (skip) or 1 (run), RFCH3: bit 2 (4) to 0 (skip) or 1 (run)	7	1

Frequency Error

```
CONFigure:SEQuence:AMPS:FERRor <int seq>,<int>
CONFigure:SEQuence:AMPS:FERRor? <int seq>
```

Defines whether or not to make frequency error tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	0 to 7 (bit-weighted decimal) RFCH1: bit 0 (1) to 0 (skip) or 1 (run), RFCH2: bit 1 (2) to 0 (skip) or 1 (run), RFCH3: bit 2 (4) to 0 (skip) or 1 (run)	7	1

Instruction Message

```
CONFigure:SEQuence:AMPS:SIGNaling:MESSage
<int seq>,<int step>,<string>
CONFigure:SEQuence:AMPS:SIGNaling:MESSage?
<int seq>,<int step>
```

Defines the instruction message of <string> for the step number in <int step> for the sequence number set by <int seq>. These strings must be in double quotation marks.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int step>	Message for Step No.: 1 to 6	1	1
<string>	Message up to 69 characters	Yes[a]	—

a. “Wait for Registration.” is displayed.

Registration

```
CONFigure:SEQuence:AMPS:SIGNaling:REGister
<int seq>,<bool>
CONFigure:SEQuence:AMPS:SIGNaling:REGister? <int seq>
```

Defines whether or not to make registration tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<bool>	ON (1) for run, OFF (0) for skip	1	—

RF Channel Setting

```
CONFigure:SEQuence:AMPS:RFCHannel
<int seq>,<int ch1>,<int ch2>,<int ch3>
CONFigure:SEQuence:AMPS:RFCHannel? <int seq>
```

Specifies three of the RF channel numbers to be tested for the sequence number set by <int seq>. Enter 9999 in <int ch2> and/or <int ch3> to skip tests on RFCH2 and/or RFCH3, respectively. “----” is displayed on the screen.

The Test Set returns 9999 for the channel(s) set to skip tests when queried.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int ch1>	RFCH1: 991 to 1023, or 1 to 799	991	1
<int ch2>	RFCH2: 991 to 1023, 1 to 799, or 9999	384	1
<int ch3>	RFCH3: 991 to 1023, 1 to 799, or 9999	799	1

RF/AF Test

```
CONFigure:SEQuence:AMPS:SIGNaling:RFAF <int seq>,<bool>
CONFigure:SEQuence:AMPS:SIGNaling:RFAF? <int seq>
```

Defines whether or not to make RF/AF tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int>	Sequence No.: 1, 2, 3	1	1
<bool>	ON (1) for run, OFF (0) for skip	1	—

RX Distortion

```
CONFigure:SEQuence:AMPS:RXDistortion <int seq>,<int>
CONFigure:SEQuence:AMPS:RXDistortion? <int seq>
```

Defines whether or not to make RX distortion tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	0 to 7 (bit-weighted decimal) RFCH1: bit 0 (1) to 0 (skip) or 1 (run), RFCH2: bit 1 (2) to 0 (skip) or 1 (run), RFCH3: bit 2 (4) to 0 (skip) or 1 (run)	7	1

RX SINAD

```
CONFigure:SEQuence:AMPS:RXSinad <int seq>,<int>
CONFigure:SEQuence:AMPS:RXSinad? <int seq>
```

Defines whether or not to make RX SINAD tests for the sequence number specified by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	0 to 7 (bit-weighted decimal) RFCH1: bit 0 (1) to 0 (skip) or 1 (run), RFCH2: bit 1 (2) to 0 (skip) or 1 (run), RFCH3: bit 2 (4) to 0 (skip) or 1 (run)	7	1

SAT Deviation

```
CONFigure:SEQuence:AMPS:SATone:Deviation
<int seq>,<int>
CONFigure:SEQuence:AMPS:SATone:Deviation? <int seq>
```

Defines whether or not to make frequency deviation tests of the supervisory audio tone (SAT) signal for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	0 to 7 (bit-weighted decimal) RFCH1: bit 0 (1) to 0 (skip) or 1 (run), RFCH2: bit 1 (2) to 0 (skip) or 1 (run), RFCH3: bit 2 (4) to 0 (skip) or 1 (run)	7	1

SAT Frequency Error

```
CONFigure:SEQuence:AMPS:SATone:FERRor <int seq>,<int>
CONFigure:SEQuence:AMPS:SATone:FERRor? <int seq>
```

Defines whether or not to make frequency error tests of the supervisory audio tone (SAT) signal for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	0 to 7 (bit-weighted decimal) RFCH1: bit 0 (1) to 0 (skip) or 1 (run), RFCH2: bit 1 (2) to 0 (skip) or 1 (run), RFCH3: bit 2 (4) to 0 (skip) or 1 (run)	7	1

ST Deviation

```
CONFigure:SEQuence:AMPS:ST:Deviation <int seq>,<int>
CONFigure:SEQuence:AMPS:ST:Deviation? <int seq>
```

Defines whether or not to make frequency deviation tests of the signaling tone (ST) for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	0 to 7 (bit-weighted decimal) RFCH1: bit 0 (1) to 0 (skip) or 1 (run), RFCH2: bit 1 (2) to 0 (skip) or 1 (run), RFCH3: bit 2 (4) to 0 (skip) or 1 (run)	7	1

ST Frequency

```
CONFigure:SEQuence:AMPS:ST:FREQuency <int seq>,<int>
CONFigure:SEQuence:AMPS:ST:FREQuency? <int seq>
```

Defines whether or not to make frequency tests of the signaling tone (ST) signal for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	0 to 7 (bit-weighted decimal) RFCH1: bit 0 (1) to 0 (skip) or 1 (run), RFCH2: bit 1 (2) to 0 (skip) or 1 (run), RFCH3: bit 2 (4) to 0 (skip) or 1 (run)	7	1

TX Distortion

```
CONFigure:SEQuence:AMPS:TXDistortion <int seq>,<int>
CONFigure:SEQuence:AMPS:TXDistortion? <int seq>
```

Defines whether or not to make TX distortion tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	0 to 7 (bit-weighted decimal) RFCH1: bit 0 (1) to 0 (skip) or 1 (run), RFCH2: bit 1 (2) to 0 (skip) or 1 (run), RFCH3: bit 2 (4) to 0 (skip) or 1 (run)	7	1

TX Power

```
CONFigure:SEQuence:AMPS:TXPower <int seq>,<int>
CONFigure:SEQuence:AMPS:TXPower? <int seq>
```

Defines whether or not to make TX power tests for the sequence number specified by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	0 to 7 (bit-weighted decimal) RFCH1: bit 0 (1) to 0 (skip) or 1 (run), RFCH2: bit 1 (2) to 0 (skip) or 1 (run), RFCH3: bit 2 (4) to 0 (skip) or 1 (run)	7	1

For CDMA Tests

1st Call Setup

```
CONFigure:SEQuence:CDMA:SIGNaling:CALL1
<int seq>,<bool>
CONFigure:SEQuence:CDMA:SIGNaling:CALL1? <int seq>
```

Defines whether or not to make first call setup tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<bool>	ON (1) for run, OFF (0) for skip	1	—

1st Call Type

```
CONFigure:SEQuence:CDMA:SIGNaling:CALL1:TYPE
<int seq>,<string>
CONFigure:SEQuence:CDMA:SIGNaling:CALL1:TYPE? <int seq>
```

Specifies a type of the first call setup to either Paging or MS Origination for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<string>	PAGE for Paging, ORIGination for MS origination	ORIG	—

Amplitude for Other Tests

```
CONFigure:SEQuence:CDMA:AMPLitude:OTESt
<int seq>,<real>
CONFigure:SEQuence:CDMA:AMPLitude:OTESt? <int seq>
```

Specifies the amplitude level for test items other than sensitivity for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<real>	–110.0 to –20.0 (dBm)	–75.0	0.1

Amplitude for Sensitivity Tests

```
CONFigure:SEQuence:CDMA:AMPLitude:SENSitivity
<int seq>,<real>
CONFigure:SEQuence:CDMA:AMPLitude:SENSitivity?
<int seq>
```

Specifies the amplitude level to make sensitivity tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int>	Sequence No.: 1, 2, 3	1	1
<real>	–110.0 to –20.0 (dBm)	–104.0	0.1

DC Current at Idle

```
CONFigure:SEQuence:CDMA:CURRent:IDLE <int seq>,<int>
CONFigure:SEQuence:CDMA:CURRent:IDLE? <int seq>
```

Defines whether or not to make idle dc current tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	0 (skip) or 1 (run)	1	—

DC Current at Talk

```
CONFigure:SEQuence:CDMA:CURRent:TALK <int seq>,<int>
CONFigure:SEQuence:CDMA:CURRent:TALK? <int seq>
```

Defines whether or not to make talk dc current tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	0 to 7 (bit-weighted decimal) RFCH1: bit 0 (1) to 0 (skip) or 1 (run), RFCH2: bit 1 (2) to 0 (skip) or 1 (run), RFCH3: bit 2 (4) to 0 (skip) or 1 (run)	7	1

Frequency Error

```
CONFigure:SEQuence:CDMA:FERRor <int seq>,<int>
CONFigure:SEQuence:CDMA:FERRor? <int seq>
```

Defines whether or not to make frequency error tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	0 to 7 (bit-weighted decimal) RFCH1: bit 0 (1) to 0 (skip) or 1 (run), RFCH2: bit 1 (2) to 0 (skip) or 1 (run), RFCH3: bit 2 (4) to 0 (skip) or 1 (run)	7	1

Hard Handoff

```
CONFigure:SEQuence:CDMA:SIGNaling:HHOFf
<int seq>,<bool>
CONFigure:SEQuence:CDMA:SIGNaling:HHOFf? <int seq>
```

Defines whether or not to make hard handoff tests from one radio system to another radio system, for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<bool>	ON (1) for run, OFF (0) for skip	1	—

Instruction Message

```
CONFigure:SEQuence:CDMA:SIGNaling:MESSage
<int seq>,<int step>,<string>
CONFigure:SEQuence:CDMA:SIGNaling:MESSage?
<int seq>,<int step>
```

Defines the instruction message of <string> for the step number in <int step> for the sequence number set by <int seq>. These strings must be in the double quotation marks.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int step>	Message for Step No.: 1 to 6	1	1
<string>	Message up to 69 characters	Yes[a]	—

a. “Wait for Registration.” is displayed.

Maximum TX Power

```
CONFigure:SEQuence:CDMA:MAXPower <int seq>,<int>
CONFigure:SEQuence:CDMA:MAXPower? <int seq>
```

Defines whether or not to make maximum TX power tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	0 to 7 (bit-weighted decimal) RFCH1: bit 0 (1) to 0 (skip) or 1 (run), RFCH2: bit 1 (2) to 0 (skip) or 1 (run), RFCH3: bit 2 (4) to 0 (skip) or 1 (run)	7	1

Minimum TX Power

```
CONFigure:SEQuence:CDMA:MINPower <int seq>,<int>
CONFigure:SEQuence:CDMA:MINPower? <int seq>
```

Defines whether or not to make minimum TX power tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	0 to 7 (bit-weighted decimal) RFCH1: bit 0 (1) to 0 (skip) or 1 (run), RFCH2: bit 1 (2) to 0 (skip) or 1 (run), RFCH3: bit 2 (4) to 0 (skip) or 1 (run)	7	1

Registration

```
CONFigure:SEQuence:CDMA:SIGNaling:REGister
<int seq>,<bool>
CONFigure:SEQuence:CDMA:SIGNaling:REGister? <int seq>
```

Defines whether or not to make registration tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<bool>	ON (1) for run, OFF (0) for skip	1	—

RF Channel Setting

```
CONFigure:SEQuence:RFCHannel
<int seq>,<int ch1>,<int ch2>,<int ch3>
CONFigure:SEQuence:CDMA:RFCHannel? <int seq>
```

Specifies three of the RF channel numbers to be tested for the sequence number set by <int seq>. Enter 9999 in <int ch2> and/or <int ch3> to skip tests on RFCH2 and/or RFCH3, respectively. “----” is displayed on the screen.

The Test Set returns 9999 when queried, for the channel(s) set to skip tests.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int ch1>	For CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, AMPS: 991 to 1023, 1 to 799	991	1
	For CEL-JP-IS2K, CELLR-T53[a]: 1041 to 1199, 801 to 1039, 1 to 799	1041	1
	For PCS-US-IS2K, PCS-US: 0 to 1199	0	1
	For PCS-KOREA-P0: 0 to 1300	0	1
	For PCS-KR-IS2K, PCS-KOREA-P1: 601 to 1300, 1 to 600	601	1

Parameter	Range/Selection	*RST	Resolution
<int ch2>	For CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, AMPS: 991 to 1023, 1 to 799, 9999	384	1
	For CEL-JP-IS2K, CELLR-T53[a]: 1041 to 1199, 801 to 1039, 1 to 799, 9999	1039	1
	For PCS-US-IS2K, PCS-US: 0 to 1199, 9999	600	1
	For PCS-KOREA-P0: 0 to 1300, 9999	650	1
	For PCS-KR-IS2K, PCS-KOREA-P1: 601 to 1300, 1 to 600, 9999	1250	1
<int ch3>	For CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, AMPS: 991 to 1023, 1 to 799, 9999	799	1
	For CEL-JP-IS2K, CELLR-T53[a]: 1041 to 1199, 801 to 1039, 1 to 799, 9999	799	1
	For PCS-US-IS2K, PCS-US: 0 to 1199, 9999	1199	1
	For PCS-KOREA-P0: 0 to 1300, 9999	1300	1
	For PCS-KR-IS2K, PCS-KOREA-P1: 601 to 1300, 1 to 600, 9999	600	1

a. Channels 1201 to 1600 will not be supported.

RF Test

```
CONFigure:SEQuence:CDMA:SIGNaling:RFTest
<int seq>,<bool>
CONFigure:SEQuence:CDMA:SIGNaling:RFTest? <int seq>
```

Defines whether or not to make RF/AF tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<bool>	ON (1) for run, OFF (0) for skip	1	—

Rho Test

```
CONFigure:SEQuence:CDMA:RHO <int seq>,<int>
CONFigure:SEQuence:CDMA:RHO? <int seq>
```

Defines whether or not to make rho (waveform quality) tests for the sequence number set by <int seq>. This is also applied to the multi-code rho tests for IS2K systems when the radio configuration is set to either F3R3, F4R3, or F5R4.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	0 to 7 (bit-weighted decimal) RFCH1: bit 0 (1) to 0 (skip) or 1 (run), RFCH2: bit 1 (2) to 0 (skip) or 1 (run), RFCH3: bit 2 (4) to 0 (skip) or 1 (run)	7	1

Sensitivity/FER Test

```
CONFigure:SEQuence:CDMA:SENSitivity <int seq>,<int>
CONFigure:SEQuence:CDMA:SENSitivity? <int seq>
```

Defines whether or not to make sensitivity/FER (frame error rate) tests for the sequence number set by <int seq>. This is also applied to the sensitivity TDSO FER tests for IS2K systems when the service option is set to 32.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	0 to 7 (bit-weighted decimal) RFCH1: bit 0 (1) to 0 (skip) or 1 (run), RFCH2: bit 1 (2) to 0 (skip) or 1 (run), RFCH3: bit 2 (4) to 0 (skip) or 1 (run)	7	1

Service Option for Other Tests on CEL-US-IS2K/-JP-IS2K RC1/3/4

```
CONFigure:SEQuence:CDMA:SOPTion:OTESt <int seq>,<int>
CONFigure:SEQuence:CDMA:SOPTion:OTESt? <int seq>
```

Specifies service option 002 for data loopback tests for the sequence number set by <int seq>, when the radio configuration is set to either F1R1, F3R3, or F4R3 on IS2K systems.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	2 for data loopback at 9.6 kbps	2	—

Service Option for Other Tests on CEL-US-IS2K/-JP-IS2K RC2/5

```
CONFigure:SEQuence:CDMA:SOPTion:OTESt <int seq>,<int>
CONFigure:SEQuence:CDMA:SOPTion:OTESt? <int seq>
```

Specifies service option 009 for data loopback tests for the sequence number set by <int seq>, when the radio configuration is set to either F2R2 or F5R4 on IS2K systems.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	9 for data loopback at 14.4 kbps	9	—

Service Option for Other Tests on CELLR-IS95A/-TSB74/-T53

```
CONFigure:SEQuence:CDMA:SOPTion:OTESt <int seq>,<int>
CONFigure:SEQuence:CDMA:SOPTion:OTESt? <int seq>
```

Specifies one service option for data loopback tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	2 for data loopback at 9.6 kbps, or 9 for data loopback at 14.4 kbps	2	—

Service Option for Voice Echo on CEL-US-IS2K/-JP-IS2K RC1/3/4

```
CONFigure:SEQuence:CDMA:SOPTion:VECho <int seq>,<int>
CONFigure:SEQuence:CDMA:SOPTion:VECho? <int seq>
```

Specifies one service option for voice echo tests for the sequence number set by <int seq>, when the radio configuration is set to either F1R1, F3R3, or F4R3 on IS2K systems.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	1 for normal voice, or 3 for voice using EVRC (enhanced variable rate coder) at 9.6 kbps	1	—

Service Option for Voice Echo on CEL-US-IS2K/-JP-IS2K RC2/5

```
CONFigure:SEQuence:CDMA:SOPTion:VECho <int seq>,<int>
CONFigure:SEQuence:CDMA:SOPTion:VECho? <int seq>
```

Specifies one service option for voice echo tests for the sequence number set by <int seq>, when the radio configuration is set to either F2R2 or F5R4 on IS2K systems.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	17 for voice at 14.4 kbps, or 32768 for voice at 14.4 kbps	17	—

Service Option for Voice Echo on CELLR-IS95A/-TSB74/-T53

```
CONFigure:SEQuence:CDMA:SOPTion:VECho <int seq>,<int>
CONFigure:SEQuence:CDMA:SOPTion:VECho? <int seq>
```

Specifies one service option for voice echo tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	1 for normal voice, 3 for voice using EVRC (enhanced variable rate coder) at 9.6 kbps, or 32768 for voice at 14.4 kbps	1	—

Softer Handoff

```
CONFigure:SEQuence:CDMA:SIGNaling:SHOFf
<int seq>,<bool>
CONFigure:SEQuence:CDMA:SIGNaling:SHOFf? <int seq>
```

Defines whether or not to make softer handoff tests from one RF channel to another RF channel, for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<bool>	ON (1) for run, OFF (0) for skip	1	—

Time Offset

```
CONFigure:SEQuence:CDMA:TOFFset <int seq>,<int>
CONFigure:SEQuence:CDMA:TOFFset? <int seq>
```

Defines whether or not to make time offset tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int>	0 to 7 (bit-weighted decimal) RFCH1: bit 0 (1) to 0 (skip) or 1 (run), RFCH2: bit 1 (2) to 0 (skip) or 1 (run), RFCH3: bit 2 (4) to 0 (skip) or 1 (run)	7	1

Voice Echo

```
CONFigure:SEQuence:CDMA:SIGNaling:VECHo
<int seq>,<bool>
CONFigure:SEQuence:CDMA:SIGNaling:VECHo? <int seq>
```

Defines whether or not to make voice echo tests for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<bool>	ON (1) for run, OFF (0) for skip	1	—

File Management Command Reference

The FILE commands are used to manage the test setup files on an SRAM memory card.

Send the “DISPlay:CONFigure:FILE” command to display the File Management screen before sending the following commands.

Delete File

```
CONFigure:FILE:DELete <string>
```

Deletes the test setup file set by <string> (file name) from an SRAM memory card. This string must be in double quotation marks. There is no query form of this command.

Parameter	Range/Selection	*RST	Resolution
<string>	Filename: Up to 8 characters	—	—

Format Card

```
CONFigure:FILE:FORMat
```

Initializes an SRAM memory card. This command will *not* initialize the firmware update card.There is no query form of this command.

List Files

```
CONFigure:FILE:LIST?
```

Returns a list of all information on the setup files in an SRAM memory card. This information includes the total number of files, file number, file name, date & time, and comment for each file.

Recall File

```
CONFigure:FILE:RECall <string>
```

Loads the test setup file set by <string> (file name) from an SRAM memory card. This string must be in double quotation marks. There is no query form of this command.

Parameter	Range/Selection	*RST	Resolution
<string>	Filename: Up to 8 characters	—	—

Save File

```
CONFigure:FILE:SAVE <string 1>,<string 2>
```

Saves the current setting of the Test Set into an SRAM memory card. These strings must be in double quotation marks. Date and time are automatically given by the Test Set. There is no query form of this command.

Parameter	Range/Selection	*RST	Resolution
<string 1>	Filename: Up to 8 characters	—	—
<string 2>	Comment: Up to 23 characters	—	—

Test Condition Command Reference

The test condition commands are used to set the controls and parameters associated with the test condition and Pass/Fail test limits for Automatic Test, Manual Test, and TX Analyzer. The query commands return the settings of those controls and parameters.

Send the “DISPlay:CONFigure:CONDition” command to display the Test Setup: Test Condition screen before sending the following commands.

Radio System

```
CONFigure:CONDition:RSYStem
<string 1>,<string 2>,<string 3>
CONFigure:CONDition:RSYStem?
```

Defines the radio system to be tested. The valid radio systems are dependent on the options installed with the Test Set.

Parameter	Range/Selection	*RST	Resolution
<string 1>	For Test Sets without Option 013: CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1, OFF For Test Sets with Option 013: CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1, AMPS, OFF	CEL-US-IS2K	—
<string 2>			
<string 3>			

For AMPS Tests (Option 013)

NOTE This section is applicable only for Test Sets with Option 013.

Control Channel

```
CONFigure:CONDition:AMPS:CCHannel <int>
CONFigure:CONDition:AMPS:CCHannel?
```

Specifies one of the control channel numbers from the given ranges.

Parameter	Range/Selection	*RST	Resolution
<int>	313 to 333, or 334 to 354	321	1

DC Current Limit at Idle

```
CONFigure:CONDition:AMPS:LIMit:CURRent:IDLE
<real lo>,<real hi>
CONFigure:CONDition:AMPS:LIMit:CURRent:IDLE?
```

Specifies the lower and upper limits of idle dc current tests.

Parameter	Range/Selection	*RST	Resolution
<real lo>	Lower limit: 0.000 to 1.000 (A)	0.000	0.001
<real hi>	Upper limit: 0.000 to 1.000 (A)	1.000	

DC Current Limit at Talk

```
CONFigure:CONDition:AMPS:LIMit:CURRent:TALK
<real lo>,<real hi>
CONFigure:CONDition:AMPS:LIMit:CURRent:TALK?
```

Specifies the lower and upper limits of talk dc current tests.

Parameter	Range/Selection	*RST	Resolution
<real lo>	Lower limit: 0.000 to 1.000 (A)	0.000	0.001
<real hi>	Upper limit: 0.000 to 1.000 (A)	1.000	

FM Deviation Limiting Performance Limit

```
CONFigure:CONDition:AMPS:LIMit:FMDLimit
<real lo>,<real hi>
CONFigure:CONDition:AMPS:LIMit:FMDLimit?
```

Specifies the lower and upper limits of FM deviation limiting performance tests.

Parameter	Range/Selection	*RST	Resolution
<real lo>	Lower limit: 1000 to 25000 (Hz)	1000	10
<real hi>	Upper limit: 1000 to 25000 (Hz)	12000	

Frequency Error Limit

```
CONFigure:CONDition:AMPS:LIMit:FERRor
<real lo>,<real hi>
CONFigure:CONDition:AMPS:LIMit:FERRor?
```

Specifies the lower and upper limits of RF frequency error tests.

Parameter	Range/Selection	*RST	Resolution
<real lo>	Lower limit: –12.50 to +12.50 (ppm)	–2.50	0.01
<real hi>	Upper limit: –12.50 to +12.50 (ppm)	+2.50	

Power Level

```
CONFigure:CONDition:AMPS:PLEVel <int>
CONFigure:CONDition:AMPS:PLEVel?
```

Specifies the transmission power level between 0 (+36 dBm) and 7 (+8 dBm) for Class I AMPS radio systems.

Parameter	Range/Selection	*RST	Resolution
<int>	0 (+36 dBm) to 7 (+8 dBm)	0	7

RX Distortion Limit

```
CONFigure:CONDition:AMPS:LIMit:RXDistortion <real>
CONFigure:CONDition:AMPS:LIMit:RXDistortion?
```

Specifies the upper limit of receiver distortion tests.

Parameter	Range/Selection	*RST	Resolution
<real>	Upper limit: 0.0 to 100.0(%)	5.0	0.1

RX SINAD Limit

```
CONFigure:CONDition:AMPS:LIMit:RXSinad <real>
CONFigure:CONDition:AMPS:LIMit:RXSinad?
```

Specifies the upper limit of receiver SINAD tests.

Parameter	Range/Selection	*RST	Resolution
<real>	Lower limit: 0.0 to 40.0 (dB)	12.0	0.1

SAT Deviation Limit

```
CONFigure:CONDition:AMPS:LIMit:SATone:Deviation
<real lo>,<real hi>
CONFigure:CONDition:AMPS:LIMit:SATone:Deviation?
```

Specifies the lower and upper limits of frequency deviation tests for the supervisory audio tone (SAT) signal.

Parameter	Range/Selection	*RST	Resolution
<real lo>	Lower limit: 1000 to 25000 (Hz)	1800	10
<real hi>	Upper limit: 1000 to 25000 (Hz)	2200	

SAT Frequency

```
CONFigure:CONDition:AMPS:SATone <string>
CONFigure:CONDition:AMPS:SATone?
```

Specifies one of the supervisory audio tone (SAT) frequencies defined for AMPS.

Parameter	Range/Selection	*RST	Resolution
<string>	5970, 6000, or 6030 (Hz)	5970	—

SAT Frequency Error Limit

```
CONFigure:CONDition:AMPS:LIMit:SATone:FERRor
<real lo>,<real hi>
CONFigure:CONDition:AMPS:LIMit:SATone:FERRor?
```

Specifies the lower and upper limits of frequency error tests for the supervisory audio tone (SAT) signal.

Parameter	Range/Selection	*RST	Resolution
<real lo>	Lower limit: –600.0 to +600.0 (Hz)	–1.0	0.1
<real hi>	Upper limit: –600.0 to +600.0 (Hz)	+1.0	

ST Deviation Limit

```
CONFigure:CONDition:AMPS:LIMit:ST:Deviation
<real lo>,<real hi>
CONFigure:CONDition:AMPS:LIMit:ST:Deviation?
```

Specifies the lower and upper limits of frequency deviation tests for the signaling tone (ST).

Parameter	Range/Selection	*RST	Resolution
<real lo>	Lower limit: 1000 to 25000 (Hz)	7200	10
<real hi>	Upper limit: 1000 to 25000 (Hz)	8800	

ST Frequency Limit

```
CONFigure:CONDition:AMPS:LIMit:ST:FREQuency
<real lo>,<real hi>
CONFigure:CONDition:AMPS:LIMit:ST:FREQuency?
```

Specifies the lower and upper limits of frequency tests for the signaling tone (ST).

Parameter	Range/Selection	*RST	Resolution
<real lo>	Lower limit: 9000.0 to 11000.0 (Hz)	9999.0	0.1
<real hi>	Upper limit: 9000.0 to 11000.0 (Hz)	10001.0	

System ID

```
CONFigure:CONDition:AMPS:SIDentify <int>
CONFigure:CONDition:AMPS:SIDentify?
```

Specifies the system identification (SID) number (15 bits) of the mobile phone.

Parameter	Range/Selection	*RST	Resolution
<int>	0 to 32767	231	1

TX Distortion Limit

```
CONFigure:CONDition:AMPS:LIMit:TXDistortion <real>
CONFigure:CONDition:AMPS:LIMit:TXDistortion?
```

Specifies the upper limit of transmission distortion tests.

Parameter	Range/Selection	*RST	Resolution
<real >	Upper limit: 0.0 to 100.0(%)	5.0	0.1

TX Power Limit

```
CONFigure:CONDition:AMPS:LIMit:TXPower
<real lo>,<real hi>
CONFigure:CONDition:AMPS:LIMit:TXPower?
```

Specifies the lower and upper limits of transmission power level tests.

Parameter	Range/Selection	*RST	Resolution
<real lo>	Lower limit: –99.9 to +99.9 (dBm)	+24.0	0.1
<real hi>	Upper limit: –99.9 to +99.9 (dBm)	+30.0	

For CDMA Tests

There are two kinds of commands for CDMA tests:

- Common commands used for all CDMA radio systems, and
- Commands for the radio system specified by the first string.

Averaging Number for Frequency Error Tests

```
CONFigure:CONDition:CDMA:FAVerage <int>
```

Specifies the averaging number for the frequency error tests.

Parameter	Range/Selection	*RST	Resolution
<int>	1 to 100	4	1

Averaging Time for Idle DC Current Test

```
CONFigure:CONDition:CDMA:CAVerage <string>
CONFigure:CONDition:CDMA:CAVerage?
```

Specifies the averaging number for the idle dc current measurements.

Parameter	Range/Selection	*RST	Resolution
<string>	1.28, 2.56, 5.12, 10.24 (sec)	1.28	—

Confidence Level

```
CONFigure:CONDition:CDMA:CONFidence <string>
CONFigure:CONDition:CDMA:CONFidence?
```

Sets the confidence level for sensitivity/FER (frame error rate) tests to either 95% or OFF.

Parameter	Range/Selection	*RST	Resolution
<string>	95(%), OFF	95	—

DC Current Limit at Idle

```
CONFigure:CONDition:CDMA:LIMit:CURRent:IDLE
<string>,<real lo>,<real hi>
CONFigure:CONDition:CDMA:LIMit:CURRent:IDLE? <string>
```

Specifies the lower and upper limits of idle dc current tests for the radio system set by <string>.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1	CEL-US-IS2K	—
<real lo>	Lower limit: 0.000 to 1.000 (A)	0.000	0.001
<real hi>	Upper limit: 0.000 to 1.000 (A)	1.000	

DC Current Limit at Talk

```
CONFigure:CONDition:CDMA:LIMit:CURRent:TALK
<string>,<real lo>,<real hi>
CONFigure:CONDition:CDMA:LIMit:CURRent:TALK? <string>
```

Specifies the lower and upper limits of talk dc current tests for the radio system set by <string>.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1	CEL-US-IS2K	—
<real lo>	Lower limit: 0.000 to 1.000 (A)	0.000	0.001
<real hi>	Upper limit: 0.000 to 1.000 (A)	1.000	

Frequency Error Limit

```
CONFigure:CONDition:CDMA:LIMit:FERRor
<string>,<real lo>,<real hi>
CONFigure:CONDition:CDMA:LIMit:FERRor? <string>
```

Specifies the lower and upper limits of frequency error tests for the radio system set by <string>.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1	CEL-US-IS2K	—
<real lo>	Lower limit: –10000 to +10000 (Hz)	–300	1
<real hi>	Upper limit: –10000 to +10000 (Hz)	+300	

Initial Power

```
CONFigure:CONDition:CDMA:PINitial <string>,<int>
CONFigure:CONDition:CDMA:PINitial? <string>
```

Specifies the initial power offset of the access probe signal for the radio system set by <string>.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1	CEL-US-IS2K	—
<int>	–16 to 15 (dB)	0	1

Maximum Frames

```
CONFigure:CONDition:CDMA:MAXFrames <int>
CONFigure:CONDition:CDMA:MAXFrames?
```

Specifies the maximum number of frames to be tested for sensitivity/FER (frame error rate) tests.

Parameter	Range/Selection	*RST	Resolution
<int>	25 to 10000000 (frames)	10000	1

Maximum Power Limit

```
CONFigure:CONDition:CDMA:LIMit:MAXPower
<string>,<real lo>,<real hi>
CONFigure:CONDition:CDMA:LIMit:MAXPower? <string>
```

Specifies the lower and upper limits of maximum transmission power tests for the radio system set by <string>.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1	CEL-US-IS2K	—
<real lo>	Lower limit: –99.9 to 99.9 (dBm)	+23.0	0.1
<real hi>	Upper limit: –99.9 to 99.9 (dBm)	+30.0	

Maximum Request & Response Sequences

```
CONFigure:CONDition:CDMA:MRSequence <string>,<int>
CONFigure:CONDition:CDMA:MRSequence? <string>
```

Specifies one of the maximum numbers of both the request sequence and the response sequence of the access probe power for the radio system set by <string>.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1	CEL-US-IS2K	—
<int>	Sequence number: 1 to 15	1	1

Maximum Slot Cycle Index

```
CONFigure:CONDition:CDMA:MSCindex <string>,<int>
CONFigure:CONDition:CDMA:MSCindex? <string>
```

Specifies the maximum slot cycle index, which is a part of the variable-length message format for a registration message, for the radio system set by <string>.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1	CEL-US-IS2K	—
<int>	Index: 0 to 7	0	1

Minimum Power Limit

```
CONFigure:CONDition:CDMA:LIMit:MINPower
<string>,<real lo>,<real hi>
CONFigure:CONDition:CDMA:LIMit:MINPower? <string>
```

Specifies the lower and upper limits of minimum transmission power tests for the radio system set by <string>.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1	CEL-US-IS2K	—
<real lo>	Lower limit: –99.9 to 99.9 (dBm)	–99.9	0.1
<real hi>	Upper limit: –99.9 to 99.9 (dBm)	–50.0	

Multi Code Rho Limit

```
CONFigure:CONDition:CDMA:LIMit:MRHO
<string>,<real lo>,<real hi>
CONFigure:CONDition:CDMA:LIMit:MRHO? <string>
```

Specifies the lower and upper limits of rho (waveform quality) tests on a multiple coded channel for the IS2K system set by <string>. The radio configuration needs to be set to either F3R3, F4R3, or F5R4.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CEL-JP-IS2K	CEL-US-IS2K	—
<real lo>	Lower limit: 0.800 to 1.000	0.944	0.001
<real hi>	Upper limit: 0.800 to 1.000	1.000	

Network ID

```
CONFigure:CONDition:CDMA:NID <string>,<int>
CONFigure:CONDition:CDMA:NID? <string>
```

Specifies the network identification (NID) number (16 bits) of the base station for the radio system set by <string>.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1	CEL-US-IS2K	—
<int>	0 to 65535	1	1

Nominal Power

```
CONFigure:CONDition:CDMA:PNOMinal <string>,<int>
CONFigure:CONDition:CDMA:PNOMinal? <string>
```

Specifies the nominal transmission power offset of the access probe signal for the radio system set by <string>.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1	CEL-US-IS2K	—
<int>	–8 to 7 (dB)	0	1

Number of Power Steps

```
CONFigure:CONDition:CDMA:NSTep <string>,<int>
CONFigure:CONDition:CDMA:NSTep? <string>
```

Specifies the number of steps to increase the transmission power level of the access probe signal for the radio system set by <string>.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1	CEL-US-IS2K	—
<int>	0 to 15 (steps)	4	1

Power Increase Step

```
CONFigure:CONDition:CDMA:PSTep <string>,<int>
CONFigure:CONDition:CDMA:PSTep? <string>
```

Specifies the power increase step of the access probe power for the radio system set by <string>.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1	CEL-US-IS2K	—
<int>	0 to 7 (dB)	3	1

Power Up Registration

```
CONFigure:CONDition:CDMA:PURegister <string>,<bool>
CONFigure:CONDition:CDMA:PURegister? <string>
```

Defines whether to activate or to disable the power-up registration function of the signaling process for the radio system set by <string>.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1	CEL-US-IS2K	—
<bool>	ON (1) for activate, OFF (0) for disable	0	—

Radio Configuration for IS2K

```
CONFigure:CONDition:CDMA:RCONfig <string>
CONFigure:CONDition:CDMA:RCONfig?
```

Specifies one of the radio configurations in the combination of forward link and reverse link for IS2K systems tests, to be used in the Automatic Test mode.

Parameter	Range/Selection	*RST	Resolution
<string>	F1R1, F2R2, F3R3, F4R3, F5R4	F1R1	—

The available service options for voice echo tests and other tests are dependent on the selection of the radio configurations for the radio systems, as shown in the following table:

Radio System	Radio Config:	Service Options Available for Voice Echo (VE) or Other Tests (OT)					
		1	2	3	9	17	32768
Cellr/IS95A and others than IS2K's		VE	OT	VE	OT		VE
Cel US/IS2K, Cel JP/IS2K, PCS US/IS2K, PCS KR/IS2K	F1R1	VE	OT	VE			
	F2R2				OT	VE	VE
	F3R3	VE	OT	VE			
	F4R3	VE	OT	VE			
	F5R4				OT	VE	VE

Registration Network ID

```
CONFigure:CONDition:CDMA:RNID <string>,<int>
CONFigure:CONDition:CDMA:RNID? <string>
```

Specifies the network identification (NID) number (16 bits) for zone-based registration with the radio system set by <string>.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1	CEL-US-IS2K	—
<int>	0 to 65535	12	1

Registration System ID

```
CONFigure:CONDition:CDMA:RSID <string>,<int>
CONFigure:CONDition:CDMA:RSID? <string>
```

Specifies the system identification (SID) number (15 bits) of the mobile phone for zone-based registration with the radio system set by <string>.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1	CEL-US-IS2K	—
<int>	0 to 32767	12	1

Rho Limit

```
CONFigure:CONDition:CDMA:LIMit:RHO
<string>,<real lo>,<real hi>
CONFigure:CONDition:CDMA:LIMit:RHO? <string>
```

Specifies the lower and upper limits of rho (waveform quality) tests on a single coded channel for the radio system set by <string>. For IS2K systems tests, the radio configuration needs to be set to either F1R1 or F2R2.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53	CEL-US-IS2K	—
<real lo>	Lower limit: 0.800 to 1.000	0.944	0.001
<real hi>	Upper limit: 0.800 to 1.000	1.000	

SCH Data Rate

```
CONFigure:CONDition:CDMA:SCH:DRATe <real>
CONFigure:CONDition:CDMA:SCH:DRATe?
```

Specifies one of the SCH (supplemental channel) channel data rates available in conjunction with the radio configuration for IS2K systems tests.

Parameter	Range/Selection	*RST	Resolution
<real>	For F3R3: 9.6, 19.2, 38.4, 76.8, 153.6 (kbps)	9.6	—
	For F4R3: 9.6, 19.2, 38.4, 76.8, 153.6 (kbps)	9.6	—
	For F5R4: 14.4, 28.8, 57.6, 115.2, 230.4 (kbps)	14.4	—

SCH Encoder

```
CONFigure:CONDition:CDMA:SCH:ENCoder <string>
CONFigure:CONDition:CDMA:SCH:ENCoder?
```

Specifies one of the encoding methodologies available in conjunction with the SCH (supplemental channel) data rate selection. The radio configuration needs to be set to either F3R3, F4R3, or F5R4 for IS2K systems tests.

Parameter	Range/Selection	*RST	Resolution
<string>	CONV (convolutional encoder), TURB (turbo encoder)	CONV	—
	Convolutional encoding for SCH data rate at 9.6 kbps or 14.4 kbps, Turbo encoding for other SCH data rates higher than 14.4 kbps		

SCH Level

```
CONFigure:CONDition:CDMA:SCH:LEVel <real>
CONFigure:CONDition:CDMA:SCH:LEVel?
```

Specifies a value of the SCH (supplemental channel) channel power level relative to the carrier power level when the radio configuration is set to either F3R3, F4R3, or F5R4 for IS2K systems tests.

Parameter	Range/Selection	*RST	Resolution
<real>	–20.0 to –2.7 (dB)	–3.7	0.1

Sector B Power Level

```
CONFigure:CONDition:CDMA:BSECtor <string>,<real>
CONFigure:CONDition:CDMA:BSECtor? <string>
```

Defines the sector B power level for softer handoff tests for the radio system set by <string>.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1	CEL-US-IS2K	—
<real>	–15 to –3 (dB)	–5	1

Sector B Power State

```
CONFigure:CONDition:CDMA:BSECtor:STATe <string>,<bool>
CONFigure:CONDition:CDMA:BSECtor:STATe? <string>
```

Defines whether or not to activate the sector B power for softer handoff tests for the radio system set by <string>.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1	CEL-US-IS2K	—
<bool>	ON (1), OFF (0)	0	—

Sensitivity/FER Limit

```
CONFigure:CONDition:CDMA:LIMit:SENSitivity
<string>,<real>
CONFigure:CONDition:CDMA:LIMit:SENSitivity? <string>
```

Specifies the upper limit of sensitivity/FER (frame error rate) tests for the radio system set by <string>.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1	CEL-US-IS2K	—
<real>	0.0 to 5.0(%)	0.5	0.5

Sensitivity TDSO FER Limit

<This command will be available later.>

```
CONFigure:CONDition:CDMA:LIMit:TDSO <string>,<real hi>
CONFigure:CONDition:CDMA:LIMit:TDSO? <string>
```

Specifies the upper limit of TDSO FER tests setting the service option to 32 (test data service option) for the IS2K system set by <string>.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CEL-JP-IS2K	CEL-US-IS2K	—
<real hi>	Upper limit: 0.0 to 0.5 (%)	0.5	0.001

System ID

```
CONFigure:CONDition:CDMA:SID <string>,<int>
CONFigure:CONDition:CDMA:SID? <string>
```

Specifies the system identification (SID) number (15 bits) of the mobile phone for the radio system set by <string>.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1	CEL-US-IS2K	—
<int>	0 to 32767	7	1

Time Offset Limit

```
CONFigure:CONDition:CDMA:LIMit:TOFFset
<string>,<real lo>,<real hi>
CONFigure:CONDition:CDMA:LIMit:TOFFset? <string>
```

Specifies the lower and upper limits of time offset tests for the radio system set by <string>.

Parameter	Range/Selection	*RST	Resolution
<string>	CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1	CEL-US-IS2K	—
<real lo>	Lower limit: –0.00000100 to +0.00000100 (s)	–0.00000100	0.00000001
<real hi>	Upper limit: –0.00000100 to +0.00000100 (s)	+0.00000100	

DISPlay Subsystem

The DISPlay subsystem commands are used to select which of the Test Set's screens is being programmed. No query form is available for these commands.

Initial Screen Command Reference

Initial Screen

`DISPlay:INIT`

Displays the initial screen to activate one of the function modes. A test procedure from an SRAM memory card can be selected on this screen.

Automatic Test Screen Command Reference

Automatic Test Stand-By Screen

`DISPlay:AUTO:STBY`

Displays the Automatic Test: Stand-by screen.

Configuration Screen Command Reference

Automatic Test Sequence Screen

`DISPlay:CONFigure:SEQuence`

Displays the Test Setup: Test Sequence screen.

File Management Screen

`DISPlay:CONFigure:FILE`

Displays the File Management screen.

System Configuration Screen

`DISPlay:CONFigure`

Displays the Configuration screen for defining the system parameters.

Test Condition Screen

`DISPlay:CONFigure:CONDition`

Displays the Test Setup: Test Condition screen.

Manual Test Screen Command Reference

Measuring Screen

`DISPlay:MANual:MEASure`

Displays the Manual Test: Measuring screen.

MS Info Screen during Measurement

`DISPlay:MANual:MEASure:MSID`

Displays the Manual Test: Measuring screen for Mobile Station Information.

MS Info Screen during Stand-by

`DISPlay:MANual:STBY:MSID`

Displays the Manual Test: Stand-by screen for Mobile Station Information.

Stand-by Screen

`DISPlay:MANual:STBY`

Displays the Manual Test: Stand-by screen.

Signal Generator Screen Command Reference

Signal Generator Screen

`DISPlay:RFGenerator`

Displays the Signal Generator screen.

NOTE This command is applicable for Test Sets with Option 002.

TX Analyzer Screen Command Reference

TX ANalyzer Screen

`DISPlay:TXANalyzer`

Displays the TX Analyzer screen.

NOTE This command is applicable for Test Sets with Option 002.

HCOPy Subsystem

The HCOPy commands are used to control the printing function. No query form is available for these commands.

HCOPy Subsystem Command Reference

Abort Printing

`HCOPy:ABORt`

Stops printing immediately.

Print All

`HCOPy:ITEM:ALL`

Prints all test results, the list of test setup files on the SRAM card, and the contents of the Configuration, Test Sequence, and Test Condition screens for all radio systems, depending on the system configuration.

Print Screen

`HCOPy:SDUMp`

Prints the current screen.

IEEE Common Commands

The following IEEE common commands are used to set and monitor the status registers and to reset the Test Set.

IEEE Common Command Reference

Clear Status

`*CLS`

Initializes the status byte register (STBR) and standard event status register (SESR). Also clears the content of the error queue.

Event Status Register Query

`*ESR?`

Returns a value of the standard event status register (SESR).

Parameter	Range/Selection	*RST	Resolution
<int>	0 to 255	0	1

Identification Query

`*IDN?`

Returns identification information on the manufacturing origin, model number, serial number and the revision number of the firmware.

Instrument Option Query

`*OPT?`

Returns information on the option numbers installed with the Test Set.

Number	Option
000	None
002	TX Analyzer and Signal Generator capabilities
013	AMPS test capability
004	PCS test capability (pre-installed)
010	Low power measurement and high level RF output capabilities (pre-installed)

Operation Complete

```
*OPC
```

Sets the OPC bit of the standard event status register (SESR) to 1 when operation is complete.

```
*OPC?
```

Returns the ASCII code “1” in the output queue when operation is complete.

Reset

```
*RST
```

Resets to the initialized state (PRESET operation). However, it does not influence the state of the serial interface, output queue, standard event status register (SESR), and standard event status enable register (SESER).

Standard Event Status Enable

```
*ESE <int>
*ESE?
```

Specifies a value of the standard event status enable register (SESER). The query command returns the value of SESER.

Parameter	Range/Selection	*RST	Resolution
<int>	0 to 255	0	1

Status Byte Register Query

```
*STB?
```

Returns a value of the status byte register (STBR).

Parameter	Range/Selection	*RST	Resolution
<int>	0 to 255	0	1

RFGenerator Subsystem (Option 002)

The RFGenerator subsystem commands are used to set and read the controls and parameters of the Signal Generator functions. Send the “DISPlay:RFGenerator” command to display the Signal Generator screen before sending the following commands.

NOTE This section is applicable only for Test Sets with Option 002.

RFGenerator Subsystem Command Reference

DC Power Mode

```
RFGenerator:DCPower:MODE <bool>
RFGenerator:DCPower:MODE?
```

Defines the dc power supply mode. If the Test Set is turned off, this mode returns to the preset state.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1), OFF (0)	0	—

DC Power Voltage

```
RFGenerator:DCPower:VOLT <real>
RFGenerator:DCPower:VOLT?
```

Specifies a value of the dc power voltage to be supplied to the mobile.

Parameter	Range/Selection	*RST	Resolution
<real>	3.0 to 12.0 (V)	3.0	0.1

Modulation Type

```
RFGenerator:MODulation <string>
RFGenerator:MODulation?
```

Defines one of the modulation types.

Parameter	Range/Selection	*RST	Resolution
<string>	For CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1: Off, NORM for Normal, or PILOT for Pilot only	OFF	—
	For AMPS: OFF, or NORM for Normal	OFF	—

Radio System

```
RFGenerator:RSYStem <string>
RFGenerator:RSYStem?
```

Defines one of the radio systems valid for the Test Set depending on the options installed.

Parameter	Range/Selection	*RST	Resolution
<string>	For Test Sets without Option 013: CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1 For Test Sets with Option 013: CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1, AMPS	CEL-US-IS2K	—

RF Amplitude

```
RFGenerator:AMPLitude <real>
RFGenerator:AMPLitude?
```

Specifies the output amplitude level from the RF IN/OUT port.

Parameter	Range/Selection	*RST	Resolution
<real>	–110.0 to –20.0 (dBm)	–40.0	0.1

RF Channel

```
RFGenerator:RFCHannel <int>
RFGenerator:RFCHannel?
```

Specifies one of the RF channel numbers for the radio system specified.

Parameter	Range/Selection	*RST	Resolution
<int>	For CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, AMPS: 991 to 1023, 1 to 799	991	1
	For CEL-JP-IS2K, CELLR-T53[a]: 1041 to 1199, 801 to 1039, 1 to 799	1041	1
	For PCS-US-IS2K, PCS-US: 0 to 1199	0	1
	For PCS-KOREA-P0: 0 to 1300	0	1
	For PCS-KR-IS2K, PCS-KOREA-P1: 601 to 1300, 1 to 600	601	1

a. Channels 1201 to 1600 will not be supported.

RF Channel Frequency

```
RFGenerator:RFFRequency <real>
RFGenerator:RFFRequency?
```

Specifies one of the RF channel frequencies for the radio system specified.

Parameter	Range/Selection	*RST	Resolution
<int>	For CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, AMPS: 869040000 to 870000000, 870030000 to 893970000 (Hz)	869040000	30000
	For CEL-JP-IS2K, CELLR-T53[a]: 832012500 to 833987500, 843012500 to 845987500, 860012500 to 869987500 (Hz)	832012500	12500
	For PCS-US-IS2K, PCS-US: 1930000000 to 1989950000 (Hz)	1930000000	50000
	For PCS-KOREA-P0: 1805000000 to 1870000000 (Hz)	1805000000	50000
	For PCS-KR-IS2K, PCS-KOREA-P1: 1805050000 to 1840000000, 1840050000 to 1870000000 (Hz)	1805050000	50000

a. Frequency range 838.0125 to 843.0000 MHz will not be supported.

RF Signal Output

```
RFGenerator:RFOUtput <bool>
RFGenerator:RFOUtput?
```

Defines whether or not to output the RF signal power.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1), OFF (0)	0	—

SYSTem Subsystem

The SYSTem commands are used to control the overall system function.

SYSTem Subsystem Command Reference

Error Query

```
SYSTem:ERRor?
```

Returns a set of values for the system error number and the error message. The error messages are character strings in double quotation marks.

Global Setup

```
SYSTem:SETup <string>,……,<string>
SYSTem:SETup?
```

The query returns all the values currently set in the Test Set to the external controller as comma-delimited parameter strings.

The first command sets the Test Set to the values specified in <strings>. This command inputs all the values from the external controller to the Test Set as comma-delimited parameter strings, which are retrieved by the query.

NOTE The data is valid only within the same firmware version. Because of this, it is preferred to transmit a set of data in the text file form, and is also strongly recommended to use the “SYSTem:SETup?” command on the retrieved file, and it is strongly recommended to use the file retrieved using the command “SYStem:SETup?”.

The usage of these commands can be found in “SETUP Sample Programs” on page 171.

Lock System Panel

```
SYSTem:KLOCk <bool>
SYSTem:KLOCk?
```

Sets the option to lock the system panel for protection. This locks all the panel keys except the Local softkey. This command is different from the panel key lock in the Configuration mode. Refer to “Panel Key Lock” on page 31.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1), OFF (0)	0	—

Softkey Memory for Amplitude

```
SYSTem:MEMory:AMPLitude <real 1>,<real 2>
SYSTem:MEMory:AMPLitude?
```

Stores two amplitude values into the softkey memory 1 and 2. To clear the stored values, enter –999.9.

Parameter	Range/Selection	*RST	Resolution
<real 1>	For CDMA: –110.0 to –20.0 (dBm)	–999.9	0.1
<real 2>	For AMPS: –120.0 to –20.0 (dBm)		

Softkey Memory for RF Channel

```
SYSTem:MEMory:CHANnel <int 1>,<int 2>
SYSTem:MEMory:CHANnel?
```

Stores two of the RF channel numbers into the softkey memory 1 and 2. To clear the stored values, enter 9999.

Parameter	Range/Selection	*RST	Resolution
<int 1>	0 to 1300 depending on the radio systems	9999	1
<int 2>			

TESTs Subsystem for Automatic Test

The TESTs subsystem commands allow you to execute overall measurements and Pass/Fail tests using the Automatic Test Mode. Test sequences and conditions are configurable with the CONFigure:SEQuence commands and CONFigure:CONDition commands. Send the “DISPlay:AUTO:STBY” command to display the Automatic Test screen before sending the following commands.

Measurements are made for up to three RF channels of a radio system according to the configuration in the test sequence screen. Pass/Fail tests are also measured against the limits specified in the test condition screen. The query commands return the settings of those controls and parameters in addition to the test results.

For CDMA and AMPS tests, the test flow steps and test items are different from each other. The following sections are divided into three parts: the common commands for both tests, the commands for AMPS tests, and the commands CDMA tests.

TESTs Subsystem for Automatic Test Command Reference

DC Power Mode

```
TESTs:AUTO:DCPower:MODE <string>
TESTs:AUTO:DCPower:MODE?
```

Defines the dc power supply mode.

Parameter	Range/Selection	*RST	Resolution
<string>	AUTO: DC power is supplied during a measurement cycle. OFF: DC power is not supplied. ON: DC power is always supplied.	OFF	—

DC Power Voltage

```
TESTs:AUTO:DCPower:VOLT <real>
TESTs:AUTO:DCPower:VOLT?
```

Specifies a value of the dc power voltage to be supplied to the mobile.

Parameter	Range/Selection	*RST	Resolution
<real>	3.0 to 12.0 (V)	3.0	0.1

Dialed Number

```
TESTs:AUTO:RESults:MSINformation:DIALed?
```

Returns the dialed number string, up to 32 digits.

ESN

```
TESTs:AUTO:RESults:MSINformation:ESN?
```

Returns the Electronic Serial Number (ESN) string of eight-digit hexadecimal numbers.

Phone Number

```
TESTs:AUTO:RESults:MSINformation:PNUMber?
```

Returns a string of the phone number, up to 24 digits.

Screen Mode

```
TESTs:AUTO:SCReen <string>
TESTs:AUTO:SCReen?
```

Selects one of the screen modes.

Parameter	Range/Selection	*RST	Resolution
<string>	SIMPlified, DETailed, VALue	SIMP	—

For AMPS Tests (Option 013)

NOTE This section is applicable only for Test Sets with Option 013.

All Test Results

```
TESTs:AUTO:AMPS:RESults:ALL? <int seq>
```

Returns a set of all test result values, <string 1> and <string 2>, for both test flow steps and test items for the sequence number set by <int seq>.

If no test result exists (no test result = no judgment), the values 127 and 8191 are returned, respectively, resulting in all bits being set to “1”.

Parameter	Range/Selection	*RST	Resolution
<int>	Sequence No.: 1, 2, 3	1	1
<String 1> Bit (Weight)	**Pass (0)/Fail (1) Result for Test Flow Step**		
Bit 0 (1)	0/1 for Registration		
Bit 1 (2)	0/1 for 1st Call		
Bit 2 (4)	0/1 for 1st Release		

Parameter	Range/Selection	*RST	Resolution
Bit 3 (8)	0/1 for 2nd Call		
Bit 4 (16)	0/1 for RF/AF Test		
Bit 5 (32)	0/1 for 2nd Release		
Bit 6 (64)	1 if the test is aborted		
<String 2> Bit (Weight)	**Pass (0)/Fail (1) Result for RF / AF Test Item**		
Bit 0 (1)	0/1 for TX Power		
Bit 1 (2)	0/1 for Frequency Error		
Bit 2 (4)	0/1 for FM Deviation Limiting		
Bit 3 (8)	0/1 for TX Distortion		
Bit 4 (16)	0/1 for RX Distortion		
Bit 5 (32)	0/1 for RX SINAD		
Bit 6 (64)	0/1 for SAT Deviation		
Bit 7 (128)	0/1 for SAT Frequency Error		
Bit 8 (256)	0/1 for ST Deviation		
Bit 9 (512)	0/1 for ST Frequency		
Bit 10 (1024)	0/1 for DC Current (Idle)		
Bit 11 (2048)	0/1 for DC Current (Talk)		
Bit 12 (4096)	1 if the test is aborted		

DC Current Result at Idle

`TESTs:AUTO:AMPS:RESults:CURRent:IDLE? <int seq>`

Returns a set of idle dc current test results, <string 1>, <string 2>, and <string 3>, for the sequence number set by <int seq>. The first RF channel is always tested.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow		
<string 2>	0 for Pass, or 1 for Fail		
<string 3>	Measured value ranging from 0.000 to 1.000 (A), or 9.999 for impossible measurement or overflow/underflow		

DC Current Result at Talk

```
TESTs:AUTO:AMPS:RESults:CURRent:TALK?
<int seq>,<int ch>
```

Returns a set of talk dc current test results, <string 1>, <string 2>, and <string 3>, for the sequence number set by <int seq> and the RF channel number set by <int ch>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int ch>	RFCH: 1, 2, 3	1	1
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow		
<string 2>	0 for Pass, or 1 for Fail		
<string 3>	Measured value ranging from 0.000 to 1.000 (A), or 9.999 for impossible measurement or overflow/underflow		

FM Deviation Limiting Result

```
TESTs:AUTO:AMPS:RESults:FMDLimit? <int seq>,<int ch>
```

Returns a set of FM deviation limiting performance test results, <string 1>, <string 2>, and <string 3>, for the sequence number set by <int seq> and the RF channel number set by <int ch>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int ch>	RFCH: 1, 2, 3	1	1
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow		
<string 2>	0 for Pass, or 1 for Fail		
<string 3>	Measured value ranging from 1000 to 25000 (Hz), or 99999 for impossible measurement or overflow/underflow		

Frequency Error Result

```
TESTs:AUTO:AMPS:RESults:FERRor? <int seq>,<int ch>
```

Returns a set of frequency error test results, <string 1>, <string 2>, and <string 3>, for the sequence number set by <int seq> and the RF channel number set by <int ch>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int ch>	RFCH: 1, 2, 3	1	1
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow		
<string 2>	0 for Pass, or 1 for Fail		
<string 3>	Measured value ranging from –12.50 to +12.50 (ppm), or 999.99 for impossible measurement or overflow/underflow		

Pause On Failure Action

```
TESTs:AUTO:AMPS:SIGNaling:POFailure <string>
```

Specifies one of the actions at the pause-on-failure state.

Parameter	Range/Selection	*RST	Resolution
<string>	CONTinue for restarting the test beyond the paused step. MANual for activating the Manual Test.	CONT	—

RF Channel Setting

```
TESTs:AUTO:AMPS:RFCHannel
<int seq>,<int ch1>,<int ch2>,<int ch3>
TESTs:AUTO:AMPS:RFCHannel? <int seq>
```

Specifies three of the RF channel numbers to be tested for the sequence number set by <int seq>. To skip tests on RFCH2 and/or RFCH3, enter 9999 for <int ch2> and/or <int ch3> respectively. RFCH1 cannot be skipped.

For the channel(s) set to skip tests, the Test Set returns 9999 when queried.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int ch1>	RFCH1: 991 to 1023, or 1 to 799	991	1
<int ch2>	RFCH2: 991 to 1023, 1 to 799, or 9999	384	1
<int ch3>	RFCH3: 991 to 1023, 1 to 799, or 9999	799	1

RX Distortion Test Result

```
TESTs:AUTO:AMPS:RESults:RXDistortion?
<int seq>,<int ch>
```

Returns a set of RX distortion test results, <string 1>, <string 2>, and <string 3>, for the sequence number set by <int seq> and the RF channel number set by <int ch>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int ch>	RFCH: 1, 2, 3	1	1
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow		
<string 2>	0 for Pass, or 1 for Fail		
<string 3>	Measured value ranging from 0 to 100.0(%), or 999.9 for impossible measurement or overflow/underflow		

RX SINAD Test Result

`TESTs:AUTO:AMPS:RESults:RXSinad? <int seq>,<int ch>`

Returns a set of RX SINAD test results, <string 1>, <string 2>, and <string 3>, for the sequence number set by <int seq> and the RF channel number set by <int ch>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int ch>	RFCH: 1, 2, 3	1	1
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow		
<string 2>	0 for Pass, or 1 for Fail		
<string 3>	Measured value ranging from 0.0 to 40.0 (dB), or 99.9 for impossible measurement or overflow/underflow		

SAT Deviation Test Result

`TESTs:AUTO:AMPS:RESults:SATone:Deviation?`
`<int seq>,<int ch>`

Returns a set of supervisory audio tone (SAT) deviation test results, <string 1>, <string 2>, and <string 3>, for the sequence number set by <int seq> and the RF channel number set by <int ch>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No: 1, 2, 3	1	1
<int ch>	RFCH: 1, 2, 3	1	1
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow		
<string 2>	0 for Pass, or 1 for Fail		
<string 3>	Measured value ranging from 1000 to 25000 (Hz), or 99999 for impossible measurement or overflow/underflow		

SAT Frequency Error Test Result

`TESTs:AUTO:AMPS:RESults:SATone:FERRor?`
`<int seq>,<int ch>`

Returns a set of supervisory audio tone (SAT) frequency error test results, <string 1>, <string 2>, and <string 3>, for the sequence number set by <int seq> and the RF channel number set by <int ch>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int ch>	RFCH: 1, 2, 3	1	1
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow		
<string 2>	0 for Pass, or 1 for Fail		
<string 3>	Measured value ranging from –600.0 to 600.0 (Hz), or 99999.9 for impossible measurement or overflow/underflow		

Signaling State

`TESTs:AUTO:AMPS:SIGNaling:STATe?`

Returns a bit-weighted-decimal value corresponding to the test flow steps executed for a test cycle.

Bit (Weight)	Description
Bit 0 (1)	Registration
Bit 1 (2)	1st Call
Bit 2 (4)	1st Release
Bit 3 (8)	2nd Call

Bit (Weight)	Description
Bit 4 (16)	RF/AF Test
Bit 5 (32)	2nd Release
Bit 6 (64)	Measurement end with test result
Bit 7 (128)	Measurement end without test result (Aborted or Time out error occurred)
Bit 8 (256)	Paused at a failure. To specify the following action, send the `TESTs:AUTO:AMPS:SIGNaling:POFailure` command.

ST Deviation Test Result

```
TESTs:AUTO:AMPS:RESults:ST:Deviation?
<int seq>,<int ch>
```

Returns a set of signaling tone (ST) deviation test results, <string 1>, <string 2>, and <string 3>, for the sequence number set by <int seq> and the RF channel number set by <int ch>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int ch>	RFCH: 1, 2, 3	1	1
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow		
<string 2>	0 for Pass, or 1 for Fail		
<string 3>	Measured value ranging from 1000 to 25000 (Hz), or 99999 for impossible measurement or overflow/underflow		

ST Frequency Test Result

```
TESTs:AUTO:AMPS:RESults:ST:FREQuency?
<int seq>,<int ch>
```

Returns a set of signaling tone (ST) frequency test results, <string 1>, <string 2>, and <string 3>, for the sequence number set by <int seq> and the RF channel number set by <int ch>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int ch>	RFCH: 1, 2, 3	1	1

Parameter	Range/Selection	*RST	Resolution
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow		
<string 2>	0 for Pass, or 1 for Fail		
<string 3>	Measured value ranging from 9000.0 to 11000.0 (Hz), or 99999 for impossible measurement or overflow/underflow		

TX Distortion Test Result

```
TESTs:AUTO:AMPS:RESults:TXDistortion?
<int seq>,<int ch>
```

Returns a set of TX distortion test results, <string 1>, <string 2>, and <string 3>, for the sequence number set by <int seq> and the RF channel number set by <int ch>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int ch>	RFCH: 1, 2, 3	1	1
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow		
<string 2>	0 for Pass, or 1 for Fail		
<string 3>	Measured value ranging from 0.0 to 100.0(%), or 999.9 for impossible measurement or overflow/underflow		

TX Power Test Result

```
TESTs:AUTO:AMPS:RESults:TXPower? <int seq>,<int ch>
```

Returns a set of TX power test results, <string 1>, <string 2>, and <string 3>, for the sequence number set by <int seq> and the RF channel number set by <int ch>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int ch>	RFCH: 1, 2, 3	1	1
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow		
<string 2>	0 for Pass, or 1 for Fail		
<string 3>	Measured value ranging from 0.0 to 100.0(%), or 999.9 for impossible measurement or overflow/underflow		

For CDMA Tests

All Test Results

`TESTs:AUTO:CDMA:RESults:ALL? <int seq>`

Returns a set of all test result values, <string 1> and <string 2>, for both the test flow steps and test items for the sequence number set by <int seq>.

If no test result exists (no test result = no judgment), the values 1023 and 511 are returned, respectively, resulting in all bits being set to “1”.

Parameter	Range/Selection	*RST	Resolution
<int>	Sequence No.: 1, 2, 3	1	1
<String 1> Bit (Weight)	**Pass (0)/Fail (1) Result for Test Flow Step**		
Bit 0 (1)	0/1 for Registration		
Bit 1 (2)	0/1 for 1st Call		
Bit 2 (4)	0/1 for 1st Release		
Bit 3 (8)	0/1 for 2nd Call		
Bit 4 (16)	0/1 for Voice Echo Test		
Bit 5 (32)	0/1 for Softer Handoff Test		
Bit 6 (64)	0/1 for RF Test		
Bit 7 (128)	0/1 for 2nd Release		
Bit 8 (256)	0/1 for Hard Handoff		
Bit 9 (512)	1 if the test is aborted		
<String 2> Bit (Weight)	**Pass (0)/Fail (1) Result for Test Item**		
Bit 0 (1)	0/1 for Max TX Power		
Bit 1 (2)	0/1 for Min TX Power		
Bit 2 (4)	0/1 for Frequency Error		
Bit 3 (8)	0/1 for Rho		
Bit 4 (16)	0/1 for Time Offset		
Bit 5 (32)	0/1 for Sensitivity/FER		
Bit 6 (64)	0/1 for DC Current (Idle)		
Bit 7 (128)	0/1 for DC Current (Talk)		
Bit 8 (256)	1 if the test is aborted		

DC Current Result at Idle

`TESTs:AUTO:CDMA:RESults:CURRent:IDLE? <int seq>`

Returns a set of idle dc current test results, <string 1>, <string 2>, and <string 3>, for the sequence number set by <int seq>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow		
<string 2>	0 for Pass, or 1 for Fail		
<string 3>	Measured value ranging from 0.000 to 1.000 (A), or 9.999 for impossible measurement or overflow/underflow		

DC Current Result at Talk

`TESTs:AUTO:CDMA:RESults:CURRent:TALK?`
`<int seq>,<int ch>`

Returns a set of talk dc current test results, <string 1>, <string 2>, and <string 3>, for the sequence number set by <int seq> and the RF channel number set by <int ch>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int ch>	RFCH: 1, 2, 3	1	1
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow		
<string 2>	0 for Pass, or 1 for Fail		
<string 3>	Measured value ranging from 0.000 to 1.0000 (A), or 9.999 for impossible measurement or overflow/underflow		

Frequency Error Test Result

`TESTs:AUTO:CDMA:RESults:FERRor? <int seq>,<int ch>`

Returns a set of frequency error test results, <string 1>, <string 2>, and <string 3>, for the sequence number set by <int seq> and the RF channel number set by <int ch>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int ch>	RFCH: 1, 2, 3	1	1
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow		
<string 2>	0 for Pass, or 1 for Fail		
<string 3>	Measured value ranging from –10000 to 10000 (Hz), or 9.999 for impossible measurement or overflow/underflow		

Maximum TX Power Test Result

`TESTs:AUTO:CDMA:RESults:MAXPower? <int seq>,<int ch>`

Returns a set of maximum TX power test results, <string 1>, <string 2>, and <string 3>, for the sequence number set by <int seq> and the RF channel number set by <int ch>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int ch>	RFCH: 1, 2, 3	1	1
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow		
<string 2>	0 for Pass, or 1 for Fail		
<string 3>	Measured value ranging from –99.9 to 99.9 (dBm), or 99.9 for impossible measurement or overflow/underflow		

Minimum TX Power Test Result

`TESTs:AUTO:CDMA:RESults:MINPower? <int seq>,<int ch>`

Returns a set of minimum TX power test results, <string 1>, <string 2>, and <string 3>, for the sequence number set by <int seq> and the RF channel number set by <int ch>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int ch>	RFCH: 1, 2, 3	1	1

Parameter	Range/Selection	*RST	Resolution
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow		
<string 2>	0 for Pass, or 1 for Fail		
<string 3>	Measured value ranging from –99.9 to 99.9 (dBm), or 99.9 for impossible measurement or overflow/underflow		

Pause On Failure Action

`TESTs:AUTO:CDMA:SIGNaling:POFailure <string>`

Specifies one of the actions at the pause-on-failure state.

Parameter	Range/Selection	*RST	Resolution
<string>	CONTinue for restarting the test beyond the paused step. MANual for activating the Manual Test.	CONT	—

RF Channel Setting

```
TESTs:AUTO:CDMA:RFCHannel
<int seq>,<int ch1>,<int ch2>,<int ch3>
TESTs:AUTO:CDMA:RFCHannel? <int seq>
```

Specifies three of the RF channel numbers to be tested for the sequence number set by <int seq>. To skip tests on RFCH2 and/or RFCH3, enter 9999 for <int ch2> and/or <int ch3> respectively. RFCH1 cannot be skipped.

For the channel(s) set to skip tests, the Test Set returns 9999 when queried.

Parameter	Range/Selection	*RST	Resolution
<int SEQ>	Sequence No.: 1, 2, 3	1	1
<int ch1>	For CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, AMPS: 991 to 1023, 1 to 799	991	1
	For CEL-JP-IS2K, CELLR-T53[a]: 1041 to 1199, 801 to 1039, 1 to 799	1041	1
	For PCS-US-IS2K, PCS-US: 0 to 1199	0	1
	For PCS-KOREA-P0: 0 to 1300	0	1
	For PCS-KR-IS2K, PCS-KOREA-P1: 601 to 1300, 1 to 600	601	1

Parameter	Range/Selection	*RST	Resolution
<int ch2>	For CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, AMPS: 991 to 1023, 1 to 799, 9999	384	1
	For CEL-JP-IS2K, CELLR-T53[a]: 1041 to 1199, 801 to 1039, 1 to 799, 9999	1039	1
	For PCS-US-IS2K, PCS-US: 0 to 1199, 9999	600	1
	For PCS-KOREA-P0: 0 to 1300, 9999	650	1
	For PCS-KR-IS2K, PCS-KOREA-P1: 601 to 1300, 1 to 600, 9999	1250	1
<int ch3>	For CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, AMPS: 991 to 1023, 1 to 799, 9999	799	1
	For CEL-JP-IS2K, CELLR-T53[a]: 1041 to 1199, 801 to 1039, 1 to 799, 9999	799	1
	For PCS-US-IS2K, PCS-US: 0 to 1199, 9999	1199	1
	For PCS-KOREA-P0: 0 to 1300, 9999	1300	1
	For PCS-KR-IS2K, PCS-KOREA-P1: 601 to 1300, 1 to 600, 9999	600	1

a. Channels 1201 to 1600 will not be supported.

Rho Test Result

`TESTs:AUTO:CDMA:RESults:RHO? <int seq>,<int ch>`

Returns a set of rho (waveform quality) test results, <string 1>, <string 2>, and <string 3>, for the sequence number set by <int seq> and the RF channel number set by <int ch>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int ch>	RFCH: 1, 2, 3	1	1
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow		
<string 2>	0 for Pass, or 1 for Fail		
<string 3>	Measured value ranging from 0.800 to 1.000, or 9.999 for impossible measurement or overflow/underflow		

Sensitivity/FER Test Result

`TESTs:AUTO:CDMA:RESults:FER? <int seq>,<int ch>`

Returns a set of sensitivity/FER (frame error rate) test results, <string 1>, <string 2>, and <string 3>, for the sequence number set by <int seq> and the RF channel number set by <int ch>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int ch>	RFCH: 1, 2, 3	1	1
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow		
<string 2>	0 for Pass, or 1 for Fail		
<string 3>	Measured value ranging from 0.00000 to 100.00000(%), or 999.99999 for impossible measurement or overflow/underflow		

Signaling State

`TESTs:AUTO:CDMA:SIGNaling:STATe?`

Returns a bit-weighted-decimal value corresponding to the test flow steps executed for a test cycle.

Bit (Weight)	Description
Bit 0 (1)	Registration
Bit 1 (2)	1st Call
Bit 2 (4)	1st Release
Bit 3 (8)	2nd Call
Bit 4 (16)	Voice Echo
Bit 5 (32)	Softer Handoff
Bit 6 (64)	RF Test
Bit 7 (128)	2nd Release
Bit 8 (256)	Hard Handoff
Bit 9 (512)	Measurement end with test result
Bit 10 (1024)	Measurement end without test result (Aborted or Time out error occurred)
Bit 11 (2048)	Paused at a failure. To specify the following action, send the `TESTs:AUTO:CDMA:SIGNaling:POFailure` command.

Time Offset Test Result

`TESTs:AUTO:CDMA:RESults:TOFFset? <int seq>,<int ch>`

Returns a set of timing offset test results, <string 1>, <string 2>, and <string 3>, for the sequence number set by <int seq> and the RF channel number set by <int ch>.

Parameter	Range/Selection	*RST	Resolution
<int seq>	Sequence No.: 1, 2, 3	1	1
<int ch>	RFCH: 1, 2, 3	1	1
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow		
<string 2>	0 for Pass, or 1 for Fail		
<string 3>	Measured value ranging from –0.00000325 to 0.00000325 (sec) or 9.9999999 for impossible measurement or overflow/underflow		

Voice Echo Test Result

`TESTs:AUTO:CDMA:TALK:STATe <string>`

Verifies whether the test result of the voice echo step passes or fails.

Parameter	Range/Selection	*RST	Resolution
<string>	PASS, FAIL	—	—

TESTs Subsystem for Manual Test

The TESTs subsystem commands allows you to execute real time measurements. Test conditions are configurable with the CONFigure:CONDition commands. Send the “DISPlay:MANual:STBY” command to display the Automatic Test screen before sending the following commands.

For CDMA and AMPS tests, the test flow steps and test items are different from each other. The following sections are divided into three parts: the common commands for both tests, the commands for AMPS tests, and the commands CDMA tests.

TESTs Subsystem for Manual Tests Command Reference

BS Release

```
TESTs:MANual:RELease
```

Releases the mobile phone from the Test Set.

Clear Status

```
TESTs:MANual:SCLear
```

Clears the Pass/Fail results from the test flow steps.

DC Power Mode

```
TESTs:MANual:DCPower:MODE <bool>
TESTs:MANual:DCPower:MODE?
```

Defines the dc power supply mode.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	0	—

DC Power Voltage

```
TESTs:MANual:DCPower:VOLT <real>
TESTs:MANual:DCPower:VOLT?
```

Specifies a value of the dc power voltage to be supplied to the mobile.

Parameter	Range/Selection	*RST	Resolution
<real>	3.0 to 12.0 (V)	3.0	0.1

Dialed Number

```
TESTs:MANual:RESults:MSINformation:DIALed?
```

Returns the dialed number string, up to 32 digits.

ESN

```
TESTs:MANual:RESults:MSINformation:ESN?
```

Returns the Electronic Serial Number (ESN) string of eight-digit hexadecimal numbers.

Paging

```
TESTs:MANual:PAGE
```

Executes the paging process from the Test Set.

Phone Number

```
TESTs:MANual:RESults:MSINformation:PNUMber?
```

Returns a string of the phone number, up to 24 digits.

Previous System Screen

```
TESTs:MANual:PRSYstem
```

Returns to the screen for the previous radio system tests before making the hard handoff.

Radio System

```
TESTs:MANual:RSYStem <string>
TESTs:MANual:RSYStem?
```

Defines one of the radio systems to be tested.

Parameter	Range/Selection	*RST	Resolution
<string>	For Test Sets without Option 013: CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1 For Test Sets with Option 013: CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1, AMPS	CEL-US-IS2K	—

Registration

```
TESTs:MANual:REGister
```

Executes the registration process.

RF Channel

```
TESTs:MANual:RFCHannel <int>
TESTs:MANual:RFCHannel?
```

Specifies one of the RF channel numbers for the radio system to be tested.

Parameter	Range	*RST	Resolution
<int>	For CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, AMPS: 991 to 1023, 1 to 799	991	1
	For CEL-JP-IS2K, CELLR-T53[a]: 1041 to 1199, 801 to 1039, 1 to 799	1041	1
	For PCS-US-IS2K, PCS-US: 0 to 1199	0	1
	For PCS-KOREA-P0: 0 to 1300	0	1
	For PCS-KR-IS2K, PCS-KOREA-P1: 601 to 1300, 1 to 600	601	1

a. Channels 1201 to 1600 will not be supported.

RF Frequency

```
TESTs:MANual:RFFRequency <real>
TESTs:MANual:RFFRequency?
```

Specifies the RF frequency value of the radio system to be tested.

Parameter	Range	*RST	Resolution
<real>	For CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, AMPS: 824040000 to 825000000, 825030000 to 848970000 (Hz)	824040000	30000
	For CEL-JP-IS2K, CELLR-T53[a]: 887012500 to 888987500, 898012500 to 900987500, 915012500 to 924987500 (Hz)	887012500	12500
	For PCS-US-IS2K, PCS-US: 1850000000 to 1909950000 (Hz)	1850000000	50000
	For PCS-KOREA-P0: 1715000000 to 1780000000 (Hz)	1715000000	50000
	For PCS-KR-IS2K, PCS-KOREA-P1: 1715050000 to 1750000000, 1750050000 to 1780000000 (Hz)	1715050000	50000

a. Frequency range 893.0125 to 898.0000 MHz will not be supported.

For AMPS Tests (Option 013)

NOTE This section is applicable only for Test Sets with Option 013.

Amplitude

```
TESTs:MANual:AMPS:AMPLitude <real>
TESTs:MANual:AMPS:AMPLitude?
```

Specifies the RF amplitude level for making measurements.

Parameter	Range/Selection	*RST	Resolution
<real>	–120.0 to –40.0 (dBm)	–40.0	0.1

Audio Frequency Test Result

```
TESTs:MANual:AMPS:RESults:AFRequency?
```

Returns a set of audio frequency test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 20.0 to 20000.0 (Hz), or 999.99 for impossible measurement or overflow/underflow

Audio Frequency Test Status

```
TESTs:MANual:AMPS:RESults:AFRequency:STATe <bool>
TESTs:MANual:AMPS:RESults:AFRequency:STATe?
```

Defines whether or not to run the audio frequency test.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

Audio Level Measurement Result

```
TESTs:MANual:AMPS:RESults:ACLEVel?
```

Returns a set of audio level measurement results with 2.9 kHz deviation, <string 1>, <string 2>, and <string 3>, at the time of RX SINAD measurement. As neither this item nor result value is shown on the screen, the remote control command and query command are required to retrieve the result value. To enable this function, the Audio Level Measurement Status command must be used.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for valid data, or 1 for invalid data or unable to measure
<string 3>	Measured value ranging from 30 mVrms to 3 Vrms, or 9.999 for impossible measurement or overflow/underflow

Audio Level Measurement Status

```
TESTs:MANual:AMPS:RESults:ACLEVel:STATe <bool>
TESTs:MANual:AMPS:RESults:ACLEVel:STATe?
```

Defines whether or not to enable the audio level measurement function at the time of RX SINAD measurement. This item is not shown on the screen.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) to enable, OFF (0) to disable	0	—

Audio Output Adjustment

```
TESTs:MANual:AMPS:AOADjust
```

Executes to adjust the audio signal output level from the Test Set to have 8 kHz FM deviation from the mobile for TX distortion measurements.

Audio Output Level

```
TESTs:MANual:AMPS:AOUT <int>
TESTs:MANual:AMPS:AOUT?
```

Specifies the audio output level for making audio measurements.

Parameter	Range/Selection	*RST	Resolution
<int>	–48 to +12 (dBV)	–48	1

Audio Test Item

```
TESTs:MANual:AMPS:RESults:AANalyzer:SELect <string>
TESTs:MANual:AMPS:RESults:AANalyzer:SELect?
```

Selects one of the audio test items to be tested.

Parameter	Range/Selection	*RST	Resolution
<string>	TX-DIST for TX distortion, RX-DIST for RX distortion, or RX-SINAD for RX SINAD	TX-DIST	—

Audio Test Status

```
TESTs:MANual:AMPS:RESults:AANalyzer:STATe <bool>
TESTs:MANual:AMPS:RESults:AANalyzer:STATe?
```

Defines whether or not to run the audio test specified by the `TESTs:MANual:AMPS:RESults:AANalyzer:SELect` command.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

DC Current Test Result

`TESTs:MANual:AMPS:RESults:CURRent?`

Returns a set of dc current test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 0.000 to 1.000 (A), or 9.999 for impossible measurement or overflow/underflow

DC Current Test Status

`TESTs:MANual:AMPS:RESults:CURRent:STATe <bool>`
`TESTs:MANual:AMPS:RESults:CURRent:STATe?`

Defines whether or not to run the dc current test.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

Deviation Test Item

`TESTs:MANual:AMPS:RESults:DEViation:SELect <string>`
`TESTs:MANual:AMPS:RESults:DEViation:SELect?`

Selects one of the deviation test items to be tested.

Parameter	Range/Selection	*RST	Resolution
<string>	FM for FM deviation. SAT for supervisory audio tone (SAT) deviation, or ST for signaling tone (ST) deviation	FM	—

Deviation Test Status

`TESTs:MANual:AMPS:RESults:DEViation:STATe <bool>`
`TESTs:MANual:AMPS:RESults:DEViation:STATe?`

Defines whether or not to make the deviation test specified by the `TESTs:MANual:AMPS:RESults:DEViation:SELect` command.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

FM Deviation Limiting Result

`TESTs:MANual:AMPS:RESults:FM?`

Returns a set of FM deviation limiting test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 1000 to 25000 (Hz), or 99999 for impossible measurement or overflow/underflow

Frequency Error Test Result

`TESTs:MANual:AMPS:RESults:FERRor?`

Returns a set of frequency error test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from –12.50 to 12.50 (ppm), or 999.99 for impossible measurement or overflow/underflow

Frequency Error Test Status

`TESTs:MANual:AMPS:RESults:FERRor:STATe <bool>`
`TESTs:MANual:AMPS:RESults:FERRor:STATe?`

Defines whether or not to run the frequency error test.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

Power Level

```
TESTs:MANual:AMPS:PLEVel <int>
TESTs:MANual:AMPS:PLEVel?
```

Specifies the TX output power level.

Parameter	Range/Selection	*RST	Resolution
<int>	0 (+36 dBm) to 7 (+8 dBm)	0	—

RX Distortion Test Result

```
TESTs:MANual:AMPS:RESults:RXDistortion?
```

Returns a set of RX distortion test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 0.0 to 100.0(%), or 999.99 for impossible measurement or overflow/underflow

RX SINAD Test Result

```
TESTs:MANual:AMPS:RESults:RXSinad?
```

Returns a set of RX SINAD test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 0.0 to 40.0 (dB), or 99.9 for impossible measurement or overflow/underflow

SAT Deviation Test Result

```
TESTs:MANual:AMPS:RESults:SATone?
```

Returns a set of supervisory audio tone (SAT) deviation test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 1000 to 25000 (Hz), or 99999 for impossible measurement or overflow/underflow

SAT Frequency

```
TESTs:MANual:AMPS:SATone <string>
TESTs:MANual:AMPS:SATone?
```

Selects one of the supervisory audio tone (SAT) frequencies.

Parameter	Range/Selection	*RST	Resolution
<string>	5970, 6000, 6030 (Hz)	5970	—

Signaling State

```
TESTs:MANual:AMPS:SIGNaling:STATe?
```

Returns a bit-weighted-decimal value corresponding to the test flow steps executed for a test cycle.

Bit (Weight)	Description
Bit 0 (1)	Registration
Bit 1 (2)	Paging or MS Origination
Bit 2 (4)	RF/AF Test
Bit 3 (8)	MS Release or BS Release
Bit 4 (16)	Time Out Error
Bit 5 (32)	Measurement End

ST Deviation Test Result

```
TESTs:MANual:AMPS:RESults:ST?
```

Returns a set of signaling tone (ST) deviation test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 10 to 25000 (Hz), or 99999 for impossible measurement or overflow/underflow

TX Distortion Test Result

```
TESTs:MANual:AMPS:RESults:TXDistortion?
```

Returns a set of TX distortion test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 0.0 to 100.0(%), or 999.9 for impossible measurement or overflow/underflow

TX Power Test Result

```
TESTs:MANual:AMPS:RESults:TXPower?
```

Returns a set of TX distortion test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from –99.9 to 99.9 (dBm), or 99.9 for impossible measurement or overflow/underflow

TX Power Test Status

```
TESTs:MANual:AMPS:RESults:TXPower:STATe <bool>
TESTs:MANual:AMPS:RESults:TXPower:STATe?
```

Defines whether or not to run the TX power test.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

For CDMA Tests

Amplitude

```
TESTs:MANual:CDMA:AMPLitude <real>
TESTs:MANual:CDMA:AMPLitude?
```

Specifies the amplitude level.

Parameter	Range/Selection	*RST	Resolution
<real>	–110.0 to –20.0 (dBm)	–75.0	0.1

Confidence Level

```
TESTs:MANual:CDMA:CONFidence <string>
TESTs:MANual:CDMA:CONFidence?
```

Sets the confidence level for sensitivity/FER (frame error rate) tests to either 95% or OFF.

Parameter	Range/Selection	*RST	Resolution
<string>	95(%), OFF	95	—

DC Current Test Result

```
TESTs:MANual:CDMA:RESults:CURRent?
```

Returns a set of dc current test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 0.000 to 1.000 (A), or 9.9999 for impossible measurement or overflow/underflow

DC Current Test Status

```
TESTs:MANual:CDMA:RESults:CURRent:STATe <bool>
TESTs:MANual:CDMA:RESults:CURRent:STATe?
```

Defines whether or not to run the dc current test.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

Frequency Error Test Result

```
TESTs:MANual:CDMA:RESults:FERRor?
```

Returns a set of frequency error test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from –10000 to 10000 (Hz), or 99999 for impossible measurement or overflow/underflow

Frequency Error Test Status

```
TESTs:MANual:CDMA:RESults:FERRor:STATe <bool>
TESTs:MANual:CDMA:RESults:FERRor:STATe?
```

Defines whether or not to run the frequency error test.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

Radio System to Handoff

```
TESTs:MANual:CDMA:HORSystem <string>
TESTs:MANual:CDMA:HORSystem?
```

Specifies the radio system to make a hard handoff from the current radio system. Refer to "Manual Test Sample Program" on page 160 for the handoff restrictions between the radio systems.

Parameter	Range/Selection	*RST	Resolution
<string>	For Test Sets without Option 013: CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1 For Test Sets with Option 013: CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1, AMPS	PCS-US-IS2K	—

Hard Handoff Execution

`TESTs:MANual:CDMA:HHOFf`

Executes the hard handoff test to the other radio system set by the Handoff field from the current radio system.

Maximum and Minimum TX Power Levels

`TESTs:MANual:CDMA:MMPower`

Measures the maximum and minimum TX power levels once the triggered measurement has been made.

Maximum Frame

`TESTs:MANual:CDMA:MAXFrames <int>`
`TESTs:MANual:CDMA:MAXFrames?`

Specifies the maximum number of frames to be tested for the sensitivity/FER (frame error rate) test.

Parameter	Range/Selection	*RST	Resolution
<int>	25 to 10000000	10000	1

Maximum TX Power Test Result

`TESTs:MANual:CDMA:RESults:MAXPower?`

Returns a set of maximum TX power test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from –99.9 to 99.9 (dBm), or 99.9 for impossible measurement or overflow/underflow

Minimum TX Power Test Result

`TESTs:MANual:CDMA:RESults:MINPower?`

Returns a set of minimum TX power test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from –99.9 to 99.9 (dBm), or 99.9 for impossible measurement or overflow/underflow

Multi-code Rho Test Result

`TESTs:MANual:CDMA:RESults:RHO?`

Returns a set of multi-code rho (waveform quality) test result, <string 1>, <string 2>, and <string 3>, for IS2K systems tests with the radio configuration F3R3, F4R3, or F5R4. Also, see Rho Test Result.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 0.800 to 1.000, or 9.999 for impossible measurement or overflow/underflow

Multi-code Rho Test Status

`TESTs:MANual:CDMA:RESults:RHO:STATe <bool>`
`TESTs:MANual:CDMA:RESults:RHO:STATe?`

Defines whether or not to run the multi-code rho (waveform quality) test, for IS2K systems tests with the radio configuration F3R3, F4R3, or F5R4. Also, see Rho Test Status.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

Power Control Bit

```
TESTs:MANual:CDMA:PCBit <string>
TESTs:MANual:CDMA:PCBit?
```

Sets the power control bit pattern.

Parameter	Range/Selection	*RST	Resolution
<string>	ALWAYS-UP, ALWAYS-DOWN, OPEN-LOOP	OPEN-LOOP	—

RF Channel for Hard Handoff

```
TESTs:MANual:CDMA:HOCHannel <int>
TESTs:MANual:CDMA:HOCHannel?
```

Specifies one of the RF channel numbers of the radio system to make a handoff from the current radio system.

Parameter	Range/Selection	*RST	Resolution
<int>	For CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, AMPS: 991 to 1023, 1 to 799	991	1
	For CEL-JP-IS2K, CELLR-T53[a]: 1041 to 1199, 801 to 1039, 1 to 799	1041	1
	For PCS-US-IS2K, PCS-US: 0 to 1199	0	1
	For PCS-KOREA-P0: 0 to 1300	0	1
	For PCS-KR-IS2K, PCS-KOREA-P1: 601 to 1300, 1 to 600	601	1

a. Channels 1201 to 1600 will not be supported.

RF Frequency to Hard Handoff

```
TESTs:MANual:CDMA:HOFRequency <real>
TESTs:MANual:CDMA:HOFRequency?
```

Specifies the RF channel frequency of the radio system to make a handoff from the current radio system.

Parameter	Range/Selection	*RST	Resolution
<real>	For CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, AMPS: 824040000 to 825000000 Hz, 825030000 to 848970000 Hz	824040000	30000
	For CEL-JP-IS2K, CELLR-T53[a]: 887012500 to 888987500 Hz, 898012500 to 900987500 Hz, 915012500 to 924987500 Hz	887012500	12500
	For PCS-US-IS2K, PCS-US: 1850000000 to 1909950000 Hz	1850000000	50000
	For PCS-KOREA-P0: 1715000000 to 1780000000 Hz	1715000000	50000
	For PCS-KR-IS2K, PCS-KOREA-P1: 1715050000 to 1750000000 Hz, 1750050000 to 1780000000 Hz	1715050000	50000

a. Frequency range 893.0125 to 898.0000 MHz will not be supported.

Radio Configuration for IS2K

```
TESTs:MANual:CDMA:RCONfig F1R1|F2R2|F3R3|F4R3|F5R4
TESTs:MANual:CDMA:RCONfig?
```

Specifies one of the radio configurations available for IS2K systems. The available service options are dependent on a selection of the radio configurations.

Parameter	Description
F1R1	Available service options: 1, 2, 3
F2R2	Available service options: 9, 17, 32768
F3R3	Available service options: 1, 2, 3, 32
F4R3	Available service options: 1, 2, 3, 32
F5R4	Available service options: 9, 17, 32, 32768

Rho Test Result

```
TESTs:MANual:CDMA:RESults:RHO?
```

Returns a set of rho (waveform quality) test result, <string 1>, <string 2>, and <string 3>. For IS2K systems tests with the radio configuration F3R3, F4R3, or F5R4, the test result is for Multi-code Rho.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 0.800 to 1.000, or 9.999 for impossible measurement or overflow/underflow

Rho Test Status

```
TESTs:MANual:CDMA:RESults:RHO:STATe <bool>
TESTs:MANual:CDMA:RESults:RHO:STATe?
```

Defines whether or not to run the rho (waveform quality) test. For IS2K systems tests with the radio configuration F3R3, F4R3, or F5R4, the test status is for Multi-code Rho.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

Sensitivity/FER Test Result

```
TESTs:MANual:CDMA:RESults:FER?
```

Returns a set of sensitivity/FER (frame error rate) test results, <string 1>, <string 2>, <string 3>, <string 4>, and <string 5>. For IS2K systems tests with the service option 32, the test result is for Sensitivity/TDSO FER.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 0.00000 to 100.00000, or 999.99999 for impossible measurement or overflow/underflow
<string4>	Number of frame errors actually counted ranging from 0 to 10000000.
<string5>	Number of frames actually counted ranging from 0 to 10000000

Sensitivity/FER Test Status

```
TESTs:MANual:CDMA:RESults:FER:STATe <bool>
TESTs:MANual:CDMA:RESults:FER:STATe?
```

Defines whether or not to run the sensitivity/FER test. For IS2K systems tests with the service option 32, the test status is for Sensitivity/TDSO FER.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

Service Option

```
TESTs:MANual:CDMA:SOPTion <string>
TESTs:MANual:CDMA:SOPTion?
```

Specifies one of the service options. For IS2K systems tests, the available service options are dependent on the radio configurations.

Parameter	Range/Selection	*RST	Resolution
<string>	1 for normal voice, 2 for data loopback at 9.6 kbps, 3 for voice using EVRC (enhanced variable rate coder) at 9.6 kbps, 9 for data loopback at 14.4 kbps, 17 for voice at 14.4 kbps, 32 for test data service option, or 32768 for voice at 14.4 kbps	2	—

Signaling State

```
TESTs:MANual:CDMA:SIGNaling:STATe?
```

Returns a bit-weighted-decimal value corresponding to the test flow steps executed for a test cycle.

Bit (Weight)	Description
Bit 0 (1)	Registration
Bit 1 (2)	Paging or MS Origination
Bit 2 (4)	RF Test or Voice Echo Test
Bit 3 (8)	MS Release or BS Release
Bit 4 (16)	Time Out Error
Bit 5 (32)	Measurement End

Softer Handoff

```
TESTs:MANual:CDMA:SHOFf
```

Executes the softer handoff test from a channel to another.

Time Offset Test Result

```
TESTs:MANual:CDMA:RESults:TOFFset?
```

Returns a set of timing offset test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 0.00000325 to 0.00000325 (sec), or 9.99999999 for impossible measurement or overflow/underflow

Time Offset Test Status

```
TESTs:MANual:CDMA:RESults:TOFFset:STATe <bool>
TESTs:MANual:CDMA:RESults:TOFFset:STATe?
```

Defines whether or not to make the timing offset test.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

TX Power Test Result

```
TESTs:MANual:CDMA:RESults:TXPower?
```

Returns a set of TX power test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from –99.9 to 99.9 (dBm), or 99.9 for impossible measurement or overflow/underflow

TX Power Test Status

```
TESTs:MANual:CDMA:RESults:TXPower:STATe <bool>
TESTs:MANual:CDMA:RESults:TXPower:STATe?
```

Defines whether or not to run the TX power test.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

TRIGger Subsystem

The Trigger commands are used to control the measurement cycle.

TRIGger Subsystem Command Reference

Abort

`TRIGger:ABORt`

Stops and resets the trigger system, and makes the trigger sequence state idle.

Immediate Trigger

`TRIGger:IMMediate`

Starts a measurement cycle immediately.

Trigger Mode

```
TRIGger:MODE <string>
TRIGger:MODE?
```

Selects one of the trigger modes to execute a single or multiple measurements.

Parameter	Range/Selection	*RST	Resolution
<string>	SINGle, CONTinuous trigger mode	CONT	—

TXANalyzer Subsystem (Option 002)

The TXANalyzer subsystem commands are used to set and read the controls and parameters of the TX Analyzer functions. Send the “DISPlay:TXANalyzer” command to display the TX Analyzer screen before sending the following commands.

NOTE This section is applicable for Test Sets with Option 002.

TXANalyzer Subsystem Command Reference

DC Power Mode

```
TXANalyzer:DCPower:MODE <bool>
TXANalyzer:DCPower:MODE?
```

Defines whether or not to supply the dc power from the Test Set.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

DC Power Voltage

```
TXANalyzer:DCPower:VOLT <real>
TXANalyzer:DCPower:VOLT?
```

Specifies a value of the dc power voltage to be supplied to the mobile.

Parameter	Range/Selection	*RST	Resolution
<real>	3.0 to 12.0 (V)	3.0	0.1

Radio System

```
TXANalyzer:RSYStem <string>
TXANalyzer:RSYStem?
```

Specifies one of the radio systems to be tested.

Parameter	Range/Selection	*RST	Resolution
<string>	For Test Sets without Option 013: CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1 For Test Sets with Option 013: CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, CEL-JP-IS2K, CELLR-T53, PCS-US-IS2K, PCS-US, PCS-KR-IS2K, PCS-KOREA-P0, PCS-KOREA-P1, AMPS	CEL-US-IS2K	—

RF Channel

```
TXANalyzer:RFCHannel <int>
TXANalyzer:RFCHannel?
```

Specifies one of the RF channel numbers for the radio system.

Parameter	Range/Selection	*RST	Resolution
<int>	For CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, AMPS: 991 to 1023, 1 to 799	991	1
	For CEL-JP-IS2K, CELLR-T53[a]: 1041 to 1199, 801 to 1039, 1 to 799	1041	1
	For PCS-US-IS2K, PCS-US: 0 to 1199	0	1
	For PCS-KOREA-P0: 0 to 1300	0	1
	For PCS-KR-IS2K, PCS-KOREA-P1: 601 to 1300, 1 to 600	601	1

a. Channels 1201 to 1600 will not be supported.

RF Frequency

```
TXANalyzer:RFFRequency <real>
TXANalyzer:RFFRequency?
```

Specifies the RF frequency value of the radio system.

Parameter	Range/Selection	*RST	Resolution
<int>	For CEL-US-IS2K, CELLR-IS95A, CELLR-TSB74, AMPS: 869040000 to 870000000, 870030000 to 893970000 (Hz)	824040000	30000
	For CEL-JP-IS2K, CELLR-T53[a]: 832012500 to 833987500, 843012500 to 845987500, 860012500 to 869987500 (Hz)	887012500	12500
	For PCS-US-IS2K, PCS-US: 1930000000 to 1989950000 (Hz)	1850000000	50000
	For PCS-KOREA-P0: 1805000000 to 1870000000 (Hz)	1715000000	50000
	For PCS-KR-IS2K, PCS-KOREA-P1: 1805050000 to 1840000000, 1840050000 to 1870000000 (Hz)	1715050000	50000

a. Frequency range 838.0125 to 843.0000 MHz will not be supported.

For AMPS Tests (Option 013)

NOTE This section is applicable only for Test Sets with Option 013.

Audio Frequency Test Result

`TXANalyzer:AMPS:RESults:AFRequency?`

Returns a set of audio frequency test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 20.0 to 20000.0 (Hz), or 99999.9 for impossible measurement or overflow/underflow

Audio Frequency Test Status

`TXANalyzer:AMPS:RESults:AFRequency:STATe <bool>`
`TXANalyzer:AMPS:RESults:AFRequency:STATe?`

Defines whether or not to run the audio frequency tests.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

Audio Level Measurement Result

`TXANalyzer:AMPS:RESults:ACLEVel?`

Returns a set of audio level measurement results with 2.9 kHz deviation, <string 1>, <string 2>, and <string 3>, at the time of RX SINAD measurement. As neither this item nor result value is shown on the screen, the remote control command and query command are required to retrieve the result value. To enable this function, the Audio Level Measurement Status command must be used.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for valid data, or 1 for invalid data or unable to measure
<string 3>	Measured value ranging from 30 mVrms to 3 Vrms, or 9.999 for impossible measurement or overflow/underflow

Audio Level Measurement Status

`TXANalyzer:AMPS:RESults:ACLEVel:STATe <bool>`
`TXANalyzer:AMPS:RESults:ACLEVel:STATe?`

Defines whether or not to enable the audio level measurement function at the time of RX SINAD measurement. This item is not shown on the screen.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) to enable, OFF (0) to disable	0	—

Audio Output Level

`TXANalyzer:AMPS:RESults:AOUT <int>`
`TXANalyzer:AMPS:RESults:AOUT?`

Specifies the audio signal output level to make audio signal measurements.

Parameter	Range/Selection	*RST	Resolution
<int>	–48 to +12 (dBV)	–48	1

Audio Test Item

```
TXANalyzer:AMPS:RESults:AANalyzer:SELect <string>
TXANalyzer:AMPS:RESults:AANalyzer:SELect?
```

Selects one of the audio test items to be tested.

Parameter	Range/Selection	*RST	Resolution
<string>	TX-DIST for TX distortion, RX-DIST for RX distortion, RX-SINAD for RX SINAD	TX-DIST	—

Audio Test Status

```
TXANalyzer:AMPS:RESults:AANalyzer:STATe <bool>
TXANalyzer:AMPS:RESults:AANalyzer:STATe?
```

Defines whether or not to run the audio test specified by the `TXANalyzer:AMPS:RESults:AANalyzer:SELect` command.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

DC Current Test Result

```
TXANalyzer:AMPS:RESults:CURRent?
```

Returns a set of dc current test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 0.000 to 1.000 (A), or 9.999 for impossible measurement or overflow/underflow

DC Current Test Status

```
TXANalyzer:AMPS:RESults:CURRent:STATe <bool>
TXANalyzer:AMPS:RESults:CURRent:STATe?
```

Defines whether or not to run the dc current test.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

Deviation Test Item

```
TXANalyzer:AMPS:RESults:DEViation:SELect <string>
TXANalyzer:AMPS:RESults:DEViation:SELect?
```

Selects one of the deviation test items to be tested.

Parameter	Range/Selection	*RST	Resolution
<string>	FM for FM deviation, SAT for supervisory audio tone (SAT) deviation, ST for signaling tone (ST) deviation	FM	—

Deviation Test Status

```
TXANalyzer:AMPS:RESults:DEViation:STATe <bool>
TXANalyzer:AMPS:RESults:DEViation:STATe?
```

Defines whether or not to run the deviation test specified by the `TESTs:MANual:AMPS:RESults:DEViation:SELect` command.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

FM Deviation Limiting Test Result

```
TXANalyzer:AMPS:RESults:FM?
```

Returns a set of FM deviation limiting test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 1000 to 25000 (Hz), or 99999 for impossible measurement or overflow/underflow

Frequency Error Test Result

```
TXANalyzer:AMPS:RESults:FERRor?
```

Returns a set of frequency error test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from –12.50 to 12.50 (ppm), or 999.99 for impossible measurement or overflow/underflow

Frequency Error Test Status

```
TXANalyzer:AMPS:RESults:FERRor:STATe <bool>
TXANalyzer:AMPS:RESults:FERRor:STATe?
```

Defines whether or not to run the frequency error test.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

RX Distortion Test Result

```
TXANalyzer:AMPS:RESults:RXDistortion?
```

Returns a set of RX distortion test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 0.0 to 100.0(%), or 999.99 for impossible measurement or overflow/underflow

RX SINAD Test Result

```
TXANalyzer:AMPS:RESults:RXSinad?
```

Returns a set of RX SINAD test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 0.0 to 40.0 (dB), or 99.9 for impossible measurement or overflow/underflow

SAT Deviation Test Result

`TXANalyzer:AMPS:RESults:SATone?`

Returns a set of supervisory audio tone (SAT) Deviation test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 1000 to 25000 (Hz), or 99999 for impossible measurement or overflow/underflow

ST Deviation Test Result

`TXANalyzer:AMPS:RESults:ST?`

Returns a set of signaling tone (ST) deviation test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 10 to 25000 (Hz), or 99999 for impossible measurement or overflow/underflow

TX Distortion Test Result

`TXANalyzer:AMPS:RESults:TXDistortion?`

Returns a set of TX distortion test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 0.0 to 100.0(%), or 999.9 for impossible measurement or overflow/underflow

TX Power Test Result

`TXANalyzer:AMPS:RESults:TXPower?`

Returns a set of TX distortion test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from –99.9 to 99.9 (dBm), or 99.9 for impossible measurement or overflow/underflow

TX Power Test Status

`TXANalyzer:AMPS:RESults:TXPower:STATe <bool>`
`TXANalyzer:AMPS:RESults:TXPower:STATe?`

Defines whether or not to run the TX power test.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

For CDMA Tests

DC Current Test Result

`TXANalyzer:CDMA:RESults:CURRent?`

Returns a set of dc current test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 0.000 to 1.000 (A), or 9.9999 for impossible measurement or overflow/underflow

DC Current Test Status

```
TXANalyzer:CDMA:RESults:CURRent:STATe <bool>
TXANalyzer:CDMA:RESults:CURRent:STATe?
```

Defines whether or not to run the dc current test.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

Frequency Error Test Result

```
TXANalyzer:CDMA:RESults:FERRor?
```

Returns a set of frequency error test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 0.000 to 1.000 (A), or 9.9999 for impossible measurement or overflow/underflow

Frequency Error Test Status

```
TXANalyzer:CDMA:RESults:FERRor:STATe <bool>
TXANalyzer:CDMA:RESults:FERRor:STATe?
```

Defines whether or not to run the frequency error test.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

Multi-code Rho Test Result

`TXANalyzer:CDMA:RESults:RHO?`

Returns a set of rho (waveform quality) test results, <string 1>, <string 2>, and <string 3>, for IS2K systems tests with the radio configuration F3R3, F4R3, or F5R4. Also, see Rho Test Result.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 0.800 to 1.000, or 9.999 for impossible measurement or overflow/underflow

Multi-code Rho Test Status

`TXANalyzer:CDMA:RESults:RHO:STATe <bool>`
`TXANalyzer:CDMA:RESults:RHO:STATe?`

Defines whether or not to run the multi-code rho (waveform quality) test, for IS2K systems tests with the radio configuration F3R3, F4R3, or F5R4. Also, see Rho Test Status.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

Rho Test Result

`TXANalyzer:CDMA:RESults:RHO?`

Returns a set of rho (waveform quality) test results, <string 1>, <string 2>, and <string 3>. For IS2K radio system tests with the radio configuration 3, 4, or 5, this item name changes to Multi-code Rho.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from 0.800 to 1.000, or 9.999 for impossible measurement or overflow/underflow

Rho Test Status

```
TXANalyzer:CDMA:RESults:RHO:STATe <bool>
TXANalyzer:CDMA:RESults:RHO:STATe?
```

Defines whether or not to run the rho (waveform quality) test. For IS2K radio system tests with the radio configuration 3, 4, or 5, this item name changes to Multi-code Rho.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

Time Offset Test Result

```
TXANalyzer:CDMA:RESults:TOFFset?
```

Returns a set of timing offset test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from –0.0000032 to 0.0000032 (sec), or 9.99999999 for impossible measurement or overflow/underflow

Time Offset Test Status

```
TXANalyzer:CDMA:RESults:TOFFset:STATe <bool>
TXANalyzer:CDMA:RESults:TOFFset:STATe?
```

Defines whether or not to run the timing offset test.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

TX Power Test Result

```
TXANalyzer:CDMA:RESults:TXPower?
```

Returns a set of TX power test results, <string 1>, <string 2>, and <string 3>.

Parameter	Description
<string 1>	0 for normal measurement, or 1 for impossible measurement or overflow/underflow
<string 2>	0 for Pass, or 1 for Fail
<string 3>	Measured value ranging from –99.9 to 99.9 (dBm), or 99.9 for impossible measurement or overflow/underflow

TX Power Test Status

```
TXANalyzer:CDMA:RESults:TXPower:STATe <bool>
TXANalyzer:CDMA:RESults:TXPower:STATe?
```

Defines whether or not to run the TX power test.

Parameter	Range/Selection	*RST	Resolution
<bool>	ON (1) for run, OFF (0) for skip	1	—

4 Programming Command Cross Reference

This chapter contains tables that correlate the screens, softkeys, test parameters and test items with their corresponding syntax for programming the Agilent E6393B CDMA MS Test Set.

Initial Screen

The following table shows the cross reference for the initial screen after power on.

Softkey or `Field`	**Command**
Automatic Test	`DISPlay:AUTO:STBY`
Configuration	`DISPlay:CONFigure`
(Initial Screen)	`DISPlay:INIT`
Manual Test	`DISPlay:MANual:STBY`
`Procedure`	`CONFigure:FILE:RECall <string>`
SIgnal Generator	`DISPlay:RFGenerator`
TX Analyzer	`DISPlay:TXANalyzer`

Automatic Test Screens

The following table shows the cross reference for the Automatic Test screens.

Softkey or Field	**Command**
Abort (Measurement)	TRIGger:ABORt
Abort (Printing)	HCOPy:ABORt
Continue	TESTs:AUTO:AMPS:SIGNaling:POFailure CONTinue
DC Current(Idle)	TESTs:AUTO:AMPS:RESults:CURRent:IDLE? <int seq>
DC Current(Idle)	TESTs:AUTO:CDMA:RESults:CURRent:IDLE? <int seq>
DC Current(Talk)	TESTs:AUTO:AMPS:RESults:CURRent:TALK? <int seq>,<int ch>
DC Current(Talk)	TESTs:AUTO:CDMA:RESults:CURRent:TALK? <int seq>,<int ch>
DC Power	TESTs:AUTO:DCPower:MODE <string> TESTs:AUTO:DCPower:MODE? TESTs:AUTO:DCPower:VOLT <real> TESTs:AUTO:DCPower:VOLT?
Detail	TESTs:AUTO:SCReen DETailed TESTs:AUTO:SCReen?
Dialed Number:	TESTs:AUTO:RESults:MSINformation:DIALed?
ESN:	TESTs:AUTO:RESults:MSINformation:ESN?
Fail	TESTs:AUTO:CDMA:TALK:STATe FAIL
FM Dev Limit	TESTs:AUTO:AMPS:RESults:FMDLimit? <int seq>,<int ch>
Frequency Error	TESTs:AUTO:AMPS:RESults:FERRor? <int seq>,<int ch>
Frequency Error	TESTs:AUTO:CDMA:RESults:FERRor? <int seq>,<int ch>
Manual Test	TESTs:AUTO:AMPS:SIGNaling:POFailure MANual
Memory1 (amplitude)	SYSTem:MEMory:AMPLitude 1,<real> SYSTem:MEMory:AMPLitude?
Memory1 (channel)	SYSTem:MEMory:CHANnel 1,<int> SYSTem:MEMory:CHANnel?
Memory2 (amplitude)	SYSTem:MEMory:AMPLitude 2,<real> SYSTem:MEMory:AMPLitude?
Memory2 (channel)	SYSTem:MEMory:CHANnel 2,<int> SYSTem:MEMory:CHANnel?

Softkey or Field	Command
Max TX Power	TESTs:AUTO:CDMA:RESults:MAXPower? <int seq>,<int ch>
Min TX Power	TESTs:AUTO:CDMA:RESults:MINPower? <int seq>,<int ch>
Multi-code Rho[a]	TESTs:AUTO:CDMA:RESults:RHO? <int seq>,<int ch>
Pass	TESTs:AUTO:CDMA:TALK:STATe PASS
Phone Number:	TESTs:AUTO:RESults:MSINformation:PNUMber?
Print All	HCOPy:ITEM:ALL
Print Screen	HCOPy:SDUMp
Procedure	CONFigure:FILE:RECall <string>
RFCH	TESTs:AUTO:AMPS:RFCHannel <int seq>,<int ch1>,<int ch2>,<int ch3> TESTs:AUTO:AMPS:RFCHannel? <int seq>
RFCH	TESTs:AUTO:CDMA:RFCHannel <int seq>,<int ch1>,<int ch2>,<int ch3> TESTs:AUTO:CDMA:RFCHannel? <int seq>
Rho	TESTs:AUTO:CDMA:RESults:RHO? <int seq>,<int ch>
RX Distortion	TESTs:AUTO:AMPS:RESults:RXDistortion? <int seq>,<int ch>
RX SINAD	TESTs:AUTO:AMPS:RESults:RXSinad? <int seq>,<int ch>
SAT Deviation	TESTs:AUTO:AMPS:RESults:SATone:Deviation? <int seq>,<int ch>
SAT Freq Error	TESTs:AUTO:AMPS:RESults:SATone:FERRor? <int seq>,<int ch>
Screen >>	TESTs:AUTO:SCReen <string> TESTs:AUTO:SCReen?
Sensitivity/FER	TESTs:AUTO:CDMA:RESults:FER? <int seq>,<int ch>
Simple	TESTs:AUTO:SCReen SIMPlified TESTs:AUTO:SCReen?
ST Frequency	TESTs:AUTO:AMPS:RESults:ST:FREQuency? <int seq>,<int ch>
ST Deviation	TESTs:AUTO:AMPS:RESults:ST:Deviation? <int seq>,<int ch>
Start	TRIGger:IMMediate
Time Offset	TESTs:AUTO:CDMA:RESults:TOFFset? <int seq>,<int ch>

Softkey or `Field`	**Command**
`TX Distortion`	`TESTs:AUTO:AMPS:RESults:TXDistortion? <int seq>,<int ch>`
`TX Power`	`TESTs:AUTO:AMPS:RESults:TXPower? <int seq>,<int ch>`
Value	`TESTs:AUTO:SCReen VALue` `TESTs:AUTO:SCReen?`

a. This is valid if the radio configuration is set to either 3, 4, or 5 for testing IS2K systems.

Manual Test Screens

The following table shows the cross reference for the Manual Test screens.

Softkey or Field	**Command**
Amplitude	TESTs:MANual:CDMA:ASECtor <real> TESTs:MANual:CDMA:ASECtor?
Audio Frequency	TESTs:MANual:AMPS:RESults:AFRequency:STATe <bool> TESTs:MANual:AMPS:RESults:AFRequency:STATe? TESTs:MANual:AMPS:RESults:AFRequency?
Audio Level (Neither Softkey nor Field exits.)	TESTs:MANual:AMPS:RESults:ACLEVel:STATe <bool> TESTs:MANual:AMPS:RESults:ACLEVel:STATe? TESTs:MANual:AMPS:RESults:ACLEVel?
Audio Out	TESTs:MANual:AMPS:AOUT <int> TESTs:MANual:AMPS:AOUT?
Clear Status	TESTs:MANual:SCLear
Confidence	TESTs:MANual:CDMA:CONFidence <string> TESTs:MANual:CDMA:CONFidence?
DC Current	TESTs:MANual:AMPS:RESults:CURRent:STATe <bool> TESTs:MANual:AMPS:RESults:CURRent:STATe? TESTs:MANual:AMPS:RESults:CURRent?
DC Current	TESTs:MANual:CDMA:RESults:CURRent:STATe <bool> TESTs:MANual:CDMA:RESults:CURRent:STATe? TESTs:MANual:CDMA:RESults:CURRent?
DC Power	TESTs:MANual:DCPower:MODE <bool> TESTs:MANual:DCPower:MODE?
	TESTs:MANual:DCPower:VOLT <real> TESTs:MANual:DCPower:VOLT?
Dialed Number:	TESTs:MANual:RESults:MSINformation:DIALed?
ESN:	TESTs:MANual:RESults:MSINformation:ESN?
FER	TESTs:MANual:CDMA:RESults:FER:STATe <bool> TESTs:MANual:CDMA:RESults:FER:STATe? TESTs:MANual:CDMA:RESults:FER?
FM Deviation	TESTs:MANual:AMPS:RESults:DEViation:SELect FM TESTs:MANual:AMPS:RESults:DEViation:SELect? TESTs:MANual:AMPS:RESults:DEViation:STATe <bool> TESTs:MANual:AMPS:RESults:DEViation:STATe? TESTs:MANual:AMPS:RESults:FM?

Softkey or Field	Command
Frequency Error	TESTs:MANual:AMPS:RESults:FERRor:STATe <bool> TESTs:MANual:AMPS:RESults:FERRor:STATe? TESTs:MANual:AMPS:RESults:FERRor?
Frequency Error	TESTs:MANual:CDMA:RESults:FERRor:STATe <bool> TESTs:MANual:CDMA:RESults:FERRor:STATe? TESTs:MANual:CDMA:RESults:FERRor?
Handoff	TESTs:MANual:CDMA:HORSystem <string> TESTs:MANual:CDMA:HORSystem?
Hard Handoff	TESTs:MANual:CDMA:HHOFf
Max & Min Power	TESTs:MANual:CDMA:MMPower
Max Frames	TESTs:MANual:CDMA:MAXFrames <int> TESTs:MANual:CDMA:MAXFrames?
Max TX Power	TESTs:MANual:CDMA:RESults:MAXPower?
Memory1 (amplitude)	SYSTem:MEMory:AMPLitude 1,<real> SYSTem:MEMory:AMPLitude?
Memory1 (channel)	SYSTem:MEMory:CHANnel 1,<int> SYSTem:MEMory:CHANnel?
Memory2 (amplitude)	SYSTem:MEMory:AMPLitude 2,<real> SYSTem:MEMory:AMPLitude?
Memory2 (channel)	SYSTem:MEMory:CHANnel 2,<int> SYSTem:MEMory:CHANnel?
Min TX Power	TESTs:MANual:CDMA:RESults:MINPower?
MS Info	DISPlay:MANual:MEASure:MSID
	DISPlay:MANual:STBY:MSID
Multi-code Rho[a]	TESTs:MANual:CDMA:RESults:RHO:STATe <bool> TESTs:MANual:CDMA:RESults:RHO:STATe? TESTs:MANual:CDMA:RESults:RHO?
Paging	TESTs:MANual:PAGE
Phone Number:	TESTs:MANual:RESults:MSINformation:PNUMber?
Print Screen	HCOPy:SDUMp
Procedure	CONFigure:FILE:RECall <string fname>
Pwr Cntl Bit	TESTs:MANual:CDMA:PCBit <string> TESTs:MANual:CDMA:PCBit?
Radio Conf[b]	TESTs:MANual:RCONfig <string> TESTs:MANual:RCONfig?

Softkey or Field	Command
Radio System	TESTs:MANual:RSYStem <string> TESTs:MANual:RSYStem?
Registration	TESTs:MANual:REGister
Release	TESTs:MANual:RELease
RFCH (Handoff)	TESTs:MANual:CDMA:HOCHannel <int> TESTs:MANual:CDMA:HOCHannel?
	TESTs:MANual:CDMA:HOFRequency <real> TESTs:MANual:CDMA:HOFRequency?
RFCH (Radio System)	TESTs:MANual:RFCHannel <int> TESTs:MANual:RFCHannel?
	TESTs:MANual:RFFRequency <real> TESTs:MANual:RFFRequency?
Rho	TESTs:MANual:CDMA:RESults:RHO:STATe <bool> TESTs:MANual:CDMA:RESults:RHO:STATe? TESTs:MANual:CDMA:RESults:RHO?
RX Distortion	TESTs:MANual:AMPS:RESults:AANalyzer:SELect RX-DIST TESTs:MANual:AMPS:RESults:AANalyzer:SELect? TESTs:MANual:AMPS:RESults:AANalyzer:STATe <bool> TESTs:MANual:AMPS:RESults:AANalyzer:STATe? TESTs:MANual:AMPS:RESults:RXDistortion?
RX SINAD	TESTs:MANual:AMPS:RESults:AANalyzer:SELect RX-SINAD TESTs:MANual:AMPS:RESults:AANalyzer:SELect? TESTs:MANual:AMPS:RESults:AANalyzer:STATe <bool> TESTs:MANual:AMPS:RESults:AANalyzer:STATe? TESTs:MANual:AMPS:RESults:RXSinad?
SAT Deviation	TESTs:MANual:AMPS:RESults:DEViation:SELect SAT TESTs:MANual:AMPS:RESults:DEViation:SELect? TESTs:MANual:AMPS:RESults:DEViation:STATe <bool> TESTs:MANual:AMPS:RESults:DEViation:STATe? TESTs:MANual:AMPS:RESults:SATone?
Service Option	TESTs:MANual:CDMA:SOPTion <string> TESTs:MANual:CDMA:SOPTion?
Softer Handoff	TESTs:MANual:CDMA:SHOFf

Softkey or Field	Command
ST Deviation	TESTs:MANual:AMPS:RESults:DEViation:SELect ST TESTs:MANual:AMPS:RESults:DEViation:SELect? TESTs:MANual:AMPS:RESults:DEViation:STATe <bool> TESTs:MANual:AMPS:RESults:DEViation:STATe? TESTs:MANual:AMPS:RESults:ST?
TDSO FER[c]	TESTs:MANual:CDMA:RESults:FER:STATe <bool> TESTs:MANual:CDMA:RESults:FER:STATe? TESTs:MANual:CDMA:RESults:FER?
Time Offset	TESTs:MANual:CDMA:RESults:TOFFset:STATe <bool> TESTs:MANual:CDMA:RESults:TOFFset:STATe? TESTs:MANual:CDMA:RESults:TOFFset?
Trigger	TRIGger:IMMediate
Trigger Sing/Cont	TRIGger:MODE <string> TRIGger:MODE?
TX Distortion	TESTs:MANual:AMPS:RESults:AANalyzer:SELect TX-DIST TESTs:MANual:AMPS:RESults:AANalyzer:SELect? TESTs:MANual:AMPS:RESults:AANalyzer:STATe <bool> TESTs:MANual:AMPS:RESults:AANalyzer:STATe? TESTs:MANual:AMPS:RESults:TXDistortion?
TX Power	TESTs:MANual:AMPS:RESults:TXPower:STATe <bool> TESTs:MANual:AMPS:RESults:TXPower:STATe? TESTs:MANual:AMPS:RESults:TXPower?
TX Power	TESTs:MANual:CDMA:RESults:TXPower:STATe <bool> TESTs:MANual:CDMA:RESults:TXPower:STATe? TESTs:MANual:CDMA:RESults:TXPower?

a. This is valid if the radio configuration is set to either 3, 4, or 5 for testing IS2K systems.
b. This is valid for testing IS2K systems.
c. This is valid if the service option is set to 32 for testing IS2K systems with the radio configuration 3, 4, or 5.

TX Analyzer Screens

The following table shows the cross reference for the TX Analyzer screens.

Softkey or Field	**Command**
Audio Frequency	TXANalyzer:AMPS:RESults:AFRequency:STATe <bool> TXANalyzer:AMPS:RESults:AFRequency:STATe? TXANalyzer:AMPS:RESults:AFRequency?
Audio Level (Neither Softkey nor Field exists.)	TXANalyzer:AMPS:RESults:ACLEVel:STATe <bool> TXANalyzer:AMPS:RESults:ACLEVel:STATe? TXANalyzer:AMPS:RESults:ACLEVel?
Audio Out	TXANalyzer:AMPS:RESults:AOUT <int> TXANalyzer:AMPS:RESults:AOUT?
DC Current	TXANalyzer:AMPS:RESults:CURRent:STATe <bool> TXANalyzer:AMPS:RESults:CURRent:STATe? TXANalyzer:AMPS:RESults:CURRent?
DC Current	TXANalyzer:CDMA:RESults:CURRent:STATe <bool> TXANalyzer:CDMA:RESults:CURRent:STATe? TXANalyzer:CDMA:RESults:CURRent?
DC Power	TXANalyzer:DCPower:MODE <bool> TXANalyzer:DCPower:MODE? TXANalyzer:DCPower:VOLT <real> TXANalyzer:DCPower:VOLT?
FM Deviation	TXANalyzer:AMPS:RESults:DEViation:SELect FM TXANalyzer:AMPS:RESults:DEViation:SELect? TXANalyzer:AMPS:RESults:DEViation:STATe <bool> TXANalyzer:AMPS:RESults:DEViation:STATe? TXANalyzer:AMPS:RESults:FM?
Frequency Error	TXANalyzer:AMPS:RESults:FERRor:STATe <bool> TXANalyzer:AMPS:RESults:FERRor:STATe? TXANalyzer:AMPS:RESults:FERRor?
Frequency Error	TXANalyzer:CDMA:RESults:FERRor:STATe <bool> TXANalyzer:CDMA:RESults:FERRor:STATe? TXANalyzer:CDMA:RESults:FERRor?
Memory1 (amplitude)	SYSTem:MEMory:AMPLitude 1,<real> SYSTem:MEMory:AMPLitude?
Memory1 (channel)	SYSTem:MEMory:CHANnel 1,<int> SYSTem:MEMory:CHANnel?

Softkey or Field	Command
Memory2 (amplitude)	SYSTem:MEMory:AMPLitude 2,<real> SYSTem:MEMory:AMPLitude?
Memory2 (channel)	SYSTem:MEMory:CHANnel 2,<int> SYSTem:MEMory:CHANnel?
Multi-code Rho[a]	TXANalyzer:CDMA:RESults:RHO:STATe <bool> TXANalyzer:CDMA:RESults:RHO:STATe? TXANalyzer:CDMA:RESults:RHO?
Print Screen	HCOPy:SDUMp
Procedure	CONFigure:FILE:RECall <string>
Radio System	TXANalyzer:RSYStem <string> TXANalyzer:RSYStem?
RFCH	TXANalyzer:RFCHannel <int> TXANalyzer:RFCHannel? TXANalyzer:RFFRequency <real> TXANalyzer:RFFRequency?
Rho	TXANalyzer:CDMA:RESults:RHO:STATe <bool> TXANalyzer:CDMA:RESults:RHO:STATe? TXANalyzer:CDMA:RESults:RHO?
RX Distortion	TXANalyzer:AMPS:RESults:AANalyzer:SELect RX-DIST TXANalyzer:AMPS:RESults:AANalyzer:SELect? TXANalyzer:AMPS:RESults:AANalyzer:STATe <bool> TXANalyzer:AMPS:RESults:AANalyzer:STATe? TXANalyzer:AMPS:RESults:RXDistortion?
RX SINAD	TXANalyzer:AMPS:RESults:AANalyzer:SELect RX-SINAD TXANalyzer:AMPS:RESults:AANalyzer:SELect? TXANalyzer:AMPS:RESults:AANalyzer:STATe <bool> TXANalyzer:AMPS:RESults:AANalyzer:STATe? TXANalyzer:AMPS:RESults:RXSinad?
SAT Deviation	TXANalyzer:AMPS:RESults:DEViation:SELect SAT TXANalyzer:AMPS:RESults:DEViation:SELect? TXANalyzer:AMPS:RESults:DEViation:STATe <bool> TXANalyzer:AMPS:RESults:DEViation:STATe? TXANalyzer:AMPS:RESults:SATone?
ST Deviation	TXANalyzer:AMPS:RESults:DEViation:SELect ST TXANalyzer:AMPS:RESults:DEViation:SELect? TXANalyzer:AMPS:RESults:DEViation:STATe <bool> TXANalyzer:AMPS:RESults:DEViation:STATe? TXANalyzer:AMPS:RESults:ST?

Softkey or Field	Command
Time Offset	TXANalyzer:CDMA:RESults:TOFFset:STATe <bool> TXANalyzer:CDMA:RESults:TOFFset:STATe? TXANalyzer:CDMA:RESults:TOFFset?
Trigger	TRIGger:IMMediate
Trigger Sing/Cont	TRIGger:MODE <string> TRIGger:MODE?
TX Distortion	TXANalyzer:AMPS:RESults:AANalyzer:SELect TX-DIST TXANalyzer:AMPS:RESults:AANalyzer:SELect? TXANalyzer:AMPS:RESults:AANalyzer:STATe <bool> TXANalyzer:AMPS:RESults:AANalyzer:STATe? TXANalyzer:AMPS:RESults:TXDistortion?
TX Power	TXANalyzer:AMPS:RESults:TXPower:STATe <bool> TXANalyzer:AMPS:RESults:TXPower:STATe? TXANalyzer:AMPS:RESults:TXPower?
TX Power	TXANalyzer:CDMA:RESults:TXPower:STATe <bool> TXANalyzer:CDMA:RESults:TXPower:STATe? TXANalyzer:CDMA:RESults:TXPower?

a. This is valid if the radio configuration is set to either 3, 4, or 5 for testing IS2K systems.

Signal Generator Screen

The following table shows the cross reference for the Signal Generator screen.

Softkey or `Field`	**Command**
`Amplitude`	`RFGenerator:AMPLitude <real>` `RFGenerator:AMPLitude?`

`DC Power`	`RFGenerator:DCPower:MODE <bool>`
	`RFGenerator:DCPower:MODE?`
	
	`RFGenerator:DCPower:VOLT <real>`
	`RFGenerator:DCPower:VOLT?`

Memory1 (amplitude)	`SYSTem:MEMory:AMPLitude 1,<real>` `SYSTem:MEMory:AMPLitude?`
Memory1 (channel)	`SYSTem:MEMory:CHANnel 1,<int>` `SYSTem:MEMory:CHANnel?`
Memory2 (amplitude)	`SYSTem:MEMory:AMPLitude 2,<real>` `SYSTem:MEMory:AMPLitude?`
Memory2 (channel)	`SYSTem:MEMory:CHANnel 2,<int>` `SYSTem:MEMory:CHANnel?`
`Modulation`	`RFGenerator:MODulation <string>` `RFGenerator:MODulation?`
Print Screen	`HCOPy:SDUMp`
`Procedure`	`CONFigure:FILE:RECall <string>`
`Radio System`	`RFGenerator:RSYStem <string>` `RFGenerator:RSYStem?`
RF Output On/Off	`RFGenerator:RFOUtput <bool>` `RFGenerator:RFOUtput?`

`RFCH`	`RFGenerator:RFCHannel <int>`
	`RFGenerator:RFCHannel?`
	
	`RFGenerator:RFFRequency <real>`
	`RFGenerator:RFFRequency?`

Configuration Screen

The following table shows the cross reference for the Configuration screens.

Softkey or Field	Command
Auto Test Run	CONFigure:ATMode <string> CONFigure:ATMode?
Auto Test Sequence	DISPlay:CONFigure:SEQuence
Beeper	CONFigure:BEEPer <bool> CONFigure:BEEPer?
Cellular:IS95A/TSB74/IS2K/AMPS	CONFigure:LOSS:CELLular:US <real in>,<real out> CONFigure:LOSS:CELLular:US?
Cellular:T53/IS2K	CONFigure:LOSS:CELLular:JAPan <real in>,<real out> CONFigure:LOSS:CELLular:JAPan?
Date/Time	CONFigure:DATE <int yyyy>,<int mm>,<int dd> CONFigure:DATE? CONFigure:TIME <int hh>,<int mm> CONFigure:TIME?
Even Second Source <no softkey nor field>	CONFigure:ESECond INT|EXT CONFigure:ESECond?
File Management	DISPlay:CONFigure:FILE
Firmware	*IDN?
Loss	CONFigure:LOSS <bool> CONFigure:LOSS?
Option	*OPC?
Panel Key	CONFigure:PKEY <string> CONFigure:PKEY?
PCS:Korea/IS2K	CONFigure:LOSS:PCS:KOREa <real in>,<real out> CONFigure:LOSS:PCS:KOREa?
PCS:US/IS2K	CONFigure:LOSS:PCS:US <real in>,<real out> CONFigure:LOSS:PCS:US?
Procedure	CONFigure:FILE:RECall <string fname>
Print All	HCOPy:ITEM:ALL
Print Screen	HCOPy:SDUMp
Printer	CONFigure:PRINter <string> CONFigure:PRINter?

Softkey or Field	**Command**
Printer Header	CONFigure:PRINter:HEADing <string 1>,<string 2> CONFigure:PRINter:HEADing?
Reference	CONFigure:ROSCillator <string> CONFigure:ROSCillator?
Test Condition	DISPlay:CONFigure:CONDition

Automatic Test Sequence Screen

The following table shows the cross reference for the Test Sequence screens in the Configuration mode.

Softkey or Field	Command
1 Registration	CONFigure:SEQuence:AMPS:SIGNaling:REGister <int seq>,<bool> CONFigure:SEQuence:AMPS:SIGNaling:REGister? <int seq>
1 Registration	CONFigure:SEQuence:CDMA:SIGNaling:REGister <int seq>,<bool> CONFigure:SEQuence:CDMA:SIGNaling:REGister? <int seq>
2 or 5 MS Origination	CONFigure:SEQuence:AMPS:SIGNaling:CALL1:TYPE <int seq>,ORIG CONFigure:SEQuence:AMPS:SIGNaling:CALL1:TYPE? <int seq> CONFigure:SEQuence:AMPS:SIGNaling:CALL1 <int seq>,<bool> CONFigure:SEQuence:AMPS:SIGNaling:CALL1? <int seq>
2 or 5 MS Origination	CONFigure:SEQuence:CDMA:SIGNaling:CALL1:TYPE <int seq>,ORIG CONFigure:SEQuence:CDMA:SIGNaling:CALL1:TYPE? <int seq> CONFigure:SEQuence:CDMA:SIGNaling:CALL1 <int seq>,<bool> CONFigure:SEQuence:CDMA:SIGNaling:CALL1? <int seq>
4 or 2 Paging	CONFigure:SEQuence:AMPS:SIGNaling:CALL1:TYPE <int seq>,<TYPE=PAGE> CONFigure:SEQuence:AMPS:SIGNaling:CALL1:TYPE? <int seq> CONFigure:SEQuence:AMPS:SIGNaling:CALL1 <int seq>,<bool> CONFigure:SEQuence:AMPS:SIGNaling:CALL1? <int seq>
5 or 2 Paging	CONFigure:SEQuence:CDMA:SIGNaling:CALL1:TYPE <int seq>,PAGE CONFigure:SEQuence:CDMA:SIGNaling:CALL1:TYPE? <int seq> CONFigure:SEQuence:CDMA:SIGNaling:CALL1 <int seq>,<string> CONFigure:SEQuence:CDMA:SIGNaling:CALL1? <int seq>
5 or 3 RF/AF Test	CONFigure:SEQuence:AMPS:SIGNaling:RFAF <int seq>,<bool> CONFigure:SEQuence:AMPS:SIGNaling:RFAF? <int seq>

Softkey or Field	Command
6 or 3 RF Test	CONFigure:SEQuence:CDMA:SIGNaling:RFTest <int seq>,<bool> CONFigure:SEQuence:CDMA:SIGNaling:RFTest? <int seq>
3 or 6 Voice Echo	CONFigure:SEQuence:CDMA:SIGNaling:VECHo <int seq>,<bool> CONFigure:SEQuence:CDMA:SIGNaling:VECHo? <int seq>
7 Softer Handoff	CONFigure:SEQuence:CDMA:SIGNaling:SHOFf <int seq>,<bool> CONFigure:SEQuence:CDMA:SIGNaling:SHOFf? <int seq>
8 Hard Handoff	CONFigure:SEQuence:CDMA:SIGNaling:HHOFf <int seq>,<bool> CONFigure:SEQuence:CDMA:SIGNaling:HHOFf? <int seq>
Amplitude: Other Tests	CONFigure:SEQuence:AMPS:AMPLitude:OTESt <int seq>,<real> CONFigure:SEQuence:AMPS:AMPLitude:OTESt? <int seq>
Amplitude: Other Tests	CONFigure:SEQuence:CDMA:ASECtor:OTESt <int seq>,<real> CONFigure:SEQuence:CDMA:ASECtor:OTESt? <int seq>
Amplitude: Sensitivity	CONFigure:SEQuence:AMPS:AMPLitude:SENSitivity <int seq>,<real> CONFigure:SEQuence:AMPS:AMPLitude:SENSitivity? <int seq>
Amplitude: Sensitivity:	CONFigure:SEQuence:CDMA:ASECtor:SENSitivity <int seq>,<real> CONFigure:SEQuence:CDMA:ASECtor:SENSitivity? <int seq>
Audio Out: Level	CONFigure:SEQuence:AMPS:AOUT:LEVel <int seq>,<int> CONFigure:SEQuence:AMPS:AOUT:LEVel? <int seq>
Audio Out: Mode	CONFigure:SEQuence:AMPS:AOUT:MODE <int seq>,<string> CONFigure:SEQuence:AMPS:AOUT:MODE? <int seq>
DC Current(Idle)	CONFigure:SEQuence:AMPS:CURRent:IDLE <int seq>,<int> CONFigure:SEQuence:AMPS:CURRent:IDLE? <int seq>
DC Current(Idle)	CONFigure:SEQuence:CDMA:CURRent:IDLE <int seq>,<int> CONFigure:SEQuence:CDMA:CURRent:IDLE? <int seq>
DC Current(Talk)	CONFigure:SEQuence:AMPS:CURRent:TALK <int seq>,<int> CONFigure:SEQuence:AMPS:CURRent:TALK? <int seq>
DC Current(Talk)	CONFigure:SEQuence:CDMA:CURRent:TALK <int seq>,<int> CONFigure:SEQuence:CDMA:CURRent:TALK? <int seq>
FM Dev Limit	CONFigure:SEQuence:AMPS:FMDLimit <int seq>,<int> CONFigure:SEQuence:AMPS:FMDLimit? <int seq>
Frequency Error	CONFigure:SEQuence:AMPS:FERRor <int seq>,<int> CONFigure:SEQuence:AMPS:FERRor? <int seq>

Softkey or Field	Command
Frequency Error	CONFigure:SEQuence:CDMA:FERRor <int seq>,<int> CONFigure:SEQuence:CDMA:FERRor? <int seq>
Max TX Power	CONFigure:SEQuence:CDMA:MAXPower <int seq>,<int> CONFigure:SEQuence:CDMA:MAXPower? <int seq>
Message for Step No.	CONFigure:SEQuence:AMPS:SIGNaling:MESSage <int seq>,<int msg#>,<string> CONFigure:SEQuence:AMPS:SIGNaling:MESSage? <int seq>,<int msg#>
Message for Step No.	CONFigure:SEQuence:CDMA:SIGNaling:MESSage <int seq>,<int msg#>,<string> CONFigure:SEQuence:CDMA:SIGNaling:MESSage? <int seq>,<int msg#>
Min TX Power	CONFigure:SEQuence:CDMA:MINPower <int seq>,<int> CONFigure:SEQuence:CDMA:MINPower? <int seq>
Print All	HCOPy:ITEM:ALL
Print Screen	HCOPy:SDUMp
RFCH	CONFigure:SEQuence:AMPS:RFCHannel <int seq>,<int ch1>,<int ch2>,<int ch3> CONFigure:SEQuence:AMPS:RFCHannel? <int seq>
RFCH	CONFigure:SEQuence:CDMA:RFCHannel <int seq>,<int ch1>,<int ch2>,<int ch3> CONFigure:SEQuence:CDMA:RFCHannel? <int seq>
Rho	CONFigure:SEQuence:CDMA:RHO <int seq>,<int> CONFigure:SEQuence:CDMA:RHO? <int seq>
RX Distortion	CONFigure:SEQuence:AMPS:RXDistortion <int seq>,<int> CONFigure:SEQuence:AMPS:RXDistortion? <int seq>
RX SINAD	CONFigure:SEQuence:AMPS:RXSinad <int seq>,<int> CONFigure:SEQuence:AMPS:RXSinad? <int seq>
SAT Deviation	CONFigure:SEQuence:AMPS:SATone:Deviation <int seq>,<int> CONFigure:SEQuence:AMPS:SATone:Deviation? <int seq>
SAT Freq Error	CONFigure:SEQuence:AMPS:SATone:FERRor <int seq>,<int> CONFigure:SEQuence:AMPS:SATone:FERRor? <int seq>
Sequence No.	CONFigure:SEQuence:RSYStem <string 1>,<string 2>,<string 3> CONFigure:SEQuence:RSYStem?
Sensitivity/FER	CONFigure:SEQuence:CDMA:SENSitivity <int seq>,<int> CONFigure:SEQuence:CDMA:SENSitivity? <int seq>

Softkey or Field	Command
Service Option: Other Tests	CONFigure:SEQuence:CDMA:SOPTion:OTESt <int seq>,<string> CONFigure:SEQuence:CDMA:SOPTion:OTESt? <int seq>
Service Option: Voice Echo	CONFigure:SEQuence:CDMA:SOPTion:VECho <int seq>,<string> CONFigure:SEQuence:CDMA:SOPTion:VECho? <int seq>
ST Deviation	CONFigure:SEQuence:AMPS:ST:Deviation <int seq>,<int> CONFigure:SEQuence:AMPS:ST:Deviation? <int seq>
ST Frequency	CONFigure:SEQuence:AMPS:ST:FREQuency <int seq>,<int> CONFigure:SEQuence:AMPS:ST:FREQuency? <int seq>
Time Offset	CONFigure:SEQuence:CDMA:TOFFset <int seq>,<int> CONFigure:SEQuence:CDMA:TOFFset? <int seq>
TX Distortion	CONFigure:SEQuence:AMPS:TXDistortion <int seq>,<int> CONFigure:SEQuence:AMPS:TXDistortion? <int seq>
TX Power	CONFigure:SEQuence:AMPS:TXPower <int seq>,<int> CONFigure:SEQuence:AMPS:TXPower? <int seq>

Test Condition Screens

The following table shows the cross reference for the Test Condition screens in the Configuration mode.

Softkey or Field	Command
Access Probe	
Init Pwr	CONFigure:CONDition:CDMA:PINitial <string>,<int> CONFigure:CONDition:CDMA:PINitial? <string>
Max Req Seq, Max Rsp Seq	CONFigure:CONDition:CDMA:MRSequence <string>,<int> CONFigure:CONDition:CDMA:MRSequence? <string>
Nom Pwr	CONFigure:CONDition:CDMA:PNOMinal <string>,<int> CONFigure:CONDition:CDMA:PNOMinal? <string>
Num Step	CONFigure:CONDition:CDMA:NSTep <string>,<int> CONFigure:CONDition:CDMA:NSTep? <string>
Pwr Step	CONFigure:CONDition:CDMA:PSTep <string>,<int> CONFigure:CONDition:CDMA:PSTep? <string>
Base Station	
Max Slot Cycle Index	CONFigure:CONDition:CDMA:MSCindex <string>,<int> CONFigure:CONDition:CDMA:MSCindex? <string>
NID	CONFigure:CONDition:CDMA:NID <string>,<int> CONFigure:CONDition:CDMA:NID? <string>
Power Up Rgstr	CONFigure:CONDition:CDMA:PURegister <string>,<bool> CONFigure:CONDition:CDMA:PURegister? <string>
Rgstr NID	CONFigure:CONDition:CDMA:RNID <string>,<int> CONFigure:CONDition:CDMA:RNID? <string>
Rgstr SID	CONFigure:CONDition:CDMA:RSID <string>,<int> CONFigure:CONDition:CDMA:RSID? <string>
SID	CONFigure:CONDition:CDMA:SID <string>,<int> CONFigure:CONDition:CDMA:SID? <string>
Control Channel	CONFigure:CONDition:AMPS:CCHannel <int> CONFigure:CONDition:AMPS:CCHannel?
DC Current Avg Time Idle	CONFigure:CONDition:CDMA:CAVerage <string>,<string> CONFigure:CONDition:CDMA:CAVerage? <string>
DC Curr(Idle)	CONFigure:CONDition:AMPS:LIMit:CURRent:IDLE <real lo>,<real hi> CONFigure:CONDition:AMPS:LIMit:CURRent:IDLE?
DC Curr(Idle)	CONFigure:CONDition:CDMA:LIMit:CURRent:IDLE <string>,<real lo>,<real hi> CONFigure:CONDition:CDMA:LIMit:CURRent:IDLE? <string>

Softkey or Field	Command
DC Curr(Talk)	CONFigure:CONDition:AMPS:LIMit:CURRent:TALK <real lo>,<real hi> CONFigure:CONDition:AMPS:LIMit:CURRent:TALK?
DC Curr(Talk)	CONFigure:CONDition:CDMA:LIMit:CURRent:TALK <string>,<real lo>,<real hi> CONFigure:CONDition:CDMA:LIMit:CURRent:TALK? <string>
FER Confidence	CONFigure:CONDition:CDMA:CONFidence <string>,<string> CONFigure:CONDition:CDMA:CONFidence? <string>
FER Max Frames	CONFigure:CONDition:CDMA:MAXFrames <string>,<int> CONFigure:CONDition:CDMA:MAXFrames? <string>
FM Dev Limit	CONFigure:CONDition:AMPS:LIMit:FMDLimit <real lo>,<real hi> CONFigure:CONDition:AMPS:LIMit:FMDLimit?
Freq Error	CONFigure:CONDition:AMPS:LIMit:FERRor <real lo>,<real hi> CONFigure:CONDition:AMPS:LIMit:FERRor?
Freq Error	CONFigure:CONDition:CDMA:LIMit:FERRor <string>,<real lo>,<real hi> CONFigure:CONDition:CDMA:LIMit:FERRor? <string>
Max TX Power	CONFigure:CONDition:CDMA:LIMit:MAXPower <string>,<real lo>,<real hi> CONFigure:CONDition:CDMA:LIMit:MAXPower? <string>
Min TX Power	CONFigure:CONDition:CDMA:LIMit:MINPower <string>,<real lo>,<real hi> CONFigure:CONDition:CDMA:LIMit:MINPower? <string>
Multi-code Rho[a]	CONFigure:CONDition:CDMA:LIMit:MRHO <string>,<real lo>,<real hi> CONFigure:CONDition:CDMA:LIMit:MRHO? <string>
Power Level	CONFigure:CONDition:AMPS:PLEVel <int> CONFigure:CONDition:AMPS:PLEVel?
Print Screen	HCOPy:SDUMp
Radio Conf[b]	CONFigure:CONDition:CDMA:RCONfig <string> CONFigure:CONDition:CDMA:RCONfig?
Rho	CONFigure:CONDition:CDMA:LIMit:RHO <string>,<real lo>,<real hi> CONFigure:CONDition:CDMA:LIMit:RHO? <string>
RX Distortion	CONFigure:CONDition:AMPS:LIMit:RXDistortion <real hi> CONFigure:CONDition:AMPS:LIMit:RXDistortion?
RX SINAD	CONFigure:CONDition:AMPS:LIMit:RXSinad <real lo> CONFigure:CONDition:AMPS:LIMit:RXSinad?

Softkey or Field	Command
SAT	CONFigure:CONDition:AMPS:SATone <string> CONFigure:CONDition:AMPS:SATone?
SAT Deviation	CONFigure:CONDition:AMPS:LIMit:SATone:Deviation <real lo>,<real hi> CONFigure:CONDition:AMPS:LIMit:SATone:Deviation?
SAT Freq Err	CONFigure:CONDition:AMPS:LIMit:SATone:FERRor <real lo>,<real hi> CONFigure:CONDition:AMPS:LIMit:SATone:FERRor?
SCH Data Rate[a]	CONFigure:CONDition:CDMA:SCH:DRATe <real> CONFigure:CONDition:CDMA:SCH:DRATe?
SCH Encoder[a]	CONFigure:CONDition:CDMA:SCH:ENCoder <string> CONFigure:CONDition:CDMA:SCH:ENCoder?
SCH Level[a]	CONFigure:CONDition:CDMA:SCH:LEVel <real> CONFigure:CONDition:CDMA:SCH:LEVel?
Sector B Pwr	CONFigure:CONDition:CDMA:BSECtor <string>,<real> CONFigure:CONDition:CDMA:BSECtor? <string> CONFigure:CONDition:CDMA:BSECtor:STATe <string>,<bool> CONFigure:CONDition:CDMA:BSECtor:STATe? <string>
Sens/FER	CONFigure:CONDition:CDMA:LIMit:SENSitivity <string>,<real hi> CONFigure:CONDition:CDMA:LIMit:SENSitivity? <string>
Sens/TDSO FER[c]	CONFigure:CONDition:CDMA:LIMit:TDSO <string>,<real hi> CONFigure:CONDition:CDMA:LIMit:TDSO? <string>
SID	CONFigure:CONDition:AMPS:SIDentify <int> CONFigure:CONDition:AMPS:SIDentify?
ST Deviation	CONFigure:CONDition:AMPS:LIMit:ST:Deviation <real lo>,<real hi> CONFigure:CONDition:AMPS:LIMit:ST:Deviation?
ST Frequency	CONFigure:CONDition:AMPS:LIMit:ST:FREQuency <real lo>,<real hi> CONFigure:CONDition:AMPS:LIMit:ST:FREQuency?

Softkey or Field	Command
Time Offset	CONFigure:CONDition:CDMA:LIMit:TOFFset <string>,<real lo>,<real hi> CONFigure:CONDition:CDMA:LIMit:TOFFset? <string>
TX Distortion	CONFigure:CONDition:AMPS:LIMit:TXDistortion <real hi> CONFigure:CONDition:AMPS:LIMit:TXDistortion?
TX Power	CONFigure:CONDition:AMPS:LIMit:TXPower <real lo>,<real hi> CONFigure:CONDition:AMPS:LIMit:TXPower?

a. This is valid if the radio configuration is set to either 3, 4, or 5 for testing IS2K systems.
b. This is valid for testing IS2K systems
c. This is valid if the service option is set to 32 for testing IS2K systems with the radio configuration 3, 4, or 5.

File Management Screens

The following table shows the cross reference for the File Management screens in the Configuration mode.

Softkey or `Field`	Command
Delete	`CONFigure:FILE:DELete <string_fname>`
Format SRAM Card	`CONFigure:FILE:FORMat`
Print All	`CONFigure:FILE:LIST?`
Print Screen	`HCOPy:SDUMp`
Recall	`CONFigure:FILE:RECall <string_fname>`
Save	`CONFigure:FILE:SAVE <string_fname>,<string_comment>`

5 Example Programs

This chapter contains several example programs that you can use to test CDMA and/or AMPS mobile phones with the Test Set.

Manual Test Sample Program

The following HP BASIC sample program measures Peak TX Power and Frame Error Rate using the Manual Test mode for a Cellular US/IS2K mobile phone.

CLEAR and RESET the controller, then execute the following program:

```
1000! RE-SAVE "A:\ManSmp1.pgm"
1010  Serial_port=9
1020  OUTPUT Serial_port;"*RST"
1030!
1040!**** Loss value set ****
1050!
1060  OUTPUT Serial_port;"DISP:CONF"
1070  OUTPUT Serial_port;"CONF:LOSS ON"
1080  OUTPUT Serial_port;"CONF:LOSS:CELL:US 10.0,10.0"
1090!
1100!**** Test Condition ****
1110!
1120  OUTPUT Serial_port;"CONF:COND:CDMA:SID CEL-US-ISK,4119"
1130  OUTPUT Serial_port;"CONF:COND:CDMA:RSID CEL-US-IS2K,4119"
1140!
1150!**** Radio Standard and RF Channel set ****
1160!
1170  OUTPUT Serial_port;"DISP:MAN:STBY"
1180  OUTPUT Serial_port;"TEST:MAN:RSYS CEL-US-IS2K"
1190  OUTPUT Serial_port;"TEST:MAN:RFCH 384"
1200  OUTPUT Serial_port;"TEST:MAN:CDMA:AMPL -70"
1210!
1220!**** Max Frame, Confidence, Power control bit, Service option set ****
1230!
1240  OUTPUT Serial_port;"TEST:MAN:CDMA:MAXF 10000"
1250  OUTPUT Serial_port;"TEST:MAN:CDMA:CONF 95"
1260  OUTPUT Serial_port;"TEST:MAN:CDMA:PCB OPEN-LOOP"
1270  OUTPUT Serial_port;"TEST:MAN:CDMA:SOPT 2"
1280!
1290!**** Measurement item set ****
1300!
1310  OUTPUT Serial_port;"TRIG:MODE SING"
1320  OUTPUT Serial_port;"TEST:MAN:CDMA:RES:TXP:STAT ON"
```

```
1330  OUTPUT Serial_port;"TEST:MAN:CDMA:RES:FERR:STAT OFF"
1340  OUTPUT Serial_port;"TEST:MAN:CDMA:RES:RHO:STAT OFF"
1350  OUTPUT Serial_port;"TEST:MAN:CDMA:RES:FER:STAT ON"
1360  OUTPUT Serial_port;"TEST:MAN:CDMA:RES:TOFF:STAT OFF"
1370!
1380!**** Registration ****
1390!
1400  DISP "Executing Registration..."
1410  OUTPUT Serial_port;"TEST:MAN:REG"
1420  REPEAT
1430    OUTPUT Serial_port;"TEST:MAN:CDMA:SIGN:STAT?"
1440    ENTER Serial_port;F
1450  UNTIL BIT(F,5)=1
1460!
1470!**** Paging ****
1480!
1490  DISP "Executing Paging..."
1500  OUTPUT Serial_port;"TEST:MAN:PAGE"
1510  REPEAT
1520    OUTPUT Serial_port;"TEST:MAN:CDMA:SIGN:STAT?"
1530    ENTER Serial_port;F
1540  UNTIL BIT(F,2)=1
1550!
1560!**** Trigger ****
1570!
1580  DISP "Executing RF Test..."
1590  OUTPUT Serial_port;"TRIG:IMM"
1600  REPEAT
1610    OUTPUT Serial_port;"*STB?"
1620    ENTER Serial_port;G
1630  UNTIL BIT(G,1)=0
1640!
1650!**** TX power measurement ****
1660!
1670  OUTPUT Serial_port;"TEST:MAN:CDMA:RES:TXP?"
1680  ENTER Serial_port;Txp1,Txp2,Txp3
1690  IF Txp1=1 THEN
1700    PRINT "TX power : Measurement invalid."
1710  ELSE
```

```
1720   IF Txp2=0 THEN
1730     Result$="PASS"
1740   ELSE
1750     Result$="FAIL"
1760   END IF
1770   PRINT "TX power : ",Txp3;"dBm",Result$
1780 END IF
1790!
1800!**** FER measurement ****
1810!
1820 OUTPUT Serial_port;"TEST:MAN:CDMA:RES:FER?"
1830 ENTER Serial_port;Fer1,Fer2,Fer3
1840 IF Fer1=1 THEN
1850   PRINT "FER : Measurement invalid."
1860 ELSE
1870   IF Rho2=0 THEN
1880     Result$="PASS"
1890   ELSE
1900     Result$="FAIL"
1910   END IF
1920   PRINT "FER : ",Fer3;"%",Result$
1930 END IF
1940!
1950!**** BS Release ****
1960!
1970 OUTPUT Serial_port;"TEST:MAN:REL"
1980 REPEAT
1990   OUTPUT Serial_port;"TEST:MAN:CDMA:SIGN:STAT?"
2000   ENTER Serial_port;H
2010 UNTIL BIT(H,5)=1
2020 DISP "Measurement End."
2030 END
```

Table 5-1 Program Comments

1020	Resets the Test Set to the default settings for programming.
1060	Displays the Configuration screen.
1070	Activates the Attenuation function.
1080	Sets the Attenuation values for the Cellular US/IS2K band.
1120	Sets the System ID for the mobile phone.
1130	Sets the system ID for the zone based registration for the mobile phone.
1170	Displays the Stand-by screen of the Manual Test mode.
1180	Sets the Radio Standard to Cellular US/IS2K.
1190	Sets the RF Channel.
1200	Sets the RF Amplitude.
1240	Sets the maximum number of frames for the FER measurement.
1250	Sets the confidence level for the FER measurement.
1260	Sets the power control bit pattern.
1270	Sets the service option.
1310	Sets the Trigger Mode to Single.
1320	Sets whether or not to execute the TX Power measurement.
1330	Sets whether or not to execute the Frequency Error measurement.
1340	Sets whether or not to execute the Rho (waveform quality) measurement.
1350	Sets whether or not to execute the Frame Error Rate measurement.
1360	Sets whether or not to execute the Timing Offset measurement.
1410	Starts registration.
1420 to 1450	Waits until the mobile phone camps on as instructed.
1500	Executes paging.
1510 to 1540	Waits until the mobile phone camps on as instructed.
1590	Sends a trigger to measure.
1600 to 1630	Waits until the measurements end.
1670	Queries the TX Power results.
1680	Retrieves the status and measurement data.

1690 to 1780	Prints the test result data.
1820	Queries the Frame Error Rate results.
1830	Retrieves the status and measurement data.
1840 to 1930	Prints the test result data.
1970	Executes the BS Release.
1980 to 2010	Waits until the release is complete.
2020	Displays “Measurement End”.
2030	Ends this program.

Automatic Test Sample Program

The following HP BASIC sample program executes an Automatic Test on a Cellular US/IS2K mobile phone.

CLEAR and RESET the controller, and execute the following program:

```
1000! RE-SAVE "A:\AutSmpl.pgm"
1010  Serial_port=9
1020  OUTPUT Serial_port;"*RST"
1030!
1040!**** Loss value, Autotest mode set ****
1050!
1060  OUTPUT Serial_port;"DISP:CONF"
1070  OUTPUT Serial_port;"CONF:LOSS ON"
1080  OUTPUT Serial_port;"CONF:LOSS:CELL:US 15.0,15.0"
1090  OUTPUT Serial_port;"CONF:ATM CONT"
1100!
1110!**** Auto Test Sequence screen ****
1120!
1130  OUTPUT Serial_port;"DISP:CONF:SEQ"
1140  OUTPUT Serial_port;"CONF:SEQ:RSYS CEL-US-IS2K,OFF,OFF"
1150  OUTPUT Serial_port;"CONF:SEQ:CDMA:SIGN:CALL1:TYPE 1,ORIG"
1160  OUTPUT Serial_port;"CONF:SEQ:CDMA:SIGN:CALL1 1,OFF"
1170  OUTPUT Serial_port;"CONF:SEQ:CDMA:SIGN:SHOF 1,OFF"
1180  OUTPUT Serial_port;"CONF:SEQ:CDMA:SIGN:HHOF 1,OFF"
1190  OUTPUT Serial_port;"CONF:SEQ:CDMA:RFCH 1,384,9999,9999"
1200  OUTPUT Serial_port;"CONF:SEQ:CDMA:AMPL:SENS 1,-90.0"
1210  OUTPUT Serial_port;"CONF:SEQ:CDMA:AMPL:OTES 1,-65.0"
1220  OUTPUT Serial_port;"CONF:SEQ:CDMA:SOPT:VEC 1,1"
1230  OUTPUT Serial_port;"CONF:SEQ:CDMA:SOPT:OTES 1,2"
1240!
1250!**** Test Condition screen ****
1260!
1270  OUTPUT Serial_port;"DISP:CONF:COND"
1280  OUTPUT Serial_port;"CONF:COND:CDMA:SID CEL-US-IS2K,4119"
1290  OUTPUT Serial_port;"CONF:COND:CDMA:RSID CEL-US-IS2K,4119"
1300!
1310!**** AutomaticTest Stand-by screen ****
1320!
```

```
1330  OUTPUT Serial_port;"DISP:AUTO:STBY"
1340  OUTPUT Serial_port;"TEST:AUTO:SCR VAL"
1350!
1360  DISP "Turn on the mobile and wait for the mobile to find service. Press Continue."
1370  PAUSE
1380  DISP
1390!
1400!**** Trigger ****
1410!
1420  OUTPUT Serial_port;"TRIG:IMM"
1430!
1440!**** Registration ****
1450!
1460  DISP "Executing Registration..."
1470  REPEAT
1480    OUTPUT Serial_port;"TEST:AUTO:CDMA:SIGN:STAT?"
1490    ENTER Serial_port;G
1500  UNTIL BIT(G,3)=1
1510!
1520!**** Paging ****
1530!
1540  DISP "Executing Paging..."
1550  REPEAT
1560    OUTPUT Serial_port;"TEST:AUTO:CDMA:SIGN:STAT?"
1570    ENTER Serial_port;G
1580  UNTIL BIT(G,6)=1
1590!
1600!**** RF Test ****
1610!
1620  DISP "Executing RF Test..."
1630  REPEAT
1640    OUTPUT Serial_port;"TEST:AUTO:CDMA:SIGN:STAT?"
1650    ENTER Serial_port;G
1660  UNTIL BIT(G,7)=1
1670!
1680!**** BS Release ****
1690!
1700  DISP "Executing RF Test..."
1710  REPEAT
```

```
1720   OUTPUT Serial_port;"TEST:AUTO:CDMA:SIGN:STAT?"
1730   ENTER Serial_port;G
1740  UNTIL BIT(G,9)=1 OR BIT(G,10)=1
1750!
1760!**** Max Power measurement ****
1770!
1780  OUTPUT Serial_port;"TEST:AUTO:CDMA:RES:MAXP? 1,1"
1790  ENTER Serial_port;Mp1,Mp2,Mp3
1800  IF Mp1=1 THEN
1810   PRINT "Max power : Measurement invalid."
1820  ELSE
1830   IF Mp2=0 THEN
1840    Result$="PASS"
1850   ELSE
1860    Result$="FAIL"
1870   END IF
1880   PRINT "Max power : ",Mp3;"dBm",Result$
1890  END IF
1900!
1910!**** Frequency Error measurement ****
1920!
1930  OUTPUT Serial_port;"TEST:AUTO:CDMA:RES:FERR? 1,1"
1940  ENTER Serial_port;Ferr1,Ferr2,Ferr3
1950  IF Ferr1=1 THEN
1960   PRINT "Frequency Error : Measurement invalid."
1970  ELSE
1980   IF Ferr2=0 THEN
1990    Result$="PASS"
2000   ELSE
2010    Result$="FAIL"
2020   END IF
2030   PRINT "Frequency Error : ",Ferr3;"Hz",Result$
2040  END IF
2050!
2060!**** All Items ****
2070!
2080  OUTPUT Serial_port;"TEST:AUTO:CDMA:RES:ALL? 1"
2090  ENTER Serial_port;All1,All2
2100  IF All1=1023 THEN
```

```
2110    PRINT "Automatic Test : Measurement invalid."
2120  ELSE
2130    IF All1=0 THEN PRINT "Automatic Test : PASS"
2140    IF BIT(All1,0)=1 THEN PRINT "Registration : FAIL"
2150    IF BIT(All1,1)=1 THEN PRINT "1st Call : FAIL"
2160    IF BIT(All1,2)=1 THEN PRINT "1st Release : FAIL"
2170    IF BIT(All1,3)=1 THEN PRINT "2nd Call : FAIL"
2180    IF BIT(All1,4)=1 THEN PRINT "Voice Echo : FAIL"
2190    IF BIT(All1,5)=1 THEN PRINT "Softer Handoff : FAIL"
2200    IF BIT(All1,6)=1 THEN PRINT "RF Test : FAIL"
2210    IF BIT(All1,7)=1 THEN PRINT "2nd Release : FAIL"
2220    IF BIT(All1,8)=1 THEN PRINT "Hard Handoff : FAIL"
2230    IF All2<>511 THEN
2240      IF BIT(All2,0)=1 THEN PRINT "Max TX Power : FAIL"
2250      IF BIT(All2,1)=1 THEN PRINT "Min TX Power : FAIL"
2260      IF BIT(All2,2)=1 THEN PRINT "Frequency Error : FAIL"
2270      IF BIT(All2,3)=1 THEN PRINT "Rho : FAIL"
2280      IF BIT(All2,4)=1 THEN PRINT "Time Offset : FAIL"
2290      IF BIT(All2,5)=1 THEN PRINT "Sensitivity/FER : FAIL"
2300      IF BIT(All2,6)=1 THEN PRINT "DC Current (Idle) : FAIL"
2310      IF BIT(All2,7)=1 THEN PRINT "DC Current (Talk) : FAIL"
2320    END IF
2330  END IF
2340!
2350  DISP "Measurement End."
2360  END
```

Table 5-2 Program Comments

1020	Resets the Test Set to the default settings for programming.
1060	Displays the Configuration screen.
1070	Activates the Attenuation function.
1080	Sets the Attenuation values for the Cellular US/IS2K band.
1090	Selects whether to continue the test or not on failure.
1130	Displays the Auto Test Sequence screen.
1140	Sets the radio systems to the sequence number 1, 2, and 3.
1150	Sets the 1st call setting for the sequence number 1.
1160	Defines whether or not to make the 1st call.
1170	Defines whether or not to test the softer handoff.
1180	Defines whether or not to make the hard handoff.
1190	Sets the three RF channels for the sequence number 1.
1200	Sets the amplitude for the sensitivity test for the sequence number 1.
1210	Sets the amplitude for other than the sensitivity test of the sequence number 1.
1220	Sets the service option for the voice echo test for the sequence number 1.
1230	Sets the service option for the tests other than the voice echo test for the sequence number 1.
1270	Displays the Test Condition screen.
1280	Sets the system ID for Cellular US/IS2K.
1290	Sets the system ID for the zone based registration for Cellular US/IS2K.
1330	Displays the Automatic Test: Stand-by screen.
1340	Selects the Value screen.
1360 to 1380	Waits until the mobile phone camps on as instructed.
1420	Starts the Automatic Test.
1460 to 1500	Executes registration and waits for its end.
1540 to 1580	Executes paging and waits for its end.
1620 to 1660	Executes the RF tests and waits for their ends.

1700 and 1740	Executes the BS Release and waits for its end.
1780	Queries the maximum transmission power results of the 1st RF channel of the sequence number 1.
1790	Enters the status and measurement data.
1800 to 1890	Prints the test results of the maximum transmission power of the 1st channel of the sequence number 1.
1930	Queries the frequency error results of the 1st RF channel of the sequence number 1.
1940	Retrieves the status and measurement data.
1950 to 2040	Prints the test results of the frequency error of the 1st channel of the sequence number 1.
2080	Queries the all of the test results.
2090	Retrieves the all of the test results.
2100 to 2330	Prints the test results of the signaling test flow.
2350	Displays “Measurement Ends.”
2360	Ends this program.

SETUP Sample Programs

The first HP BASIC sample program, SETUP, is used to retrieve all of the setting parameter values from the Test Set to your computer. The second program loads the parameter values from your computer to the Test Set.

CLEAR and RESET the controller, and execute the following program to get the parameter values.

```
1000! re-save "a:\saveset.pgm"
1010  DIM Sdata$[20000]
1020  Serial_port=9
1030  !
1040  DISP "Getting the parameter values from the Test Set..."
1050  OUTPUT Serial_port;"SYST:SET?"
1060  ENTER Serial_port;Sdata$
1070  !
1080  INPUT "Enter file name.",Fname$
1090  CREATE "A:"&Fname$,0
1100  ASSIGN @Io TO "A:"&Fname$
1110  OUTPUT @Io;Sdata$
1120  ASSIGN @Io TO *
1130  END
```

Table 5-3 Program Comments

1010	Declares the string array.
1050	Sends a query for all the setting parameter values.
1060	Retrieves the values to the string array.
1080	Requests the Test Set operator to input the file name.
1090	Creates the file on the A: drive.
1100	Sets up the I/O path to the file.
1110	Outputs the data from the string array to the file.
1120	Closes the I/O path.
1130	Ends this program.

CLEAR and RESET the controller, and execute the following program to load the parameter values to the Test Set.

```
1000! re-save "a:\getset.pgm"
1010  DIM Sdata$[20000]
1020  Serial_port=9
1030  !
1040  INPUT "Enter file name.",Fname$
1050  ASSIGN @Io TO "A:"&Fname$
1060  ENTER @Io;Sdata$
1070  ASSIGN @Io TO *
1080  !
1090  DISP "Loading the parameter values to the Test Set..."
1100  OUTPUT Serial_port;"SYST:SET "&Sdata$
1110  DISP "Loading complete."
1120  END
```

Table 5-4 Program Comments

1010	Declares the string array.
1040	Inputs the file name.
1050	Sets up the I/O path to the file.
1060	Enters the data from the file to the string array.
1070	Closes the I/O path.
1110	Sets the all of the setting parameter values.
1120	Ends this program.

A Syntax Diagrams

This appendix contains syntax diagrams for each subsystem command. These diagrams illustrate the hierarchical structure of each system.

Graphical Conventions

The following describes the graphical conventions used in the syntax diagrams.

FREQuency : Represents a command (a question mark indicates a query).
: : Indicates that a colon must be used between two commands.
sp : Indicates that a space must be used as part of the command line.
string : Represents one or multiple parameters for integer, real, string or bool.

Syntax Diagrams

The following subsystem diagrams are illustrated for the Test Set with all options:

- Figure A-1, “CONFigure Subsystem (1 of 4),”
- Figure A-5, “DISPlay Subsystem,”
- Figure A-6, “HCOPy Subsystem,”
- Figure A-7, “RFGenerator Subsystem,”
- Figure A-8, “SYSTem Subsystem,”
- Figure A-9, “TESTs Subsystem (1 of 3),”
- Figure A-12, “TRIGger Subsystem,”
- Figure A-13, “TXANalyzer Subsystem.”

Figure A-1 CONFigure Subsystem (1 of 4)

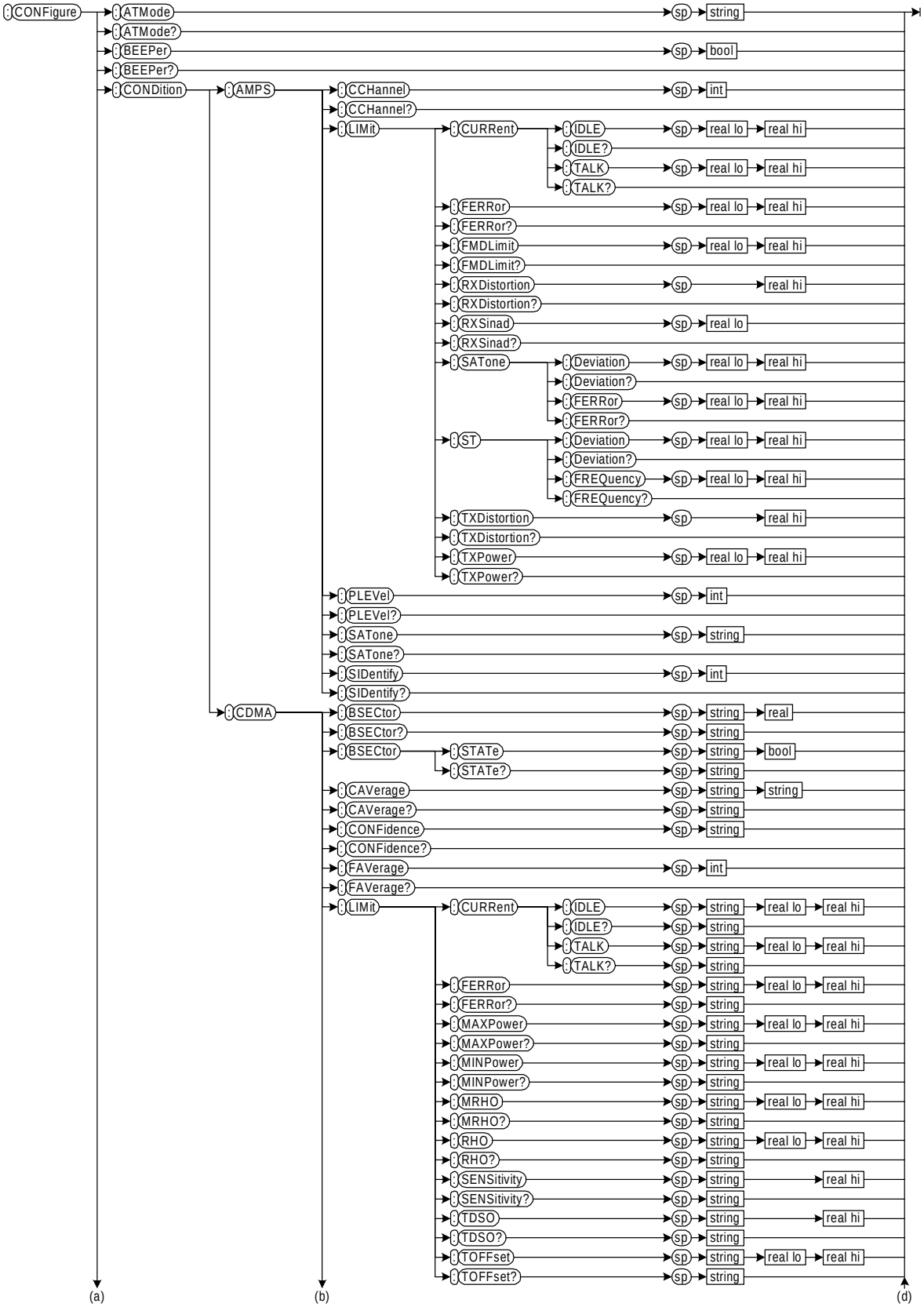


Figure A-2 CONFigure Subsystem (2 of 4)

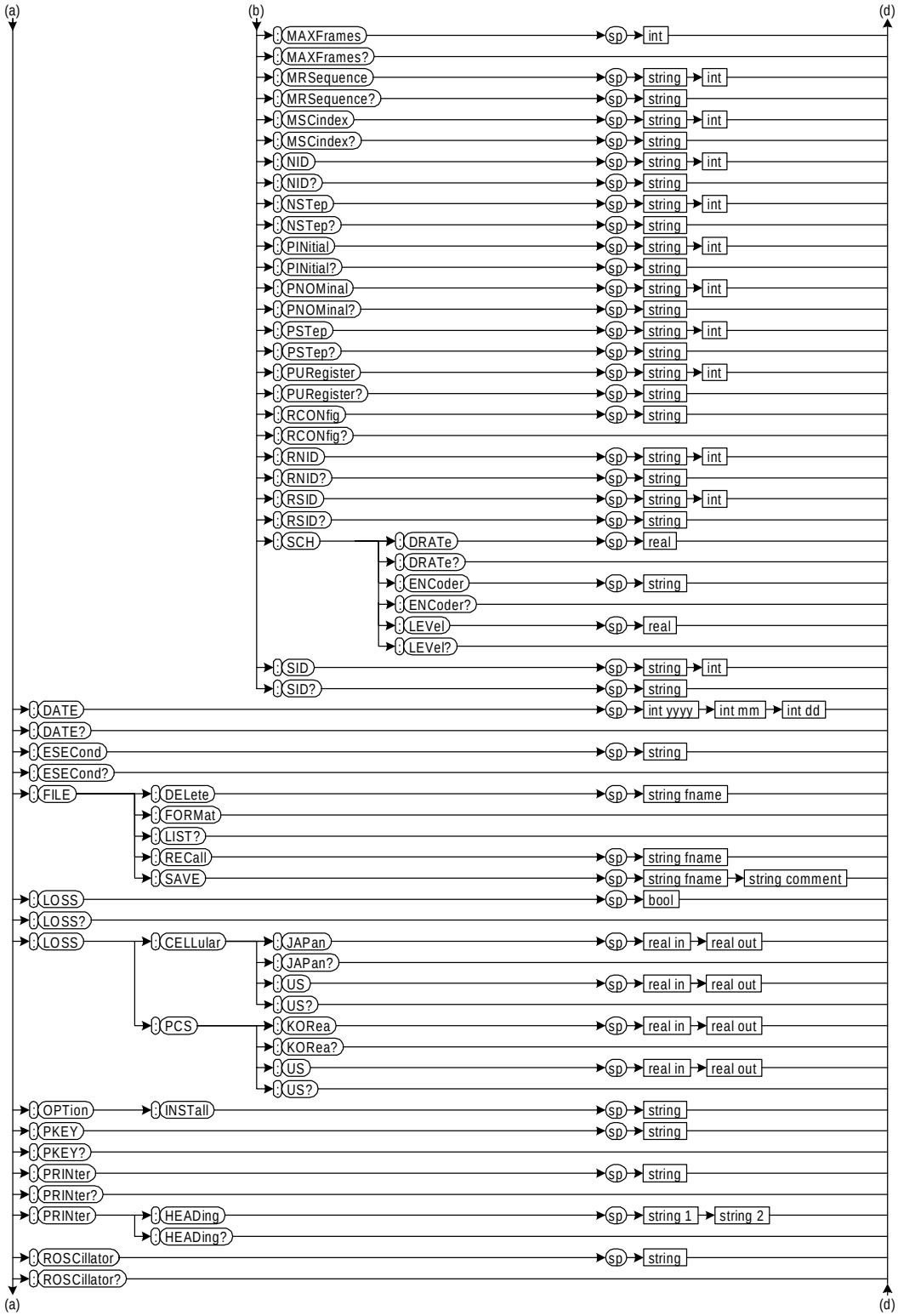


Figure A-3 CONFigure Subsystem (3 of 4)

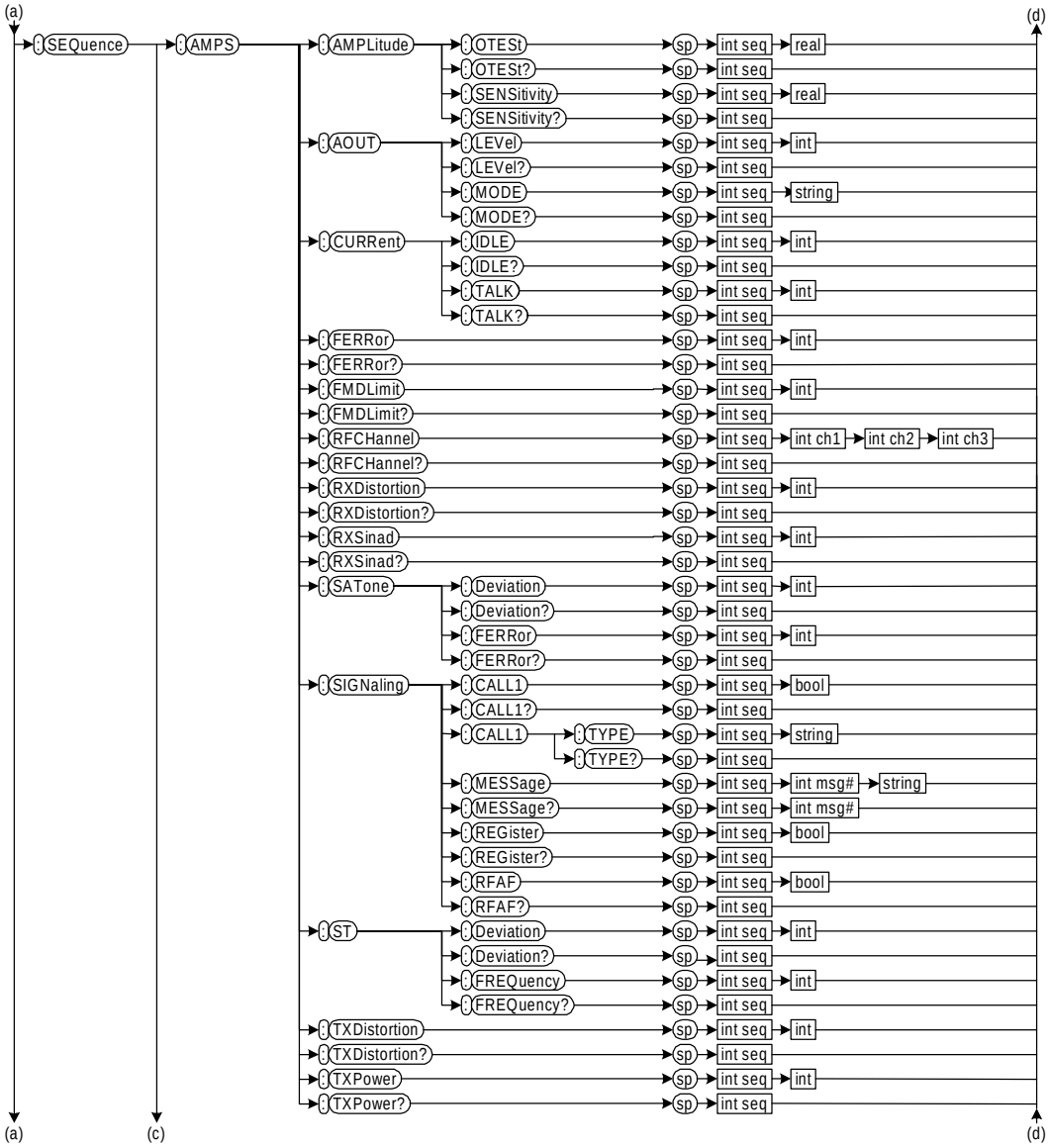


Figure A-4 CONFigure Subsystem (4 of 4)

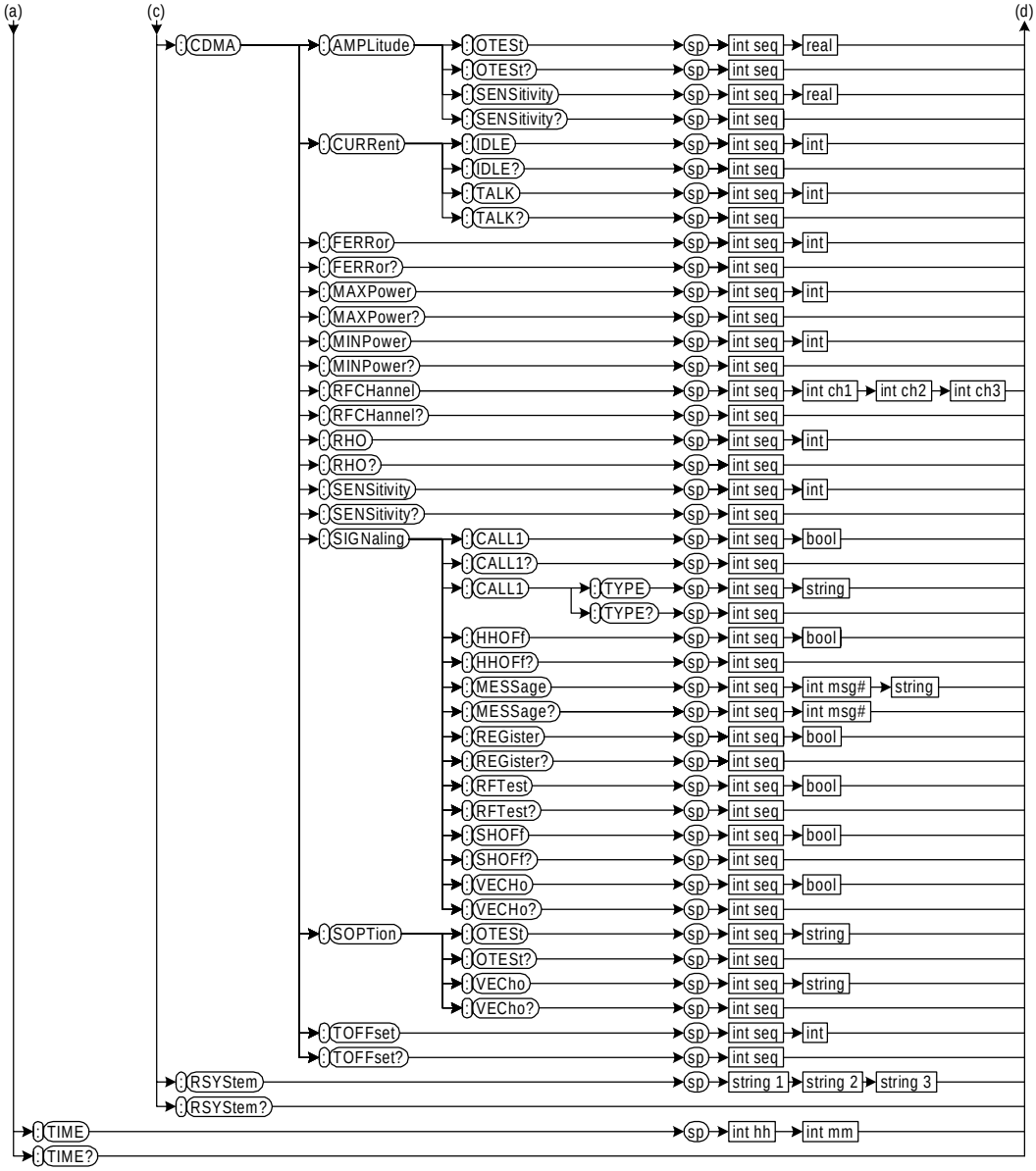


Figure A-5 DISPlay Subsystem

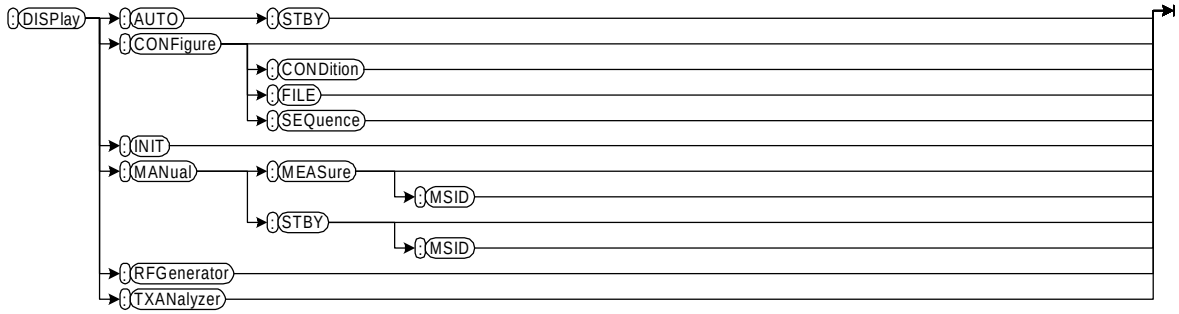


Figure A-6 HCOPy Subsystem

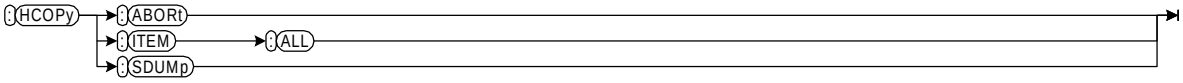


Figure A-7 RFGenerator Subsystem

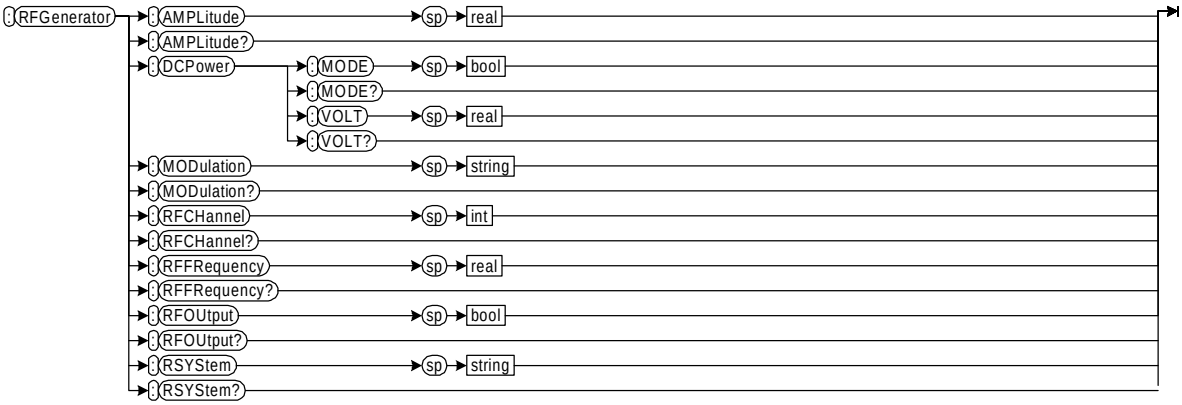
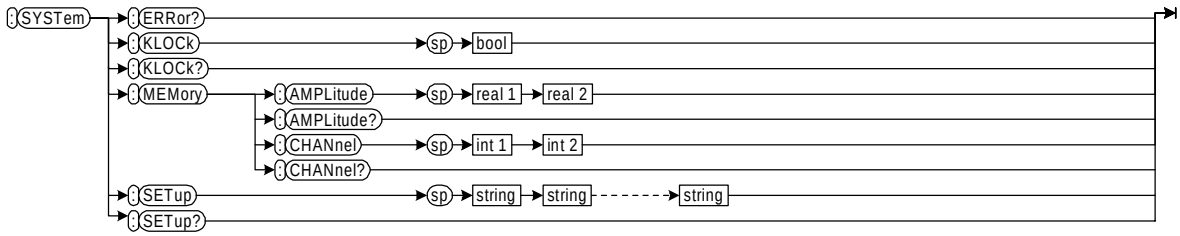


Figure A-8 SYSTem Subsystem



Syntax Diagrams

Figure A-9 TESTs Subsystem (1 of 3)

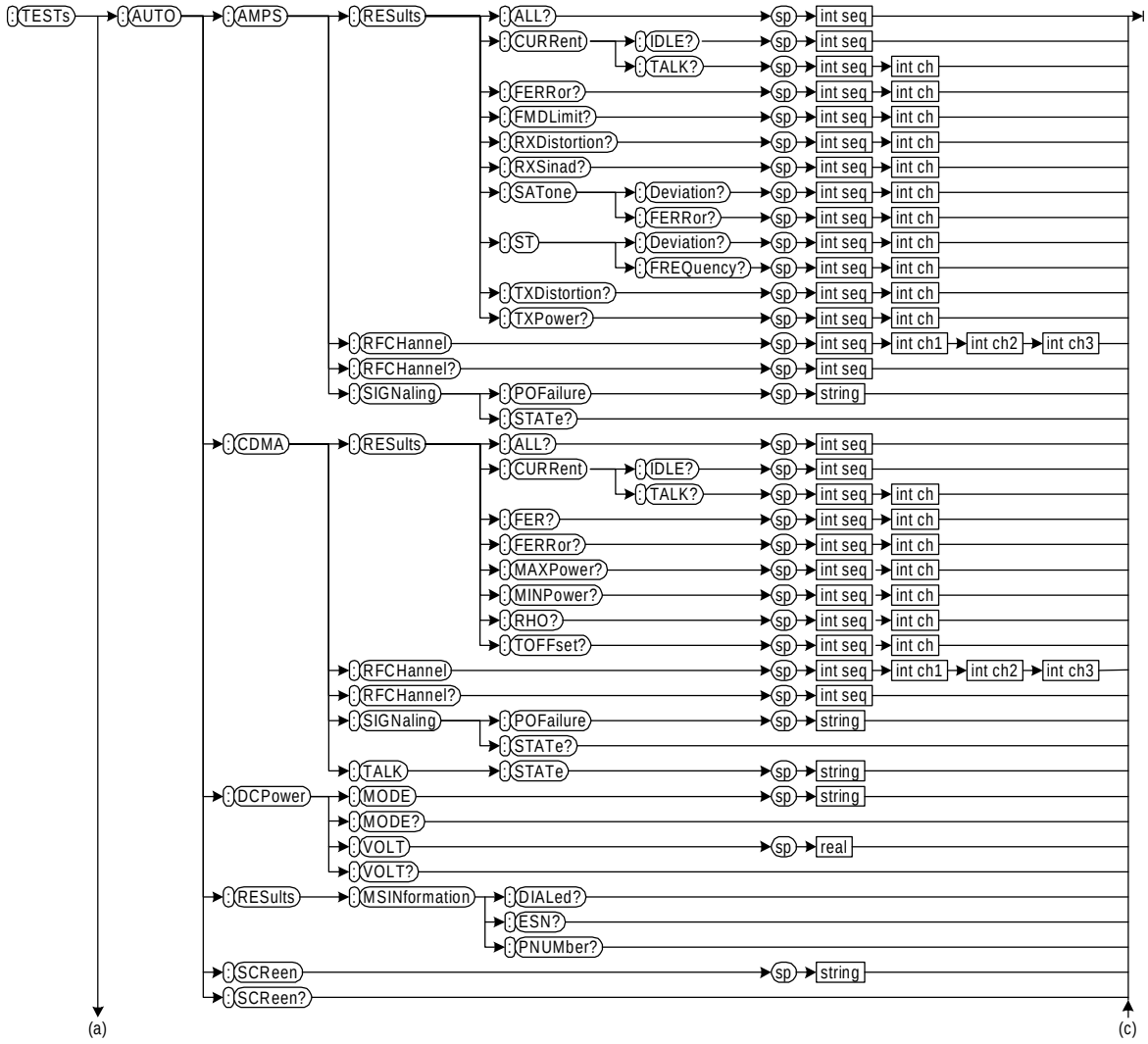


Figure A-10 TESTs Subsystem (2 of 3)

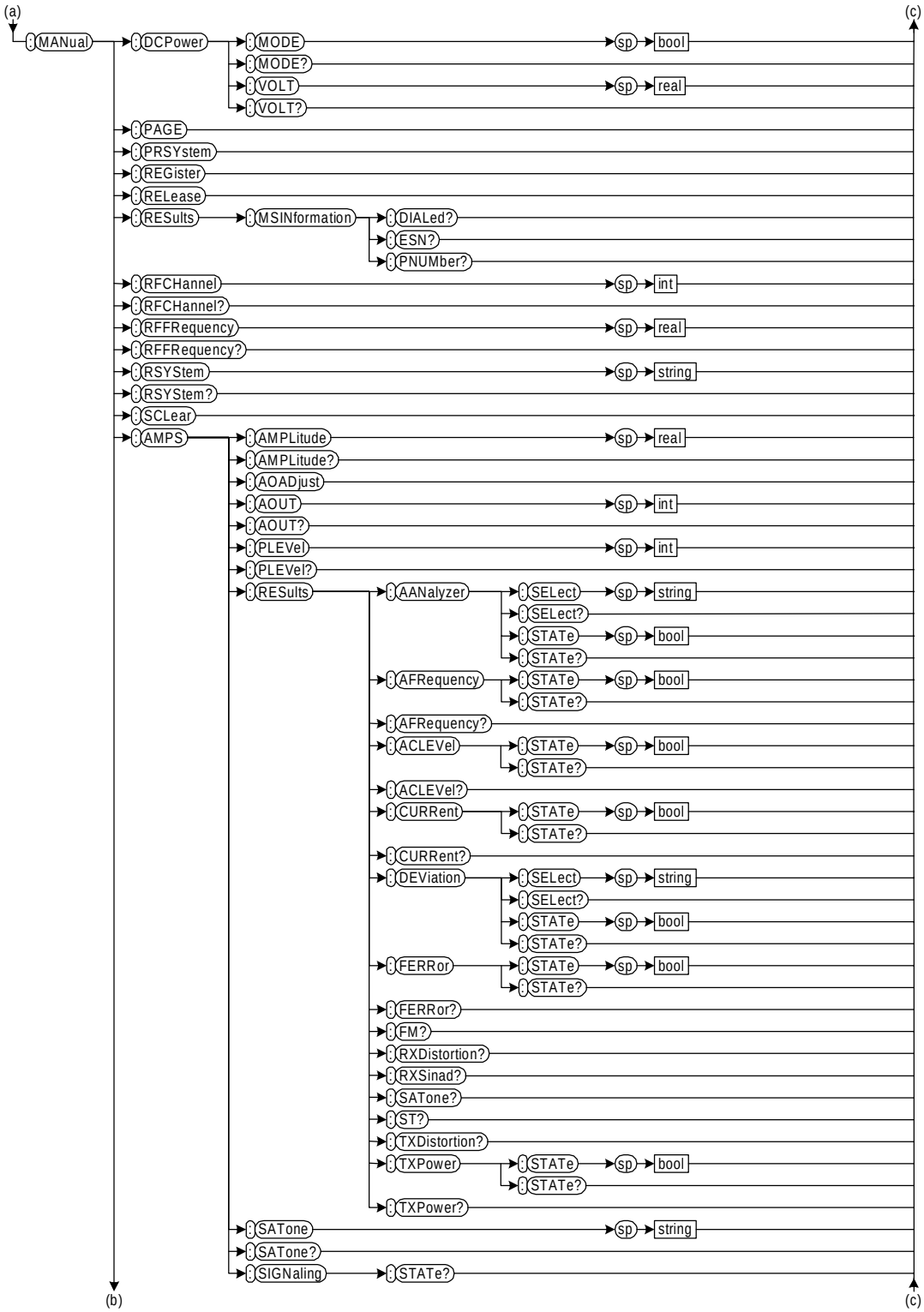


Figure A-11 TESTs Subsystem (3 of 3)

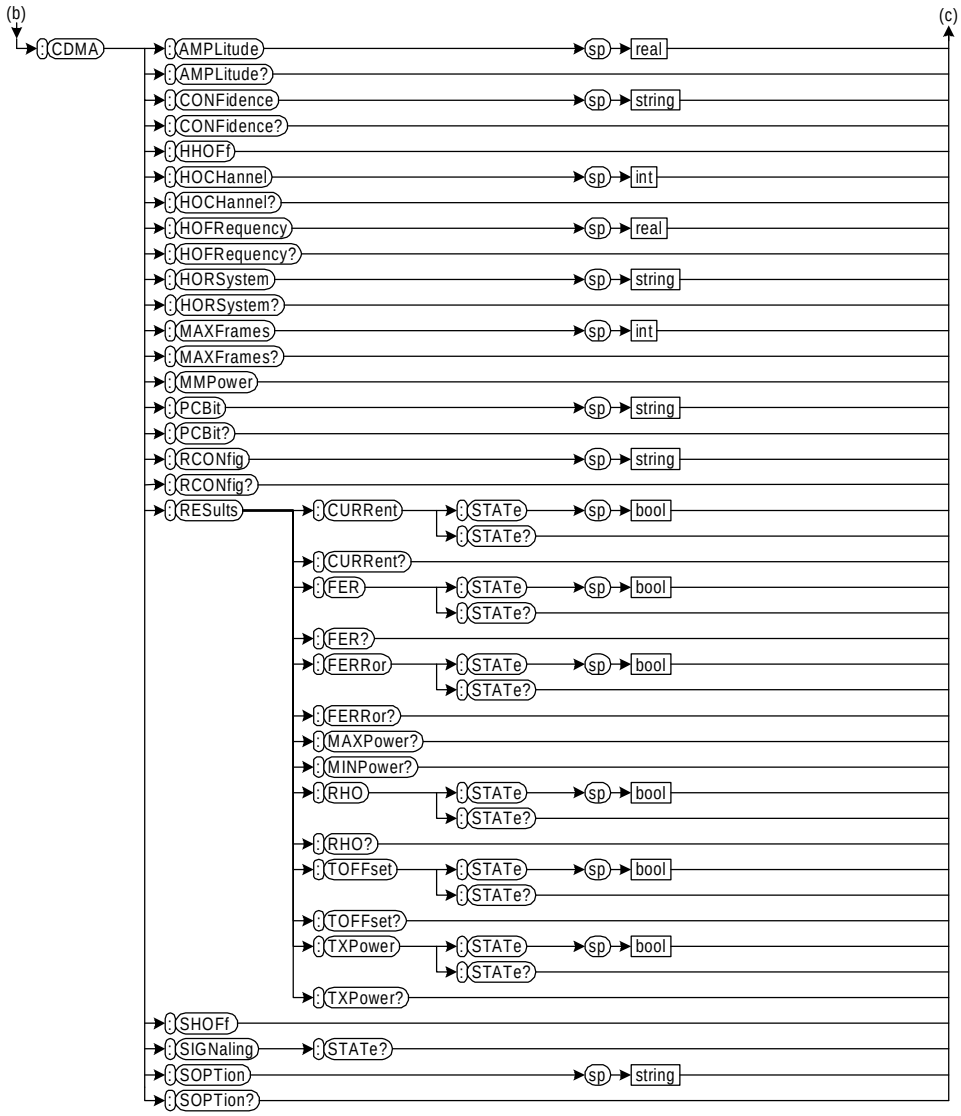


Figure A-12 TRIGger Subsystem

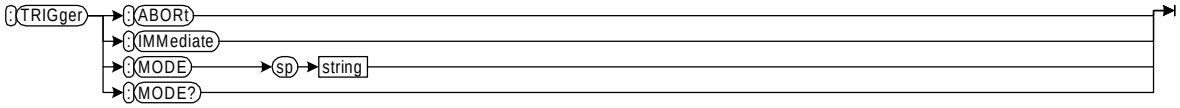
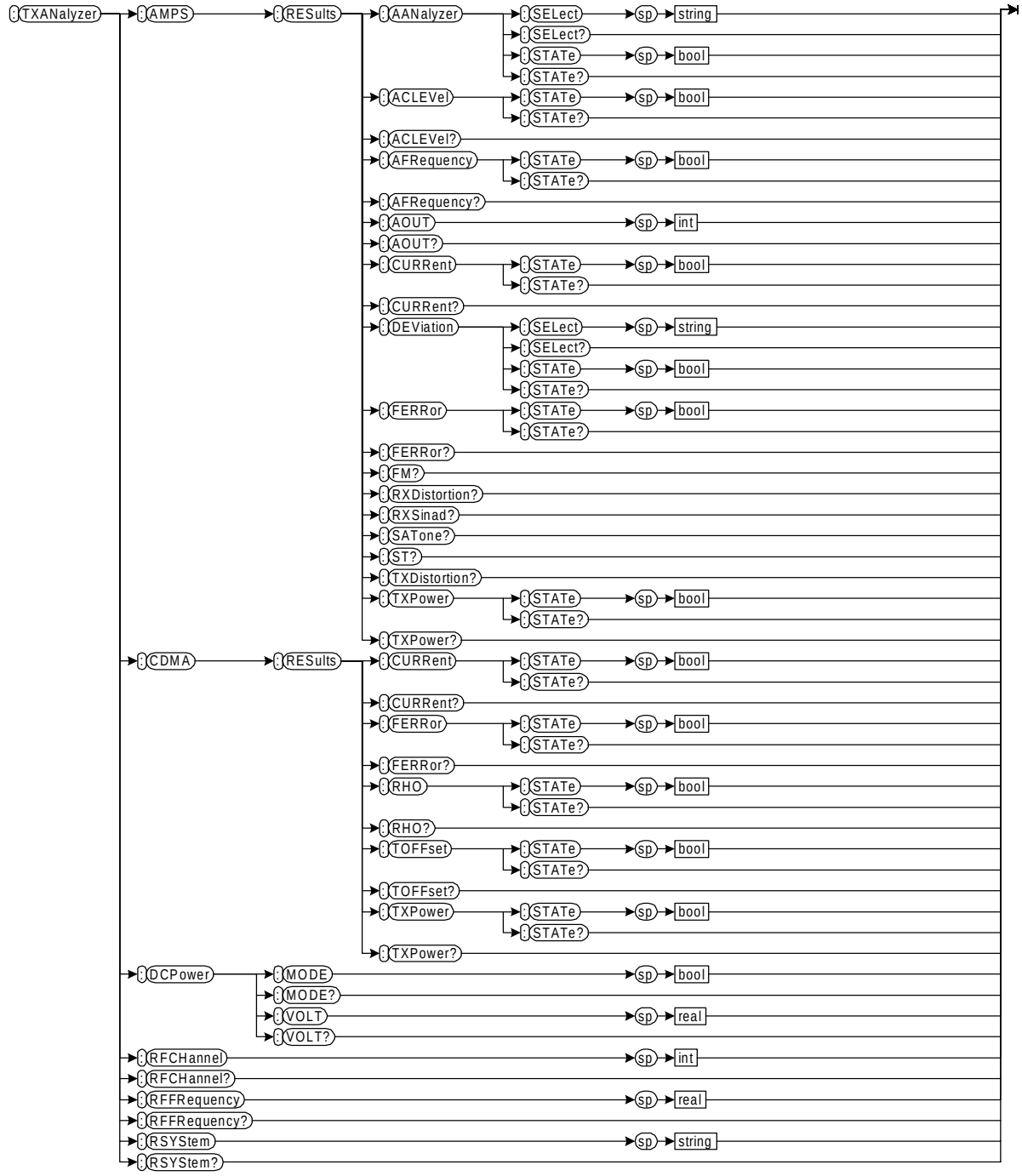


Figure A-13 TXANalyzer Subsystem



Syntax Diagrams

B Radio System Combinations

This appendix illustrates the allowable combinations of radio systems for the Automatic Test Sequence and the Manual Test hard handoff.

Automatic Test Transfer Between Radio Systems

In the Automatic Test mode, you can select up to two radio systems to make a handoff or transfer from the first radio system using the command: `CONF:SEQ:RSYS <string 1>,<string 2>,<string 3>`.

For hard handoff, there are some restrictions in the combination of radio systems as shown in Table B-1. The radio system <string 1> is transferred in the order of <string 2> and <string 3>. The current and transferred radio systems are shown in the table cells “From” and “To”, respectively.

- Y - Hard handoff is capable.
- X - Transferable for more than three test frequencies within a radio system
- n - No combination is available.

Table B-1 Hard Handoff and Transfer Capability between Radio Systems

From \ To	Cel US/IS2K	Cel JP/IS2K	PCS US/IS2K	PCS KR/IS2K	Cellr/IS95A	Cellr/TSB74	Cellr/T53	PCS US	PCS Korea P0	PCS Korea P1	AMPS
Cel US/IS2K	X	n	Y	n	n	Y[a]	n	Y[a]	n	n	Y
Cel JP/IS2K	n	X	n	n	n	n	Y[a]	n	n	n	n
PCS US/IS2K	Y	n	X	n	n	Y[a]	n	Y[a]	n	n	Y
PCS KR/IS2K	n	n	n	X	n	n	n	n	n	Y[a]	n
Cellr/IS95A	n	n	n	n	X	Y	n	Y	n	n	Y
Cellr/TSB74	n	n	n	n	Y	X	n	Y	n	n	Y
Cellr/T53[b]	n	n	n	n	n	n	X	n	n	n	n
PCS US	n	n	n	n	Y	Y	n	X	n	n	Y
PCS Korea P0[b]	n	n	n	n	n	n	n	n	X	n	n
PCS Korea P1[b]	n	n	n	n	n	n	n	n	n	X	n
AMPS[b]	n	n	n	n	n	n	n	n	n	n	X

a. When the radio configuration is set to RC1 or RC2.
b. The hard handoff capability between other system is not available, then the handoff field will show “------”.

Manual Test Hard Handoff Between Radio Systems

In the Manual Test mode, you can set the current radio system and the radio system to be handed off using the following commands:

Current radio system: `TEST:MAN:RSYS <string1>`

Handoff radio system: `TEST:MAN:HORS <string2>`

For hard handoff, there are some restrictions in the combination of radio systems as shown in Table B-2. In this test mode, the radio system is handed off “From” <string 1> “To” <string 2>.

- Y - Hard handoff is capable.
- n - No combination is available.

Table B-2 Hard Handoff Capability between Radio Systems

From \ To	Cel US/IS2K	Cel JP/IS2K	PCS US/IS2K	PCS KR/IS2K	Cellr/IS95A	Cellr/TSB74	Cellr/T53	PCS US	PCS Korea P0	PCS Korea P1	AMPS
Cel US/IS2K	–	n	Y	n	n	Y	n	Y	n	n	Y
Cel JP/IS2K	n	–	n	n	n	n	Y	n	n	n	n
PCS US/IS2K	Y	n	–	n	n	Y	n	Y	n	n	Y
PCS KR/IS2K	n	n	n	–	n	n	n	n	n	Y	n
Cellr/IS95A	n	n	n	n	–	Y	n	Y	Y	Y	Y
Cellr/TSB74	n	n	n	n	Y	–	n	Y	Y	Y	Y
Cellr/T53[a]	n	n	n	n	n	n	–	n	n	n	n
PCS US	n	n	n	n	Y	Y	n	–	Y	Y	Y
PCS Korea P0[a]	n	n	n	n	n	n	n	n	–	n	n
PCS Korea P1[a]	n	n	n	n	n	n	n	n	n	–	n
AMPS[a]	n	n	n	n	n	n	n	n	n	n	–

a. Hard handoff between other system is not available, then the handoff field will show “------”.

C Test Run/Skip Combinations

This appendix describes the Run/Skip combination restrictions for test flows.

Test Run/Skip Combinations

For each radio system test, two different test flows can be configured with the combinations of Run and Skip, depending on setting the first call setup (the second flow step) to either Paging or MS Origination.

In the following combination tables, values `0` and `1` are defined as follows:

1: Run the test flow step.

0: Skip the flow step.

Note that one combination of a test flow is shown in one row of the tables.

When the value shown in a table cell is `1` or `0`, it means that you must specify `1` or `0` as the argument `<bool>` in the command shown left. You can choose either `1` or `0` when a table cell shows `1|0`. However, when you see (dependent on step 2), (always executed), and (another than step 8), those table cells are automatically set to `0` or `1` by the Test Set.

CDMA Tests

For CDMA tests, either MS Origination or Paging can be defined as the first call setup in the test flow step, respectively. In both cases, there are 6 combinations of test runs and skips.

First Call Setup with MS Origination

To specify the second flow step, which is called as “the first call setup”, to MS Origination, send the command,
`CONF:SEQ:CDMA:SIGN:CALL1:TYPE <int seq>,ORIG`.

Table C-1 1 (Run) and 0 (Skip) Combination for MS Origination First Call Setup

Test Flow Step	Command	<bool>					
1 Registration	CONF:SEQ:CDMA:SIGN:REG <int seq>,<bool>	1	1	1	1	0	0
2 MS Origination	CONF:SEQ:CDMA:SIGN:CALL 1 <int seq>,<bool>	1	1	0	0	1	1
3 Voice Echo	CONF:SEQ:CDMA:SIGN:VECH <int seq>,<bool>	1|0	1|0	0	0	1|0	1|0
4 MS Release	(dependent on step 2)	1	1	0	0	1	1
5 Paging	(always executed)	1	1	1	1	1	1
6 RF Test	CONF:SEQ:CDMA:SIGN: RFT <int seq>,<bool>	1|0	1|0	1|0	1|0	1|0	1|0
7 Softer Handoff	CONF:SEQ:CDMA:SIGN:SHOF <int seq>,<bool>	1|0	1|0	1|0	1|0	1|0	1|0
8 Hard Handoff	CONF:SEQ:CDMA:SIGN:HHOF <int seq>,<bool>	1	0	1	0	1	0
9 BS Release	(another than step 8)	0	1	0	1	0	1

Test Run/Skip Combinations

First Call Setup with Paging

To specify the second flow step, which is called as “the first call setup”, to Paging, send the command,
`CONF:SEQ:CDMA:SIGN:CALL1:TYPE <int seq>,PAGE`.

Table C-2 1 (Run) and 0 (Skip) Combination for Paging First Call Setup

Test Flow	Command	<bool>					
1 Registration	CONF:SEQ:CDMA:SIGN:REG <int seq>,<bool>	1	1	1	1	0	0
2 Paging	CONF:SEQ:CDMA:SIGN:CALL1 <int seq>,<bool>	1	1	0	0	0	0
3 RF Test	CONF:SEQ:CDMA:SIGN:RFT <int seq>,<bool>	1|0	1|0	0	0	0	0
4 BS Release	(dependent on step 2)	1	1	0	0	0	0
5 MS Origination	(always executed)	1	1	1	1	1	1
6 Voice Echo	CONF:SEQ:CDMA:SIGN:VECH <int seq>,<bool>	1|0	1|0	1|0	1|0	1|0	1|0
7 Softer Handoff	CONF:SEQ:CDMA:SIGN:SHOF <int seq>,<bool>	1|0	1|0	1|0	1|0	1|0	1|0
8 Hard Handoff	CONF:SEQ:CDMA:SIGN:HHOF <int seq>,<bool>	1	0	1	0	1	0
9 MS Release	(another than step 8)	0	1	0	1	0	1

AMPS Tests

For AMPS tests, either MS Origination or Paging can be defined as the first call setup in the test flow step, respectively. In both cases, there are 3 combinations of test runs and skips.

First Call Setup with MS Origination

To specify the second flow step, which is called as “the first call setup”, to MS Origination, send the command,
`CONF:SEQ:AMPS:SIGN:CALL1:TYPE <int seq>,ORIG`.

Table C-3 1 (Run) and 0 (Skip) Combination for MS Origination First Call Setup

Test Flow	Command	<bool>		
1 Registration	CONF:SEQ:AMPS:SIGN:REG <int seq>,<bool>	1	1	0
2 MS Origination	CONF:SEQ:AMPS:SIGN:CALL1 <int seq>,<bool>	1	0	1
3 MS Release	(dependent on step 2)	1	0	1
4 Paging	(always executed)	1	1	1
5 RF/AF Test	CONF:SEQ:AMPS:SIGN:RFAF <int seq>,<bool>	1|0	1|0	1|0
6 BS Release	(always executed)	1	1	1

First Call Setup with Paging

To specify the second flow step, which is called as “the first call setup”, to Paging, send the command,
`CONF:SEQ:AMPS:SIGN:CALL1:TYPE <int seq>,PAGE`.

Table C-4 1 (Run) and 0 (Skip) Combination for Paging First Call Setup

Test Flow	Command	<bool>		
1 Registration	CONF:SEQ:AMPS:SIGN:REG <int seq>,<bool>	1	1	0
2 Paging	CONF:SEQ:AMPS:SIGN:CALL1 <int seq>,<bool>	1	0	0
3 RF/AF Test	CONF:SEQ:AMPS:SIGN:RFAF <int seq>,<bool>	1|0	0	0
4 BS Release	(dependent on step 2)	1	0	0
5 MS Origination	(always executed)	1	1	1
6 MS Release	(always executed)	1	1	1

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