Agilent N9360A
Multi UE Tester

W-CDMA Programming Manual

Agilent Technologies

Notices

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WARNING

A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

Preface

Thank-you for purchasing the Agilent N9360A Wideband Code Division Multiple Access (W-CDMA) option. This option is the W-CDMA software for the N9360A Multi UE Tester.

- Before using the tester, the user is advised to read this manual carefully to ensure correct usage and also to fully utilize the tester capability.

- This manual is a reference document and the user is advised to keep it carefully for future reference.

- The manual includes the characteristics of W-CDMA, the tester operation, test procedures and screen references.

- The manual describes the remote control commands of the N9360A Multi UE Tester W-CDMA

- Refer to the *N9360A Multi UE Tester Installation Guide* for information regarding installation and details of the tester. Refer also to the *N9360A GSM Option User Manual* for information about the test functions of Global System for Mobile communication (GSM) and the *N9360A cdma2000 Option User Manual* for information about the test functions of Code Division Multiple Access (cdma2000).

Notation

The following notations are used in this manual:

- `Example:`   indicates a command
- [Example] :   indicates a screen name
- Tester/tester: indicates the N9360A Multi UE Tester.

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Manufacturer's Name: Agilent Technologies Microwave Products (M) Sdn. Bhd
Manufacturer's Address: Bayan Lepas Free Industrial Zone,
11900, Bayan Lepas, Penang, Malaysia

Declares under sole responsibility that the product as originally delivered

Product Name: Multi UE Tester
Model Number: N9360A (GS8210)
Product Options: This declaration covers all options of the above product(s)

complies with the essential requirements of the following applicable European Directives, and carries the CE marking accordingly:

Low Voltage Directive (2006/95/EC)
EMC Directive (2004/108/EC)

and conforms with the following product standards:

EMC

Standard	Limit
IEC 61326:2002 / EN 61326:1997+A1:1998+A2:2001+A3:2003	
CISPR 11:1990 / EN55011:1990	Class A Group 1
IEC 61000-4-2:1995 / EN 61000-4-2:1995	4 kV CD, 8 kV AD
IEC 61000-4-3:1995 / EN 61000-4-3:1996	3 V/m, 80-1000 MHz
IEC 61000-4-4:1995 / EN 61000-4-4:1995	0.5 kV signal lines, 1 kV power lines
IEC 61000-4-5:1995 / EN 61000-4-5:1995	0.5 kV line-line, 1 kV line-ground
IEC 61000-4-6:1996 / EN 61000-4-6:1996	3 V, 0.15-80 MHz
IEC 61000-4-11:1994 / EN 61000-4-11:1994	1 cycle / 100%

Canada: ICES-001:2004
Australia/New Zealand: AS/NZS CISPR11:2004

The product was tested in a typical configuration with Agilent Technologies test systems.

Safety
IEC 61010-1:2001 / EN 61010-1:2001
Canada: CAN/CSA-C22.2 No. 61010-1-04
USA: ANSI/UL 61010-1:2004

190695

Supplementary Information:
The N9360A-S01, N9360A-S02, N9360A-S03, N9360A-S04 are the RF shield box options which are intended to be used together with N9360A (GS8210) tester. Therefore as being an accessory of the N9360A, the RF shield box does not carry a separate CE marking.

This DoC applies to above-listed products placed on the EU market after:

1-February-2008
Date

Tay Eng Su

Quality Manager

For further information, please contact your local Agilent Technologies sales office, agent or distributor,
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Template: A5971-5302-2, Rev. E.00	N9360A	Rev 2.0

Product Regulations

EMC		Performance Criteria[1]
	IEC 61326:2002 / EN 61326:1997+A1:1998+A2:2001+A3:2003	
	CISPR 11:1990 / EN 55011:1990 – Group 1 Class A	
	IEC 61000-4-2:1995+A1:1998 / EN 61000-4-2:1995 (ESD 4kV CD, 8kV AD)	A
	IEC 61000-4-3:1995 / EN 61000-4-3:1996 (3V/m, 80% AM)	A
	IEC 61000-4-4:1995 / EN 61000-4-4:1995 (EFT 0.5kV line-line, 1kV line-earth)	A
	IEC 61000-4-5:1995 / EN 61000-4-5:1995 (Surge 0.5kV line-line, 1kV line-earth)	A
	IEC 61000-4-6:1996 / EN 61000-4-6:1996 (3V, 0.15~80 MHz, 80% AM, power line)	A
	IEC 61000-4-11:1994 / EN 61000-4-11:1994 (Dips 1 cycle, 100%)	A
	Canada: ICES-001:2004	
	Australia/New Zealand: AS/NZS CISPR11:2004	
Safety	IEC 61010-1:2001 / EN 61010-1:2001	
	Canada: CAN/CSA-C22.2 No. 61010-1-04	
	USA: ANSI/UL 61010-1:2004	

Additional Information:

The product herewith complies with the essential requirements of the Low Voltage Directive 2006/95/EC and the EMC Directive 2004/108/EC and carries the CE Marking accordingly (European Union).

[1]Performance Criteria:

A Pass - Normal operation, no effect.
B Pass - Temporary degradation, self recoverable.
C Pass - Temporary degradation, operator intervention required.
D Fail - Not recoverable, component damage.
N/A – Not applicable.

Notes:

Regulatory Information for Canada

ICES/NMB-001:2004
This ISM device complies with Canadian ICES-001.
Cet appareil ISM est confomre à la norme NMB-001 du Canada.

Regulatory Information for Australia/New Zealand

This ISM device complies with Australian/New Zealand AS/NZS CISPR11:2004

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Legal Information

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Legal Information

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Agilent By Phone

If you do not have access to the Internet, call one of the numbers in **Table 1-1**.

Table 1-1 Agilent Call Centers and Regional Headquarters

United States and Canada:	Test and Measurement Call Center (800) 452 4844 (toll-free in US)
Europe:	(41 22) 780 8111
Japan:	Measurement Assistance Center (81) 0426 56 7832
Latin America:	305 269 7548
Asia-Pacific:	(85 22) 599 7777

Manufacturing Address

Agilent Technologies Microwave Products (Malaysia) Sdn. Bhd.

Bayan Lepas Free Industrial Zone,

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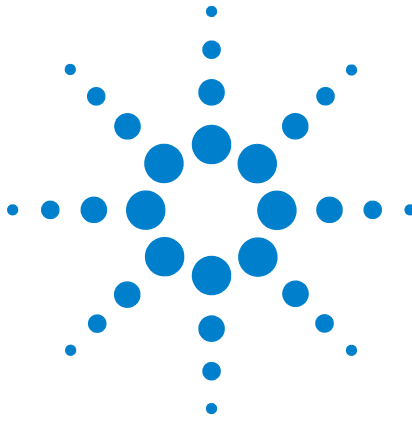
2

Caution and Safety Requirements

Agilent Technologies

Safety Information

Safety Summary

The following general safety precautions must be observed during all phases of operation of this instrument. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the instrument. Agilent Technologies, Inc. assumes no liability for the customer's failure to comply with these requirements.

Safety Notices

CAUTION	A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like, that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

WARNING	A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

Example of pictorial symbols

⚠	Symbol Δ indicates an attention (including danger or warning). The caution detail (electric shock in this case) is indicated inside of the symbol.
🚫	Symbol ⊘ indicates prohibition. The actual prohibition (disassembling prohibition in this case) is indicated in the vicinity or inside of the symbol.
	Symbol ● indicates a mandatory action or an instruction. The actual detail (in this case, remove the power plug from the outlet) is indicated inside of the symbol.

Warning Label

A warning label is stuck on the front panel of the Tester.

Do not remove, damage or modify the warning label.

General

WARNING **The protection provided by the N9360A tester may be impaired if the tester is used in a manner not specified by Agilent or the instructions on the display are not followed.**

WARNING **DO NOT INSTRUMENT COVERS. Operating personnel must not remove any instrument covers. Component replacement and internal adjustments must be made only by qualified service personnel. Products that appear damaged or defective should be made inoperative and secured against unintended operation until they can be repaired by a qualified service personnel.**
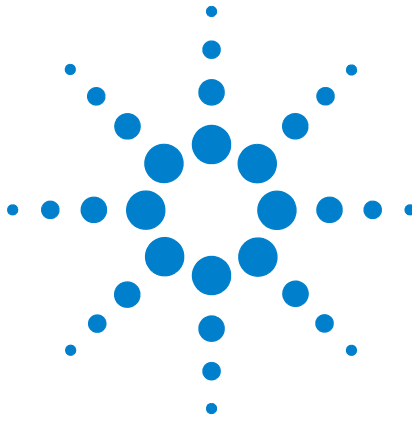
When Operating The Tester

CAUTION	Make sure that the input signal level does not exceed the maximum level allowed. Tester failure may result otherwise.

CAUTION	Do not turn off the Line switch on the rear panel of the Tester while the LINE LED on the front panel of the Tester is lit in green. Otherwise, Tester failure may occur.

3
Preparing for Use

This chapter describes a quick overview of how to set up an automated test system with the Agilent N9360A Multi UE Tester W-CDMA Test Capability.

Equipment for Automated Test System

Ethernet

The following equipments are required to construct an automated test system using the Ethernet interface:

- The Agilent N9360A Multi UE Tester.

- A system controller with the Ethernet interface.

- A 10Base-T/100Base-TX UTP cross-over cable to connect the controller and the Tester. Or, two 10Base-T/100Base-TX UTP straight cables to connect a HUB, the controller and the Tester.

- An RF cable to connect the RF signals from or to the mobile phone under test, the Antenna Coupler (Agilent N9360A-A02) to connect RF signals from or to the mobile phone, or the Shield case (Agilent N9360A-S01) to couple RF signals from or to the mobile phone.

- A printer and an appropriate cable (if required).

A typical setup for an automated test system using the Ethernet as shown in Figure 3-1 below:

Figure 3-1 Typical Setup for Automated Test System (Ethernet Interface)
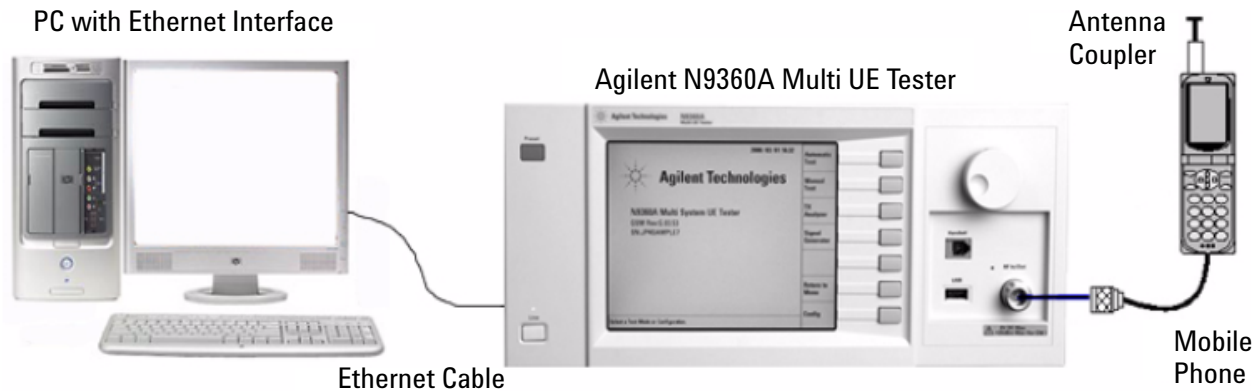
GP-IB

Using an Option E00

The following equipments are required to construct an automated test system using the GP-IB:

- The Agilent N9360A Multi UE Tester (with option E00).
- A system controller with the GP-IB interface.
- An IEEE-488 (GP-IB) cable.
- An RF cable to connect the RF signals from or to the mobile phone under test, the Antenna Coupler (Agilent N9360A-A02) to connect the RF signals from or to the mobile phone, or the Shield case (Agilent N9360A-S01) to couple the RF signals from or to the mobile phone.
- A printer and an appropriate cable (if required).

A typical setup for an automated test system using the GP-IB as shown in Figure 3-2 below:

Figure 3-2 Typical Setup for Automated Test System (GP-IB Interface)
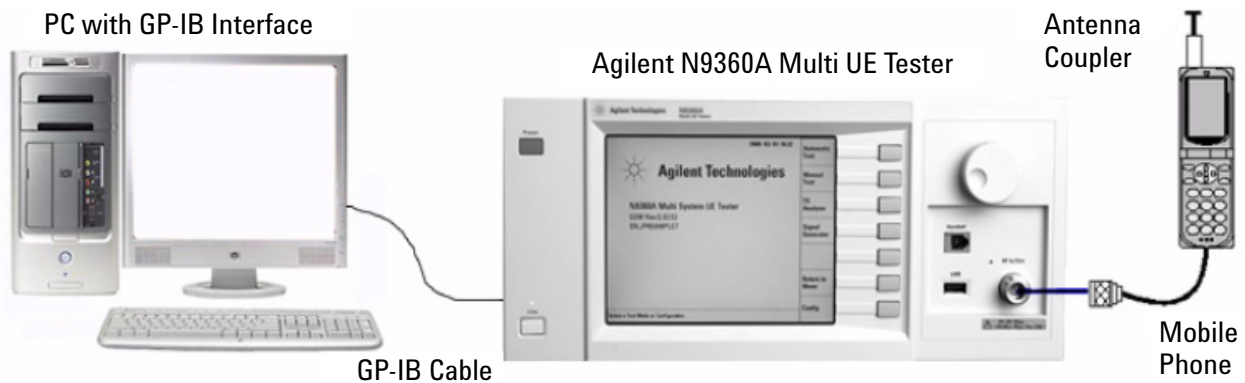
Using an Option E02

The following equipments are required to construct an automated test system using the GP-IB interface:

- The Agilent N9360A Multi UE Tester.
- A USB-GPIB Converter (option E02).
- A system controller with the GP-IB interface.
- An IEEE-488 (GP-IB) cable.

- An RF cable to connect the RF signals from or to the mobile phone under test, the Antenna Coupler (Agilent N9360A-A02) to connect the RF signals from or to the mobile phone, or the Shield case (Agilent N9360A-S01) to couple the RF signals from or to the mobile phone.

- A printer and an appropriate cable (if required).

A typical setup for an automated test system using the GP-IB as shown in Figure 3-3 below:

Figure 3-3 Typical Setup for Automated Test System (GP-IB Interface)
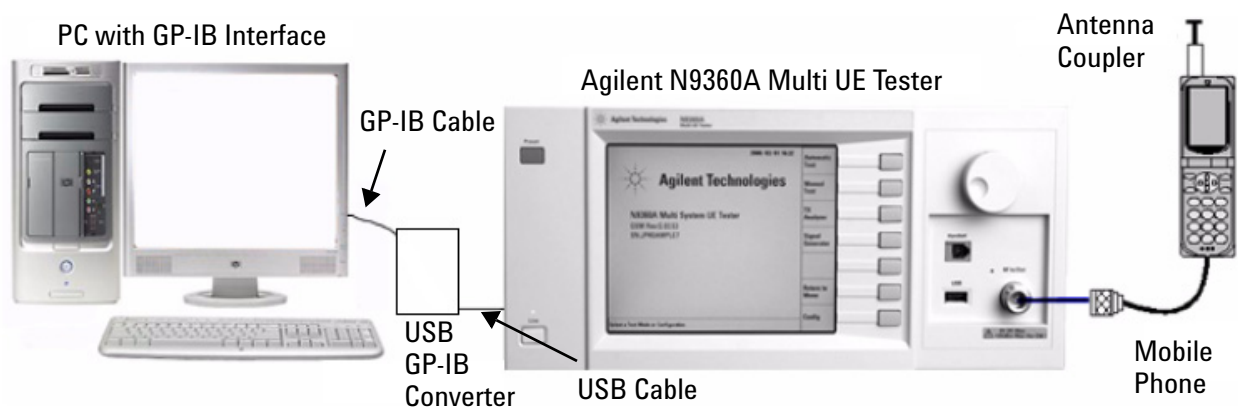
RS-232C (Option)

The following equipments are required to construct an automated test system using RS-232C interface:

- The Agilent N9360A Multi UE Tester (with option E01).
- A system controller with the RS-232C interface.
- An RS-232C null modem cable.
- An RF cable to connect the RF signals from or to the mobile phone under test, the Antenna Coupler (Agilent N9360A-A02) to connect the RF signals from or to the mobile phone, or the Shield case (Agilent N9360A-S01) to couple the RF signals from or to the mobile phone.
- A printer and an appropriate cable (if required).

A typical setup for an automated test system using RS-232C as shown in Figure 3-4 below:

Figure 3-4 Typical Setup for Automated Test System (Serial Interface)

PC with RS-232C Interface

Agilent N9360A Multi UE Tester

Antenna Coupler

Mobile Phone

RS-232C Cable
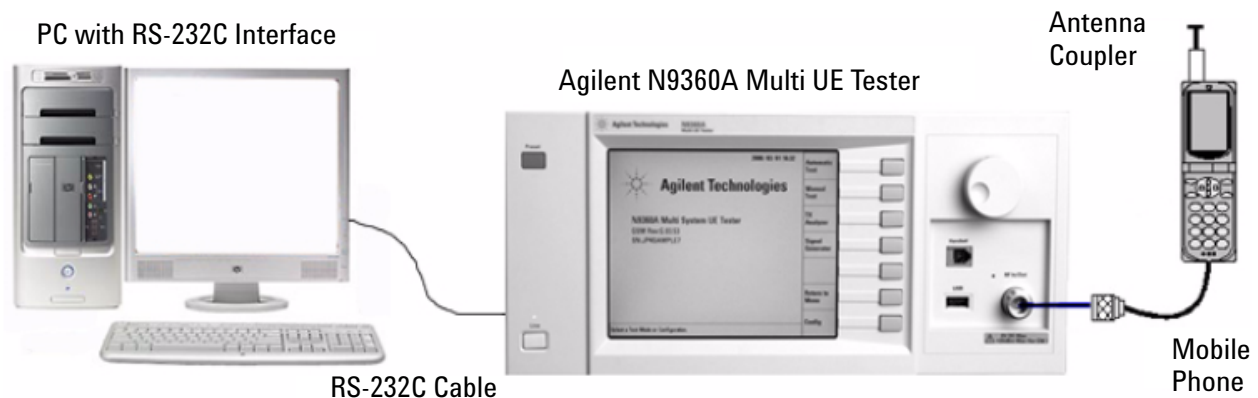
Connecting to Controller

Ethernet

An Ethernet connector is provided with the Tester as the Ethernet interface to connect a controller.

- If your controller (PC) has an Ethernet interface, use the UTP (10BASE-T/100BASE-TX) cross-over cable to connect the controller (PC) and the Tester directly. Or, use two straight cables and a HUB to connect the controller and the Tester.

GP-IB

The tester is equipped with the IEEE-488 (GP-IB) connector (Option E00), or a USB-GPIB converter (Option E02) is provided for the Tester as a GP-IB interface to connect the controller.

- If your controller (PC) has an IEEE-488 (GP-IB) connector, use an IEEE-488 (GP-IB) cable to connect the controller and the Tester with the Option E00. Or, use the USB-GPIB converter (option E02) and an IEEE-488 (GP-IB) cable to connect the controller (PC) and the Tester.

RS-232C

A DB-9 male connector (Option E01) is provided with the Tester as the serial interface to a controller.

If your controller (PC) has a serial interface, refer the following explanations.

- If your controller (PC) has a DB-9 male connector, use the 9-pin female to 9-pin female RS-232C null modem cable to connect the controller (PC) and the Tester.

- If your controller (PC) has a DB-25 male connector, insert the 9-pin male to 25-pin female adapter between the 9-pin female RS-232C null modem cable and the 25-pin male connector to connect the controller (PC) and the Tester.

NOTE	Ignore the control lines (CTS, DSR, DCD and RI) status with the controller.

An example of connection of these cable and adapter are shown in Figure 3-5 as follows.

Figure 3-5 RS-232C Cable and Adapter connection

4
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 used by any computer 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 have function such as a controller.
Program Message	A program message is a combination of one or more properly formatted commands. Program messages are always from the controller to an instrument. Program messages instruct the instrument how to measure signals and output signals.
Respond Message	A response message is a collection of data in specific formats. Response messages are always from an instrument to the controller. Response messages inform the controller about the internal state of the instrument and the measurement results.
Command	A command is an instruction. Combine the commands to 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 respond data available to the controller. Query mnemonics always end with a question mark **?**.
Preset	A default value or status when the Tester is shipped from the factory, or after pressing the **Preset** button.

Standard Notation

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

Command Mnemonics	Most of the commands have two forms, a long form and a short form. Use either long or short command form. Combined form is not allowed. In this manual, a long form is written in both capital and small letters. A short form is written in capital letters only. This notation type is shorthand to document both the long and short command forms. Consider, for example, the `:FREQuency` command. The short form is `:FREQ` and the long form is `:FREQUENCY`. The commands are not case sensitive, so `:fREquEnCy` is equal to `:FREQUENCY`. `:FREQ` and `:FREQUENCY` are the only valid forms of the `:FREQuency` command.
Angle Brackets	Angle brackets indicate that the word or words enclosed represent something other than themselves. For example, <new line> represents **New Line** character in the ASCII character set (decimal value 10). Words in angle brackets have much more rigidly defined meaning than words shown in ordinary text. For example, this section uses the word **message** to describe about messages generally. But the bracketed words <program message> indicate a precisely defined element of the commands. If you need them, you can find the exact definitions of words such as <program message> in a syntax diagram.

Query and Event Commands

You can query any value that you can set. For example, the command string `TXANalyzer:RFCH:CHANnel <int>` implies that the query command string `TXANalyzer:RFCH:CHANnel?` also exists. Any command string ending with a question mark is a query-only command.

Some commands are events and cannot be used as queries. An event has no corresponding setting if it causes something to happen inside the instrument at a particular instant.

Command Syntax

In this manual, each programming command is described by the following syntax statements.

For example, consider the command `CONFigure:PKEY UNLOCK|LOCK`.

Syntax statements read from left to right. In this example, the `:PKEY` 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, the portion following the `:PKEY` is the argument. Either `UNLOCK` or `LOCK` must be selected.

Additional notation 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 and neither.

- <> (angle brackets) enclose variable items that represent user choices (parameters) to be entered.

- Upper-case lettering indicates that the upper-case portion of the command is the minimum required for the command (short form). For example, in the command `:FREQuency`, `:FREQ` is the minimum requirement.

- Lower-case lettering indicates that the lower-case portion of the command is optional (long form); it can either be included with the upper-case portion of the command or omitted. For example, in the command `:FREQuency`, both `:FREQ` and `:FREQUENCY` is correct.

- ; (a semicolon) separates commands written in one line. Although those commands have some common portions, each command must be written from beginning as the following example.

  `CONF:COND:AMPL -70;CONF:COND:SENS:FARM 100`

- ? (question mark) following a command indicates that the command is a query. Most of the commands accept the query command. To make the query command, a question mark is following to the command. The returned information, <value>, varies in format according to the type of the command.

- << (continue) indicates the line does not end and continue to the next line.

  For example,

  `ABC <<`

  `DEF`

  Is same as follows

  `ABC DEF`

  In addition, all commands, parameters and mark to use in the programming are the ASCII code characters.

Overview of the Ethernet Interface

Settings for the Ethernet Interface

Refer to the documentation on your controller, programming language, and a LAN card to configure the Ethernet interface.

The Ethernet configuration is not programmable but manually set using the User Interface. The preset settings and allowable range are as follows:

Table 4-1 Ethernet Configuration

Item	Preset	Allowable Range
IP Addr:	192.168.0.1	1.0.0.1 to 233.255.255.255
CIDR (Mask):	24 (255.255.255.0)	1 to 31
Gateway:	NONE	NONE, ACT
Addr:	0.0.0.0	1.0.0.1 to 233.255.255.255
Terminator:	CR+LF	CR+LF, CR, LF

The terminator outputted from the Tester can be changed as specified in Table 4-1.

The terminator inputted to the Tester is LF (fixed).

The TCP port number is 10123 (fixed).

User cannot use the address from 192.168.1.1 to 192.168.1.255 as it is already used by the Tester.

Refer to the following procedure to set the Ethernet configuration.

Step 1

On the [Top Menu] screen or the [Initial screen], press the **Config** softkey to obtain the [Configuration] screen. The Terminator input field is set on this screen.

Figure 4-1 [Configuration] Screen (Terminator Interface)

On the [configuration] screen, press the **Network Setting** softkeys to obtain the [Network Setting] screen. Set the Ethernet setting parameters on this screen.

Figure 4-2 [Network Setting] Screen (Ethernet Interface)
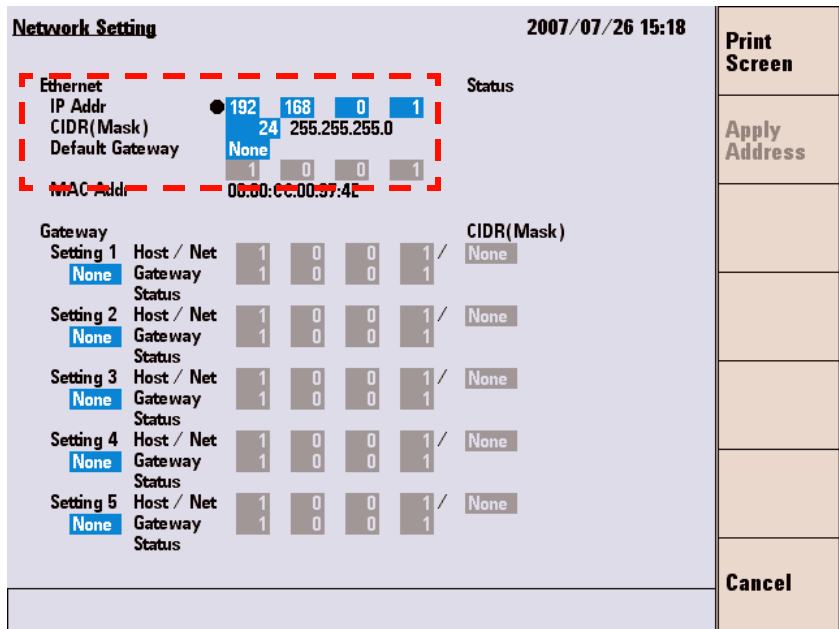
Step 2

Confirm that the Ethernet configurations are correct.

Step 3

Press the **Apply Address** softkey to activate the setting.

Overview of the GP-IB Interface

Settings for the GP-IB Interface

Refer to the documentation on your controller, programming language, and I/O interface card to configure the GP-IB interface.

The GP-IB configuration is not programmable but manually set using the User Interface. The preset settings and allowable range are as follows:

Table 4-2 GP-IB Configuration

Item	Preset	Allowable Range
GP-IB Address:	2	1 to 15

Table 4-2 GP-IB Configuration

Item	Preset	Allowable Range
EOI	Off	On, Off
Terminator:	CR+LF	CR+LF, CR, LF

The terminator outputted from the Tester can be changed as specified in Table 4-2.

The terminator inputted to the Tester is LF (for GP-IB Option E02).

The terminator inputted to tester is CR+LF (for GP-IB option E00).

If **EOI** is set to On, the terminator is not transmitted.

Refer to the following procedure to set the GP-IB configuration.

Step 1

On the [Top Menu] screen or the [Initial] screen, press the **Config** softkey to obtain the [Configuration] screen.

Figure 4-3 [Configuration] Screen (GP-IB Interface)
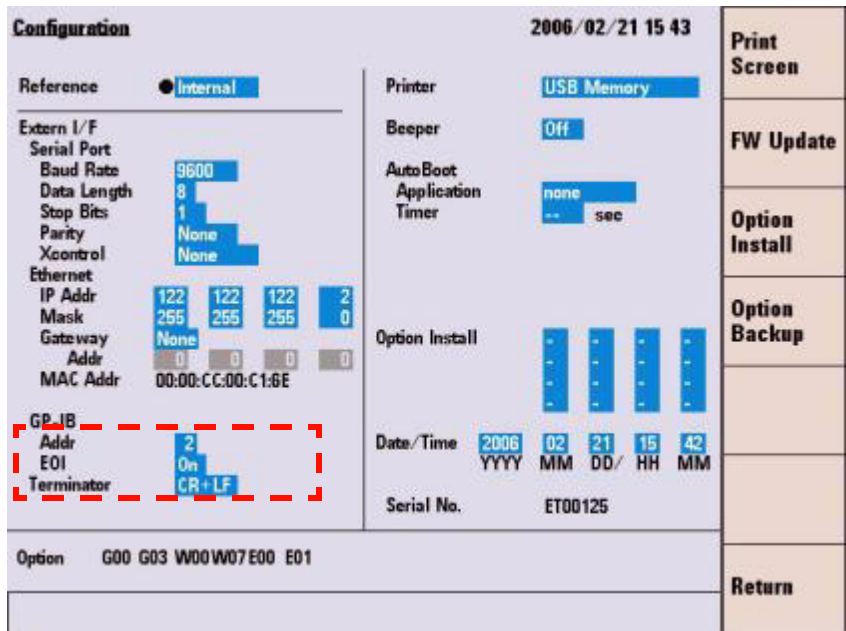
Step 2

Confirm that the GP-IB configurations are correctly set.

Step 3

Reboot the Tester to activate the configuration.

Overview of the RS-232C Serial Interface

Settings for the Serial Interface

Refer to the documentation on your controller, programming language, and an I/O interface card to configure the serial interface.

The serial port configuration is not programmable but manually set using the User Interface. The preset settings and allowable range are as follows:

Table 4-3 Serial Port Configuration

Item	Preset	Allowable Range
Baud Rate:	9600	9600, 19200, 38400, 57600, 115200
Data Length:	8	7, 8
Stop bits:	1	1, 1.5, 2
Parity:	None	None, Odd, Even
Xcontrol:	None	None, Xon/Xoff
Terminator:	CR+LF	CR, LF, CR+LF

The terminator outputted from the Tester can be change as specified in Table 4-3.

The terminator inputted to the Tester is LF (fixed).

Refer to the following procedure to set the serial port configuration.

Step 1

On the [Top Menu] screen or the [Initial] screen, press the **Config** softkey to obtain the [Configuration] screen:

Figure 4-4 [Configuration] Screen (RS-232C Interface)
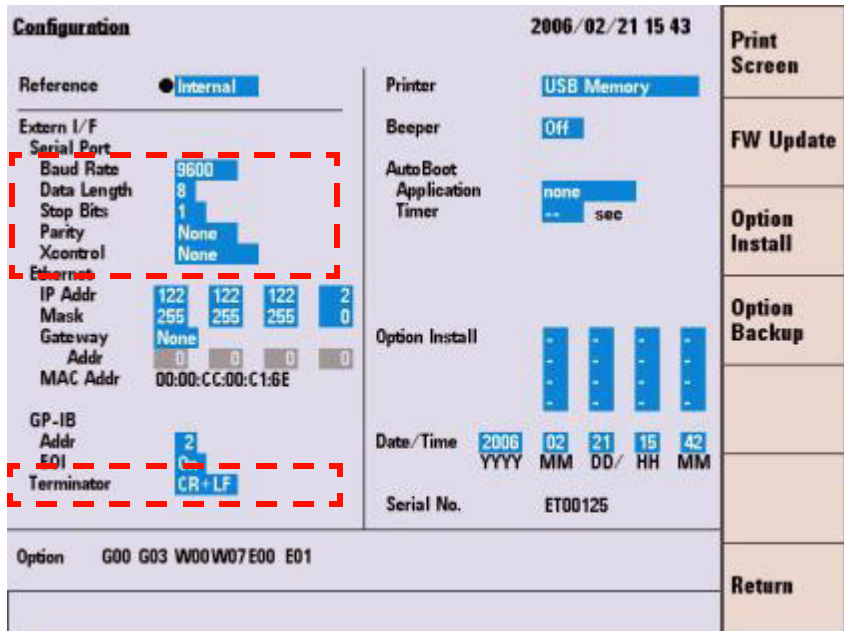
Step 2

Confirm that the Serial Port configurations are correctly set.

Step 3

Reboot the Tester to activate the configuration.

Character Format Parameters

To define the character format, check the following conditions and set the appropriate parameters:

- Data Length: Specifies the number of bits of each character excluding start, stop and parity bits.
- Parity Enable: Specifies parity check mode of each character.
- Stop Bits: Specifies number of stop bits of each character.

Flow Control

If the Tester cannot be controlled with the controller caused by receiver buffer full of the Tester, use Xon/Xoff flow control. To use the Xon/Xoff flow control with the Tester, set the **Xcontrol** on the [Configuration] screen to `Xon/Xoff`. When the controller

receives the `Xoff` (decimal value of 19), stop transmitting data. When the controller receives the `Xon` (decimal value of 17), resume transmitting data.

Flow control using the control lines (CTS, DSR and DCD) are not available.

Data Transfer Errors

On the serial interface several type of errors may occur during data reception. The errors may occur by any of the following factor.

- Parity error: The parity bit on a receiving character does not match the parity bit expected by the receiver. This error is most commonly caused by line noise. In this case, reducing the cable length or using a shielded cable may solve this error.

- Framing error: The start bit and stop bit do not match the timing expectations of the receiver. This error is most commonly cased the cable line noise. In this case, reducing the cable length or using a shielded cable may solve this error.

- Overrun error: A receiver buffer overflows, and received data is lost. This error is most commonly caused by too fast communication speed (Baud Rate). In this case, reduce the communication speed (Baud Rate).

Programming Guidelines

When you are going to write a test program, refer to the following guidelines.

- When more than two query commands are sent, the controller must read the output of each query command from the Tester. Otherwise, the controller may not be able to read the output of prior query after the next query is sent to the Tester.

- To read the measurement results, wait until the measurement ends. To check the measurement status, read the **Status Byte Register** using the `*STB?` query command and check the **Data Ready Bit** (Bit 0) and the **Measuring Status Bit** (Bit 1).

- When testing by the Automatic Test mode or the Manual Test mode, wait until the step of the Test flow ends. To check the status of the Test flow, send the `TESTs:AUTO:MEASure:SIGNaling:STATe?` query command when the test mode is the Automatic Test mode, or send the `TESTs:MANual:SIGNaling:STATe?` query command when the test mode is the Manual Test mode.

Typical Programming Flow for the Tester

When you write a test program for the Tester, insert the following steps in your program.

Step 1

Reset the instrument and set the preset settings except for the setting of serial, GP-IB and Ethernet interface.

< Send Command to the Tester> `*RST`

Step 2

Select the W-CDMA application, and display the [Initial] screen of the W-CDMA system is displayed.

< Send Command to the Tester> `APPL:WCDMA`

Step 3

Configure test setting on the [Configuration] screen.

< Send Command to the Tester> `CONF:LOSS ON`

< Send Command to the Tester> `CONF:LOSS:RFIN 0.5,0.5,0.5,0.5,0.5,0.5,0.5,0.5,0.5`

< Send Command to the Tester> `CONF:LOSS:RFOU 1.0,1.0,1.0,1.0,1.0,1.0,1.0,1.0,1.0`

<Send Command to the Tester> `CONF:COND:BAND 1`

<Send Command to the Tester> `CONF:COND:3GPP 2`

Step 4

Configure test setting on a test mode screen. For example, the Manual Test mode test sets as follows:

<Send Command to the Tester> `TEST:MAN:RFCH:CHAN 9800`

<Send Command to the Tester> `TEST:MAN:BSCT RMC`

Step 5

Create an instruction message as follows for the operator to turn on the mobile phone and wait until the Location Update to complete.

<Display Message on the PC screen> **Turn on the mobile phone and wait until [P] is shown at the [Location Update]. Then press [OK] button.**

<Wait until the **OK** button on the PC screen is clicked on>

Step 6

Start the BS Call, and then check that the test flow changes to the Talk/RF Test step.

< Send Command to the Tester> `TEST:MAN:BSC`

<Send Query Command to the Tester> `TEST:MAN:SIGN:STAT?`

If the Response is not 2, resend the query.

Else, proceed to the next step.

Step 7

Start the measurement.

<Send Command to the Tester> `TRIG:IMM`

Step 8

To read the measurement results, wait until the measurement ends.

<Send Query Command to the Tester> `*STB?`

If the Response is not 0, resend the query.

Else, proceed to the next step.

Step 9

Read the test results of Peak TX Power, for example as follows:

<Send Query Command to the Tester> `TEST:MAN:RES:TXP?`

<Display Message on the PC> Peak TX Power :`<Value 3> dBm`

<Display Message on the PC>

If the <Value 2> is not 0, Message is FAIL.

Else, Message is PASS.

Step 10

Start the BS Release, for example as follows:

<Send Command to the Tester> `TEST:MAN:BSR`

<Send Query Command to the Tester> `TEST:MAN:SIGN:STAT?`

If the Response is not `16`, resend the query.

Else, complete the test.

Using the Status Registers

The system status comprises of multiple registers that 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 of the Tester of events and conditions of the Tester. All other individual registers are used to determine the specific events or conditions.

You can determine the state of certain instrument events and conditions by using 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 five physical registers: one condition register, two transition registers, one event enable register and one event register. However, the **Standard Event Status Register** is composed of an event enable register and an event register.

Why Would You Use the Status Registers?

In general, 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 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 described below for the Tester. Refer to IEEE Common Commands on page 2 for more information about common commands.

- `*CLS` (Clear Status) clears the status byte by emptying the error queue and clearing every event register.

- `*ESE` and `*ESE?` (Event Status Enable) set or query the bits on the enable register portion of the standard event status register.

- `*ESR?` (Event Status Register) queries and clears the event register portion of the standard event status register. This command is going to be added to the set existing commands.

- `*OPC`, `*OPC?` (operation complete) sets the standard event status register to monitor the completion of all commands. The query stops any new commands from being processed until the current processing is complete, then returns `1`.

- `*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 numerical value based on its location as shown in Figure 4-5. To enable or disable a particular bit, you need to send this value with the command. If you want to enable more than one bit, send the sum of all the bits that you want to enable.

Figure 4-5 Bit Values

For example, to set `1` to `bit 0` and `bit 6` of the Standard Event Status Register, send the command `*ESE 65 (= 1 + 64)`.

The result of a query is evaluated in a similar way. If the command `*STB?` returns a decimal value of 140 (= 128 + 8 + 4), then the `bit 7`, `bit 3` and `bit 2` are set to `1`.

Status Register System

Figure 4-6 shows all of the instrument status registers and their hierarchy incorporated with the Tester.

Figure 4-6 Overall Status Byte Register System
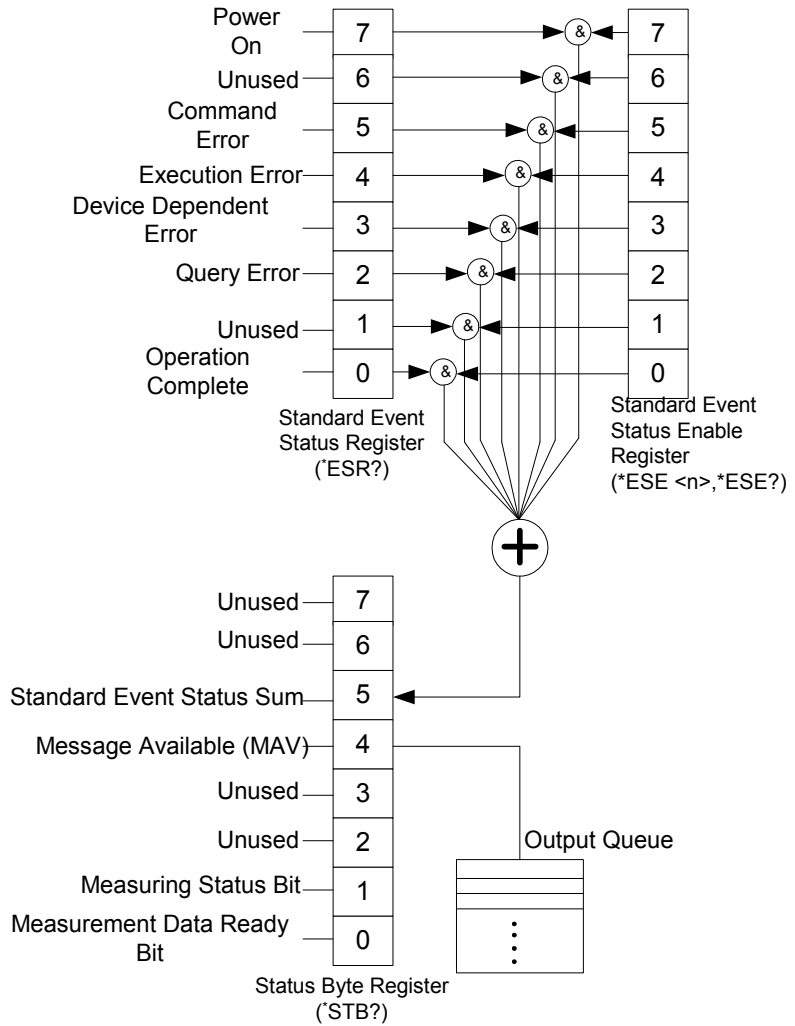
Each of these status registers is explained in detail in the following sections.

Status Byte Register

The Status Byte Register of the Tester uses the bit 0 **Measurement Data Ready Bit**, bit 1 **Measuring Status Bit**, bit 4 **Message Available** and bit 5 **Standard Event Status Summary Bit** as shown in Figure 4-7.

Figure 4-7 Status Byte Register
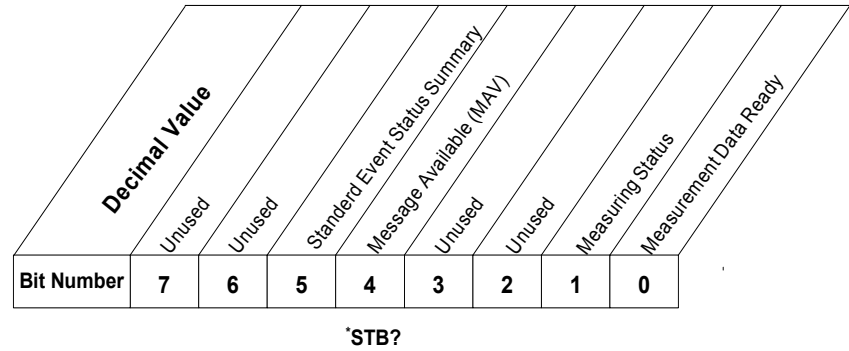
The Status Byte Register contains the following information:

Table 4-4 Status Byte Register

Bit	Description
0	0: Measurement data is not ready in the output queue. 1: Measurement data is ready in the output queue.
1	0: Measurement is completed. 1: Measurement is not completed.
2, 3	These bits are always set to `0`.
4	0: Measurement data is not ready in the output queue. 1: Measurement data is ready in the output queue.
5	0: Standard Event Status Register Masked by Standard Event Status Enable Register is not set to 1. 1: Standard Event Status Register Masked by Standard Event Status Enable Register is set to 1.
6, 7	These bits are always set to `0`.

To query the Status Byte Register, send the command `*STB?`. The response is the decimal sum of the bits which are set to `1`. For example, if the bit 5 and bit 4 are set to `1`, the decimal sum of these 2 bits is 48 (32 plus 16) see Figure 4-5. So the decimal value 48 is returned.

Standard Event Status Register

The Standard Event Status Register of the Tester is used to determine the specific event that set bit 5 in the status byte register as follows:

Figure 4-8 Standard Event Status Register

*ESR?
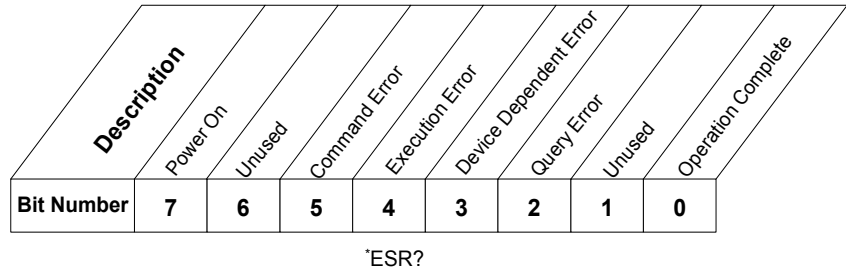
The Standard Event Status Register contains the following information:

Table 4-5 Status Byte Register

Bit	Description
0	If all pending operations is completed following execution of the `*OPC` command, this bit is set to `1`.
1	This bit is always set to `0`.
2	If a query error has occurred, this bit is set to `1`.
3	If a device dependent error has occurred, this bit is set to 1. Device dependent errors have error numbers from –399 to –300 and 1 to 32767.
4	If an execution error has occurred, this bit is set to `1`. Execution errors have error numbers from –299 to –200.
5	If a command error has occurred, this bit is set to `1`. Command errors have error numbers from –199 to –100.
6	This bit is always set to `0`.
7	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 is the decimal sum of the bits which are set to `1`. For example, if the bit 7 and bit 3 are set to `1`, the decimal sum of these 2 bits is 136 (128 plus 8) see Figure 4-5. So the decimal value 136 is returned.

Standard Event Status Enable Register

The Standard Event Status Enable Register is used to mask the Standard Event Status Register information to inform summary information to the Status Byte Register.

Figure 4-9 Standard Event Status Enable Register
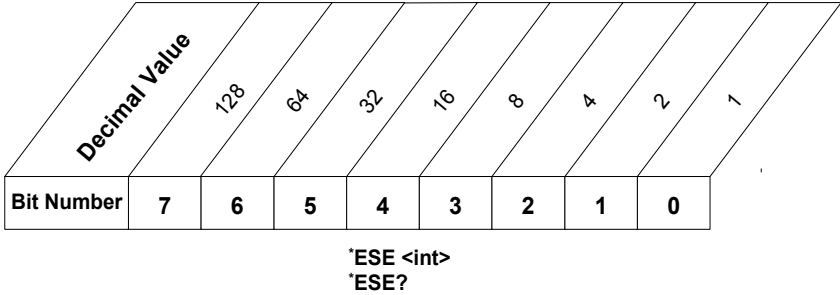
To inform the summary information of the Standard Event Status Register to bit 5 of the Status Byte Register, set 1 to corresponding bit of the Standard Event Status Enable Register. Send the *ESE <int> command, where <int> is the sum of the decimal values of the bits you want to enable. For example, to inform the Power On and Command Error bits information to the bit 5 of the Status Byte Register, bit 7 and 5 are set to 160 by *ESE 160 command (160 = 128 plus 32). See Figure 4-5. The query command *ESE? returns the decimal value of the sum of the bits previously set by with the *ESE <int> command.

Error Messages

Table 4-6 shows the Tester error messages of the Tester.

Table 4-6 Error Messages

Error No.	Description
0	No error
−100	Other command error has occurred
−103	Command error due to an invalid separator
−112	Command error due to a program mnemonic is too long
−113	Command error due to an undefined header
−120	Command error due to a numeric data error
−123	Command error due to an exponent is too large
−124	Command error due to too many digits
−131	Command error due to an invalid suffix
−141	Command error due to invalid character data
−144	Command error due to character data is too long
−200	Execution error due to an invalid command
−222	Execution error due to data that is out of range
−350	Device dependent error due to a queue overflow

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5

Programming Command Reference

This chapter describes all commands of syntaxes, parameters, and response.

Agilent Technologies

IEEE Common Commands

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

IEEE Common Commands Reference

Identification Query

`*IDN?`

This query command returns the identification information about the manufacturer name, model number, serial number and the revision number of the firmware.

Reset

`*RST`

This command executes the self-test routine and resets the Tester to the initial state.

| **NOTE** | The `*RST` command does not affect the settings of the serial, GP-IB and Ethernet interface configuration. |

Operation Complete

`*OPC`

`*OPC?`

This command sets or queries the OPC bit (bit0) of the Standard Event Status Register (SESR). The query command returns 1.

Clear Status

`*CLS`

This command initializes the Status Byte Register (STBR) and the Standard Event Status Register (SESR).

Standard Event Status Enable

`*ESE <int>`

`*ESE?`

This command sets or queries a value of the Standard Event Status Enable Register (SESER). The allowable range is from `0` to `255`. For detailed information, refer to Standard Event Status Enable Register on page 4-19.

Event Status Register Query

`*ESR?`

This query command returns a value of the Standard Event Status Register (SESR). The range of a value is from `0` to `255`. Information contained in the Standard Event Status Register is as follows:

bit 0 (1): Operation Complete

bit 1 (2): Unused

bit 2 (4): Query Error

bit 3 (8): Device Dependent Error

bit 4 (16): Execution Error

bit 5 (32): Command Error

bit 6 (64): Unused

bit 7 (128): Power On

For detailed information, refer to Standard Event Status Register on page 4-17.

Status Byte Register Query

`*STB?`

This query command returns a value of the Status Byte Register (STBR). The range of a value is from `0` to `255`. Information contained in the Status Byte Register is as follows:

bit 0 (1): Measurement Data Ready

bit 1 (2): Measuring Status

bit 2 (4): Unused

bit 3 (8): Unused

bit 4 (16): Message Available

bit 5 (32): Standard Event Status Summary

bit 6 (64): Unused

bit 7 (128): Unused

For detailed information, refer to Status Byte Register on page 4-16.

Instrument Option Query

`*OPT?`

This query command returns a value of the option numbers.

Selftest Result Query

`*TST?`

This query command returns the result of self diagnosis with integer value of `0` (Normal) or `1` (Abnormal).

Top Menu Commands

The following Top Menu commands are available only on the [Top Menu] screen or the [Configuration] screen. These commands are unavailable in any screen other than the [Top Menu] and the [Configuration] screen. The other commands except for the Top Menu Commands and the IEEE Common Commands are unavailable.

System Commands

System Error

`SYSTem:ERRor?`

This query command returns a set of values, `<int 1>` and `<string 2>`, for error numbers and error messages. Refer to Table 4-6 on page 4-20.

Lock System Panel

`SYSTem:KLOCk?`

`SYSTem:KLOCk  ON|OFF|1|0`

This command sets all the panel keys setting to `ON` (1) or `OFF` (0). If this is set to `ON` or `1`, all the panel keys are locked. If this is set to `OFF` or `0`, all the panel keys are unlocked. At preset, this is set to `0`. This query command returns the panel keys setting with integer value of `1` or `0`.

Option Code

`OPTion:SET <string>`

This command installs an option code to the Tester with 16 ASCII characters.

Display Commands

Current Screen

`DISPlay?`

This query command returns a set of values, `<char>` and `<int>`, as a type of screen currently displayed.

- `<char>` returns the type of screen currently displayed.

  `INIT` = [Initial] Screen

  `CONF` = [Configuration] Screen

  `CONF:NET` = [Configuration: Network Setting] Screen

  `UPDA:FIRM` = [Firmware Update] Screen

  `UPDA:FLAS` = [Update Flash] Screen

  `ELSE` = The other screens

- `<int>` when the [Automatic Test : Stand-by] screen is currently displayed, the Sequence number, **1** or **2**, is displayed. When other screen is displayed, **0** is returned.

Top Menu Screen

`DISPlay:INIT`

This command selects the [Top Menu] screen for activating one of the function modes.

System Configuration

`DISPlay:CONFigure`

This command selects the [Configuration] screen. The parameters and controls on this screen set the fundamental information for all function modes of the Tester.

NOTE	The parameters for the serial and GP-IB are manually specifiable.
	The Ethernet parameters are specifiable in the program.

Firmware Update Screen

`DISPlay:UPDAte:FIRMware`

This command selects the [Firmware Update] screen.

Update Flash Screen

`DISPlay:UPDAte:FLASh`

This command selects the [Update Flash] screen.

Application Type

`DISPlay:APPLication?`

This command returns the type of application currently in operation.

Application Select Commands

Application

`APPLication:GSM`

This command selects the GSM and displays the **[Initial]** screen of the GSM mode.

G00 Option is required to be installed in the Tester.

For detailed information on the programming command of the GSM mode, refer to the *N9360A Multisystem UE Tester GSM Option Programmer's Guide*.

`APPLication:WCDMA`

This command selects the W-CDMA and displays the **[Initial]** screen of the W-CDMA mode.

W00 option is required to be installed in the Tester.

`APPLication:CDMA`

This command selects the cdma2000 and displays the **[Initial]** screen of the cdma2000 mode.

C00 and C01 options are required to be installed in the Tester.

For detailed information on the programming command of the cdma2000 mode, refer to the *N9360A Multisystem UE Tester cdma2000 Option Programmer's Guide*.

Initial Softkey Screen Command

Mode Select

```
INITialsoftkey:MODe FUNC
```

```
INITialsoftkey:MODe?
```

This command selects the Tester Mode.

This query command returns the Tester Mode with strings.

Configuration Screen Commands

Printer Control

```
CONFigure:PRINter PMG800|USBMemory
```

```
CONFigure:PRINter?
```

This command sets the output device of the Print Screen. The choices are `PMG800` and `USBMemory`. At preset, this is set to `USBMemory`.

This query command returns the output device of the Print Screen with strings.

Beeper Control

```
CONFigure:BEEPer ON|OFF|1|0
```

```
CONFigure:BEEPer?
```

This command sets the beep function to `ON` (1) or `OFF` (0). If this is set to `ON`, there is beep for each step of operation. If this is set to `OFF`, beep is suppressed except for some errors and warnings. At preset, this is set to `1`.

This query command returns the beep setting with integer value of `1` or `0`.

10MHz Reference Oscillator

```
CONFigure:ROSCillator INT|EXT
```

```
CONFigure:ROSCillator?
```

This command sets the reference signal for use to `INT` for the internal reference or `EXT` for the external reference signal. At preset, this is set to `INT`.

This query command returns the reference signal setting with string of `INT` or `EXT`.

When `EXT` is selected, an appropriate signal needs to be supplied to the 10 MHz reference connector (IN) on the rear panel of the Tester.

Date

`CONFigure:DATE <int YYYY>,<int MM>,<int DD>`

`CONFigure:DATE?`

This command sets the date of the calendar in the Tester. `<int YYYY>` is year within the range from `1990` to `2037`, `<int MM>` is month within the range from `1` to `12`, and `<int DD>` is day within the range from `1` to `31`.

This query command returns the date of the calendar in the Tester with `<int YYYY>`, `<int MM>` and `<int DD>`. The range of these values is same as that of the command parameter.

Time

`CONFigure:TIME <int HH>,<int MM>`

`CONFigure:TIME?`

This command sets the time of the clock in the Tester. `<int HH>` is hour within the range from `0` to `23` and `<int MM>` is minutes within the range from `0` to `59`.

This query command returns the time of the clock in the Tester with `<int HH>` and `<int MM>`. The range of these values is same as that of the command parameter.

Autoboot

`CONFigure:AUTOBoot NONE|GSM|WCDMA|CDMA2000 <int>`

`CONFigure:AUTOBoot?`

This command selects Autoboot setting from `NONE`, `GSM`, `WCDMA`, and `CDMA2000`, that is automatically activated in a certain period of time after the Menu screen is displayed, and `<int>` sets the duration time (unit: second) until start of automatic boot.

- If this is set to `None`, the Tester does not start automatic boot.

- If this is set to `GSM`, `WCDMA`, or `CDMA2000`, the Tester starts automatic boot with the GSM application, W-CDMA application, or the cdma2000 application respectively.

- G00 Option is required to be installed in the Tester to boot GSM.

- W00 Option is required to be installed in the Tester to boot W-CDMA.

- C00 and C01 options are required to be installed in the Tester to boot cdma2000.

The duration time is within the ranges from `10` to `60` seconds in `1` step. At preset, these settings are `NONE` and 0, which means the Tester does not start automatic boot and the display shows the [Top Menu] screen.

If `0` is set other than `NONE`, an execution error occurs.

This query command returns the settings of application name and the duration time. When this command is set to `NONE`, it returns `0`.

RF Revision

`CONFigure:REVision:RF?`

This query command returns the firmware revision of RF-CPU with a string "xx.xx".

Command Reference for Configuration: Network Setting Screen

The Network commands are used for network settings of the Tester. The query commands return the settings of those controls and parameters.

Address Apply

`CONFigure:NETwork:APPLy:ADDRess`

This command sets each address set by the following commands (Network Settings) in the Tester.

`CONFigure:NETwork:IPaddress`

`CONFigure:NETwork:DEFault:GATEway`

`CONFigure:NETwork:GATEway:SET1 to SET5`

IP Address

`CONFigure:NETwork:IPaddress <string>,<int>`

`CONFigure:NETwork:IPaddress?`

This command sets the IP address and the subnet mask address of the Tester. `<string>` specifies the IP address, ranging from 1.0.0.1 to 223.255.255.255. But, from 192.168.1.1 to 192.168.1.1255 are unavailable to use the IP address because the Tester uses them internally. `<int>` defines the subnet mask address. The value of `<int>` is in the CIDR format, ranging from 1 to 31.

This query command returns the settings of IP address and subnet mask address.

Default Gateway Address

`CONFigure:NETwork:DEFault:GATEway <enum>,<string>`

`CONFigure:NETwork:DEFault:GATEway?`

This command sets the default gateway address. `<enum>` sets whether or not to enable the default gateway address. The parameter is `ACT` (for enabling) or `NONE` (for disabling). When `<enum>` is set to `ACT`, the default gateway address can be set

with `<string>`, ranging from 1.0.0.1 to 223.255.255.255. But, from 192.168.1.1 to 192.168.1.1255 are unavailable to use the IP address because the Tester uses them internally.

This query command returns `ACT` and the setting of default gateway address when `<enum>` is set to `ACT`. This returns `NONE` only when `<enum>` is set to `NONE`.

Setting 1 to 5 Gateway Address

`CONFigure:NETwork:GATEway:SET1 <enum 1>,<string 1>,<enum 2>,<string 2>`

`CONFigure:NETwork:GATEway:SET1?`

`CONFigure:NETwork:GATEway:SET2 <enum 1>,<string 1>,<enum 2>,<string 2>`

`CONFigure:NETwork:GATEway:SET2?`

`CONFigure:NETwork:GATEway:SET3 <enum 1>,<string 1>,<enum 2>,<string 2>`

`CONFigure:NETwork:GATEway:SET3?`

`CONFigure:NETwork:GATEway:SET4 <enum 1>,<string 1>,<enum 2>,<string 2>`

`CONFigure:NETwork:GATEway:SET4?`

`CONFigure:NETwork:GATEway:SET5 <enum 1>,<string 1>,<enum 2>,<string 2>`

`CONFigure:NETwork:GATEway:SET5?`

These commands set the gateway addresses for Setting 1 to Setting 5. `<enum 1>` sets whether or not to enable the gateway address for Setting 1 to Setting 5. The parameter is `ACT` (for enabling) or `NONE` (for disabling). `<string 1>` specifies the Host/Net address. When `<enum 2>` is set to `NONE`, `<string 1>` is recognized as the Host address addressed to a Host. When `<enum2>` is set to other than `NONE`, `<string 1>` is recognized as the Net address addressed to subnet.

`<enum2>` selects `Host (NONE)` or `Net (other than NONE)`. When `Net` is selected, the value of subnet mask is in the CIDR form, ranging from 1 to 31.

`<string2>` specifies the gateway address. The allowable range of each parameter is as follows:

Table 5-1 Setting 1 to 5 Gateway Address Allowable Range

enum 1	enum 2	string 1	string 2
ACT	NONE	1.0.0.1 to 223.255.255.255 (Host specifying address) 192.168.1.1 to 192.168.1.255 are unavailable to use.	1.0.0.1 to 223.255.255 (Gateway address)
	1 to 31 (Subnet mask value)	1.0.0.0 to 223.255.255.255 (Net specifying address) 192.168.1.0 to 192.168.1.255 are unavailable to use.	
NONE	–	–	–

These query commands return the set values.

Command Reference for Firmware Update

The firmware update commands are used for firmware update setting of the Tester. The query commands return the settings of those controls and parameters.

Update Type

UPDAte:TYPE USB|HDD|SERVER

UPDAte:TYPE?

This command sets update type for firmware update screen and update flash screen. The parameter is USB (update from USB memory), HDD (update from internal hard disk drive) or SERVER (update from external ftp server. At preset, this is set to USB.

This query command returns the update type (USB, HDD or SERVER) setting with strings.

Update Result

UPDAte:RESult?

This query command returns the set of values, `<int 1>`, `<int 2>`, `<int 3>`, `<int 4>`, `<string 1>`, `<string 2>`, `USB|HDD|SERVER`, as a result of last update.

`<int 1>` (1 digit) is the existance of update result for the exist (1) or not exist (1).

`<int 2>` (4 digit) is the year by which update was carried out with `yyyy`.

`<int 3>` (2 digit) is the month by which update was carried out with `mm`.

`<int 4>` (2 digit) is the day by which upadate was carried out with `dd`.

`<string 1>` (32 letters) is the version number of archive.

`<string 2>` (4 letters) is the result code of update. If update is a failure, it is equivalent to the error code. If update is a success, it is `0000`.

`USB|HDD|SERVER` is the update type.

Update History

`UPDAte:HISTory?`

This query command retruns the set of values, `<int1>`, `<int2>`, `<int3>`, `<int4>`, `<string1>`, `<string2>`, `USB|HDD|SERVER`, as histories of update from the starting position specified by Update Histroy Position to the read-out position specified by Update History Request Number. The number of the maximum histories acquirable with this command at once is 58. If the number of histories exceeds 58, the acquisition of subsequent histories is attained by shifting an acquisition start position by `UPDAte:HISTory:POSition`.

`<int 1>` (2 digit) is the number of update history returned with this query command.

`<int 2>` (4 digit) is the year by which update was carried out with `yyyy`.

`<int 3>` (2 digit) is the month by which update was carried out with `mm`.

`<int 4>` (2 digit) is the day by which upadate was carried out with `dd`.

`<string 1>` (32 letters) is the version number of archive.

`<string 2>` (4 letters) is the result code of update. If update is a failure, it is equivalent to the error code. If update is a success, it is `0000`.

`USB|HDD|SERVER` is the update type.

Update History Position

`UPDAte:HISTory:POSition <int>`

`UPDAte:HISTory:POSition?`

This command sets the read-out starting position of the history of update result read by `UPDAte:HISTory?`. The allowable range is from 1 to 2147483647 in 1 steps. However, actually the number of the maximum read-out histories is 250. If 251 or more values are set up, the read-out result of `UPDAte:HISTory?` is `0`. At preset, this is set to `1`.

This query command returns the read-out starting position of the history of update result setting with integer. The range of this values is same as that of the command parameter.

Update History Request Number

`UPDAte:HISTory:REQuest:NUMber <int>`

`UPDAte:HISTory:REQuest:NUMber?`

This command set the read-out number of the update result history read by `UPDate:HISTory?`. The allowable range is from 1 to 58 in 1 steps. At preset, this is set to `10`.

This query command returns the read-out number of the update result history with integer. The range of this values is same as that of the command parameter.

Update History Number

`UPDAte:HISTory:NUMber?`

This query command returns the total number of the existing update history.

```
HDD Clear File
```

`UPDAte:HDD:CLEar:FILE`

This command carries out deletion of the archive files for the HDD update. It is effective only when the Update Type is set to HDD.

Server IP Address

`UPDAte:SERver:IPaddress <string>`

`UPDAte:SERver:Ipaddress?`

This command sets the IP address of ftp server for SERVER update. <string> specifies the IP address, ranging from 0.0.0.0 to 223.255.255.255. At preset, this is set to `0.0.0.0`.

This query command returns the IP address of ftp server for `SERVER` update. The range of this values is same as that of the command parameter.

Server Reload List

`UPDAte:SERver:RELOad:LIST`

This command updates the list of the archive files in ftp server for `SERVER` update. Please execute this command, when the archive file for update is replaced on the ftp server. This command is effective only when the update system is set to `SERVER`.

Update Firmware

`UPDAte:FIRMware:TRIGger MENU|FUNC|G00|W00|SYS`

This command updates specified firmware specifed. `MEMU` is the top menu, `FUNC` is the Function Tester, `G00` is the GSM Tester, `W00` is the W-CDMA Tester, `SYS` is system of tester.

Update Top Menu Firmware List

`UPDAte:FIRMware:LIST:MENU?`

This query command returns the version of the archive file for update of the application applicable to the top menu which the tester recognizes. The format of archive file is `MENU_M.xx.xx` or `MENU_M.xx.xx.yy` (x: numeric character, y: alphanumeric character). It returns `?.??.??` if the tester is no recognized archive file.

Update Function Mode Firmware List

`UPDAte:FIRMware:LIST:FUNCtiontester?`

This query command returns the version of the archive file for update of the application applicable to the function tester which the tester recognizes. The format of archive file is `FUNC_F.xx.xx` or `FUNC_F.xx.xx.yy` (x: numeric character, y: alphanumeric character). It returns `?.??.??` if the tester is no recognized archive file.

Update G00 Mode Firmware List

`UPDAte:FIRMware:LIST:G00?`

This query command returns the version of the archive file for update of the application applicable to the G00 tester which the tester recognizes. This is effective only for G00 option installed tester. The format of archive file is `G00_G.xx.xx` or `G00_G.xx.xx.yy` (x: numeric character, y: alphanumeric character). It returns `?.??.??` if the tester is no recognized archive file.

Update G00 Mode Firmware List

`UPDAte:FIRMware:LIST:W00?`

This query command returns the version of the archive file for update of the application applicable to the W00 tester which the tester recognizes. This is effective only for W00 option installed tester. The format of archive file is `W00_W.xx.xx` or `W00_W.xx.xx.yy` (x: numeric character, y: alphanumeric character). It returns `?.??.??` if the tester is no recognized archive file.

Update System List

`UPDAte:FIRMware:LIST:SYStem?`

This query command returns the version of the archive file for update of the application applicable to the system setting which the tester recognizes. The format of archive file is `SYS_*.xx.xx` or `SYS_*.xx.xx.yy` (x: numeric character, y: alphanumeric character). It returns `?.??.??` if the tester is no recognized archive file.

Top Menu Firmware Revision

`UPDAte:FIRMware:REVision:MENU?`

This query command returns the version of the top menu which is installed in the tester. The format of revision is `MENU_M.xx.xx` or `MENU_M.xx.xx.yy` (x: numeric character, y: alphanumeric character). It returns `?.??.??` if the tester is no recognized archive file.

Function Mode Firmware Revision

`UPDAte:FIRMware:REVision:FUNCtiontester?`

This query command returns the version of the function tester which is installed in the tester. The format of revision is `FUNC_F.xx.xx` or `FUNC_F.xx.xx.yy` (x: numeric character, y: alphanumeric character). It returns `?.??.??` if the tester is no recognized archive file.

G00 Mode Firmware Revision

`UPDAte:FIRMware:REVision:G00?`

This query command returns the version of the G00 tester which is indtalled in the tester. This is effective only for G00 option installed tester. The format of revision is `G00_G.xx.xx` or `G00_G.xx.xx.yy` (x: numeric character, y: alphanumeric character). It returns `?.??.??` if the tester is no recognized archive file.

W00 Mode Firmware Revision

`UPDAte:FIRMware:REVision:W00?`

This query command returns the version of the W00 tester which is installed in the tester. This is effective only for W00 option installed tester. The format of revision is `W00_W.xx.xx` or `W00_W.xx.xx.yy` (x: numeric character, y: alphanumeric character). It returns `?.??.??` if the tester is no recognized archive file.

Command Reference for Update Flash

The update flash commands are used for update flash setting of the Tester. The query commands return the settings of those controls and parameters.

Update Flash

`UPDAte:FLASh:TRIGger MC1X|1XEVDO`

This command update the specified Flash ROM in the teseter. `MC1X` is the Flash ROM for MC-1x CPU, `1XEVDO` is the Flash ROM for 1xEV-DO CPU.

Update MC-1x Flash List

`UPDAte:FLASh:LIST:MC1X?`

This query command returns the version of the archive file which updates MC-1x Flash ROM which the tester recognizes. The format of archive file is `MC1X.xx.xx` or `MC1X.xx.xx.yy` (x: numeric character, y: alphanumeric character). It returns `?.??.??` if the tester is no recognized archive file.

Update 1xEV-DO Flash List

`UPDAte:FLASh:LIST:1XEVDO?`

This query command returns the version of the archive file which updates 1xEV-DO Flash ROM which the tester recognizes. The format of archive file is `EVDO.xx.xx` or `EVDO.xx.xx.yy` (x: numeric character, y: alphanumeric character). It returns `?.??.??` if the tester is no recognized archive file.

MC-1x Flash ROM Revision

`UPDAte:FLASh:REVision:MC1X?`

This query command returns the revision of the MC-1x Flash ROM which is installed in the tester. The format of revision is `MC1X.xx.xx` or `MC1X.xx.xx.yy` (x: numeric character, y: alphanumeric character). It returns `?.??.??` if the tester is no recognized archive file.

1xEV-DO Flash ROM Revision

`UPDAte:FLASh:REVision:1XEVDO?`

This query command returns the revision of the 1xEV-DO Flash ROM which is installed in the tester. The format of revision is `EVDO.xx.xx` or `EVDO.xx.xx.yy` (x: numeric character, y: alphanumeric character). It returns `?.??.??` if the tester is no recognized archive file.

DISPlay Subsystem

The DISPlay subsystem commands are used to select the screen of the Tester for programming.

DISPlay Subsystem Command Reference

Current Screen

`DISPlay?`

This query command returns a set of values, `<char>` and `<int>`, as a type of screen currently displayed.

- `<char>` returns the type of screen currently displayed.

  `INIT` = [Initial] Screen

  `AUTO:STBY` = [Automatic Test : Stand-by] Screen

  `MAN:STBY` = [Manual Test : Stand-by] Screen

  `MAN:SMS` = [Manual Test : SMS] Screen

  `TXAN:STBY` = [TX Analyzer : Stand-by] Screen

  `RFG` = [Signal Generator] Screen

  `CONF` = [Configuration] Screen

  `CONF:COND` = [Configuration : Test Condition] Screen

  `CONF:COND` = LOSS [Configuration : Test Condition : Loss] Screen

  `CONF:COND = LIM` [Configuration: Test Condition Limit] Screen

  `CONF:SEQ` = [Configuration : Test Sequence] Screen

  `CONF:FILE` = [Configuration : File Management] Screen

  `CONF:NET` = [Configuration: Network Setting] Screen

  `ELSE` = The other screens

- `<int>` when the [Automatic Test : Stand-by] screen is currently displayed, the Sequence number, **1** or **2**, is returned. When the other screen is displayed, **0** is returned.

Initial Screen

`DISPlay:INIT`

This command selects the [Initial] screen for activating one of the function modes.

Display Mode

`DISPlay:MODE FAST|TRACk`

`DISPlay:MODE?`

This command sets the display mode. `FAST` is fast mode, `TRACk` is normal mode. It cannot set up during testing of Automatic Test, signaling and mesurement state of Manual Test, and measurement state of Tx Analyzer. If `FAST` mode is specified, since renewal of a screen is not performed, it usually operates earlier than normal mode. In order to cancel `FAST` mode, it is canceled by sending `TRACk` by this command or pressing the soft key **[Local]**. At preset, this is set to `TRACk`.

This query command returns the display mode (`FAST` of `TRACk`) setting with strings.

Command Reference Test Screens

Automatic Test Screen

`DISPlay:AUTO:STBY 1|2`

This command selects the Automatic Test [Stand-by] screen. The parameter specifies a Sequence Number.

Manual Test Screen

`DISPlay:MANual:STBY`

This command selects the Manual Test [Stand-by] screen.

TX Analyzer Screen

`DISPlay:TXANalyzer:STBY`

This command selects the TX Analyzer [Stand-by] screen.

Signal Generator Screen

`DISPlay:RFGenerator`

This command selects the [Signal Generator] screen.

Command Reference for Configuration Screens

System Configuration Screen

`DISPlay:CONFigure`

This command selects the [Configuration] screen. The parameters and controls on this screen set the fundamental information for all function modes of the Tester.

NOTE	The parameters for the serial and GP-IB are manually specifiable.
	The Ethernet parameters are specifiable in the program.

Test Condition Screen

`DISPlay:CONFigure:CONDition`

This command selects the [Configuration : Test Condition] screen.

`DISPlay:CONFigure:CONDition:LOSS`

This command selects the [Configuration : Test Condition : Loss] screen.

`DISPlay:CONFigure:CONDition:LIMit`

This command selects the [Configuration : Test Condition : Limit] screen.

Test Sequence Screen

`DISPlay:CONFigure:SEQuence`

This command selects the [Configuration : Test Sequence] screen. The parameters and controls on this screen apply to the test sequence of Automatic Test.

File Management Screen

`DISPlay:CONFigure:FILE`

This command selects the [File Management] screen. The files containing test setup files for all function modes are saved to the HDD or a USB memory device. Also, these files are recalled or deleted from the HDD or the USB memory device.

Network Setting Screen

`DISPlay:CONFigure:NETwork`

This command selects the **[Configuration: Network Setting]** screen.

INITialsoftkey Subsystem

This subsystem sets or queries the controls and parameters on the [Initialsoftkey] screen.

Current System

`INITialsoftkey:CURrentsystem WCDMA|GSM|CDMA2000`

`INITialsoftkey:CURrentsystem?`

This command sets the system to be operated. The parameter is set to `WCDMA` for WCDMA setting screen, `GSM` for GSM setting screen or `CDMA2000` for CDMA2000 setting screen.

CONFigure Subsystem

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

CONFigure Subsystem Command Reference

Beeper Control

`CONFigure:BEEPer ON|OFF|1|0`

`CONFigure:BEEPer?`

This command sets the beeper function to `ON` (1) or `OFF` (0). If this is set to `ON`, there is beep for each step of operation. If this is set to `OFF`, beep is suppressed except for some errors and warnings. At preset, this is set to `1`.

This query command returns the beep setting with integer value of `1` or `0`.

10MHz Reference Oscillator

`CONFigure:ROSCillator?`

This query command returns the reference signal currently used, which is either `INT` for the internal reference or `EXT` for the external reference.

Date

`CONFigure:DATE <int YYYY>,<int MM>,<int DD>`

`CONFigure:DATE?`

This command sets the default of the calendar in the Tester. `<int YYYY>` is year within the range from `1990` to `2037`, `<int MM>` is month within the range from `1` to `12` and `<int DD>` is day within the range from `1` to `31`.

This query command returns the date of the calendar in the Tester by `<int YYYY>`, `<int MM>` and `<int DD>`. The range of these values is same as that of the command parameter.

Time

`CONFigure:TIME <int HH>,<int MM>`

`CONFigure:TIME?`

This command sets the time of the clock in the Tester. `<int HH>` is hour within the range from `0` to `23` and `<int MM>` is minutes within the range from `0` to `59`.

This query command returns the time of the clock in the Tester by `<int HH>` and `<int MM>`. The range of these values is same as that of the command parameter.

Panel Key Control

`CONFigure:PKEY UNLOCK|LOCK`

`CONFigure:PKEY?`

This command sets the panel key control to `UNLOCK` or `LOCK`. At preset, this is set to `UNLOCK`. If this is set to `LOCK`, only Automatic Test and Configuration are available. However, Manual Test, TX Analyzer and Signal Generator are all locked and cannot be changed.

This command is not identical to **Lock System Panel** of the System commands. See Lock System Panel on page 5-5.

This query command returns the panel key control setting by string of `UNLOCK` or `LOCK`.

Printer Control

```
CONFigure:PRINter PMG800|USBMemory
```

```
CONFigure:PRINter?
```

This command sets the output direction of the Print Screen. The parameter is `PMG800` or `USBMemory`. At preset, this is set to `USBMemory`.

This query command returns a type of printer or destination with strings.

Command Reference for Configuration : Test Sequence Screen

The sequence commands are used to control the test flow, test sequences of Automatic Test, and also to define whether to execute the pass or fail tests at the specified RFCH. The query commands return the settings of those controls and parameters.

Radio System

```
CONFigure:SEQuence:RFORmat <<
    W-CDMA|GSM850|GSM900|DCS1800|PCS1900|CDMA2000
    MC1X|CDMA2000EVDO|OFF
```

```
CONFigure:SEQuence:RFORmat?
```

This command selects a Radio System to be tested. The parameter is `W-CDMA`, `GSM850`, `GSM900`, `DCS1800`, `PCS1900`, `CDMA2000MC1X`, `CDMA2000EVDO` and `OFF`. PRESET value is `W-CDMA` when `Sequence Number` is set to 1. PRESET value is `Off` when `Sequence Number` is set to 2.

- `GSM850`, `GSM900`, `DCS1800` and `PCS1900` are enabled when the G00 option is installed.
- `CDMA2000MC1X` is enabled when the C00 and C01 Options are installed.
- `CDMA2000EVDO` is enabled when both the C00, C01 and C02 Options are installed.

This query command returns the selected Radio System with strings.

Sequence Number

```
CONFigure:SEQuence:NO 1|2
```

```
CONFigure:SEQuence:NO?
```

This command specifies a sequence number. The sequence number specified here applies to the commands that relate to sequence. At preset, this is set to `1`.

This query command returns the selected Sequence Number with integer value of `1` or `2`.

Band

```
CONFigure:SEQuence:BAND <int>
```

```
CONFigure:SEQuence:BAND?
```

This command specifies the Band in order to set each BS Level on each band. The parameter is `1` to `6`, `8`, and `9`. At preset, this is set to `1`.

This command works on the same as `CONFigure:SEQuence:BSLEvel:BAND`.

This command will be eliminated in future. (This is remained for convenience of existing users.)

```
CONFigure:SEQuence:BSLEvel:BAND <int>
```

```
CONFigure:SEQuence:BSLEvel:BAND?
```

This command specifies the Band in order to set each BS Level on each band. The parameter is `1`to `6`, `8`, and `9`. At preset, this is set to `1`.

BS Level

```
CONFigure:SEQuence:AMPLitude <real>
```

```
CONFigure:SEQuence:AMPLitude?
```

This command specifies the amplitude (BS Level) in each band set by the Band command described above. The allowable range is from `-115.0` to `-18.0` (dBm) in `0.1` steps. At preset, this is set to `-65.7` (dBm).

Measurement BS Level

```
CONFigure:SEQuence:MEASurementbslevel <real>
```

```
CONFigure:SEQuence:MEASurementbslevel?
```

This command specifies the amplitude (BS Level) for **MAX TX Power**, **Inner Loop Power**, **EVM**, **Origin Offset** and **MIN TX Power** measurement in each band set by the Band command described above. The allowable range is from `-115.0` to `-18.0` (dBm) in `0.1` steps. At preset, this is set to `-93.0` (dBm).

Openloop BS Level (Open Loop TX Power BS Level)

```
CONFigure:SEQuence:OLPbslevel <real>
```

```
CONFigure:SEQuence:OLPbslevel?
```

This command specifies the amplitude (BS Level) for measurement in each band set by the Band command described on page 5-28. The allowable range is from `-115.0` to `-18.0` (dBm) in `0.1` steps. At preset, this is set to `-65.7` (dBm).

BER BS Level

```
CONFigure:SEQuence:BERbslevel <real>
```

```
CONFigure:SEQuence:BERbslevel?
```

This command specifies the amplitude (BS Level) of the Tester for Bit Error Ratio (BER) test in each band set by the Band command described on page 5-28. The allowable range is from `-115.0` to `-18.0` (dBm) in `0.1` steps. The preset values are as follows.

- `-106.7` (dBm) for Band1, Band4, and Band6.
- `-104.7` (dBm) for Band2.
- `-103.7` (dBm) for Band3.

BER Frame

```
CONFigure:SEQuence:SENSitivity:FRAMe <int>
```

```
CONFigure:SEQuence:SENSitivity:FRAMe?
```

This command specifies the number of the frames for BER. The allowable range is from `1` to `4100` (frames) in `1` step. At preset, this is set to `10`.

FreqError BS Level

`CONFigure:SEQuence:FRQbslevel <real>`

`CONFigure:SEQuence:FRQbslevel?`

This command specifies the amplitude (BS Level) of the Tester for frequency error test in each band set by the Band command described on page 5-28. The allowable range is from `-115.0` to `-18.0` (dBm) in `0.1` steps. At preset, this is set to `-50.0` (dBm).

RF Signal Output Mode

`CONFigure:SEQuence:RFOUtput AUTO|ON`

`CONFigure:SEQuence:RFOUtput?`

This command specifies RF Output in Automatic Test. The parameter is `AUTO` or `ON`. At preset, this is set to `ON`.

This query command returns the RF signal output setting with string of `AUTO` or `ON`.

Wait before Paging

`CONFigure:SEQuence:WaitBeforePaging <real>`

`CONFigure:SEQuence:WaitBeforePaging?`

This command specifies the wait time before paging transmission in Automatic Test. The allowable range is from `0.0` to `99.9` (seconds) in `0.1` steps. At preset, this is set to `0.0`.

The query command returns the setting of wait time before paging transmission with integer.

3GPP system

`CONFigure:SEQuence:3GPPsystem <int>`

`CONFigure:SEQuence:3GPPsystem?`

This command sets the 3GPP system. The allowable range is from `1` to `9` in `1` steps. At preset, this is set to `2`. This command works when the Sequence Number 1 is selected.

The query command returns the setting of 3GPP System with integer. The range of the value is the same as that of the command parameter.

When the set value is not corresponding to the 3GPP System number that is available to W-CDMA mode, the execution error occurs even if the number is within the allowable setting range.

RFCH

```
CONFigure:SEQuence:VARiable:RFCH:CHANnel1 <int
1>,<int 2>
```

```
CONFigure:SEQuence:VARiable:RFCH:CHANnel1?
```

```
CONFigure:SEQuence:VARiable:RFCH:CHANnel2 <int
1>,<int 2>
```

```
CONFigure:SEQuence:VARiable:RFCH:CHANnel2?
```

```
CONFigure:SEQuence:VARiable:RFCH:CHANnel3 <int
1>,<int 2>
```

```
CONFigure:SEQuence:VARiable:RFCH:CHANnel3?
```

```
CONFigure:SEQuence:VARiable:RFCH:CHANnel4 <int
1>,<int 2>
```

```
CONFigure:SEQuence:VARiable:RFCH:CHANnel4?
```

```
CONFigure:SEQuence:VARiable:RFCH:CHANnel5 <int
1>,<int 2>
```

```
CONFigure:SEQuence:VARiable:RFCH:CHANnel5?
```

```
CONFigure:SEQuence:VARiable:RFCH:CHANnel6 <int
1>,<int 2>
```

```
CONFigure:SEQuence:VARiable:RFCH:CHANnel6?
```

These commands set a Band and a variable (uplink channel number) for RFCH. The measurement on the RFCH is skipped if these are set to -1, 99999 (— is shown in the table cell). RFCH1 cannot be skipped. <int 1> is a band and <int 2> is a variable. The allowable range and preset values are as follows:

Table 5-2 RFCH Allowable Range

Int	Allowable Range								
	−1	1	2	3	4	5	6	7	8	9
1	−1	1	2	3	4	5	6	7	8	9
2	99999	9600 to 9900	9250 to 9550, 12, 37, 62, 87, 112, 137, 162, 187, 212, 237, 262, 287	925 to 1300	1300 to 1525, 1662, 1687, 1712, 1737, 1762, 1787, 1812, 1837, 1862	4120 to 4245, 782, 787, 807, 812, 837, 862	4150 to 4200, 812, 837	–	2700 to 2875	8750 to 8924

These query commands return the set Band and channel number with integer. The range of the value is same as that of the command.

Table 5-3 RFCH Preset Value

Int	Preset Value					
	CH1	CH2	CH3	–	–	–
1	1	1	1	–	–	–
2	9612	9750	9888	–	–	–

Open Loop TX Power

CONFigure:SEQuence:OPENpower <int>

CONFigure:SEQuence:OPENpower?

This command sets whether to include Open Loop TX Power test in the test sequence. <int> is 1 for Run or 0 for − (skip). At preset, this is set to 1.

Open Loop TX Power test can be executed only on **RFCH1**.

This query command returns the setting of the Open Loop TX Power test with integer. The meaning of the return value is same as that of the command parameter.

Inner Loop Power

`CONFigure:SEQuence:INNErpower <int>`

`CONFigure:SEQuence:INNErpower?`

This command defines whether to include Inner Loop Power test in the test sequence. `<int>` is a sum of the values of all the 6 bits as follows.

bit 0 (1): For testing RFCH1

bit 1 (2): For testing RFCH2

bit 2 (4): For testing RFCH3

bit 3 (8): For testing RFCH4

bit 4 (16): For testing RFCH5

bit 5 (32): For testing RFCH6

The choices for each bit are `1` for Run and `0` for − (skip). At preset, this is set to `63`.

This query command returns the setting of Inner Loop Power test with integer. The meaning of the return value is same as that of the command parameter.

MAX TX Power

`CONFigure:SEQuence:TPOWer <int>`

`CONFigure:SEQuence:TPOWer?`

This command sets whether to include MAX TX Power test in the test sequence. `<int>` is a sum of the values of all the 6 bits as follows.

bit 0 (1): For testing RFCH1

bit 1 (2): For testing RFCH2

bit 2 (4): For testing RFCH3

bit 3 (8): For testing RFCH4

bit 4 (16): For testing RFCH5

bit 5 (32): For testing RFCH6

The choices for each bit are `1` for Run and `0` for − (skip). At preset, this is set to `63`.

This query command returns the setting of MAX TX Power test with integer. The meaning of the return value is same as that of the command parameter.

Frequency Error

```
CONFigure:SEQuence:FREQuency <int>
```

```
CONFigure:SEQuence:FREQuency?
```

This command sets whether to include Frequency Error tests in the test sequence. `<int>` is a sum of the values of all the 6 bits as follows.

> bit 0 (1): For testing RFCH1
>
> bit 1 (2): For testing RFCH2
>
> bit 2 (4): For testing RFCH3
>
> bit 3 (8): For testing RFCH4
>
> bit 4 (16): For testing RFCH5
>
> bit 5 (32): For testing RFCH6

The choices for each bit are `1` for Run and `0` for $-$ (skip). At preset, this is set to `63`.

This query command returns the setting of Frequency Error test with integer. The meaning of the return value is same as that of the command parameter.

EVM

```
CONFigure:SEQuence:EVM <int>
```

```
CONFigure:SEQuence:EVM?
```

This command sets whether to include the EVM test in the test sequence. `<int>` is the sum of the values of all the 6 bits as follows.

> bit 0 (1): For testing RFCH1
>
> bit 1 (2): For testing RFCH2
>
> bit 2 (4): For testing RFCH3
>
> bit 3 (8): For testing RFCH4
>
> bit 4 (16): For testing RFCH5

bit 5 (32): For testing RFCH6

The choices for each bit are 1 for Run and 0 for − (skip). At preset, this is set to 63.

This query command returns the setting of the EVM test with integer. The meaning of the return value is same as that of the command parameter.

Sensitivity/BER

CONFigure:SEQuence:SENSitivity:BER <int>

CONFigure:SEQuence:SENSitivity:BER?

This command defines whether to include Sensitivity Bit Error Rate (BER) tests in the test sequence. <int> is a sum of the values of all the 6 bits as follows.

bit 0 (1): For testing RFCH1

bit 1 (2): For testing RFCH2

bit 2 (4): For testing RFCH3

bit 3 (8): For testing RFCH4

bit 4 (16): For testing RFCH5

bit 5 (32): For testing RFCH6

The choices for each bit are 1 for Run and 0 for − (skip). At preset, this is set to 63.

This query command returns the setting of Sensitivity BER test with integer. The meaning of the return value is same as that of the command parameter.

MIN TX Power

CONFigure:SEQuence:TPOWer:MINimum <int>

CONFigure:SEQuence:TPOWer:MINimum?

This command defines whether to include MIN TX Power test in the test sequence. <int> is a sum of the values of all the 6 bits as follows.

bit 0 (1): For testing RFCH1

bit 1 (2): For testing RFCH2

bit 2 (4): For testing RFCH3

bit 3 (8): For testing RFCH4

bit 4 (16): For testing RFCH5

bit 5 (32): For testing RFCH6

The choices for each bit are 1 for Run and 0 for —— (skip). At preset, this is set to 63.

This query command returns the setting of **MIN TX Power** test with integer. The meaning of the return value is the same as that of the command parameter.

RF Input Attenuation

```
CONFigure:SEQuence:LOSS:RFIN:CHANnel1 <<
    <real 1>,<real 2>,<real 3>,<real 4>,<<
    <real 5>,<real 6>,<real 7>,<<
    <real 8>,<real 9>
CONFigure:SEQuence:LOSS:RFIN:CHANnel1?
CONFigure:SEQuence:LOSS:RFIN:CHANnel2 <<
    <real 1>,<real 2>,<real 3>,<real 4>,<<
    <real 5>,<real 6>,<real 7>,<<
    <real 8>,<real 9>
CONFigure:SEQuence:LOSS:RFIN:CHANnel2?
CONFigure:SEQuence:LOSS:RFIN:CHANnel3 <<
    <real 1>,<real 2>,<real 3>,<real 4>,<<
    <real 5>,<real 6>,<real 7>,<<
    <real 8>,<real 9>
CONFigure:SEQuence:LOSS:RFIN:CHANnel3?
CONFigure:SEQuence:LOSS:RFIN:CHANnel4 <<
    <real 1>,<real 2>,<real 3>,<real 4>,<<
    <real 5>,<real 6>,<real 7>,<<
    <real 8>,<real 9>
CONFigure:SEQuence:LOSS:RFIN:CHANnel4?
```

```
CONFigure:SEQuence:LOSS:RFIN:CHANnel5 <<
    <real 1>,<real 2>,<real 3>,<real 4>,<<
    <real 5>,<real 6>,<real 7>,<<
    <real 8>,<real 9>
CONFigure:SEQuence:LOSS:RFIN:CHANnel5?
CONFigure:SEQuence:LOSS:RFIN:CHANnel6 <<
    <real 1>,<real 2>,<real 3>,<real 4>,<<
    <real 5>,<real 6>>,<real 7>,<<
    <real 8>,<real 9>
CONFigure:SEQuence:LOSS:RFIN:CHANnel6?
```

This command sets the RF input path loss on each RFCH, from `<real 1>` Band 1 to `<real 9>` Band 9, respectively. `<real 7>` is unused. The allowable range is from `-9.9` to `+9.9` in `0.1` steps. At preset, this is set to `0.0`.

This query command returns the setting of the RF input path loss on each channel with real. Each value is separated by a comma. The range of the values is same as that of the command parameter. <real 7> is not returned value.

RF Output Attenuation

```
CONFigure:SEQuence:LOSS:RFOUT:CHANnel1 <<
    <real 1>,<real 2>,<real 3>,<real 4>,<<
    <real 5>,<real 6>,<real 7>,<<
    <real 8>,<real 9>
CONFigure:SEQuence:LOSS:RFOUT:CHANnel1?
CONFigure:SEQuence:LOSS:RFOUT:CHANnel2 <<
    <real 1>,<real 2>,<real 3>,<real 4>,<<
    <real 5>,<real 6>,<real 7>,<<
    <real 8>,<real 9>
CONFigure:SEQuence:LOSS:RFOUT:CHANnel2?
```

```
CONFigure:SEQuence:LOSS:RFOUT:CHANnel3 <<
    <real 1>,<real 2>,<real 3>,<real 4>,<<
    <real 5>,<real 6>,<real 7>,<<
    <real 8>,<real 9>
CONFigure:SEQuence:LOSS:RFOUT:CHANnel3?
CONFigure:SEQuence:LOSS:RFOUT:CHANnel4 <<
    <real 1>,<real 2>,<real 3>,<real 4>,<<
    <real 5>,<real 6>,<real 7>,<<
    <real 8>,<real 9>
CONFigure:SEQuence:LOSS:RFOUT:CHANnel4?
CONFigure:SEQuence:LOSS:RFOUT:CHANnel5 <<
    <real 1>,<real 2>,<real 3>,<real 4>,<<
    <real 5>,<real 6>,<real 7>,<<
    <real 8>,<real 9>
CONFigure:SEQuence:LOSS:RFOUT:CHANnel5?
CONFigure:SEQuence:LOSS:RFOUT:CHANnel6 <<
    <real 1>,<real 2>,<real 3>,<real 4>,<<
    <real 5>,<real 6>,<real 7>,<<
    <real 8>,<real 9>
CONFigure:SEQuence:LOSS:RFOUT:CHANnel6?
```

This command sets the RF output path loss on each RFCH, from `<real 1>` Band 1 to `<real 9>` Band 9, respectively. `<real 7>` is unused. The allowable range is from `-9.9` to `+9.9` in `0.1` steps. At preset, this is set to `0.0`.

This query command returns the setting of the RF output path loss on each channel with real. Each value is separated by a comma. The range of the values is same as that of the command parameter. <real 7> is not returned value.

Location Update

```
CONFigure:SEQuence:SIGNaling: <<

   LOCUpdate OFF|LU1|LU2

CONFigure:SEQuence:SIGNaling:LOCUpdate?
```

This command defines whether to include the Local Update in a test flow. Setting `Lu1` executes Mobile Phone Power On Location Update, `Lu2` executes BS Change Location Update and `OFF` skips Location Update test. At preset, this is set to `LU1`.

MS Call

```
CONFigure:SEQuence:SIGNaling:MSCAll ON|OFF|1|0

CONFigure:SEQuence:SIGNaling:MSCAll?
```

This command sets whether to include the MS Call in a test flow. The parameter is `ON` (1) for Run or `OFF` (0) for − (skip). At preset, this is set to `1`.

This query command returns the setting of MS Call with integer value of `1` or `0`. The meaning of the return value is same as that of the command parameter.

Talk Test (MS Call)

```
CONFigure:SEQuence:SIGNaling:TALK ON|OFF|1|0

CONFigure:SEQuence:SIGNaling:TALK?
```

This command sets whether to include the Talk step with an AMR connection (MS Call) in a test flow. The parameter is `ON` (1) for Run or `OFF` (0) for − (skip). At preset, this is set to `1`.

This query command returns the setting of Talk test with integer value of `1` or `0`. The meaning of the return value is same as that of the command parameter.

BS Call (AMR)

```
CONFigure:SEQuence:SIGNaling:BSCAll:<<

   AMR  ON|OFF|1|0

CONFigure:SEQuence:SIGNaling:BSCAll:AMR?
```

This command sets whether to include the BS Call (AMR) in a test flow. The parameter is ON (1) for Run or OFF (0) for − (skip). At preset, this is set to 1.

This query command returns the setting of BS Call (AMR) with integer value of 1 or 0. The meaning of the return value is same as that of the command parameter.

Talk Test (AMR)

CONFigure:SEQuence:SIGNaling:TALK:AMR ON|OFF|1|0

CONFigure:SEQuence:SIGNaling:TALK:AMR?

This command sets whether to include the Talk step with an AMR connection (BS Call) in a test flow. The parameter is ON (1) for Run or OFF (0) for − (skip). At preset, this is set to 1.

This query command returns the setting of Talk test with integer value of 1 or 0. The meaning of the return value is same as that of the command parameter.

BS Call (RMC)

CONFigure:SEQuence:SIGNaling:BSCAll:<<

RMC ON|OFF|1|0

CONFigure:SEQuence:SIGNaling:BSCAll:RMC?

This command sets whether to include the BS Call (RMC) in a test flow. The parameter is ON (1) for Run or OFF (0) for − (skip). At preset, this is set to 1.

This query command returns the setting of BS Call (RMC) with integer value of 1 or 0. The meaning of the return value is same as that of the command parameter.

RF Test

CONFigure:SEQuence:SIGNaling:RFTEST ON|OFF|1|0

CONFigure:SEQuence:SIGNaling:RFTEST?

This command defines whether to include the RF Test step in a test flow. The parameter is ON (1) for Run or OFF (0) for − (skip). At preset, this is set to 1.

This query command returns the setting of RF test with integer value of `1` or `2`. The meaning of the return value is same as that of the command parameter.

Release or Handover (AMR)

`CONFigure:SEQuence:SIGNaling:REL:AMR REL|HO`

`CONFigure:SEQuence:SIGNaling:REL:AMR?`

This command sets the action after BS Call (AMR) in a test flow. The parameter is `REL` for Release or `HO` for Handover. At preset, this is set to `REL`.

This query command returns the setting value with strings of `REL` or `HO`.

This command can only be set when the Sequence Number1 is selected.

Release or Handover (RMC)

`CONFigure:SEQuence:SIGNaling:REL:RMC REL|HO`

`CONFigure:SEQuence:SIGNaling:REL:RMC?`

This command sets the action after BS Call (RMC) in a test flow. The parameter is `REL` for Release or `HO` for Handover. At preset, this is set to `REL`.

This query command returns the setting value with string of `REL` or `HO`.

This command can be set only when the Sequence Number1 is selected and **Release or Handover (AMR)** is set to `REL`.

Command Reference for Configuration: Test Condition Screen

The Condition commands are used to set the controls and parameters associated with the test condition including the pass or fail test limits for Automatic Test and Manual Test. The query commands return the settings of those controls and parameters.

Current System

`CONFigure:CONDition:CURrentsystem WCDMA|GSM|CDMA2000`

`CONFigure:CONDition:CURrentsystem?`

This command sets the system to be operated. The parameter is set to `WCDMA` for W-CDMA, `GSM` for GSM system setting screen, or `CDMA2000` for CDMA2000 system setting screen.

Radio System

`CONFigure:CONDition:RFORmat W-CDMA`

`CONFigure:CONDition:RFORmat?`

This command selects a Radio System to be tested. Only `W-CDMA` is available.

Band

`CONFigure:CONDition:BAND <int>`

`CONFigure:CONDition:BAND?`

This command sets the Band number. The parameter is `1`, `6` and `9`. At preset, this is set to `1`.

This query command returns the set Band number with integer.

3GPP system

`CONFigure:CONDition:3GPPsystem <int>`

`CONFigure:CONDition:3GPPsystem?`

This command sets 3GPP system. The range is from `1` to `5` in 1 step. At preset, this is set to `2`.

This query command returns the set 3GPP system with integer. The range of the value is same as that of the command parameter.

When the W00 and W06 options are installed, if the selected 3GPP System number is not valid for the W-CDMA mode being specified in the `CONFigure:CONDition:WCDMAMODe`, an execution error is warned even when the number is within the

effective setting range. (Validity of a 3GPP System number to the W-CDMA Mode is determined by the information to be notified from the SC.)

Mobile Country Code

`CONFigure:CONDition:NETWork:MCC <int>`

`CONFigure:CONDition:NETWork:MCC?`

This command sets the MCC (Mobile Country Code). The range is from `0` to `999` in 1 step. At preset, this is set to `1`.

This query command returns the set MCC with integer. The range of the value is same as that of the command parameter.

Mobile Network Code

`CONFigure:CONDition:NETWork:MNC <int>`

`CONFigure:CONDition:NETWork:MNC?`

This command sets the MNC (Mobile Network Code). The range is from `0` to `99` in 1 step. At preset, this is set to `1`.

This query command returns the set MNC with integer. The range of the value is same as that of the command parameter.

Averaging

`CONFigure:CONDition:AVERage OFF|<int>`

`CONFigure:CONDition:AVERage?`

This command sets whether to activate the averaging. The parameter is `OFF` or `<int>` for the number of averaging times. The allowable range of `<int>` is from `2` to `99`. At preset, this is set to `OFF`.

This query command returns the set averaging.

BS Level

`CONFigure:CONDition:AMPLitude <real>`

`CONFigure:CONDition:AMPLitude?`

This command sets the amplitude (BS Level) in each Band. The allowable range is from `-115.0` to `-18.0` (dBm) in `0.1` steps. At preset, this is set to `-50.0` (dBm).

This query command returns the set amplitude with real. The range of the value is same as that of the command parameter.

BER Frame

`CONFigure:CONDition:SENSitivity:FRAMe <int>`

`CONFigure:CONDition:SENSitivity:FRAMe?`

This command sets the number of the frames for bit error ratio (BER) tests. The allowable range is from `1` to `4100` (frames) in `1` step. At preset, this is set to `10`.

This query command returns the set number of the frames for BER test with integer. The range of the value is same as that of the command parameter.

PRACH Power

`CONFigure:CONDition: PRACHpower:STATe ON|OFF|1|0`

`CONFigure:CONDition:PRACHpower:STATe?`

This command sets enables or disables the PRACH Power Measurement amplitude (BS Level) in the Manual Test. The parameter is ON (`1`) when enabled and `OFF` (`0`) when disabled. At preset, this is set to `1`.

This query command returns the setting of the PRACH Power Measurement with integer value of `0` or `1`.

Open Loop TX Power

`CONFigure:CONDition:LIMit:OPENpower <<`

   `<real LO>,<real HI>`

`CONFigure:CONDition:LIMit:OPENpower?`

This command sets the low and high limits for the test in each band set by the Band command described on page 5-42. The allowable range is from `-99.9` to `+99.9` (dBm) in `0.1` steps. At preset, this is set to `-24.0` (dBm) and `-4.0` (dBm).

This query command returns the set low and high limits of the test with real separated by a comma. The range of the value is same as that of the command parameter.

Inner Loop Power (DownMin)

```
CONFigure:CONDition:LIMit:INNErpower:<<

   DownMIN  <real LO>,<real HI>

CONFigure:CONDition:LIMit:INNErpower:DownMIN?
```

This command sets the low and high limits for Inner Loop Power:DownMin Test in each band set by the Band command described on page 5-42. The allowable range is from `-99.99` to `+99.99` (dB) in `0.01` steps. At preset, this is set to `-2.00` (dB) and `0.00` (dB).

This query command returns the set low and high limits of Inner Loop Power:DownMin Test with real separated by a comma. The range of the value is same as that of the command parameter.

Inner Loop Power (DownMax)

```
CONFigure:CONDition:LIMit:INNErpower:<<

   DownMAX  <real LO>,<real HI>

CONFigure:CONDition:LIMit:INNErpower:DownMAX?
```

This command sets the low and high limits for Inner Loop Power:DownMax Test in each band set by the Band command described on page 5-42. The allowable range is from `-99.99` to `+99.99` (dB) in `0.01` steps. At preset, this is set to `-2.00` (dB) and `0.00` (dB).

This query command returns the set low and high limits of the test with real separated by a comma. The range of the value is same as that of the command parameter.

Inner Loop Power (UpMin)

```
CONFigure:CONDition:LIMit:INNErpower:<<

   UpMIN <real LO>,<real HI>

CONFigure:CONDition:LIMit:INNErpower:UpMIN?
```

This command sets the low and high limits for the test in each band set by the Band command described on page 5-42. The allowable range is from `-99.99` to `+99.99` (dB) in `0.01` steps. At preset, this is set to `0.00` (dB) and `+2.00` (dB).

This query command returns the set low and high limits of the test with real separated by a comma. The range of the value is same as that of the command parameter.

Inner Loop Power (UpMax)

`CONFigure:CONDition:LIMit:INNErpower:UpMAX <<`

  `<real LO>,<real HI>`

`CONFigure:CONDition:LIMit:INNErpower:UpMAX?`

This command sets the low and high limits for the test in each band set by the Band command described on page 5-42. The allowable range is from `-99.99` to `+99.99` (dB) in `0.01` steps. At preset, this is set to `0.00` (dB) and `+2.00` (dB).

This query command returns the set low and high limits of the test with real separated by a comma. The range of the value is same as that of the command parameter.

Inner Loop Power (10 Slots Down)

`CONFigure:CONDition:LIMit:INNErpower:<<`

  `10SlotsDown  <real LO>,<real HI>`

`CONFigure:CONDition:LIMit:INNErpower:10SlotsDown`

This command sets the low and high limits for the test in each band set by the Band command described on page 5-42. The allowable range is from `-99.99` to `+99.99` (dB) in `0.01` steps. At preset, this is set to `-13.00` (dB) and `-7.00` (dB).

This query command returns the set low and high limits of the test with real separated by a comma. The range of the value is same as that of the command parameter.

Inner Loop Power (10 Slots Up)

`CONFigure:CONDition:LIMit:INNErpower:<<`

  `10SlotsUp <real LO>,<real HI>`

```
CONFigure:CONDition:LIMit:INNErpower:10SlotsUp?
```

This command sets the low and high limits for the test in each band set by the Band command described on page 5-42. The allowable range is from `-99.99` to `+99.99` (dB) in `0.01` steps. At preset, this is set to `+7.00` (dB) and `+13.00` (dB).

This query command returns the set low and high limits of the test with real separated by a comma. The range of the value is same as that of the command parameter.

Max TX Power

```
CONFigure:CONDition:LIMit:TXPower <<

  <real LO>,<real HI>

CONFigure:CONDition:LIMit:TXPower?
```

This command sets the low and high limits for the test in each band set by the Band command described on page 5-42. The allowable range is `-99.99` to `+99.99` (dB) in `0.01` steps. At preset, this is set to `+19.00` (dBm) and `+26.00` (dBm).

This query command returns the set low and high limits of Max TX Power Test with real separated by a comma. The range of the value is same as that of the command parameter.

Frequency Error Limit

```
CONFigure:CONDition:LIMit:FREQuency <<

  <real LO>,<real HI>

CONFigure:CONDition:LIMit:FREQuency?
```

This command sets the low and high limits for Frequency Error Test in each band set by the Band command described on page 5-42. The allowable range and preset values are as follows, with allowable ranges variable in `0.1` steps.

Table 5-4 Frequency Error Allowable Range and Preset Value

Band	Allowable Range (Hz)	Preset (Hz)	
		<LO>	**<HI>**
1,2,3,4,8,9	−999.9 to +999.9	−200.0	+200.0
5,6	−999.9 to +999.9	−90.0	+90.0

This query command returns the set low and high limits of Frequency Error Tests with real separated by a comma. The range of the value is same as that of the command parameter.

EVM

`CONFigure:CONDition:LIMit:EVM <real HI>`

`CONFigure:CONDition:LIMit:EVM?`

This command specifies the high limit for EVM Test in each band set by the Band command described on page 5-42. The allowable range is from `0.00` to `99.99` (%) in `0.01` steps. At preset, this is set to `17.50` (%).

This query command returns the set high limit of EVM Test with real. The range of the value is same as that of the command parameter.

Origin Offset

`CONFigure:CONDition:LIMit:OriginOFFset <real HI>`

`CONFigure:CONDition:LIMit:OriginOFFset?`

This command sets the high limit for Origin Offset Test in each band set by the Band command described on page 5-42. The allowable range is from `-99.99` to `0.00` (%) in `0.01` steps. At preset, this is set to `-32.00` (dB).

This query command returns the set high limit of Origin Offset Test with real. The range of the value is same as that of the command parameter.

BER

`CONFigure:CONDition:LIMit:BER <real HI>`

`CONFigure:CONDition:LIMit:BER?`

This command sets the high limit for BER Test in each band set by the Band command described on page 5-42. The allowable range is from `0.00` to `99.99` (%) in `0.01` steps. At preset, this is set to `1.00` (%).

This query command returns the set high limit of BER Test with real. The range of the value is same as that of the command parameter.

Min TX Power

```
CONFigure:CONDition:LIMit:TXPower:MINimum <<
```

```
CONFigure:CONDition:LIMit:TXPower:MINimum?
```

This command sets the high limit for **Min TX Power Test** in each band set by the Band command described on page 5-42. The allowable range is from `-99.99` to `+99.99` (dB) in `0.01` steps. At preset, this is set to `-40.00` (dB).

This query command returns the set high limit of **Min TX Power Test** with real. The range of the value is the same as that of the command parameter.

ACLR DSB 5MHz

```
CONFigure:CONDition:LIMit:ACLR5mhz <real HI>
```

```
CONFigure:CONDition:LIMit:ACLR5mhz?
```

This command sets the high limit for ACLR DSB 5MHz Test in each band set by the Band command described on page 5-42. The allowable range is from `-99.99` to `0.00` (dB) in `0.01` steps. At preset, this is set to `-30.00` (dB). This command is valid only when the W07 option is installed in the Tester. If the W07 option is not installed in the Tester, an execution error occurs.

This query command returns the set high limit of the test with real. The range of the value is same as that of the command parameter.

ACLR DSB 10MHz

```
CONFigure:CONDition:LIMit:ACLR10mhz <real HI>
```

```
CONFigure:CONDition:LIMit:ACLR10mhz?
```

This command sets the high limit for ACLR DSB 10MHz Test in each band set by the Band command described on page 5-42. The allowable range is from `-99.99` to `0.00` (dB) in `0.01` steps.

At preset, this is set to `-40.00` (dB). This command is valid only when the W07 option is installed in the Tester. If the W07 option is not installed in the Tester, an execution error occurs.

This query command returns the set high limit of the test with real. The range of the value is same as that of the command parameter.

OBW

`CONFigure:CONDition:LIMit:OBW <real HI>`

`CONFigure:CONDition:LIMit:OBW?`

This command sets the high limit for OBW Test in each band set by the Band command described on page 5-42. The allowable range is from `0.00` to `9.99` (MHz) in `0.01` steps. At preset, this is set to `5.00` (MHz). This command is valid only when the W07 option is installed in the Tester. If the W07 option is not installed in the Tester, an execution error occurs.

This query command returns the set high limit of OBW Test with real. The range of the value is same as that of the command parameter.

W-CDMA Mode

`CONFigure:CONDition:WCDMAMODe W-CDMA|HSDPA`

`CONFigure:CONDition:WCDMAMODe?`

This command is added when the W06 Option is installed. This command selects either the W-CDMA mode or HSDPA mode. At preset, this is set to `W-CDMA`.

This query command returns the set value with <enum>.

When W-CDMA Mode is changed in this command, the number is automatically switched to the 3GPP-System-applicable number, if the current 3GPP system number is not suitable to the assigned W-CDMA Mode.

Signaling Pattern

`CONFigure:CONDition:SIGNalingpattern <int>`

`CONFigure:CONDition:SIGNalingpattern?`

This command sets a signaling pattern. The allowable range is from `1` to `255` in `1` step. At preset, this is set to `1`.

This query command returns the set signaling pattern with integer. The range of the value is same as that of the command parameter.

Signaling Data

`CONFigure:CONDition:DATa PN9|PN15`

`CONFigure:CONDition:DATa?`

This command selects the signaling data from `PN9` and `PN15`. At preset, this is set to `PN9`.

This query command returns the set signaling data with enum.

Loopback Delay

`CONFigure:CONDition:LDELay SHORT|MID|LONG`

`CONFigure:CONDition:LDELay?`

This command selects the loopback delay among `SHORT`, `MID`, and `LONG`. At preset, this is set to `MID`.

This value is specifiable only when the query command returns the Ciphering is set to `OFF`.

This query command returns the selected Loopback Delay with enum.

When the Ciphering is set to `ON`, – is returned.

Connection Wait

`CONFigure:CONDition:CONnectionwait <int>`

`CONFigure:CONDition:CONnectionwait?`

This command sets the response time for MS Call connection. The allowable range is from `0` to `120` (sec) in `1` step. At preset, this is set to `0` (sec). When this is set to `0`, the Tester immediately responds to the call.

This query command returns the set response time with integer. The range of the value is same as that of the command parameter.

Authentication Key

`CONFigure:CONDition:AUTHKey:Type ORG|STD|USER`

`CONFigure:CONDition:AUTHKey:Type?`

This command selects the type of Authentication Key among ORG, STD, and USER. At preset, this is set to USER. This query command returns the Authentication Key type `<enum1>`.

`CONFigure:CONDition:AUTHKey:Key <string>`

This command sets the Authentication Key when the type of Authentication Key is set to USER. `<string>`: Fixed to 32 characters as hexadecimal string.

`CONFigure:CONDition:AUTHKey:Key?`

This query command returns the value of Authentication Key with string. The preset value depends on the set Authentication key Type.

- Authentication Key is set to ORG:
  `00112233445566778899AABBCCDDEEFF`
- Authentication Key is set to STD:
  `000102030405060708090A0B0C0D0E0F0F`
- Authentication Key is set to USER:
  `4147494C454E5420544543484E4F0000`

Authentication key changing in the manual test mode.

This function is set by the external command only. There is no differential part on the screen.

Algorithm of power control

`CONFigure:CONDition:TPCAlgorithm 1|2`

`CONFigure:CONDition:TPCAlgorithm?`

This command selects the TPC Algorithm from `1` and `2`. At preset, this is set to `1`.

This query command returns the set TPC Algorithm with enum.

Location Update

```
CONFigure:CONDition:LOCUpdate ON|OFF|1|0
```

```
CONFigure:CONDition:LOCUpdate?
```

This command sets whether to enable the **Location Update** for Manual Test. The parameter is set to `ON` (1) or `OFF` (0). At preset, this is set to `0`.

This query command returns the setting of **Location Update** with the value of `1` or `0`.

RMC Handover Alert

```
CONFigure:CONDition:RMCHOAlert ON|OFF|1|0
```

```
CONFigure:CONDition:RMCHOAlert?
```

This command sets whether or not to enable the **RMC Handover Alert** function. The parameter is `ON` (1) or `OFF` (0). At preset, this is set to `1`.

This query command returns the setting of **RMC Handover Alert** function with the value `1` or `0`.

Wait RLC Ack at Handover

```
CONFigure:CONDition:WAITRLCackho ON|OFF|1|0
```

```
CONFigure:CONDition:WAITRLCackho?
```

This command sets the capability to wait `ACK` during the handover from W-CDMA to GSM to `On` or `Off`. The parameter is `ON` (1) when enabled and `OFF` (0) when disabled. At preset, this is set to `1`.

This query command returns the setting of waiting `ACK` with integer value of `0` or `1`.

Meas. Type

`CONFigure:CONDition:MEASType TTI|CQI,<int>`

`CONFigure:CONDition:MEASType?`

This command is added when the W06 Option is installed. This command is valid when the W-CDMA Mode is set to `HSDPA`. This command sets Measurement type TTI/CQI. At preset, this is set to `TTI,1`. `<int 1>` is Measurement type for `TTI` or `CQI`. At preset, this is set to `TTI, 1`. `<int>` is the measurement value ranging from `1` to `100000`.

The command query returns the Meas Type. The range of the setting value is same as that of the command parameter.

H-ARQ retrans

`CONFigure:CONDition:HARQRetrans 1|4`

`CONFigure:CONDition:HARQRetrans?`

This command is added when the W06 Option is installed. This command is valid when the W-CDMA Mode is set to `HSDPA`. This command sets the number of H-ARQ retransmission. At preset, this is set to `1`.

The command query returns the number of H-ARQ retransmission with `1` or `4`.

Throughput R

`CONFigure:CONDition:LIMit:THROUPut <int LO>`

`CONFigure:CONDition:LIMit:THROUPut?`

This command is added when the W06 Option is installed. This command is valid when the W-CDMA Mode is set to `HSDPA`. This command specifies the LO limit value of Throughput R test in each band set. The allowable range is `0` to `99999` in `1` stepsize. At preset, this is set to `0`.

This query command returns the setting value of LO limit in Throughput R test.

Median CQI

`CONFigure:CONDition:LIMit:MCQI <int LO>,<int HI>`

`CONFigure:CONDition:LIMit:MCQI?`

This command is added when the W06 Option is installed. This command is valid when the W-CDMA Mode is set to `HSDPA`. This command specifies the LO limit and HI limit values of Median CQI test in each band set. The allowable range is `0` to `30` in `1` stepsize. At preset, this is set to `0` and `30`.

The query command returns the setting value of LO limit and HI limit of Median CQI test.

CQI variance

`CONFigure:CONDition:LIMit:CQIVARiance <real LO>`

`CONFigure:CONDition:LIMit:CQIVARiance?`

This command is added when the W06 Option is installed. This command is valid when the W-CDMA Mode is set to `HSDPA`. This command specifies the LO limit value of CQI variance test in each band set. The allowable range is `0.00` to `99.99` in `0.01` stepsize. At preset, this is set to `0.00`.

This query command returns the setting value of LO limit in the CQI variance test.

BER Clock Edge

`CONFigure:CONDition:BERClockedge POS|NEG`

`CONFigure:CONDition:BERClockedge?`

This command is added when W09 option is installed. If the W09 option is not installed on the Tester as this command is executed, an execution error occurs.

This command sets BER clock edge. The parameter is `POS` or `NEG`. At preset, this is set to `POS`.

This query command returns the setting value of clock edge.

Configuration : Test Condition (Loss) command reference of the screen

Attenuation Control

`CONFigure:LOSS ON|OFF|1|0`

`CONFigure:LOSS?`

This command sets the loss correction function to `ON` (`1`) or `OFF` (`0`). If this is set to `ON`, the loss correction function for the each band is activated to be used in the RF input path and RF output path. At preset, this is set to `0`.

This query command returns the attenuation function setting by integer value of `1` or `0`.

Attenuation Level Setting for Input Signal

`CONFigure:LOSS:RFIN <<`

>   `<real 1>,<real 2>,<real 3>,<real 4>, <<`
>   `<real 5>,<real 6>,<real 7>,<real 8>,<real 9>`

`CONFigure:LOSS:RFIN?`

This command specifies the losses between a mobile phone and the Tester caused by the RF Input path for each band, from `<real 1>` Band 1 to `<real 9>` Band 9, respectively. `<real 7>` is unused. The allowable range is from `0.0` to `99.9` (dB) in `0.1` stepsize. At preset, it is set to `0.0` (dB).

This query command returns the loss setting between a mobile phone and the Tester by real value. Each value is separated by a comma. The range of these values is the same as that of the command parameter. `<real 7>` is not returned value.

Attenuation Level Setting for Output Signal

`CONFigure:LOSS:RFOUt <<`

>   `<real 1>,<real 2>,<real 3>,<real 4>, <<`
>   `<real 5>,<real 6>,<real 7>,<real 8>,<real 9>`

`CONFigure:LOSS:RFOUt?`

This command specifies the insertion losses between a mobile phone and the Tester caused by the RF Output path for the each band, from `<real 1>` Band 1 to `<real 9>` Band 9, respectively. `<real 7>` is unused. The allowable range is from `0.0` to `99.9` (dB) in `0.1` stepsize. At preset, these are set to `0.0` (dB).

This query command returns the loss setting between a mobile phone and the Tester by real value. Each value is separated by a comma. The range of these values is same as that of command parameter. `<real 7>` is not returned value.

Command Reference for File Management Screen

The File commands are used to manage the test setup files on the HDD in the Tester or USB memory device.

HDD: A Hard Disk Drive in the Tester

USB: A USB memory device inserted into the USB port on the front panel or rear panel.

Save File

`CONFigure:FILE:SAVE <string FILENAME>,<<`

  `<string COMMENT>`

This command saves the current settings of the Tester into the HDD or USB memory device. FILENAME accepts up to 8 alphanumeric characters. COMMENT accepts up to 23 alphanumeric characters. Date and Time are automatically given by the Tester. FILENAME and COMMENT are double quoted strings.

Recall File

`CONFigure:FILE:RECall <string FILENAME>`

This command loads the test setup file specified by FILENAME from the HDD or a USB memory device into the internal memory of the Tester. FILENAME accepts up to 8 alphanumeric characters. FILENAME is a double quoted string.

Delete File

CONFigure:FILE:DELete <string FILENAME>

This command deletes the test setup file specified by FILENAME from the HDD or a USB memory device. FILENAME accepts up to 8 alphanumeric characters. FILENAME is a double quoted string.

Device Control

CONFigure:FILE:DEVice HDD|USB

CONFigure:FILE:DEVice?

This command sets the device type from HDD and USB.

This query command returns Device Control with HDD or USB.

List Files

CONFigure:FILE:LIST?

This query command returns the setup file list on the HDD or USB memory device in the form of <int TOTAL>, <int FILENO_1>, <string FILENAME_1>, <string DATE_1>, <string TIME_1>, <string COMMENT_1>, ... , <int FILENUMBER_n>, <string FILENAME_n>, <string DATE_n>, <string TIME_n>, or <string COMMENT_n>. Each value is separated by a comma.

> <int TOTAL> (3 letter): Total number of the setup files on the HDD or USB memory device is displayed in the range of 000 to 100.

> <int FILENO_n> (3 letters): *n*-th file number in the range of 001 to 100.

> <string FILENAME_n> (8 letters): Name of the *n*-th file.

> <string DATE_n> (10 letters): Date in **yyyy/mm/dd** format of the *n*-th file.

> <string TIME_n> (5 letters): The time saved on the *n*-th file is displayed in **hh:mm** format.

> <string COMMENT_n> (23 letters): Comment of the *n*-th file.

n represents the number of the files on the HDD or USB memory device starting with 1 and through the last (the number of all files).

File System

```
CONFigure:FILE:SYSTem GSM|WCDMA|MULTI
```

```
CONFigure:FILE:SYSTem?
```

This command sets the file system from `MULTI`, `GSM` and `WCDMA`. At preset, this is set to `MULTI`.

This query command returns the selected File System. The range of these values is same as that of command parameter.

Command Reference for Network Setting Screen

The Network Setting command is used to implement the setting required establish connection with Ethernet.

Apply Address

```
CONFigure:NETwork:APPLy:ADDRess
```

This command reflects the settings done from the screen with the following commands (Network Setting) on the tester system.

```
CONFigure:NETwork:IPaddress
```

```
CONFigure:NETwork:DEFault:GATEway
```

```
CONFigure:NETwork:GATEway:SET1-SET5
```

IP Address

```
CONFigure:NETwork:IPaddress <string
IPADDRESS>,<int>
```

```
CONFigure:NETwork:IPaddress?
```

This command displays the address being specified for the **IPADDRESS** on the screen.

`<int>` specifies the subnet mask address.

A value in `CIDR` format is entered to `<int>`.

Effective setting range for the `IPADDRSS` is `1.0.0.1-223.255.255.255` and the subnet mask address (in `CIDR` format) is `1` to `31`.

Executing this command does not reflect the result on the tester, yet.

The result is reflected on the tester as `CONFigure:NETwork:APPLy:ADDRess` is implemented.

Query of this command obtains the IP Address and subnet mask address (a value in `CIDR` format).

Default Gateway

`CONFigure:NETwork:DEFault:GATEway <enum>,<string DEFAULTGATEWAY>`

`CONFigure:NETwork:DEFault:GATEway?`

This command displays the address being set in the **DEFAULTGATEWAY** on the screen.

`<enum>` is used to enable or disable the `Default Gateway` address. `ACT` enables and `NONE` disables the setting.

Specify in the **DEFAULTGATEWAY** the address to be displayed on the screen.

If `NONE` is specified for `<enum>`, setting in the `DEFAULTGATEWAY` is unnecessary.

Executing this command does not reflect the result on the tester, yet.

The result is reflected on the tester as `CONFigure:NETwork:APPLy:ADDRess` is implemented.

Query of this command obtains the address of the `Default Gateway` being set. If `NONE` is selected for the `Default Gateway` address, the value of `<enum>` alone is returned.

Gateway

`CONFigure:NETwork:GATEway:SET1 <enum1>,<string1>,<enum2>,<string2>`

`CONFigure:NETwork:GATEway:SET1?`

```
CONFigure:NETwork:GATEway:SET2
<enum1>,<string1>,<enum2>,<string2>
```

```
CONFigure:NETwork:GATEway:SET2?
```

```
CONFigure:NETwork:GATEway:SET3
<enum1>,<string1>,<enum2>,<string2>
```

```
CONFigure:NETwork:GATEway:SET3?
```

```
CONFigure:NETwork:GATEway:SET4
<enum1>,<string1>,<enum2>,<string2>
```

```
CONFigure:NETwork:GATEway:SET4 ?
```

```
CONFigure:NETwork:GATEway:SET5
<enum1>,<string1>,<enum2>,<string2>
```

```
CONFigure:NETwork:GATEway:SET5?
```

This command sets the `Gateway Address` of `Setting1 - Setting5`.

`<enum1>` is used to enable or disable the Gateway address. `<String1>` specifies the Host/Net address. If `NONE` is specified for `<enum2>`, the address is treated as the Host-specifying address and it functions as the Gateway for the communication directed to one of the Hosts.

If `NONE` is specified for `<enum2>`, the address is treated as the Host-specifying address and functions as the Gateway for the communication directed to one of the Hosts. `<enum2>` is used to select which of the Host and Net is to be specified and also used to specify the subnet mask value of the specified subnet when the Net is specified.

When `NONE` is selected, the address of `<string1>` is treated as the Host address. If any value other than `NONE` is specified, the subnet mask value of the `<string1>` address is specified. The value of `<enum2>` is represented in the `CIDR` format and selectable in the range `1` to `31`. `<string2>` specifies the Gateway address.

Executing this command does not reflect the result on the tester, yet.

The result is reflected on the tester as `CONFigure:NETwork:APPLy:ADDRess` is implemented.

Following lists the effective setting range.

Table 5-5 Effective Gateway Setting Range

Parameters		Possible Set Value (Hz)
`<enum1>`	–	`ACT|NONE`
`<string1>`	When `<enum2>` = `NONE`	`1.0.0.1-223.255.255.255`
	When `<enum2>` = Other than `NONE`	`1.0.0.0-223.255.255.255`
`<enum2>`	–	`NONE|1 -31` (In `CIDR` format)
`<string2>`	–	`1.0.0.1-223.255.255.255`

Query of this command obtains the set value of the Gateway being specified.

When `NONE` is selected from the enable/disable of the Gateway address, it returns the value of `<enum1>` alone.

TESTs Subsystem for Automatic Test

This function allows you to execute the overall measurements and pass or fail tests by the automatic test. Test sequence and condition are configured by the `CONFigure:SEQuence` commands and `CONFigure:CONDition` commands.

Command Reference for Stand-by/Measuring Screens

The following commands are used to set the controls and parameters associated with the initial test condition for the [Stand-by] or [Measuring] screens. The query commands return the settings of those controls and parameters.

Screen Mode

`TESTs:AUTO:SCReen SIMPlified|DETailed|VALue`

`TESTs:AUTO:SCReen?`

This command selects the screen mode. The parameter is `SIMPlified`, `DETailed`, or `VALue`. At preset, this is set to `SIMPlified`.

This query command returns the selected screen mode by strings of `SIMPlified`, `DETailed`, or `VALue`.

Caller ID

`TESTs:AUTO:CALLer:ID <string>`

`TESTs:AUTO:CALLer:ID?`

This command sets the Caller ID on the [Stand-by] screen. `<string>`: Sets dialing number at BS call (AMR) test step. Up to 20 digit arbitrary number from `0` to `9` and symbol * or #. This is not initialized by PRESET execution with the Starting Condition softkey.

This query command returns the set Caller ID with string.

IMSI

`TESTs:AUTO:IMSI <string>`

`TESTs:AUTO:IMSI?`

This command sets the `IMSI` in **Automatic Test [Stand-by]** screen. `<string>` is 15 digits maximum by the number `0` to `9` without double quotation.

The `PRESET` value is `001012345678901`.

This query command returns the `IMSI`.

RFCH

`TESTs:AUTO:VARiable:RFCH:CHANnel1 <<`

   `<int 1>,<int 2>`

`TESTs:AUTO:VARiable:RFCH:CHANnel1?`

`TESTs:AUTO:VARiable:RFCH:CHANnel2 <<`

   `<int 1>,<int 2>`

`TESTs:AUTO:VARiable:RFCH:CHANnel2?`

`TESTs:AUTO:VARiable:RFCH:CHANnel3 <<`

   `<int 1>,<int 2>`

```
TESTs:AUTO:VARiable:RFCH:CHANnel3?

TESTs:AUTO:VARiable:RFCH:CHANnel4 <<

   <int 1>,<int 2>

TESTs:AUTO:VARiable:RFCH:CHANnel4?

TESTs:AUTO:VARiable:RFCH:CHANnel5 <<

   <int 1>,<int 2>

TESTs:AUTO:VARiable:RFCH:CHANnel5?

TESTs:AUTO:VARiable:RFCH:CHANnel6 <<

   <int 1>,<int 2>

TESTs:AUTO:VARiable:RFCH:CHANnel6?
```

These commands set a Band and a variable (uplink channel number) for RFCH. The measurement on the RFCH is skipped if these are set to -1 , 99999 (— is shown in the table cell). RFCH1 cannot be skipped. `<int 1>` is a band and `<int 2>` is a variable. The allowable range and preset values are as follows:

Table 5-6 RFCH Allowable Range

Int					Allowable Range				
1	−1	1	2	3	4	5	6	7	8	9
2	99999	9600 to 9900	9250 to 9550, 12, 37, 62, 87, 112, 137, 162, 187, 212, 237, 262, 287	925 to 1300	1300 to 1525, 1662, 1687, 1712, 1737, 1762, 1787, 1812, 1837, 1862	4120 to 4245, 782, 787, 807, 812, 837, 862	4150 to 4200, 812, 837	–	2700 to 2875	8750 to 8924

These query commands return the set Band and channel number with integer. The range of the value is same as that of the command.

Table 5-7 RFCH Preset Value

Int	Preset Value					
	CH1	CH2	CH3	–	–	–
1	1	1	1	–	–	–
2	9612	9750	9888	–	–	–

Talk Test Result

`TESTs:AUTO:MEASure:TALK PASS|FAIL`

This command sets the test result of the Talk test step to pass or fail. The parameter is `PASS` or `FAIL`.

Signaling State

`TESTs:AUTO:MEASure:SIGNaling:STATe?`

This query command returns the test step currently executed in a test cycle. The return value contains the currently executed status of 12 bits as follows.

bit 0(1): Location Update

bit 1(2): MS Call

bit 2(4): Talk

bit 3(8): MS Release

bit 4(16): BS Call (AMR)

bit 5(32): Talk

bit 6(64): BS Release/Handover

bit 7(128): BS Call (RMC)

bit 8(256):RF Test

bit 9(512): BS Release/Handover

bit 10(1024): Measurement end with test result

bit 11(2048): Measurement end without test result

(Aborted or Time out error occurred)

The executed step is set to `1`, and the others are set to `0`.

The value in the parentheses is decimal value for each bit. Refer to Setting and Querying the Registers on page 4-15.

`TESTs:AUTO:MEASure:SIGNaling:STATe:EXPand?`

This query command returns the test contents currently being executed and system type with integer value of `<int 1>` and `<int 2>`. Each value is separated by a comma.

- `<int 1>` contains test contents currently being executed by sum of the value of 12 bits as follows

  bit 0 (1): Location Update

  bit 1 (2): MS Call

  bit 2 (4): Talk

  bit 3 (8): MS Release

  bit 4 (16): BS Call(AMR)

  bit 5 (32): Talk

  bit 6 (64): BS Release/Handover

  bit 7 (128): BS Call(RMC)

  bit 8 (256): RF Test

  bit 9 (512): BS Release/Handover

  bit 10 (1024): Measurement end with test result

  bit 11 (2048): Measurement end without test result

  (Aborted or Time out error occurred)

The executed steps are set to `1`, and the others are set to `0`.

The value in the parentheses is decimal value for each bit. Refer to Setting and Querying the Registers on page 4-15.

`<int 2>` contains the system currently being executed. The return value is `1` (W-CDMA), `0` (GSM), or `2` (CDMA2000).

Command Reference for Test Result (Signaling and RF Test)

The following query commands return the test results.

All Tests Results (Summary)

`TESTs:AUTO:RESults:ALL?`

This query command returns summary of the test results wit h integer value of `<int 1>` and `< int 2>`. Each value is separated by a comma.

- `<int 1>` contains test results by sum of the value of 11 bits as follows.

    bit 0(1): Location Update

    bit 1(2): MS Call

    bit 2(4): Talk

    bit 3(8): MS Release

    bit 4(16): BS Call(AMR)

    bit 5(32): Talk

    bit 6(64): BS Release

    bit 7(128): BS Call(RMC)

    bit 8(256): RF Test

    bit 9(512): BS Release

    bit 10(1024): Abort

Each bit is set to `0` if the test is pass or skipped, or each bit is set to `1` if the test is fail.

If there are no test results, all bits are set to `1`, the value `2047` is returned.

- `<int 2>` contains test results by sum of the value of 13 bits as follows.

    bit 0(1): Open Loop TX Power

    bit 1(2): ILP(Down Min)

    bit 2(4): ILP(Down Max)

    bit 3(8): ILP(Up Min)

    bit 4(16): ILP(Up Max)

    bit 5(32): ILP(10s lots Down)

bit 6(64): ILP(10s lots Up)

bit 7(128): Max TX Power

bit 8(256): Frequency Error

bit 9(512): EVM

bit 10(1024):Sensitivity/BER

bit 11(2048): Abort

bit 12 (4096): Min TX Power

Each bit is set to `0` if the test is pass or skipped, or each bit is set to `1` if the test is fail.

If there are no test results, all bits are set to `1`, the value `8191` is returned.

The value in the parentheses is decimal value for each bit. Refer to Setting and Querying the Registers on .

`TESTs:AUTO:RESults:ALL:EXPand?`

This query command returns summary of the test results with the integer value of `<int 1>`, `< int 2>` and `< int 3>`. Each value is separated by a comma.

- `<int 1>` contains test results by sum of the value of 11 bits as follows.

  bit 0 (1): Location Update

  bit 1 (2): MS Call

  bit 2 (4): Talk

  bit 3 (8): MS Release

  bit 4 (16): BS Call (AMR)

  bit 5 (32): Talk

  bit 6 (64): BS Release

  bit 7 (128): BS Call (RMC)

  bit 8 (256): RF Test

  bit 9 (512): BS Release

  bit 10 (1024): Abort

Each bit is set to `0` if the test is passed or skipped, or each bit is set to `1` if the test is failed.

If there are no test results, all bits are set to `1`, the value `2047` is returned.

- `<int 2>` contains test results by sum of the value of 13 bits as follows.

  bit 0 (1): Open Loop TX Power

  bit 1 (2): ILP (Down Min)

  bit 2 (4): ILP (Down Max)

  bit 3 (8): ILP (Up Min)

  bit 4 (16): ILP (Up Max)

  bit 5 (32): ILP(10s lots Down)

  bit 6 (64): ILP(10s lots Up)

  bit 7 (128): Max TX Power

  bit 8 (256): Frequency Error

  bit 9 (512): EVM

  bit 10 (1024): Sensitivity/BER

  bit 11 (2048): Abort

  bit 12 (4096): Min TX Power

Each bit is set to `0` if the test is passed or skipped, or each bit is set to `1` if the test is failed.

If there are no test results, all bits are set to `1`, the value `8191` is returned.

The value in the parentheses is decimal value for each bit. Refer to Setting and Querying the Registers on page 4-15.

- `<int 3>` contains the system currently being executed. The return value is `1` (W-CDMA), `0` (GSM) or `2` (CDMA2000).

Command Reference for RF Test Result

The following query commands are used to return a set of the RF test result.

Open Loop TX Power Measurement

```
TESTs:AUTO:RESults:OPENpower1?
```

This query command returns the measurement result values, `<int 1>`, `<int 2>` and `<real 3>`, for RFCH 1.

- `<int 1>` (1 digit) is `0` if measurement result is within the measurement range, or `1` if measurement result is out of range or the Open Loop TX Power is not measured.

- `<int 2>` (1 digit) is the test result for the pass (0) or fail (1).

- `<real 3>` (up to 5 letters) is the measured data ranging from `-99.9` to `+99.9` in dBm. If measurement result is out of range or the Open Loop TX Power is not measured, the value `-99.9` is returned.

The Open Loop TX Power measurement can be executed only on RFCH1.

Inner Loop Power Measurement (Down MIN)

`TESTs:AUTO:RESults:INNErpower1:DownMIN?`

`TESTs:AUTO:RESults:INNErpower2:DownMIN?`

`TESTs:AUTO:RESults:INNErpower3:DownMIN?`

`TESTs:AUTO:RESults:INNErpower4:DownMIN?`

`TESTs:AUTO:RESults:INNErpower5:DownMIN?`

`TESTs:AUTO:RESults:INNErpower6:DownMIN?`

This query command returns the measurement Down MIN result values, `<int 1>`, `<int 2>` and `<real 3>`, for each channel.

- `<int 1>` (1 digit) is `0` if measurement result is within the measurement range, or `1` if any measurement is out of range or the Inner Loop Power Down MIN is not measured.

- `<int 2>` (1 digit) is the test result for the pass (0) or fail (1).

- `<real 3>` (up to 6 letters) is the measured data ranging from `-99.99` to `+99.99` in dB. If measurement is out of range or the Inner Loop Power Down MIN is not measured, the value `-99.99` is returned.

Inner Loop Power Measurement (Down MAX)

`TESTs:AUTO:RESults:INNErpower1:DownMAX?`

`TESTs:AUTO:RESults:INNErpower2:DownMAX?`

```
TESTs:AUTO:RESults:INNErpower3:DownMAX?
```

```
TESTs:AUTO:RESults:INNErpower4:DownMAX?
```

```
TESTs:AUTO:RESults:INNErpower5:DownMAX?
```

```
TESTs:AUTO:RESults:INNErpower6:DownMAX?
```

This query command returns the measurement result values, <int 1>, <int 2> and <real 3>, for each channel.

- <int 1> (1 digit) is 0 if measurement result is within the measurement range, or 1 if any measurement is overflow, underflow or not made.

- <int 2> (1 digit) is the test result for the pass (0) or fail (1).

- <real 3> (up to 6 letters) is the measured data ranging from -99.99 to +99.99 in dB. If measurement result is out of range or Inner Loop Power Down MIN is not measured, the value -99.99 is returned.

Inner Loop Power Measurement (Up MIN)

```
TESTs:AUTO:RESults:INNErpower1:UpMIN?
```

```
TESTs:AUTO:RESults:INNErpower2:UpMIN?
```

```
TESTs:AUTO:RESults:INNErpower3:UpMIN?
```

```
TESTs:AUTO:RESults:INNErpower4:UpMIN?
```

```
TESTs:AUTO:RESults:INNErpower5:UpMIN?
```

```
TESTs:AUTO:RESults:INNErpower6:UpMIN?
```

This query command returns the measurement result values, <int 1>, <int 2> and <real 3>, for each channel.

- <int 1> (1 digit) is 0 if measurement result is within the measurement range, or 1 if measurement result is out of range or Inner Loop Power Up MIN is not measured.

- <int 2> (1 digit) is the test result for the pass (0) or fail (1).

- <real 3> (up to 6 letters) is the measured data ranging from -99.99 to +99.99 in dB. If measurement is out of range or Inner Loop Power is not measured, the value -99.99 is returned.

Inner Loop Power Measurement (Up MAX)

```
TESTs:AUTO:RESults:INNErpower1:UpMAX?
```

```
TESTs:AUTO:RESults:INNErpower2:UpMAX?
```

```
TESTs:AUTO:RESults:INNErpower3:UpMAX?
```

```
TESTs:AUTO:RESults:INNErpower4:UpMAX?
```

```
TESTs:AUTO:RESults:INNErpower5:UpMAX?
```

```
TESTs:AUTO:RESults:INNErpower6:UpMAX?
```

This query command returns the measurement result values, `<int 1>`, `<int 2>` and `<real 3>`, for each channel.

- `<int 1>` (1 digit) is `0` if measurement result is within the measurement range, or `1` if measurement result is out of range or Inner Loop Power Up MAX is not measured.

- `<int 2>` (1 digit) is the test result for the pass (0) or fail (1).

- `<real 3>` (up to 6 letters) is the measured data ranging from `-99.99` to `+99.99` in dB. If measurement result is out of range or Inner Loop Power Up MAX is not measured, the value `-99.99` is returned.

Inner Loop Power Measurement (10 Slots Down)

```
TESTs:AUTO:RESults:INNErpower1:10SlotsDown?
```

```
TESTs:AUTO:RESults:INNErpower2:10SlotsDown?
```

```
TESTs:AUTO:RESults:INNErpower3:10SlotsDown?
```

```
TESTs:AUTO:RESults:INNErpower4:10SlotsDown?
```

```
TESTs:AUTO:RESults:INNErpower5:10SlotsDown?
```

```
TESTs:AUTO:RESults:INNErpower6:10SlotsDown?
```

This query command returns the measurement result values, `<int 1>`, `<int 2>` and `<real 3>`, for each channel.

- `<int 1>` (1 digit) is `0` if measurement result is within the measurement range, or `1` if measurement result is out of range or Inner Loop Power 10 Slots Down is not measured.

- `<int 2>` (1 digit) is the test result for the pass (0) or fail (1).

- `<real 3>` (up to 6 letters) is the measured data ranging from `-99.99` to `+99.99` in dB. If measurement result is out of range or Inner Loop Power 10 Slots Down in not measured, the value `-99.99` is returned.

Inner Loop Power Measurement (10 Slots Up)

`TESTs:AUTO:RESults:INNErpower1:10SlotsUp?`

`TESTs:AUTO:RESults:INNErpower2:10SlotsUp?`

`TESTs:AUTO:RESults:INNErpower3:10SlotsUp?`

`TESTs:AUTO:RESults:INNErpower4:10SlotsUp?`

`TESTs:AUTO:RESults:INNErpower5:10SlotsUp?`

`TESTs:AUTO:RESults:INNErpower6:10SlotsUp?`

This query command returns the Inner Loop Power 10 Slots Up measurement result values, `<int 1>`, `<int 2>` and `<real 3>`, for each channel.

- `<int 1>` (1 digit) is `0` if measurement result is within the measurement range, or `1` if measurement result is out of range or Inner Loop Power 10 Slots Down is not measured.

- `<int 2>` (1 digit) is the test result for the pass (0) or fail (1).

- `<real 3>` (up to 6 letters) is the measured data ranging from `-99.99` to `+99.99` in dB. If measurement result is out of range or Inner Loop Power is not measured, the value `-99.99` is returned.

Max TX Power Measurement

`TESTs:AUTO:RESults:TPOWer1?`

`TESTs:AUTO:RESults:TPOWer2?`

`TESTs:AUTO:RESults:TPOWer3?`

`TESTs:AUTO:RESults:TPOWer4?`

`TESTs:AUTO:RESults:TPOWer5?`

`TESTs:AUTO:RESults:TPOWer6?`

This query command returns the Max TX Power measurement result values, `<int 1>`, `<int 2>` and `<real 3>`, for each channel.

- `<int 1>` (1 digit) is `0` if measurement result is within the measurement range, or `1` if measurement result is out of range or Max TX Power is not measured.

- `<int 2>` (1 digit) is the test result for the pass (0) or fail (1).

- `<real 3>` (up to 6 letters) is the measured data ranging from `-99.99` to `+99.99` in dBm. If measurement result is out of range or Max TX Power is not measured, the value `-99.99` is returned.

Frequency Error Measurement

`TESTs:AUTO:RESults:FREQuency1?`

`TESTs:AUTO:RESults:FREQuency2?`

`TESTs:AUTO:RESults:FREQuency3?`

`TESTs:AUTO:RESults:FREQuency4?`

`TESTs:AUTO:RESults:FREQuency5?`

`TESTs:AUTO:RESults:FREQuency6?`

This query command returns the Frequency Error measurement result values, `<int 1>`, `<int 2>` and `<real 3>` for each channels.

- `<int 1>` (1 digit) is `0` if measurement result is within the measurement range, or `1` if measurement result is out of range or Frequency Error is not measured.
- `<int 2>` (1 digit) is the test result for the pass (0) or fail (1).
- `<real 3>` (up to 6 letters) is the measured data ranging from `-999.9` to `+999.9` in Hz. If measurement result is out of range or Frequency Error is not measured, the value `+999.9` is returned.

EVM Measurement

`TESTs:AUTO:RESults:EVM1?`

`TESTs:AUTO:RESults:EVM2?`

`TESTs:AUTO:RESults:EVM3?`

`TESTs:AUTO:RESults:EVM4?`

`TESTs:AUTO:RESults:EVM5?`

`TESTs:AUTO:RESults:EVM6?`

This query command returns the EVM measurement result values, `<int 1>`, `<int 2>`, and `<real 3>` for each channels.

`<int 1>` (1 digit) is `0` if measurement result is within the measurement range, or `1` if measurement result is out of range or Frequency Error is not measured.

`<int 2>` (1 digit) is the test result for the pass (`0`) or fail (`1`).

`<real 3>` (up to 6 letters) is the measured data ranging from `0.00` to `-100.0` in %. If measurement result is out of range or Frequency Error is not measured, the value `+99.99` is returned.

Sensitivity / BER Measurement

`TESTs:AUTO:RESults:SENSitivity:BER1?`

`TESTs:AUTO:RESults:SENSitivity:BER2?`

`TESTs:AUTO:RESults:SENSitivity:BER3?`

`TESTs:AUTO:RESults:SENSitivity:BER4?`

`TESTs:AUTO:RESults:SENSitivity:BER5?`

`TESTs:AUTO:RESults:SENSitivity:BER6?`

This query command returns the Sensitivity BER measurement result values, `<int 1>`, `<int 2>` and `<real 3>` for each channel.

- `<int 1>` (1 digit) is `0` if measurement result is within the measurement range, or `1` if measurement result is out of range or Sensitivity BER is not measured.

- `<int 2>` (1 digit) is the test result for the pass (0) or fail (1).

- `<real 3>` (up to 7 letters) is the measured data ranging from `0.00` to `-100.00` in %. If measurement result is out of range or Sensitivity BER is not measured, the value `+99.99` is returned.

Min TX Power Measurement

`TESTs:AUTO:RESults:TPOWer:MINimum1?`

`TESTs:AUTO:RESults:TPOWer:MINimum2?`

`TESTs:AUTO:RESults:TPOWer:MINimum3?`

`TESTs:AUTO:RESults:TPOWer:MINimum4?`

`TESTs:AUTO:RESults:TPOWer:MINimum5?`

`TESTs:AUTO:RESults:TPOWer:MINimum6?`

These query commands return the Min TX Power measurement result values, `<int 1>`, `<int 2>` and `<real 3>` for each channel.

- `<int 1>` (1 digit) is `0` if measurement result is within the measurement range, or `1` if measurement result is out of range or Min TX Power is not measured.

- `<int 2>` (1 digit) is the test result for the pass (`0`) or fail (`1`).

- `<real 3>` (up to 6 letters) is the measured data ranging from `-99.99` to `+99.99` (dBm). If measurement result is out of range or Min TX Power is not measured, the value `-99.99` is returned.

Command Reference for MS Information

The following MS Information commands are used to get information on the mobile phone under test.

IMSI Information

`TESTs:AUTO:RESults:MSINformation:IMSI?`

This query command returns the IMSI string up to 15 letters.

IMEI Information

`TESTs:AUTO:RESults:MSINformation:IMEI?`

This query command returns the IMEI string up to 15 letters.

DIAL Information

`TESTs:AUTO:RESults:MSINformation:DIAL?`

This query command returns the dialed number string up to 20 letters. Or, this command returns Emergency Call in the case of an emergency call. (receiving information from SC).

TESTs Subsystem for Manual Test

This function allows you to execute real time measurements.

Command Reference for [Stand-by] Screens

These commands are used to set the controls and parameters associated with an initial test condition.

Change System

```
TESTs:MANual:SYSTem
GSM|GPRS|EGPRS|WCDMA|HSDPA|MC1X|EVDO
```

```
TESTs:MANual:SYSTem?
```

This command causes switching to the specified mode (GSM/GPRS/EGPRS, WCDMA/HSDPA, and MC-1x/1xEV-DO) It is enabled in the standby status.

GSM and GPRS are enabled when the G00 option is installed, and EGPRS is enabled when the G00 and G03 options are installed. Likewise, the W00 and W06 options are required for HSDPA, the C00 and C01 options are required for MC1, and the C00, C01 and C02 options are required for EVDO.

This query command obtains the currently set mode with string.

Radio System

```
TESTs:MANual:RFORmat W_CDMA
```

```
TESTs:MANual:RFORmat?
```

This command selects a Radio System to be tested. Only W_CDMA is available for this system.

RFCH

```
TESTs:MANual:RFCH:CHANnel <int>
```

```
TESTs:MANual:RFCH:CHANnel?
```

This command sets the channel number and can be used in Stand-by or Connection status.

When RFCH is set in the Connection status, handover will starts. (However, if the value of RFCH is set to the same value as the one currently set, handover will not start.)

The allowable range and preset values are as follows:

Table 5-8 RFCH Allowable range and Preset Value

Band	Allowable Range	Preset Value
1	9600 to 9900	9612
2	9250 to 9550, 12, 37, 62, 87, 112, 137, 162, 187, 212, 237, 262, 287	9262
3	925 to 1300	937
4	1300 to 1525, 1662, 1687, 1612, 1637, 1662, 1687, 1812, 1837, 1862	1312
5	4120 to 4245, 782, 787, 807, 812, 837, 862	4132
6	4150 to 4200, 812, 837	4162
8	2700 to 2875	2712
9	8750 to 8924	8762

This query command returns the set channel number of the RFCH
with integer. The range of the value is same as that of the
command parameter.

```
TESTs:MANual:RFCH:CHANnel <int 1>,<int 2>
```

```
TESTs:MANual:RFCH:CHANnel?
```

This command sets a Band and channel for RF (uplink) on the
[Stand-by] screen or in the Connection status. When RFCH is set
in the Connection status, handover will starts. (However, if the
value of RFCH is set to the same value as the one currently set,
handover will not start.)

`<int 1>` is a Band and set to `1` at preset. `<int 2>` is a variable
(uplink channel number) and set to `9612` at preset. The allowable
ranges are as follows:

Table 5-9 Band and RFCH Allowable Range

Band	Allowable Range
1	9600 to 9900
2	9250 to 9550, 12, 37, 62, 87, 112, 137, 162, 187, 212, 237, 262, 287
3	925 to 1300
4	1300 to 1525, 1662, 1687, 1612, 1637, 1662, 1687, 1812, 1837, 1862
5	4120 to 4245, 782, 787, 807, 812, 837, 862

Table 5-9 Band and RFCH Allowable Range

Band	Allowable Range
6	4150 to 4200, 812, 837
8	8750 to 8924

At start up of the Tester, the queries in `<int 1>` and `<int 2>` format are returned.

If the setting with `<int>` format is performed, the format of the query changes to `<int>` format.

If the setting with `<int 1>` and `<int 2>` format is performed, the format of the query returns to `<int 1>` and `<int 2>` format.

This query command returns the set Band and Channel number of RFCH with integer. The range of the value is same as that of the command parameter.

Frequency

TESTs:MANual:RFCH:FREQuency <int>

TESTs:MANual:RFCH:FREQuency?

This command sets the frequency and can be used in Stand-by or Connection status.

When RFCH is set in the Connection status, handover will starts. (However, if the value of RFCH is set to the same value as the one currently set, handover will not start.)

The allowable range and preset values are as follows:

Table 5-10 Frequency Allowable Range and Preset Value

Band	Allowable Range [Hz]	Preset Value
1	1920000000 to 1980000000 in 200000 step	1922400000
2	1850000000 to 1910000000 in 200000 step 1852500000, 1857500000, 1862500000, 1867500000, 1872500000, 1877500000, 1882500000, 1887500000, 1892500000, 1897500000, 1902500000, 1907500000	1852400000
3	1710000000 to 1785000000 in 200000 step	1712400000

Table 5-10 Frequency Allowable Range and Preset Value

Band	Allowable Range [Hz]	Preset Value
4	1710000000 to 1755000000 in 200000 step 1712500000, 1717500000, 1722500000, 1727500000, 1732500000, 1737500000, 1742500000, 1747500000, 1752500000	1712400000
5	824000000 to 849000000 in 200000 step 826500000, 827500000, 831500000, 832500000, 837500000, 842500000	826400000
6	830000000 to 84000000 in 200000 step 832500000, 837500000	832400000
8	880000000 to 915000000 in 200000 step	882400000
9	1750000000 to 1784800000 in 200000 step	1752400000

This query command returns the set frequency of RFCH with real. The range of the value is same as that of the command parameter.

Send this command, after handover is completed.

`TESTs:MANual:RFCH:FREQuency <int 1>, <real 2>`

`TESTs:MANual:RFCH:FREQuency?`

This command sets a Band and frequency for RF (uplink) in Stand-by or Connection status.

When RFCH is set in the Connection status, handover will starts. (However, if the value of RFCH is set to the same value as the one currently set, handover will not start.)

`<int 1>` is a Band and set to 1 at preset. `<int 2>` is a frequency (uplink frequency) and set to `1922400000` at preset. The allowable ranges are as follows:

Table 5-11 Band and Frequency Allowable Range

Band	Allowable Range
1	1920000000 to 1980000000 in 200000 step
2	1850000000 to 1910000000 in 200000 step 1852500000, 1857500000, 1862500000, 1867500000, 1872500000, 1877500000, 1882500000, 1887500000, 1892500000, 1897500000, 1902500000, 1907500000
3	1710000000 to 1785000000 in 200000 step

Table 5-11 Band and Frequency Allowable Range

Band	Allowable Range
4	1710000000 to 1755000000 in 200000 step 1712500000, 1717500000, 1722500000, 1727500000, 1732500000, 1737500000, 1742500000, 1747500000, 1752500000
5	824000000 to 849000000 in 200000 step 826500000, 827500000, 831500000, 832500000, 837500000, 842500000
6	830000000 to 84000000 in 200000 step 832500000, 837500000
8	880000000 to 915000000 in 200000 step
9	1750000000 to 1784800000 in 200000 step

At start up of the Tester, the queries in `<int 1>` and `<int 2>` format are returned.

If the setting with `<int>` format is performed, the format of the query changes to `<int>` format.

If the setting with `<int 1>` and `<int 2>` format is performed, the format of the query returns to **<int 1>** and **<int 2>** format.

This query command returns the set Band and Frequency of RFCH with real. The range of the value is same as that of the command parameter.

BS Level

`TESTs:MANual:AMPLitude <real>`

`TESTs:MANual:AMPLitude?`

This command sets the amplitude (BS Level) of output signal from the Tester. The allowable range is from `-115.0` to `-18.0` (dBm) in `0.1` step. At preset, this is set to `-50.0` (dBm).

This query command returns the set amplitude of output signal with real. The range of the value is same as that of the command parameter.

BS Call Type

`TESTs:MANual:BSCType AMR|RMC`

```
TESTs:MANual:BSCType?
```

This command selects a type of BS Call from `AMR` and `RMC`. At preset, this is set to `AMR`.

This query command returns the set BS Call type.

Power Control Level

```
TESTs:MANual:PLEVel CNTUP|CNTDOWN|HOLD <int>
```

This command sets the output level of the mobile phone with Power Control (TPC) in the Stand-by status. The Power Control is valid during the Connection status. The allowable range and preset values are as follows:

Table 5-12 Power Control Level Allowable Range and Preset Value (for Stand-by)

Parameter	Description	Preset Value
CNTUP	Increases output power level of the mobile phone continuously.	HOLD
CNTDOWN	Decreases output power level of the mobile phone continuously.	
HOLD	Remains output power level of the mobile phone	
<int>	Increases or decreases output power level of the mobile phone by <int> dB. This setting is valid in the Connection status. 1 to 99 dB in 1 steps.	1

When the Measuring (Connection) mode is turned on, this command sets the output level of the mobile unit through the Power Control (`TPC`). Obtainable Power Control depends on the connection status. Effect settings depend on the connection statusThe allowable range and the currently specified value. Following lists the effective settings and the `PRESET` value.

Table 5-13 Power Control Level Allowable Range and Preset Value (for Connection)

Present Value	Description	Preset Value
UP	Increases output power level of the mobile phone by <int> dB described in the bottom row of this table.	HOLD
DOWN	Decreases output power level of the mobile phone by the <int> dB described in the bottom row of this table.	
CNTUP	Increases output power level of the mobile phone continuously.	
CNTDOWN	Decreases Power Control Level continuously.	

Table 5-13 Power Control Level Allowable Range and Preset Value (for Connection)

Present Value	Description	Preset Value
HOLD	Remains Power Control Level	
<int>	1 to 99 dB in 1 step	1

```
TESTs:MANual:PLEVel?
```

This query command returns the set Power Control Level with integer. The range of the value is same as that of the command parameter.

BER Frames

```
TESTs:MANual:SENSitivity:FRAMe <int>
```

```
TESTs:MANual:SENSitivity:FRAMe?
```

This command sets the number of the frames for bit error ratio (BER) tests and can be used in Stand-by or Connection status. The allowable range is from `1` to `4100` (frames) in `1` step. At preset, this is set to `10`.

This query command returns the set number of the frames for BER tests with integer.

Averaging

```
TESTs:MANual:AVERage OFF|<int>
```

```
TESTs:MANual:AVERage?
```

This command sets whether or not to activate the averaging. It is usable in the **[Stand-by]** and connection status. The parameter is `OFF` or `<int>` for the number of averaging times. The allowable range of `<int>` is from `2` to `99`. At preset, this is set to `OFF`.

This query command returns the selected averaging.

OCNS

```
TESTs:MANual:OCNS ON|OFF|1|0
```

```
TESTs:MANual:OCNS?
```

This command sets whether to enable OCNS. The parameter is ON (1) or OFF (0). This is valid in the Connection (RMC) status. Also, this is reset to OFF (0) when the status becomes Stand-by.

This query command returns the setting of OCNS function with the value 1 or 0. The meaning of the value is same as that of the command parameter.

When the W06 Option is installed and the W-CDMA Mode is set to HSDPA:

This query command returns ON/OFF of OCNS output in Connection status. In HSDPA mode, only the query command is available because the setting of ON/OFF of OCNS output is invalid. The available parameter is only ON (1). At preset, this is set to 1.

Caller ID

TESTs:MANual:CALLer:ID <string>

TESTs:MANual:CALLer:ID?

This command sets the Caller ID on the [Stand-by] screen. <string>: Sets dialing number at BS call(AMR) test step. Up to 20 digit arbitrary number from 0 to 9 and symbol * or #. This is not initialized by PRESET execution with the Starting Condition softkey.

This query command returns the set Caller ID with string.

TESTs:MANual:CALLer:ID:SEND ON|OFF|1|0

TESTs:MANual:CALLer:ID:SEND?

This command sets whether or not to display the Caller ID on the **[Stand-by]** screen. The parameter is ON or OFF. At preset, this is set to 1.

This query command returns the set Caller ID with an integer value of 1 or 0. The meaning of the return value is same as that of the command parameter.

IMSI

TESTs:MANual:IMSI <string>

TESTs:MANual:IMSI?

This command sets the IMSI in the **Manual Test [Stand-by]** screen. `<string>` is 15 digits maximum by the number `0` to `9` without double quotation.

The PRESET value is `001012345678901`.

This query command returns the IMSI.

Authentication Key Type

`TESTs:MANual:AUTHKey:Type ORG|STD|USER`

`TESTs:MANual:AUTHKey:Type?`

This command selects the Authentication Key type. The Authentication Key types are `ORG`, `STD`, `USER`. A preset value is `USER`. This query command returns the Authentication Key type `<enum1>`.

Authentication Key

`TESTs:MANual:AUTHKey:Key <string>`

`TESTs:MANual:AUTHKey:Key?`

This command sets the Authentication Key of `USER`. `<string>` is 32 digits by hexadecimal number.

This query command returns the authentication key. A PRESET value is different by the Authentication Key type.

- `ORG` is `00112233445566778899AABBCCDDEEFF`.
- `STD` is `000102030405060708090A0B0C0D0E0F0F`.
- `USER` is `4147494C454E5420544543484E4F0000`.

For Test USIM (p/n:1150-8007) used `STD`.

For Test USIM (p/n:E5515-10007/10008) used `USER`.

Set Beta Factor

`TESTs:MANual:HSBFactor:3GPP <int>`

`TESTs:MANual:HSBFactor:3GPP?`

This command sets the combination of beta factor with integer. At preset, this is set to `8`.

Table 5-14 Combination of Beta Factor

No	βc	βd	ΔACK	ΔNACK	ΔCQI
1	1(1/15)	15(15/15)	8(30/15)	8(30/15)	8(30/15)
2	12(12/15)	15(15/15)	8(30/15)	8(30/15)	8(30/15)
3	13(13/15)	15(15/15)	8(30/15)	8(30/15)	8(30/15)
4	15(15/15)	8(8/15)	8(30/15)	8(30/15)	8(30/15)
5	15(15/15)	7(7/15)	8(30/15)	8(30/15)	8(30/15)
6	15(15/15)	0(0/15)	8(30/15)	8(30/15)	8(30/15)
7	15(15/15)	0(0/15)	5(15/15)	5(15/15)	5(15/15)
8	8(8/15)	15(15/15)	3(9/15)	3(9/15)	5(15/15)

The value in the parentheses shows quantized amplitude ratio.

This command query returns the above combination number of the beta factor.

When the combination is not specified on the above table, the value 0 is returned.

Beta Factor Ratios

```
TESTs:MANual:HSBFactor:RATIOs?
```

This query command returns the setting value of the beta factor ratio in <enum 1>, <enum 2>, <enum 3>, <enum 4>, and <enum 5>.

- <enum 1> contains Beta c.

  Return value: 1.0|13/15|12/15|8/15|1/15

- <enum 2> contains Beta d.

  Return value: 1.0|8/15|7/15|OFF

- <enum 3> contains ΔACK, and <enum 4> returns ΔNACK.

  Return value: 30/15|15/15|9/15

- <enum 5> contains ΔCQI.

  Return value: 30/15|15/15

FRC TYPE

`TESTs:MANual:FRCTYPE <enum 1>,<enum 2>`

`TESTs:MANual:FRCTYPE?`

This command is added when the W06 Option is installed. This command is valid when the W-CDMA Mode is set to `HSDPA`. This command defines FRC Type from `H-Set1` to `H-Set5`, from `CQI-1` to `CQI-30` and Modulation Type (QPSK, 16QAM) on the [Stand-by] screen in Connection status. At preset, this is set `H-SET1,QPSK`.

- `<enum 1>` sets the FRC Type.
- `<enum 2>` sets the Modulation Type.

The valid setting value of Modulation Type is defined by the setting value of the `<enum1>` FRC Type and UE Category which is set in the `TESTs:MANual:UECATEgory` command. (An execution error occurs when invalid value is set.

Table 5-15 FRC Type and Modulation Type

Modulation Category	UE Category	Data/Modulation Type
IDLE+DPCH+H-SET1 to 3	–	QPSK|16QAM
IDLE+DPCH+H-SET4 to 5	–	QPSK
IDLE+DPCH+CQI-1 to 15	1 to 6,11,12	QPSK
IDLE+DPCH+CQI-16 to 30	1 to 6	16QAM
	11,12	QPSK

Ec/Ior

`TESTs:MANual:ECIOR <enum>`

`TESTs:MANual:ECIOR?`

This command is added when the W06 Option is installed. This command is valid when the W-CDMA Mode is set to `HSDPA`. This command defines the setting pattern of the Ec/Ior (DPCH, HS-SCCH, HS-PDSCH). At preset, this is set to `-5.0_-7.4_-5.9`.

When FRC Type is set from `H-SET1` to `H-SET5`:

This command defines the setting pattern of the Ec/Ior (DPCH, HS-SCCH, HS-PDSCH) on the [Stand-by] screen in Connection status. FRC Type which is set in the `TESTs:MANual:FRCTYPE` command and valid Ec/Ior patterns defined by **Modulation Type** are available to set. (An execution error occurs when invalid value is set.)

When FRC Type is set from `CQI-1` to `CQI-30`:

This command returns the setting pattern of the Ec/Ior (DPCH, HS-SCCH, HS-PDSCH) on the [Stand-by] screen in Connection status. As the Ec/Ior pattern is defined by the FRC Type set in the `TESTs:MANual:FRCTYPE` command and setting value of the UE Category set in the `TESTs:MANual:UECATEgory` command, setting is invalid. (Only the query command is available.)

Table 5-16 FRC Type, UE Category and Ec/Ior Patterns

FRC TYPE	Modulation Type	UE Category	DPCH	HS-SCCH	HS-PDSCH	<enum>
H-SET1	QPSK	–	–5.0	–7.4	–5.9	–5.0_–7.4_–5.9
			–5.0	–8.4	–5.9	–5.0_–8.4_–5.9
			–8.4	–8.4	–2.9	–8.4_–8.4_–2.9
	16QAM	–	–5.0	–7.4	–5.9	–5.0_–7.4_–5.9
			–5.0	–8.4	–5.9	–5.0_–8.4_–5.9
			–8.4	–8.4	–2.9	–8.4_–8.4_–2.9
			–13.0	–13.0	–3.0	–13.0_–13.0_–13.0
H-SET 2 to 3	QPSK|16QAM	–	–5.0	–7.4	–5.9	–5.0_–7.4_–5.9
			–5.0	–8.4	–5.9	–5.0_–8.4_–5.9
			–8.4	–8.4	–2.9	–8.4_–8.4_–2.9
H-SET 4 to 5	QPSK	–	–5.0	–7.4	–5.9	–5.0_–7.4_–5.9
			–5.0	–8.4	–5.9	–5.0_–8.4_–5.9
			–8.4	–8.4	–2.9	–8.4_–8.4_–2.9
CQI- 1 to 15	QPSK	1 to 6,11,12	–10.0	–10.0	–3.0	–10.0_–10.0_–3.0
CQI-16	16QAM	1 to 6	–10.0	–10.0	–3.0	–10.0_–10.0_–3.0
	QPSK	11,12	–10.0	–10.0	–4.0	–10.0_–10.0_–4.0

Table 5-16 FRC Type, UE Category and Ec/Ior Patterns

FRC TYPE	Modulation Type	UE Category	DPCH	HS-SCCH	HS-PDSCH	<enum>
CQI-17	16QAM	1 to 6	–10.0	–10.0	–3.0	–10.0_–10.0_–3.0
	QPSK	11,12	–10.0	–10.0	–5.0	–10.0_–10.0_–5.0
CQI-18	16QAM	1 to 6	–10.0	–10.0	–3.0	–10.0_–10.0_–3.0
	QPSK	11,12	–10.0	–10.0	–6.0	–10.0_–10.0_–6.0
CQI-19	16QAM	1 to 6	–10.0	–10.0	–3.0	–10.0_–10.0_–3.0
	QPSK	11,12	–10.0	–10.0	–7.0	–10.0_–10.0_–7.0
CQI-20	16QAM	1 to 6	–10.0	–10.0	–3.0	–10.0_–10.0_–3.0
	QPSK	11,12	–10.0	–10.0	–8.0	–10.0_–10.0_–8.0
CQI-21	16QAM	1 to 6	–10.0	–10.0	–3.0	–10.0_–10.0_–3.0
	QPSK	11,12	–10.0	–10.0	–9.0	–10.0_–10.0_–9.0
CQI-22	16QAM	1 to 6	–10.0	–10.0	–3.0	–10.0_–10.0_–3.0
	QPSK	11,12	–10.0	–10.0	–10.0	–10.0_–10.0_–10.0
CQI-23	16QAM	1 to 6	–10.0	–10.0	–4.0	–10.0_–10.0_–4.0
	QPSK	11,12	–10.0	–10.0	–11.0	–10.0_–10.0_–11.0
CQI-24	16QAM	1 to 6	–10.0	–10.0	–5.0	–10.0_–10.0_–5.0
	QPSK	11,12	–10.0	–10.0	–12.0	–10.0_–10.0_–12.0
CQI-25	16QAM	1 to 6	–10.0	–10.0	–6.0	–10.0_–10.0_–6.0
	QPSK	11,12	–10.0	–10.0	–13.0	–10.0_–10.0_–13.0
CQI-26	16QAM	1 to 6	–10.0	–10.0	–7.0	–10.0_–10.0_–7.0
	QPSK	11,12	–10.0	–10.0	–14.0	–10.0_–10.0_–14.0
CQI-27	16QAM	1 to 6	–10.0	–10.0	–8.0	–10.0_–10.0_–8.0
	QPSK	11,12	–10.0	–10.0	–15.0	–10.0_–10.0_–15.0
CQI-28	16QAM	1 to 6	–10.0	–10.0	–9.0	–10.0_–10.0_–9.0
	QPSK	11,12	–10.0	–10.0	–16.0	–10.0_–10.0_–16.0
CQI-29	16QAM	1 to 6	–10.0	–10.0	–10.0	–10.0_–10.0_–10.0
	QPSK	11,12	–10.0	–10.0	–17.0	–10.0_–10.0_–17.0
CQI-30	16QAM	1 to 6	–10.0	–10.0	–11.0	–10.0_–10.0_–11.0
	QPSK	11,12	–10.0	–10.0	–18.0	–10.0_–10.0_–18.0

Measurement Type

`TESTs:MANual:MEASType TTI|CQI,<int 2>`

`TESTs:MANual:MEASType?`

This command is added when the W06 Option is installed. This command is valid when the W-CDMA Mode is set to `HSDPA`. This command sets Measurement type TTI/CQI. At preset, this is set to `TTI,1`. `<int 1>` is Meas type for TTI or CQI. `<int 2>` is a measurement value ranging from `1` to `100000` in `1` stepsize.

This command query returns the setting value. The meaning of the return value is same as that of the command parameter.

H-ARQ Retrans

`TESTs:MANual:HARQRetrans 1|4`

`TESTs:MANual:HARQRetrans?`

This command is added when the W06 Option is installed. This command is valid when the W-CDMA Mode is set to `HSDPA`. This command sets the number of H-ARQ retransmission. At preset, this is set to `1`.

This command query returns the number of H-ARQ retransmission with `1` or `4`.

UE Category

`TESTs:MANual:UECATEgory 1|2|3|4|5|6|11|12`

`TESTs:MANual:UECATEgory?`

This command is added when the W06 Option is installed. This command is valid when the W-CDMA Mode is set to `HSDPA`. This command defines the setting of UE Category on the [Stand-by] screen in Connection status. (Varied in response to the setting value of the UE Category on the [Signal Generator] screen)

This command is valid when the setting value of **FRC Type** set in `TESTs:MANual: FRCTYPE` command is set to `CQI-1` to `CQI-30`. (An execution error occurs when the setting value is other than above settings.)

If the UE Category is set when the FRC Type is set from `CQI-16` to `CQI-30`, the **Modulation Type** defined in `TESTs:MANual:FRCTYPE` command and Ec/Ior defined in `TESTs:MANual:ECIOR` command may be varied correspondingly.

HS FRC Error

`TESTs:MANual:HSDLError ON|OFF|1|0`

`TESTs:MANual:HSDLError?`

This command is added when the W06 Option is installed. This command is valid when the W-CDMA Mode is set to `HSDPA`. This command sets whether to execute the HSFRC Error measurement on the [Manual Test] (HSDPA) screen. The parameter is `ON` (1) or `OFF` (0). At preset this is set to `0`.

When the parameter is set to `ON`: Error pattern is (NErr, Nrev, Nt) = (10,0,0)

When parameter is set `OFF`: Error pattern is (NErr, Nrev, Nt) = (0,0,0)

This query command returns `0` when NErr, Nrev, and Nt are set to `0`, and returns `1` when one of them is set to something other than `0`.

This command is varied in response to the setting of the HSFRC error measurement defined by `RFGenerator:HSDLError` command.

TX Power Test

`TESTs:MANual:TXPower:STATe ON|OFF|1|0`

`TESTs:MANual:TXPower:STATe?`

This command sets whether to execute the Peak TX Power test. The parameter is `ON` (1) or `OFF` (0). At preset, this is set to `1`.

This query command returns the setting of the TX Power test with integer value of `1` or `0`. The meaning of the return value is same as that of the command parameter.

Frequency Test

`TESTs:MANual:FREQuency:STATe ON|OFF|1|0`

`TESTs:MANual:FREQuency:STATe?`

This command sets whether to execute the Frequency test. The parameter is ON (1) or OFF (0). At preset, this is set to 1.

This query command returns the setting of the Frequency test with integer value of 1 or 0. The meaning of the return value is same as that of the command parameter.

EVM Test

`TESTs:MANual:EVM:STATe ON|OFF|1|0`

`TESTs:MANual:EVM:STATe?`

This command sets whether to execute EVM test. The parameter is ON (1) or OFF (0). At preset, this is set to 1.

This query command returns the setting of the EVM test with integer value of 1 or 0. The meaning of the return value is same as that of the command parameter.

BER Test

`TESTs:MANual:BER:STATe ON|OFF|1|0`

`TESTs:MANual:BER:STATe?`

This command sets whether to execute the BER test. The parameter is ON (1) or OFF (0). At preset, this is set to 1.

This query command returns the setting of the BER test with integer value of 1 or 0. The meaning of the return value is same as that of the command parameter.

Throughput R Test

`TESTs:MANual:THROUPut:STATe ON|OFF|1|0`

`TESTs:MANual:THROUPut:STATe?`

This command is added when the W06 Option is installed. This command is valid when the W-CDMA Mode is set to HSDPA. This command sets whether to execute the **Throughput R** measurement. The parameter is ON (1) or OFF (0). At preset this is set to 1.

This query command returns 1 when ON is set, or returns 0 when it is set to OFF.

Median CQI Test

TESTs:MANual:CQI:STATe ON|OFF|1|0

TESTs:MANual:CQI:STATe?

This command is added when the W06 Option is installed. This command is valid when the W-CDMA Mode is set to HSDPA. This command sets whether to execute the **Median CQI** and **CQI Variance** measurements. The parameter is ON (1) or OFF (0). At preset this is set to 1.

This query command returns 1 when ON is set, or returns 0 when OFF is set.

BLER Test

TESTs:MANual:BLER:STATe ON|OFF|1|0

TESTs:MANual:BLER:STATe?

This command is added when the W06 Option is installed. This command is valid when the W-CDMA Mode is set to HSDPA. This command sets whether to execute the **BLER** Test. The parameter is ON (1) or OFF (0). At preset this is set to 1.

This query command returns 1 when this is set to ON, or returns 0 when it is set to OFF.

Command Reference for Signaling Test

Location Update

TESTs:MANual:LOCupdate

This command executes a Location update procedure to the mobile phone from the Tester.

BS Call

`TESTs:MANual:BSCall`

This command executes a call setup to the mobile phone from the Tester.

BS Release

`TESTs:MANual:BSRelease`

This command releases the call from the Tester.

Handover to GSM

`TESTs:MANual:HANDover:GSM`

This command implements the handover between the systems from the W-CDMA to the GSM system.

MS Answer

`TESTs:MANual:MSAnswer`

This command starts the connection by manual response during response time after MS Call initiation.

Signaling State

`TESTs:MANual:SIGNaling:STATe?`

This query command returns the test step currently executed for a test cycle. The return value contains the status in execution of 10 bits as follows.

bit 0(1): MS Call/ BS Call

bit 1(2): Talk, RF Test

bit 2(4): MS Release/BS Release

bit 3(8): Time out error; currently unused

bit 4(16): End; Stand-by status

bit 5(32): Location Update

bit 6(64): Busy

bit7(128): Currently unused

bit8(256): SMS-MO

bit9(512): SMS-MT

The step in execution is set to `1`, and the others are set to `0`. The value in the parentheses is decimal value for each bit. Refer to Setting and Querying the Registers on page 4-15.

When the W06 Option is installed and W-CDMA Mode is set to `HSDPA`, the decimal value for each bit is assigned as follows:

bit 0 (1): BS Call

bit 1 (2): RF Test

bit 2 (4): BS Release

bit 3 (8): Time out error; currently unused

bit 4 (16): End; Stand-by status

bit 5 (32): Location Update

bit 6 (64): Busy

`TESTs:MANual:SIGNaling:STATe:EXPand?`

This query command returns test content and system type currently being executed with integer value of `<int 1>` and `<int 2>`. Each value is separated by a comma.

- `<int 1>` contains test contents by sum of the value of 11 bits as follows.

bit 0 (1): MS Call/ BS Call

bit 1 (2): Talk, RF Test

bit 2 (4): MS Release/BS Release

bit 3 (8): Time out error ; curretly unused

bit 4 (16): End; Stand-by status

bit 5 (32): Location Update

bit 6 (64): Busy

bit 7 (128): unused

bit 8 (256): SMS-MO

bit 9 (512): SMS-MT

bit 10 (1024): Handover

The stepsize in execution is set to `1`, and the others are set to `0`. The value in the parentheses is decimal value for each bit. Refer to Setting and Querying the Registers on page 4-15.

When the W06 Option is installed and W-CDMA Mode is set to `HSDPA`, the decimal value for each bit is assigned as follows:

bit 0 (1): BS Call

bit 1 (2): RF Test

bit 2 (4): BS Release

bit 3 (8): Time out error; curretly unused

bit 4 (16): End; Stand-by status

bit 5 (32): Location Update

bit 6 (64): Busy

- `<int 2>` contains the system currently being executed. The returned value is `1` (W-CDMA), `0` (GSM), or `2` (CDMA2000).

Call Status Clear

`TESTs:MANual:SCLear`

This command clears the pass or fail results of the Call Status.

Signaling Result

`TESTs:MANual:RESults:SIGNaling?`

This query command returns the Signaling results of Manual Test. The returned value is a sum of the values of all the 9 bits as follows, ranging from `0` to `511`.

bit 0(1): Location Update

bit 1(2): MS Call

bit 2(4): MS Release

bit 3(8): BS Call(AMR)

bit 4(16): BS Call(RMC)

bit 5(32): BS Release

bit 6(64): Connection(AMR)

bit 7(128): Connection(RMC)

bit 8(256): Handover

Each bit is set to `0` if the test is pass, or each bit is set to `1` if the test is fail. The value in the parentheses is decimal value for each bit. Refer to Setting and Querying the Registers on page 4-15.

If there are no test results, all bits are set to `1` and the value `511` is returned.

When the W06 Option is installed and W-CDMA Mode is set to `HSDPA`, the returned value is the total of the following values.

bit 0 (1): Location Update

bit 1 (2): BS Call(FRC)

bit 2 (4): BS Release

bit 3 (8): Connection(FRC)

bit 4 (16): Handover (Not implemented)

`bit 0` is set if the test is **pass**, or `bit 1` is set if the test is **fail**. If there are no test results, the value `511` is returned.

`TESTs:MANual:RESults:SIGNaling:EXPand?`

This query command returns summary of the test results with integer value of `<int 1>` and `< int 2>`. Each value is separated by a comma.

- `<int 1>` contains Signaling Result of Manual test by sum of the value of 9 bits ranging from `0` to `511` as follows.

bit 0 (1): Location Update

bit 1 (2): MS Call

bit 2 (4): MS Release

bit 3 (8): BS Call (AMR)

bit 4 (16): BS Call (RMC)

bit 5 (32): BS Release

bit 6 (64): Connection (AMR)

bit 7 (128): Connection (RMC)

bit 8 (256): Handover

Each bit is set to `0` (Pass) or `1` (Fail). The value in the parentheses is decimal value for each bit. Refer to Setting and Querying the Registers on page 4-15.

If there are no test results, all bits are set to `1`, the value `511` is returned.

When the W06 Option is installed and W-CDMA Mode is set to `HSDPA`, the return value is the total of the following values (`0` to `31`).

bit 0 (1): Location Update

bit 1 (2): BS Call(FRC)

bit 2 (4): BS Release

bit 3 (8): Connection(FRC)

bit 4 (16): Handover; (Not implemented)

Each bit is set to `0` (Pass) or `1` (Fail). If there are no test results, the value `31` is returned.

- <int 2> contains the system currently being executed. The return value is `1` (W-CDMA), `0` (GSM), or `2` (CDMA2000).

Meas REP (CPICH RSCP/CPICH Ec/No)

`TESTs:MANual:CPichRScp:MEASure`

This command starts Meas REP (CPICH RSCP and CPICH Ec/No) measurement.

`TESTs:MANual:REP:MEASure`

This command starts Meas REP (CPICH RSCP and CPICH Ec/No) measurement.

`TESTs:MANual:CPichRScp:STATe ON|OFF|1|0`

`TESTs:MANual:CPichRScp:STATe?`

This command sets whether or not to execute the Meas REP Measurement. The parameter is `ON` (1) or `OFF` (0). At preset, this is set to `1`.

This query command returns `1` when `ON` is set, or returns `0` when `OFF` is set.

`TESTs:MANual:REP:STATe ON|OFF|1|0`

`TESTs:MANual:REP:STATe?`

This command sets whether or not to execute the Meas REP Measurement. The parameter is ON (1) or OFF (0). At preset, this is set to 1.

This query command returns 1 when ON is set, or returns 0 when OFF is set.

ACLR

TESTs:MANual:ACLR:STATe ON|OFF|1|0

TESTs:MANual:ACLR:STATe?

This command sets whether or not to execute the ACLR Measurement. The parameter is ON (1) or OFF (0). At preset, this is set to 1.

This query command returns 1 when ON is set, or returns 0 when OFF is set.

This command is valid only when the W07 option is installed in the Tester. If the W07 option is not installed in the Tester, an execution error occurs.

RF Signal Output

TESTs:MANual:RFOUtput ON|OFF|1|0

TESTs:MANual:RFOUtput?

This command sets RF Signal Output status. The parameter is ON (1) or OFF (0). At preset, this is set to 1.

Call Drop Timer

TESTs:MANual:CDTimer ON|OFF|1|0

TESTs:MANual:CDTimer?

This command sets Call Drop Timer. The parameter is ON (1) or OFF (0). At preset, this is set to 1.

This query command returns 1 when ON is set, or returns 0 when OFF is set.

Algorithm of power control

`TESTs:MANual:TPCAlgorithm 1|2`

`TESTs:MANual:TPCAlgorithm?`

This command sets TPC Algorithm. The parameter is 1 or 2. At preset, this is set to `1`.

This query command returns `1` or `2`.

Command Reference for Manual Test Result

The following query commands return measurement result values of the Manual Test.

PRACH Power Measurement

`TESTs:MANual:RESults:PRACHpower?`

This query command returns the PRACH Power measurement result values, `<int 1>`, `<int 2>`, and `<real 3>`. Each value is separated by a comma.

*   `<int 1>` (1 digit) is `0` if measurement result is within the measurement range, or `1` if measurement result is out of range or PRACH Power is not measured.
*   `<int 2>` (1 digit) is the test result for the pass (0) or fail (1).
*   `<real 3>` (up to 5 letters) is the measured data ranging from `-99.9` to `+99.9` in dBm. If measurement result is out of range or the PRACH Power is not measured, the value `-99.9` is returned.

TX Power Measurement

`TESTs:MANual:RESults:TXPower?`

This query command returns the TX Power measurement result values, `<int 1>`, `<int 2>`, and `<real 3>`. Each value is separated by a comma.

*   `<int 1>` (1 digit) is `0` if measurement result is within the measurement range, or `1` if measurement result is out of range or the TX Power is not measured.
*   `<int 2>` (1 digit) is the test result for the pass (0) or fail (1).

- `<real 3>` (5 letters) is the measured data ranging from
  `-99.9` to `+99.9` dBm. If any measurement is overflow,
  underflow or not made, the value `-99.9` is returned.

Frequency Error Measurement

`TESTs:MANual:RESults:FREQuency?`

This query command returns the Frequency Error measurement
result values, `<int 1>`, `<int 2>`, and `<real 3>`. Each value is
separated by a comma.

- `<int 1>` (1 digit) is `0` if measurement result is within the
  measurement range, or `1` if measurement result is out of
  range or Frequency Error is not measured.

- `<int 2>` (1 digit) is the test result for the pass (0) or fail (1).

- `<real 3>` (up to 6 letters) is the measured data ranging from
  `-999.9` to `+999.9` in Hz. If measurement result is out of
  range or Frequency Error is not measured, the value `+999.9`
  is returned.

EVM Measurement

`TESTs:MANual:RESults:EVM?`

This query command returns the EVM measurement result values,
`<int 1>`, `<int 2>`, and `<real 3>`. Each value is separated by a
comma.

- `<int 1>` (1 digit) is `0` if measurement result is within the
  measurement range, or `1` if measurement result is out of
  range or EVM is not measured.

- `<int 2>` (1 digit) is the test result for the pass (0) or fail (1).

- `<real 3>` (up to 7 letters) is the measured data ranging from
  `0.00` to `-100.00` in %. If measurement result is out of range
  or EVM is not measured, the value `+99.99` is returned.

Origin Offset Measurement

`TESTs:MANual:RESults:OriginOFFset?`

This query command returns the Origin Offset measurement
result values, `<int 1>`, `<int 2>`, and `<real 3>`. Each value is
separated by a comma.

- `<int 1>` (1 digit) is `0` if measurement result is within the measurement range, or `1` if measurement result is out of range or Origin Offset is not measured.

- `<int 2>` (1 digit) is the test result for the pass (0) or fail (1).

- `<real 3>` (up to 6 letters) is the measured data ranging from `-99.99` to `0.00` in dB. If measurement result is out of range or Origin Offset is not measured, the value `-99.99` is returned.

BER Measurement

`TESTs:MANual:RESults:BER?`

This query command returns the BER measurement result values, `<int 1>`, `<int 2>`, and `<real 3>`. Each value is separated by a comma.

- `<int 1>` (1 digit) is `0` if measurement result is within the measurement range, or `1` if measurement result is out of range or BER is not measured.

- `<int 2>` (1 digit) is the test result for the pass (0) or fail (1).

- `<real 3>` (up to 7 letters) is the measured data ranging from `0.00` to `-100.00` in %. If measurement result is out of range or BER is not measured, the value `+99.99` is returned.

Meas REP (CPICH) Measurement

`TESTs:MANual:RESults:CPichRScp?`

This query command returns the CPICH RSCP measurement result values, `<int 1>`, `<int 2>`, and `<int 3>`. Each value is separated by a comma.

- `<int 1>` (1 digit) is `0` after measurement, or `1` if CPICH RSCP is not measured.

- `<int 2>` (1 digit) is the same value as that of `<int 1>`. (Decision with limits is not made.)

- `<int 3>` (up to 3 letters) is the measured data, or `-99` if CPICH RSCP is not measured.

`TESTs:MANual:RESults:ECNO?`

This query command returns the CPICH Ec/No measurement result values, `<int 1>`, `<int 2>`, and `<int 3>`. Each value is separated by a comma.

- `<int 1>` (1 digit) is `0` after measurement, or `1` if CPICH Ec/No is not measured.

- `<int 2>` (1 digit) is the same value as that of `<int 1>`. (Decision with limits is not made.)

- `<int 3>` (up to 3 letters) is the measured data, or `-99` if CPICH Ec/No is not measured.

Throughput R Measurement

`TESTs:MANual:RESults:THROUPut?`

This command is added when the W06 Option is installed. This command is valid when the W-CDMA Mode is set to `HSDPA`.

This query command returns the Throughput R measurement result values, `<int 1>`, `<int 2>`, `<int 3>`. Each value is separated by a comma.

- `<int 1>` is 0 if measurement result is within the measurement range, or 1 if measurement result is out of range or the Throughput R is not measured.

- `<int 2>` is the test result for the pass (`0`) or fail (`1`).

- `<int 3>` returns the measurement result value ranging from `0` to `99999` (kbps), or `99999` if the measurement result is out of range or the **Throughput R** is not measured.

Median CQI Measurement

`TESTs:MANual:RESults:MCQI?`

This command is added when the W06 Option is installed. This command is valid when the W-CDMA Mode is set to `HSDPA`.

This query command returns the Median CQI measurement result values, `<int 1>`, `<int 2>`, `<int 3>`. Each value is separated by a comma.

- `<int 1>` is 0 if measurement result is within the measurement range, or 1 if measurement result is out of range or the **Median CQI** is not measured.

- `<int 2>` is the test result for the pass (`0`) or fail (`1`).

- `<int 3>` returns the measurement result value ranging from `0` to `99`, or `99` if measurement result is out of range or the **Median CQI** is not measured.

CQI Variance Measurement

`TESTs:MANual:RESults:CQIVAR?`

This command is added when the W06 Option is installed. This command is valid when the W-CDMA Mode is set to `HSDPA`.

This query command returns the CQI Variance measurement result values, `<int 1>`, `<int 2>`, `<real 3>`. Each value is separated by a comma.

- `<int 1>` is 0 if measurement result is within the measurement range, or 1 if measurement result is out of range or the CQI Variance is not measured.
- `<int 2>` is the test result for the pass (0) or fail (1).
- `<real 3>` returns the measurement result value ranging from `0.00` to `100.00` (%), or `99.99` if measurement result is out of range or the **CQI Variance Measurement** is not measured.

BLER Measurement

`TESTs:MANual:RESults:BLER?`

This command is added when the W06 Option is installed. This command is valid when the W-CDMA Mode is set to `HSDPA`.

This query command returns the BLER measurement result values, `<int 1>`, `<int 2>`, `<real 3>`. Each value is separated by a comma.

- `<int 1>` is 0 if measurement result is within the measurement range, or 1 if measurement result is out of range or the BLER is not measured.
- `<int 2>` is the test result for the pass (0) or fail (1).
- `<real 3>` returns the measurement result value ranging from `0.00` to `99.99` (%), or `99.99` if measurement result is out of range or the **BLER Measurement** is not measured.

ACK, NACK, DTX Results

`TESTs:MANual:RESults:ACKnackdtx?`

This command is added when the W06 Option is installed. This command is valid when the W-CDMA Mode is set to `HSDPA`.

This query command returns the ACK, NACK, DTX Result values, `<int 1>`, `<int 2>`, `<int 3>`. Each value is separated by a comma.

- `<int 1>` is the value of ACK. The allowable range is from `0` to `100000`.
- `<int 2>` is the value of NACK. The allowable range is from `0` to `100000`.
- `<int 3>` is the value of DTX. The allowable range is from `0` to `100000`.
- `<int 1>`, `<int 2>`, `<int 3>` returns each measurement result value, or `99999` if measurement result is out of range or the **ACK, NACK, DTX Results** are not measured.

ACLR DSB 5MHz

`TESTs:MANual:RESults:ACLR5mhz?`

This query command returns the ACLR measurement (5MHz) result values, `<int 1>`, `<int 2>`, `<real 3>`.

Each value is separated by a comma.

ACLR DSB 10MHz

`TESTs:MANual:RESults: ACLR10mhz?`

This query command returns the ACLR measurement (10MHz) result values, `<int 1>`, `<int 2>`, `<real 3>`. Each value is separated by a comma.

This command is valid only when the W07 option is installed in the Tester. If the W07 option is not installed in the Tester, an execution error occurs.

Command Reference for MS Information

The following MS Information commands are used to get information on the mobile phone under test.

IMSI Information

`TESTs:MANual:RESults:MSINformation:IMSI?`

This query command returns the IMSI string up to 15 letters.

IMEI Information

`TESTs:MANual:RESults:MSINformation:IMEI?`

This query command returns the IMEI string up to 15 letters.

DIAL Information

`TESTs:MANual:RESults:MSINformation:DIAL?`

This query command returns the dialed number string up to 20 letters.

Or, this command returns Emergency Call in the case of an emergency call.

UE Category

`TESTs:MANual:RESults:MSINformation:UECATEgory?`

This command is added when the W06 Option is installed. This command is valid when the W-CDMA Mode is set to `HSDPA`.

This query command returns the UE Category measurement value with `<int>`. The allowable range for **UE Category** measurement is ranging from `1` to `64`. `<int>` returns `99` if measurement result is out of range or the result is not measured, or returns `0` if the value has not been acquired by mobile phone.

Command Reference for SMS Screen

SMS-MT

`TESTs:MANual:SMS:ASC <string>`

`TESTs:MANual:SMS:ASC?`

This command sets a SMS-MT send message (text data). At preset, the string of **This is a test of the Short Message Service.** is set.

- `<string>`: Up to 160 characters.

This query command returns the SMS-MT send message (text data). If the SMS-MT send message is set to binary data, an execution error occurs.

`TESTs:MANual:SMS:BIN <int 1>,<int 2>,<string 3>`

`TESTs:MANual:SMS:BIN?`

This command sets a SMS-MT send message (binary data) on the [Stand-by] screen.

- `<int 1>` specifies the Coding Scheme for SMS-MT.
- `<int 2>` specifies the data size up to 140.
- `<String 3>` sets the SMS-MT send message with up to 280 characters in the hexadecimal format.

This query command returns the SMS-MT send message (binary data). If the setting of text data or binary data is not set to binary data as this query command is executed, an execution error occurs.

`TESTs:MANual:SMSMt`

`This command starts SMS-MT.`

SMS-MO

`TESTs:MANual:SMS:RX?`

This query command reads out a SMS-MO received message.

- `<char 1>` indicates the type of the data (ASC or BIN).

  ASC indicates text data (ASCII), and BIN indicates binary data.
- `<int 2>` indicates the value of the Coding Scheme.
- `<int 3>` indicates the data length.

When ASCII data is received, up to 160 characters are returned. When Binary data is received, up to 140 bytes (represented by 280 characters in the hexadecimal format) are returned.

- `<string 4>` returns the received data. If ASCII data is received, up to 160 characters are returned. If binary data is received, up 280 characters are returned in the hexadecimal format.

TX Analyzer Subsystem

Command Reference for Stand-by / Measuring Screens

The following commands are used to set the controls and parameters associated with the TX Analyzer mode.

Change System

`TXANalyzer:SYSTem GSM|WCDMA|CDMA2000`

`TXANalyzer:SYSTem?`

This command causes switching to the specified system (`GSM`, `W-CDMA`, and `CDMA2000`). It is enabled in the standby status.

This query command obtains the specified system with string.

Radio System

`TXANalyzer:RFORmat W-CDMA`

`TXANalyzer:RFORmat?`

This command sets a Radio System to be tested. Only W-CDMA is available.

RFCH

`TXANalyzer:RFCH:CHANnel <int>`

`TXANalyzer:RFCH:CHANnel?`

This command sets the channel number. The allowable range, preset values and steps are as follows:

Table 5-17 RFCH Allowable Range and Preset Value

Band	Allowable Range	Preset Value
1	9600 to 9900	9612

Table 5-17 RFCH Allowable Range and Preset Value

Band	Allowable Range	Preset Value
2	9250 to 9550, 12, 37, 62, 87, 112, 137, 162, 187, 212, 237, 262, 287	9262
3	925 to 1300	937
4	1300 to 1525, 1662, 1687, 1612, 1637, 1662, 1687, 1812, 1837, 1862	1312
5	4120 to 4245, 782, 787, 807, 812, 837, 862	4132
6	4150 to 4200, 812, 837	4162
8	2700 to 2875	2712
9	8750 to 8924	9762

This query command returns the set channel number of the RFCH with integer. The range of the value is same as that of the command parameter.

```
TXANalyzer:RFCH:CHANnel <int 1>,<int 2>

TXANalyzer:RFCH:CHANnel?
```

This command sets a channel for Band and RF (uplink) on the [Stand-by] screen.

$<$int 1$>$ is a band and set to 1 at preset. $<$int 2$>$ is a variable (uplink channel number) and set to `9612` at preset. The allowable ranges are as follows:

Table 5-18 Band and RFCH Allowable Range

Band	Allowable Range
1	9600 to 9900
2	9250 to 9550, 12, 37, 62, 87, 112, 137, 162, 187, 212, 237, 262, 287
3	925 to 1300
4	1300 to 1525, 1662, 1687, 1612, 1637, 1662, 1687, 1812, 1837, 1862
5	4120 to 4245, 782, 787, 807, 812, 837, 862
6	4150 to 4200, 812, 837
8	2700 to 2875
9	8750 to 8924

At start up of the Tester, the queries in <int 1> and <int 2> format are returned.

If the setting with <int> format is performed, the format of the query changes to <int> format.

If the setting with <int 1> and <int 2> format is performed, the format of the query returns to <int 1> and <int 2> format.

This query command returns the set Band and Channel number of RFCH with integer. The range of the value is same as that of the command parameter.

Frequency

TXANalyzer:RFCH:FREQuency <real>

TXANalyzer:RFCH:FREQuency?

This command sets the frequency. The allowable range and preset values are as follows:

Table 5-19 Frequency Allowable Range and Preset Value

Band	Allowable Range [Hz]	Preset Value
1	1920000000 to 1980000000 in 200000 step	1922400000
2	1850000000 to 1910000000 in 200000 step, 1852500000, 1857500000, 1862500000, 1867500000, 1872500000, 1877500000, 1882500000, 1887500000, 1892500000, 1897500000, 1902500000, 1907500000	1852400000
3	1710000000 to 1785000000 in 200000 step	1712400000
4	1710000000 to 1755000000 in 200000 step, 1712500000, 1717500000, 1722500000, 1727500000, 1732500000, 1737500000, 1742500000, 1747500000, 1752500000	1712400000
5	824000000 to 849000000 in 200000 step, 826500000, 827500000, 831500000, 832500000, 837500000, 842500000	826400000
6	830000000 to 840000000 in 200000 step, 832500000, 837500000	4162

This query command returns the set frequency of the RFCH with real. The range of the value is same as that of the command parameter.

`TXANalyzer:RFCH:FREQuency <int 1>,<real 2>`

`TXANalyzer:RFCH:FREQuency?`

This command specifies a Band and frequency for RF (uplink) on Stand-by screen.

`<int 1>` is a Band and set to `1` at preset. `<int 2>` is a frequency (uplink frequency) and set to `1922400000` at preset. The allowable ranges are as follows:

Table 5-20 Band and Frequency Allowable range

Band	Allowable Range [Hz]
1	1920000000 to 1980000000 in 200000 step
2	1850000000 to 1910000000 in 200000 step, 1852500000, 1857500000, 1862500000, 1867500000, 1872500000, 1877500000, 1882500000, 1887500000, 1892500000, 1897500000, 1902500000, 1907500000
3	1710000000 to 1785000000 in 200000 step
4	1710000000 to 1755000000 in 200000 step, 1712500000, 1717500000, 1722500000, 1727500000, 1732500000, 1737500000, 1742500000, 1747500000, 1752500000
5	824000000 to 849000000 in 200000 step, 826500000, 827500000, 831500000, 832500000, 837500000, 842500000
6	830000000 to 840000000 in 200000 step, 832500000, 837500000
8	880000000 to 915000000 in 200000 step
9	1750000000 to 1784800000 in 200000 step

At start up of the Tester, the queries in `<int 1>` and `<int 2>` format are returned.

If the setting with `<int>` format is performed, the format of the query changes to `<int>` format.

If the setting with `<int 1>` and `<int 2>` format is performed, the format of the query returns to `<int 1>` and `<int 2>` format.

This query command returns the set Band and Frequency of RFCH with real. The range of the value is same as that of the command parameter.

Amplitude

```
TXANalyzer:AMPLitude <real>
```

```
TXANalyzer:AMPLitude?
```

This command sets the amplitude of output signal from the Tester applied to the mobile phone under test in each Band. The allowable range is from `–115.0` to `–18.0` (dBm) in `0.1` steps. At preset, this is set to `-50.0` (dBm).

This query command returns the set amplitude of output signal by real ranging from `–115.0` to `–18.0` (dBm).

Modulation

```
TXANalyzer:MODulation <<
IDLE|IDLE+DPCH(PN9)|IDLE+DPCH(PN15)| <<
IDLE+DPCH(PN9)+OCNS|IDLE+DPCH(PN15)+OCNS
```

```
TXANalyzer:MODulation?
```

This command defines a type of modulation. The parameter is `IDLE`, `IDLE+DPCH(PN9)`, `IDLE+DPCH(PN15)`, `IDLE+DPCH(PN9)+OCNS`, or `IDLE+DPCH(PN15)+OCNS`. At preset, this is set to `IDLE`. This works with Modulation on the [Signal Generator] screen.

`IDLE`: Outputs CPICH, P-CCPCH, SCH, PICH and S-CCPCH.

`IDLE+DPCH(PN9)`: Outputs `IDLE` (without S-CCPCH) and RMC 12.2kbps (PN9).

`IDLE+DPCH(PN15)`: Outputs `IDLE` (without S-CCPCH) and RMC 12.2kbps(PN15).

`IDLE+DPCH(PN9)+OCNS`: Outputs `IDLE` (without S-CCPCH), RMC 12.2kbps(PN9) and OCNS.

`IDLE+DPCH(PN15)+OCNS`: Outputs `IDLE` (without S-CCPCH), RMC 12.2kbps(PN15) and OCNS.

This is automatically set to `IDLE` when the screen is changed to the [TX Analyzer] screen while Modulation on the [Signal Generator] screen is set to `OFF`. (There is no `OFF` setting in TX Analyzer.)

This query command returns the set modulation.

`TXANalyzer:MODulation <enum 1>,<enum 2>`

`TXANalyzer:MODulation?`

This command is available when the W06 Option is installed. `<enum 1>` defines the **Modulation** Category. The allowable range is `IDLE|IDLE+DPCH`. `<enum 2>` defines Data/Modulation Type. The allowable range is varied according to the **Modulation** value.

<enum 1>	<enum 2>
IDLE	–
IDLE+DPCH	PN9|PN15

When the tester is turned on, the new form of query is returned.

RF Signal Output

`TXANalyzer:RFOUtput ON|OFF|1|0`

`TXANalyzer:RFOUtput?`

This command sets RF Signal Output status. The parameter is `ON` (1) or `OFF` (0). At preset, this is set to `OFF`. This works with RF Output on the [Signal Generator] screen.

Averaging

`TXANalyzer:AVERage OFF|<int>`

`TXANalyzer:AVERage?`

This command sets whether to activate the averaging. The parameter is `OFF` or `<int>` for the number of averaging times. The allowable range of `<int>` is from `2` to `99`. At preset, this is set to `OFF`.

This query command returns the set averaging.

Primary Scrambling Code

`TXANalyzer:PSCODe <int>`

`TXANalyzer:PSCODe?`

This command sets the Down Link Primary Scrambling Code (P-Scrambling) in the **TX Analyzer [Stand-by]** screen. The range is `0` to `511` by 1 step. PRESET value is `100`.

This query command returns the Primary Scrambling Code value.

This command relates to the Signal Generator screen.

Frequency Offset

`TXANalyzer:OFFSet <real>`

`TXANalyzer:OFFSet?`

This command sets the Frequency Offset value in the **TX Analyzer [Stand-by]** screen. The range is `-100.0` to `100.0 kHz` by 0.1kHz step. The PRESET value is `0.0 kHz`.

This query command returns the Frequency Offset value.

This command relates to the Signal Generator screen.

TX Power Measurement

`TXANalyzer:TXPower:STATe ON|OFF|1|0`

`TXANalyzer:TXPower:STATe?`

This command sets whether to execute the TX Power measurement. The parameter is `ON` (1) or `OFF` (0). At preset, this is set to `1`.

This query command returns the setting of the TX Power measurement with integer value of `1` or `0`. The meaning of the return value is same as that of the command parameter.

Frequency Error

`TXANalyzer:FREQuency:STATe ON|OFF|1|0`

`TXANalyzer:FREQuency:STATe?`

This command sets whether to execute the Frequency Error measurement. The parameter is ON (1) or OFF (0). At preset, this is set to 1.

This query command returns the setting of the Frequency Error measurement with integer value of 1 or 0. The meaning of the return value is same as that of the command parameter.

EVM

```
TXANalyzer:EVM:STATe ON|OFF|1|0
```

```
TXANalyzer:EVM:STATe?
```

This command sets whether to execute the EVM measurement. The parameter is ON (1) or OFF (0). At preset, this is set to 1.

This query command returns the setting of the EVM measurement. The meaning of the return value is same as that of the command parameter.

ACLR

```
TXANalyzer:ACLR:STATe ON|OFF|1|0
```

```
TXANalyzer:ACLR:STATe?
```

This command sets whether to execute the ACLR measurement. The parameter is ON (1) or OFF (0). At preset, this is set to 1. This command is valid only when the W07 option is installed in the Tester. If the W07 option is not installed in the Tester, an execution error occurs.

This query command returns the setting of the ACLR measurement. The meaning of the return value is same as that of the command parameter.

OBW

```
TXANalyzer:OBW:STATe ON|OFF|1|0
```

```
TXANalyzer:OBW:STATe?
```

This command sets whether to execute the OBW measurement. The parameter is ON (1) or OFF (0). At preset, this is set to 1. This command is valid only when the W07 option is installed in the Tester. If the W07 option is not installed in the Tester, an execution error occurs.

This query command returns the setting of the OBW measurement. The meaning of the return value is same as that of the command parameter.

OCNS

`TXANalyzer:OCNS OFF|ON`

`TXANalyzer:OCNS?`

This command sets whether or not to add the OCNS output to the Modulation. This command becomes available when the W06 Option is installed. An execution error occurs when W06 Option is not installed. At preset, this is set to `OFF`.

This command query returns `ON` or `OFF` regarding whether the OCNS output is added to the Modulation or not.

BER Frame

`TXANalyzer:SENSitivity:FRAMe <int>`

`TXANalyzer:SENSitivity:FRAMe?`

This command is added when W09 option is installed. An execution error occurs when W06 Option is not installed.

This command sets the number of the frames for bit error ratio (BER) tests. The allowable range is from `1` to `4100` (frames) in `1` stepsize. At preset, this is set to `10`.

This query command returns the set number of the frames for BER test with integer. The range of the value is the same as that of the command parameter.

BER Test

`TXANalyzer:BER:STATs ON|OFF|1|0`

`TXANalyzer:BER:STATs?`

This command is added when W09 option is installed. An execution error occurs when W06 Option is not installed.

This command sets whether to execute the BER test. The parameter is `ON` (1) or `OFF` (0).

This query command returns the setting of the BER test with integer value of 1 or 0. The meaning of the return value is same as that of the command parameter.

TX Power Measurement

TXANalyzer:RESults:TXPower?

This query command returns the TX Power measurement result values, <int 1>, <int 2>, and <real 3>. Each value is separated by a comma.

- <int 1> (1 digit) is 0 if measurement result is within the measurement range, or 1 if measurement result is out of range or TX Power is not measured.

- <int 2> (1 digit) is the test result for the pass (0) or fail (1).

- <real 3> (up to 6 letters) is the measured data ranging from -99.99 to +99.99 in dBm. If measurement range is out of range or TX Power is not measured, the value -99.99 is returned.

Frequency Error Measurement

TXANalyzer:RESults:FREQuency?

This query command returns the Frequency Error measurement result values, <int 1>, <int 2>, and <real 3>. Each value is separated by a comma.

- <int 1> (1 digit) is 0 if measurement result is within the measurement range, or 1 if measurement range is out of range or Frequency Error is not measured.

- <int 2> (1 digit) is the test result for the pass (0) or fail (1).

- <real 3> (up to 6 letters) is the measured data ranging from -999.9 to +999.9 in Hz. If measurement result is out of range or Frequency Error is not measured, the value +999.9 is returned.

EVM Measurement

TXANalyzer:RESults:EVM?

This query command returns the EVM measurement result values, <int 1>, <int 2>, and <real 3>. Each value is separated by a comma.

`<int 1>` (1 digit) is `0` if measurement result is within the measurement range, or `1` if measurement range is out of range or EVM is not measured.

`<int 2>` (1 digit) is the test result for the pass (0) or fail (1).

`<real 3>` (up to 7 letters) is the measured data ranging from `0.00` to `+100.00` in %. If measurement result is out of range or EVM is not measured, the value +99.99 is returned.

Origin Offset Measurement

`TXANalyzer:RESults:OriginOFFset?`

This query command returns a set of test result values, `<int 1>`, `<int 2>`, and `<real 3>`.

- `<int 1>` (1 digit) is `0` if measurement result is within the measurement range, or `1` if measurement result is out of range or Origin Offset is not measured.
- `<int 2>` (1 digit) is the test result for the pass (0) or fail (1).
- `<real 3>` (up to 6 letters) is the measured data ranging from `-99.99` to `0.00` in %. If measurement result is out of range or Origin Offset is not measured, the value `-99.99` is returned.

ACLR DSB 5MHz Measurement

`TXANalyzer:RESults:ACLR5mhz?`

This query command returns a set of test result values, `<int 1>`, `<int 2>`, and `<real 3>`.

- `<int 1>` (1 digit) is `0` if measurement result is within the measurement range, or `1` if measurement result is out of range or ACLR DSB 5MHz is not measured.
- `<int 2>` (1 digit) is the test result for the pass (0) or fail (1).
- `<real 3>` (up to 6 letters) is the measured data ranging from `-99.99` to `0.00` in dB. If measurement result is out of range or ACLR DSB 5MHz is not measured, the value `-99.99` is returned.

This command is valid only when the W07 option is installed in the Tester. If the W07 option is not installed in the Tester, an execution error occurs.

ACLR DSB 10MHz Measurement

`TXANalyzer:RESults:ACLR10mhz?`

This query command returns a set of test result values, `<int 1>`, `<int 2>`, and `<real 3>`.

- `<int 1>` (1 digit) is `0` if measurement result is within the measurement range, or `1` if measurement result is out of range or ACLR DSB 10Hz is not measured.
- `<int 2>` (1 digit) is the test result for the pass (0) or fail (1).
- `<real 3>` (up to 6 letters) is the measured data ranging from `-99.99` to `0.00` in dB. If measurement result is out of range or ACLR DSB 10MHz is not measured, the value `-99.99` is returned.

This command is valid only when the W07 option is installed in the Tester. If the W07 option is not installed in the Tester, an execution error occurs.

OBW Measurement

`TXANalyzer:RESults:OBW?`

This query command returns a set of test result values, `<int 1>`, `<int 2>`, and `<real 3>`. Each value is separated by a comma.

- `<int 1>` (1 digit) is `0` if measurement result is within the measurement range, or `1` if measurement result is out of range or OBW is not measured.
- `<int 2>` (1 digit) is the test result for the pass (0) or fail (1).
- `<real 3>` (up to 4 letters) is the measured data ranging from `0.00` to `9.99` in MHz. If measurement result is out of range or OBW is not measured, the value `9.99` is returned.

This command is valid only when the W07 option is installed in the Tester. If the W07 option is not installed in the Tester, an execution error occurs.

BER Measurement

`TXANalyzer:RESults:BER?`

This command is added when W09 option is installed. An execution error occurs when W06 Option is not installed.

This query command returns the BER measurement result values, `<int 1>`, `<int 2>`, and `<real 3>`. Each value is separated by a comma.

- `<int 1>` (1 digit) is `0` if measurement result is within the measurement range, or `1` if measurement result is out of range or **BER Measurement** is not measured.

- `<int 2>` (1 digit) is the test result for the pass (`0`) or fail (`1`).

- `<real 3>` (up to 7 letters) is the measured data ranging from `0.00` to `-100.00` in %. If measurement result is out of range or **BER Measurement** is not measured, the value `+99.99` is returned.

Signal Generator Subsystem

The Signal Generator subsystem commands are used to set and read the controls and parameters of the Signal Generator functions.

RFGenerator Subsystem Command Reference

Change System

`RFGenerator:SYSTem GSM|WCDMA|CDMA2000`

`RFGenerator:SYSTem?`

This command causes switching to the specified system (`GSM`, `W-CDMA` and `CDMA2000`). It is enabled in the standby status.

This query command obtains the specified system with string.

Radio System

`RFGenerator:RFORmat W_CDMA`

`RFGenerator:RFORmat?`

This command selects a Radio System to be tested. Only `W-CDMA` is available.

RFCH

`RFGenerator:CHANnel <int>`

```
RFGenerator:CHANnel?
```

This command sets the channel number. The allowable range and preset values are as follows:

Table 5-21 RFCH Allowable Range and Preset Value

Band	Allowable Range	Preset Value
1	10550 to 10850	10562
2	9650 to 9950, 412, 437, 462, 487, 512, 537, 562, 587, 612, 637, 662, 687	9662
3	1150 to 1525	1162
4	1525 to 1750 1887, 1912, 1937, 1962, 1987, 2012, 2037, 2062, 2087	1537
5	4345 to 4470, 1007, 1012, 1032, 1037, 1062, 1087	4357
6	4375 to 4425, 1037, 1062	4387
8	2925 to 3100	2937
9	9225 to 9399	9237

The range of the value is same as that of the command parameter.

```
RFGenerator:CHANnel <int 1>,<int 2>
```

```
RFGenerator:CHANnel?
```

This command sets a Band and channel for RF (downlink) on the [Stand-by] screen.

`<int 1>` is a Band and set to 1 at preset. `<int 2>` is a variable (uplink channel number) and set to `10562` at preset. The allowable ranges are as follows:

Table 5-22 Band and RFCH Allowable Range

Band	Allowable Range
1	10550 to 10850
2	9650 to 9950, 412, 437, 462, 487, 512, 537, 562, 587, 612, 637, 662, 687
3	1150 to 1525

Table 5-22 Band and RFCH Allowable Range

Band	Allowable Range
4	1525 to 1750 1887, 1912, 1937, 1962, 1987, 2012, 2037, 2062, 2087
5	4345 to 4470, 1007, 1012, 1032, 1037, 1062, 1087
6	4375 to 4425, 1037, 1062
8	2925 to 3100
9	9225 to 9399

At start up of the Tester, the queries in `<int 1>` and `<int 2>` format are returned.

If the setting with `<int>` format is performed, the format of the query changes to `<int>` format.

If the setting with `<int 1>` and `<int 2>` format is performed, the format of the query returns to `<int 1>` and `<int 2>` format.

This query command returns the set Band and Channel number of RFCH with integer. The range of the value is same as that of the command parameter.

Frequency

`RFGenerator:FREQuency <int>`

`RFGenerator:FREQuency?`

This command sets the frequency. The allowable range and preset values are as follows:

Table 5-23 Frequency Allowable Range and Preset Value

Band	Allowable Range [Hz]	Preset Value [Hz]
1	2110000000 to 2170000000 in 200000 step	2112400000
2	1930000000 to 1990000000 in 200000 step, 1932500000, 1937500000, 1942500000, 1947500000, 1952500000, 1957500000, 1962500000, 1967500000, 1972500000, 1977500000, 1982500000, 1987500000	1932400000

Table 5-23 Frequency Allowable Range and Preset Value

Band	Allowable Range [Hz]	Preset Value [Hz]
3	1805000000 to 1880000000 in 200000 step	1807400000
4	2110000000 to 2155000000 in 200000 step, 2112500000, 2117500000, 2122500000, 2127500000, 2132500000, 2137500000, 2142500000, 2147500000, 2152500000	2112400000
5	869000000 to 894000000 in 200000 step, 871500000, 872500000, 876500000, 877500000, 882500000, 887500000	871400000
6	875000000 to 885000000 in 200000 step, 877500000, 882500000	877400000
8	925000000 to 960000000	927400000
9	1845000000 to 1879800000	1847400000

This query command returns the set frequency of the RFCH with real. The range of the value is same as that of the command parameter.

```
RFGenerator:FREQuency <int 1>,<real 2>
```

```
RFGenerator:FREQuency?
```

This command sets a Band and frequency for RF (downlink) on Stand-by screen.

`<int 1>` is a Band and set to `1` at preset. `<int 2>` is a frequency (downlink frequency) and set to `2112400000` at preset. The allowable ranges are as follows:

Table 5-24 Frequency Allowable Range and Preset Value

Band	Allowable Range [Hz]
1	2110000000 to 2170000000 in 200000 step
2	1930000000 to 1990000000 in 200000 step, 1932500000, 1937500000, 1942500000, 1947500000, 1952500000, 1957500000, 1962500000, 1967500000, 1972500000, 1977500000, 1982500000, 1987500000
3	1805000000 to 1880000000 in 200000 step

Table 5-24 Frequency Allowable Range and Preset Value

Band	Allowable Range [Hz]
4	2110000000 to 2155000000 in 200000 step, 2112500000, 2117500000, 2122500000, 2127500000, 2132500000, 2137500000, 2142500000, 2147500000, 2152500000
5	869000000 to 894000000 in 200000 step, 871500000, 872500000, 876500000, 877500000, 882500000, 887500000
6	875000000 to 885000000 in 200000 steps, 877500000, 882500000

At start up of the Tester, the queries in `<int 1>` and `<int 2>` format are returned.

If the setting with `<int>` format is performed, the format of the query changes to `<int>` format.

If the setting with `<int 1>` and `<int 2>` format is performed, the format of the query returns to `<int 1>` and `<int 2>` format.

This query command returns the set Band and Frequency of RFCH with real. The range of the value is same as that of the command parameter.

Amplitude

`RFGenerator:AMPLitude <real>`

`RFGenerator:AMPLitude?`

This command sets the amplitude of the Tester applied to the mobile phone under test. The allowable range is from `-115.0` to `-18.0` (dBm) in `0.1` steps. At preset, this is set to `-50.0` (dBm).

This query command returns the set output amplitude with real. The range of the value is same as that of the command parameter.

Modulation

`RFGenerator:MODulation OFF|IDLE| <<`
`IDLE+DPCH(PN9)| IDLE+DPCH(PN15)| <<`
`IDLE+DPCH(PN9)+OCNS| IDLE+DPCH(PN15)+OCNS`

`RFGenerator:MODulation?`

This command defines a type of modulation. The parameter is
`OFF`, `IDLE`, `IDLE+DPCH(PN9)`, `IDLE+DPCH(PN15)`,
`IDLE+DPCH(PN9)+OCNS`, or `IDLE+DPCH(PN15)+OCNS`. At preset,
this is set to `OFF`.

- `OFF`: Outputs carrier wave without modulation.
- `IDLE`: Outputs CPICH, P-CCPCH, SCH, PICH, S-CCPCH.
- `IDLE+DPCH(PN9)`: Outputs IDLE (without S-CCPCH) + RMC
  12.2kbps (PN9).
- `IDLE+DPCH(PN15)`: Outputs IDLE (without S-CCPCH) + RMC
  12.2kbps (PN15).
- `IDLE+DPCH(PN9)+OCNS`: Outputs IDLE (without S-CCPCH),
  RMC 12.2kbps (PN9) and OCNS.
- `IDLE+DPCH(PN15)+OCNS`: Outputs IDLE (without S-CCPCH),
  RMC 12.2kbps (PN15) and OCNS.

This works with Modulation on the [TX Analyzer] screen.

This is automatically set to `IDLE` when the screen is changed to
the [TX Analyzer] screen while Modulation on the [Signal
Generator] screen is set to `OFF`. (There is no `OFF` setting in TX
Analyzer.)

After that, the setting of `IDLE` continues when the screen is
changed from the [TX Analyzer] screen to the [Signal
Generator] screen.

This query command returns the selected type of modulation
with strings. The meaning of return value is same as that of the
command parameter.

`RFGenerator:MODulation <enum 1>,<enum 2>`

`RFGenerator:MODulation?`

This command is available when the W06 Option is installed.

`<enum 1>` specifies the **Modulation** Category.

`<enum 2>` specifies Data/Modulation Type.

The valid setting value of the Data/Modulation Type is varied
according to the combination of **Modulation Category** and **UE
Category**. (An execution error occurs when invalid value is set.)

Table 5-25 Modulation and Data/Modulation Type

Modulation Category <enum 1>	UE Category	Data/Modulation Type <enum 2>
OFF, IDLE	–	–
IDLE+DPCH	–	PN9|PN15
IDLE+DPCH+H-SET1 to 3	–	QPSK(PN15)|16QAM(PN15)
IDLE+DPCH+H-SET4 to 5	–	QPSK(PN15)
IDLE+DPCH+CQI-1 to 15	1 to 6,11,12	QPSK(PN15)
IDLE+DPCH+CQI-16 to 30	1 to 6	16QAM(PN15)
	11,12	QPSK(PN15)

RF Signal Output

```
RFGenerator:RFOUtput ON|OFF|1|0
```

```
RFGenerator:RFOUtput?
```

This command selects RF Signal Output status. The parameter is ON (1) or OFF (0). At preset, this is set to OFF. This works with the RF Output on the [TX Analyzer] screen.

UE Category

```
RFGenerator:UECATEgory <1|2|3|4|5|6|11|12>
```

```
RFGenerator:UECATEgory?
```

This command is added when the W06 Option is installed. This command sets **UE Category**. (Varied in response to the **UE Category** on the [Manual Test] screen)

This command is valid when **Modulation** is set from IDLE+DPCH+CQI-1 to IDLE+DPCH+CQI-30. (An execution error occurs when other setting value is set.)

If UE Category is set when **Modulation** is set from IDLE+DPCH+CQI-16 to IDLE+DPCH+CQI-30, the modulation type defined in RFGenarator:MODulation command and Ec/Ior defined in RFGenarator:ECIOR command may be varied accordingly.

An execution error occurs when executing this command in the initial status, because the initial value of **Modulation** is set to `OFF`.

Ec/Ior

`RFGenerator:ECIOR <enum>`

`RFGenerator:ECIOR?`

This command is added when the W06 Option is installed. This command defines the setting pattern of the Ec/Ior (DPCH, HS-SCCH, HS-PDSCH). This command is valid when **Modulation Category** is ranging from `IDLE+DPCH+H-Set1` to `IDLE+DPCH+CQI-30`. (An execution error occurs when other setting value is set.)

The setting pattern of Ec/Ior is varied according to the **Modulation Category** and **UE Category** setting values. (An execution error occurs when invalid setting value is set.)

`RFGenerator:MODulation` value is set to `IDLE+DPCH+H-Set1 to 5`: The allowable range is the valid Ec/Ior patterns defined by the setting values of **Modulation** and **Modulation Type**.

`RFGenerator:MODulation` value is set to `IDLE+DPCH+CQI-1 to 30`: Setting is invalid because Ec/Ior pattern is defined by the **Modulation Category** and **UE Category** setting values. (Only query command is valid.)

Table 5-26 Modulation and Ec/Ior Pattern

Modulation Category	Data/Modulation Type	UE Category	DPCH	HS-SCCH	HS-PDSCH	<enum>
OFF, IDLE	–	–	–	–	–	–
IDLE+DPCH	PN9|PN15	–	–	–	–	–
IDLE+DPCH +H-SET1	QPSK(PN15)	–	–5.0	–7.4	–5.9	–5.0_–7.4_–5.9
			–5.0	–8.4	–5.9	–5.0_–8.4_–5.9
			–8.4	–8.4	–2.9	–8.4_–8.4_–2.9
	16QAM(PN15)	–	–5.0	–7.4	–5.9	–5.0_–7.4_–5.9
			–5.0	–8.4	–5.9	–5.0_–8.4_–5.9
			–8.4	–8.4	–2.9	–8.4_–8.4_–2.9
			–13.0	–13.0	–3.0	–13.0_–13.0_–13.0

Table 5-26 Modulation and Ec/Ior Pattern

Modulation Category	Data/Modulation Type	UE Category	DPCH	HS-SCCH	HS-PDSCH	<enum>
IDLE+DPCH +H-SET2 to 3	QPSK(PN15) 16QAM(PN15)	–	–5.0	–7.4	–5.9	–5.0_–7.4_–5.9
			–5.0	–8.4	–5.9	–5.0_–8.4_–5.9
			–8.4	–8.4	–2.9	–8.4_–8.4_–2.9
IDLE+DPCH +H-SET4 to 5	QPSK(PN15)	–	–5.0	–7.4	–5.9	–5.0_–7.4_–5.9
			–5.0	–8.4	–5.9	–5.0_–8.4_–5.9
			–8.4	–8.4	–2.9	–8.4_–8.4_–2.9
IDLE+DPCH +CQI-1 to 15	QPSK(PN15)	1 to 6,11,12	–10.0	–10.0	–3.0	–10.0_–10.0_–3.0
IDLE+DPCH +CQI-16	16QAM(PN15)	1 to 6	–10.0	–10.0	–3.0	–10.0_–10.0_–3.0
	QPSK(PN15)	11,12	–10.0	–10.0	–4.0	–10.0_–10.0_–4.0
IDLE+DPCH +CQI-17	16QAM(PN15)	1 to 6	–10.0	–10.0	–3.0	–10.0_–10.0_–3.0
	QPSK(PN15)	11,12	–10.0	–10.0	–5.0	–10.0_–10.0_–5.0
IDLE+DPCH +CQI-18	16QAM(PN15)	1 to 6	–10.0	–10.0	–3.0	–10.0_–10.0_–3.0
	QPSK(PN15)	11,12	–10.0	–10.0	–6.0	–10.0_–10.0_–6.0
IDLE+DPCH +CQI-19	16QAM(PN15)	1 to 6	–10.0	–10.0	–3.0	–10.0_–10.0_–3.0
	QPSK(PN15)	11,12	–10.0	–10.0	–7.0	–10.0_–10.0_–7.0
IDLE+DPCH +CQI-20	16QAM(PN15)	1 to 6	–10.0	–10.0	–3.0	–10.0_–10.0_–3.0
	QPSK(PN15)	11,12	–10.0	–10.0	–8.0	–10.0_–10.0_–8.0
IDLE+DPCH +CQI-21	16QAM(PN15)	1 to 6	–10.0	–10.0	–3.0	–10.0_–10.0_–3.0
	QPSK(PN15)	11,12	–10.0	–10.0	–9.0	–10.0_–10.0_–9.0
IDLE+DPCH +CQI-22	16QAM(PN15)	1 to 6	–10.0	–10.0	–3.0	–10.0_–10.0_–3.0
	QPSK(PN15)	11,12	–10.0	–10.0	–10.0	–10.0_–10.0_–10.0
IDLE+DPCH +CQI-23	16QAM(PN15)	1 to 6	–10.0	–10.0	–4.0	–10.0_–10.0_–4.0
	QPSK(PN15)	11,12	–10.0	–10.0	–11.0	–10.0_–10.0_–11.0
IDLE+DPCH +CQI-24	16QAM(PN15)	1 to 6	–10.0	–10.0	–5.0	–10.0_–10.0_–5.0
	QPSK(PN15)	11,12	–10.0	–10.0	–12.0	–10.0_–10.0_–12.0
IDLE+DPCH +CQI-25	16QAM(PN15)	1 to 6	–10.0	–10.0	–6.0	–10.0_–10.0_–6.0
	QPSK(PN15)	11,12	–10.0	–10.0	–13.0	–10.0_–10.0_–13.0
IDLE+DPCH +CQI-26	16QAM(PN15)	1 to 6	–10.0	–10.0	–7.0	–10.0_–10.0_–7.0
	QPSK(PN15)	11,12	–10.0	–10.0	–14.0	–10.0_–10.0_–14.0

Table 5-26 Modulation and Ec/Ior Pattern

Modulation Category	Data/Modulation Type	UE Category	DPCH	HS-SCCH	HS-PDSCH	<enum>
IDLE+DPCH +CQI-27	16QAM(PN15)	1 to 6	−10.0	−10.0	−8.0	−10.0_−10.0_−8.0
	QPSK(PN15)	11,12	−10.0	−10.0	−15.0	−10.0_−10.0_−15.0
IDLE+DPCH +CQI-28	16QAM(PN15)	1 to 6	−10.0	−10.0	−9.0	−10.0_−10.0_−9.0
	QPSK(PN15)	11,12	−10.0	−10.0	−16.0	−10.0_−10.0_−16.0
IDLE+DPCH +CQI-29	16QAM(PN15)	1 to 6	−10.0	−10.0	−10.0	−10.0_−10.0_−10.0
	QPSK(PN15)	11,12	−10.0	−10.0	−17.0	−10.0_−10.0_−17.0
IDLE+DPCH +CQI-30	16QAM(PN15)	1 to 6	−10.0	−10.0	−11.0	−10.0_−10.0_−11.0
	QPSK(PN15)	11,12	−10.0	−10.0	−18.0	−10.0_−10.0_−18.0

OCNS

`RFGenerator:OCNS ---|OFF|ON`

`RFGenerator:OCNS?`

This command is added when the W06 Option is installed. This command sets whether to add the OCNS output to the **Modulation**. This command is available when the W06 Option is installed. An execution error occurs when W06 Option is not installed.

When the **Modulation** is set to OFF, this command cannot be set and only query is valid. When the **Modulation** is set to IDLE or IDLE+DPCH, ON or OFF can be set.

This query command returns ON or OFF regarding whether the **OCNS** output is added to the **Modulation** or not. When the **Modulation** is set to OFF, --- is returned.

Primary Scrambling Code

`RFGenerator:PSCODe <int>`

`RFGenerator:PSCODe?`

This command sets the Down Link Primary Scrambling Code (P-Scrambling) in the **Signal Generator** screen. The range is 0 to 511 by 1 step. PRESET value is 100.

This query command returns the Primary Scrambling Code value.

This command relates to the **TX Analyzer** screen.

Frequency Offset

`RFGenerator:OFFSet <real>`

`RFGenerator:OFFSet?`

This command sets the Frequency Offset value in the **Signal Generator** screen. The range is `-100.0` to `100.0 kHz` by 0.1kHz step. The PRESET value is `0.0 kHz`.

This query command returns the Frequency Offset value.

This command relates to the **TX Analyzer** screen.

HS FRC Error

`RFGenerator:HSDLError ON|OFF|1|0`

`RFGenerator:HSDLError?`

This command is added when the W06 Option is installed. This command sets whether to execute the **HS FRC Error** measurement in the Signal Generator screen. The parameter is set to `ON` (1) or `OFF` (0). At preset this is set to `0`.

When this parameter is set to `ON`: Error pattern is (NErr, Nrev, Nt) = (10,0,0)

When this parameter is set to `OFF`: Error pattern is (NErr, Nrev, Nt) = (0,0,0)

The query command returns `OFF` when all of NErr, Nrev, and Nt are set to `0`, and returns `ON` when one of them is set to something other than `0`.

This command is varied responding to the **HS FRC Error** measurement set by `TESTs:MANual:HSDLError` command.

HCOPy Subsystem

The HCOPy commands are used to control the printing function.

HCOPy Subsystem Command Reference

Print Screen Image

`HCOPy:SDUMp`

This command executes to print a screen image.

SYSTem Subsystem

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

SYSTem Subsystem Command Reference

System Error

`SYSTem:ERRor?`

This query command returns a set of values `<int 1>` and `<string 2>`, for error numbers and error messages. Refer to Table 4-6 for the listings of the error messages.

Lock System Panel

`SYSTem:KLOCk ON|OFF|1|0`

`SYSTem:KLOCk?`

This command locks the control panel functions for protection. At preset, this is set to `0`.

If this is set to `ON` (1), all of the function become inactive, but only the **Local** softkey is defined. When the **Local** softkey is pressed or the command `SYSTem:KLOCk OFF` is sent, the Tester returns to the normal operation.

This command is not identical to the panel key lock on the [Configuration] screen. See Panel Key Control on page 5-26.

This query command returns the selected lock function with integer. The meaning of return value is same as that of the command parameter.

Softkey Memory (Channel)

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

`<int 3>,<int 4>,<int 5>,<int 6>,<int 7>,<int 8>`

`SYSTem:MEMory:CHANnel?`

This command stores the four settings of Channel number into Memory 1, 2, 3 and 4. The stored values are displayed on the softkeys. `<int 1>` and `<int 2>`, `<int 3>` and `<int 4>`, `<int 5>` and `<int 6>`, `<int 7>` and `<int 8>`, in pairs, are correspond to 1, 2, 3, and 4 respectively. `<int 1,3,5,7>` contains Band and preset value is `1`. `<int 2,4,6,8>` contains variables (uplink channel number) and preset value is `99999`. The allowable range of each band, differs in uplink/downlink, is as follows:

Table 5-27 Channel Softkey Memory Allowable Range and Preset Value

Band	Preset Value
Uplink	
1	9600 to 9900
2	9250 to 9550, 12, 37, 62, 87, 112, 137, 162, 187, 212, 237, 262, 287
3	925 to 1300
4	1300 to 1525, 1662, 1687, 1712, 1737, 1762, 1787, 1812, 1837, 1862
5	4120 to 4245, 782, 787, 807, 812, 837, 862
6	4150 to 4200, 812, 837
8	2700 to 2875
9	8750 to 8924
−1 (setting cleared)	99999 (setting cleared)
Downlink	
1	10550 to 10850
2	9650 to 9950, 412, 437, 462, 487, 512, 537, 562, 587, 612, 637, 662, 687
3	1150 to 1525
4	1525 to 1750, 1887, 1912, 1937, 1962, 1987, 2012, 2037, 2062, 2087
5	4345 to 4470,1007, 1012, 1032, 1037, 1062,1087

Table 5-27 Channel Softkey Memory Allowable Range and Preset Value

Band	Preset Value
6	4375 to 4425, 1037, 1062
8	2925 to 3100
9	9225 to 9399
−1 (setting cleared)	

This query command returns the channel number of RFCH and Band with integer. The allowable range is the same as that of the command parameter.

Softkey Memory (BS Level)

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

<real 3>,<real 4>

SYSTem:MEMory:AMPLitude?
```

This command stores the four settings of BS Level into Memory 1, 2, 3 and 4. The stored values are displayed on the softkeys. The allowable range, preset values and steps are as follows:

Table 5-28 BS Level Softkey Memory Allowable Range and Preset Value

Allowable Range	Preset Value
−115.0 to −18.0	−999.9	−999.9

Menu Screen

```
SYSTem:RBT
```

This command returns to the **[Top Menu]** Screen.

It is effective when the response of the `Display?` query command is `INIT`.

Trigger Subsystem

The Trigger commands are used to control a measurement cycle.

Trigger Subsystem Command Reference

Trigger Immediately

`TRIGger:IMMediate`

This command immediately starts a measurement. When measurement is completed, the Tester's state becomes idle.

Trigger Mode

`TRIGger:MODE SINGle|CONTinuous`

`TRIGger:MODE?`

This command sets the trigger mode to either a single or continuous (repetitive) measurement. The parameter is `SINGle` or `CONTinuous`. At preset, this is set to `SINGle`.

This query command returns the selected trigger mode with string.

Abort

`TRIGger:ABORt`

This command aborts measurement and resets the trigger system, and the trigger sequence state returns to idle.

6
Programming Command Summary

This chapter contains summary tables for correlating the screens, softkeys, test parameters and test items with their corresponding syntax for control the Tester.

Agilent Technologies

IEEE Common Commands

The following commands are used to control and query the status of the Tester:

Table 6-1 IEEE Common Command Summary

Item	Command
Identification Query	`*IDN?`
Reset	`*RST`
Operation Complete	`*OPC` `*OPC?`
Clear Status	`*CLS`
Standard Event Status Enable	`*ESE <int>` `*ESE?`
Event Status Register Query	`*ESR?`
Status Byte Register Query	`*STB?`
Instrument Option Query	`*OPT?`
Selftest Result Query	`*TST?`

Top Menu Commands

The following commands are used to set the **[Top Menu]** screen and the **[Configuration]** screen.

Table 6-2 Top Menu Command Summary

Item	Command
System Error	`SYST:ERR?`
Lock System Panel	`SYST:KLOC ON|OFF|1|0` `SYST:KLOC?`
Current Screen	`DISP?`
Top Menu Screen	`DISP:INIT`
Configuration Screen	`DISP:CONF`
Network Setting Screen	`DISP:CONF:NET`
Firmware Update Screen	`DISP:UPDA:FIRM`

Table 6-2 Top Menu Command Summary

Item	Command
Update Flash Screen	`DISP:UPDA:FLAS`
Application Type	`DISP:APPL?`
GSM Application	`APPL:GSM`
W-CDMA Application	`APPL:WCDMA`
CDMA2000 Application	`APPL:CDMA`
GSM(Legacy)Application	`APPL:LEG:GSM`
W-CDMA(Legacy)Application	`APPL:LEG:WCDMA`
Printer Control	`CONF:PRIN PMG800|USBMemory` `CONF:PRIN?`
Beeper Control	`CONF:BEEP ON|OFF|1|0` `CONF:BEEP?`
10 MHz Reference Oscillator	`CONF:ROSC INT|EXT` `CONF:ROSC?`
Date Entry	`CONF:DATE <int YYYY>,<int MM>, <int DD>` `CONF:DATE?`
Time Entry	`CONF:TIME <int HH>, <int MM>` `CONF:TIME?`
Autoboot	`CONF:AUTOB none|GSM|WCDMA|CDMA2000, <int>` `CONF:AUTOB?`
RF Revision	`CONF:REV:RF?`
Tester Mode	`INIT:MOD FUNC` `INIT:MOD?`
Update Type	`UPDA:TYPE USB|HDD|SERVER` `UPDA:TYPE?`
Update Result	`UPDA:RES?`
Update History	`UPDA:HIST?`
Update History Position	`UPDA:HIST:POS <int>` `UPDA:HIST:POS?`
Update History Request Number	`UPDA:HIST:REQ:NUM <int>` `UPDA:HIST:REQ:NUM?`

Table 6-2 Top Menu Command Summary

Item	Command
Update History Number	UPDA:HIST:NUM?
HDD Clear File	UPDA:HDD:CLE:FILE
Server IP Address	UPDA:SER:IP <string>
	UPDA:SER:IP?
Server Reload List	UPDA:SER:RELO:LIST
Update Firmware	UPDA:FIRM:TRIG MENU|FUNC|G00|W00|SYS
Update Top Menu Firmware List	UPDA:FIRM:LIST:MENU?
Update Function Mode Firmware List	UPDA:FIRM:LIST:FUNC?
Top Menu Firmware Revision	UPDA:FIRM:REV:MENU?
Function Mode Firmware Revision	UPDA:FIRM:REV:FUNC?
G00 Alone Firmware Revision	UPDA:FIRM:REV:G00?
W00 Alone Firmware Revision	UPDA:FIRM:REV:W00?
W00 Alone Firmware Revision	UPDA:FIRM:REV:W00?
Update Flash	UPDA:FLAS:TRIG MC1X|1XEVDO
Update MC-1x Flash List	UPDA:FLAS:LIST:MC1X?
Update 1xEV-DO Flash List	UPDA:FLAS:LIST:1XEVDO?
MC-1x Flash ROM Revision	UPDA:FLAS:REV:MC1X?
1xEV-DO Flash ROM Revision	UPDA:FLAS:REV:1XEVDO?

Display Screen

The following commands are used to select a display of each test item and test setup for each function mode.

Table 6-3 DISPlay Subsystem Command Summary

Item	Command
Current Screen	DISP?
Initial Screen	DISP:INIT
Application Type	DISP:APPL?
Tester Mode	DISP:TEST:MOD?

Table 6-3 DISPlay Subsystem Command Summary

Item	Command
Display Mode	`DISP:MODE FAST|TRAC`
	`DISP:MODE?`
Test Screens	
Automatic Test Screen	`DISP:AUTO:STBY`
Manual Test Screen	`DISP:MAN:STBY`
Manual Test SMS Screen	`DISP:MAN:SMS`
TX Analyzer Screen	`DISP:TXAN:STBY`
Signal Generator Screen	`DISP:RFG`
Configuration Screens	
System Configuration Screen	`DISP:CONF`
Test Condition Screen	`DISP:CONF:COND`
Test Condition Loss Screen	`DISP:CONF:COND:LOSS`
Test Condition Limit Screen	`DISP:CONF:COND:LIM`
Test Sequence Screen	`DISP:CONF:SEQ`
File Management Screen	`DISP:CONF:FILE`
Network Setting Screen	`DISP:CONF:NET`

Initial softkey Screen

The following command is used to set [**Initial Softkey**] screen.

Table 6-4 INITialsoftkey Subsystem Command Summary

Item	Command
Current System	`INIT : CUR WCDMA|GSM|CDMA2000`
	`INIT : CUR?`

Configuration Screen

The CONFigure subsystem commands are used to set the controls and parameters associated with the basic system requirement, file management, test condition, and test sequence screens.

System Configuration Screen

The following commands are used to set the reference signal oscillator source, date and time, beeper, RF attenuation, firmware update, and so forth, which are fundamentally required to operate the Tester.

Table 6-5 CONFigure Subsystem Command Summary

Item	Command
Beeper Control	CONF:BEEP ON|OFF|1|0 CONF:BEEP?
10 MHz Reference Oscillator	CONF:ROSC CONF:ROSC?
Date	CONF:DATE <int YYYY>,<int MM>,<int DD> CONF:DATE?
Time	CONF:TIME <int HH>,<int MM> CONF:TIME?
Panel Key Control	CONF:PKEY UNLOCK|LOCK CONF:PKEY?
Log Save	CONF:LOG:DEBUG:SAVE
Printer Control	CONF:PRIN PMG800|USBMemory CONF:PRIN?

Test Sequence : Test Sequence Screen

The following commands are used to set controls and parameters associated with the screen for a test flow and test sequence including the attenuations for each traffic channel, and to define whether to execute each of Pass or Fail tests in Automatic Test.

Table 6-6 SEQuence Command Summary

Item	Command

Radio System	`CONF:SEQ:RFOR W-CDMA|GSM850|GSM900|DCS1800|PCS1900 <<`
	`|CDMA2000MC1X|CDMA2000EVDO|OFF`
	`CONF:SEQ:RFOR?`

Sequence Number	`CONF:SEQ:NO 1|2` `CONF:SEQ:NO?`

Band	`CONF:SEQ:BAND <int>`
	`CONF:SEQ:BAND?`
	`CONF:SEQ:BSLE:BAND <int>`
	`CONF:SEQ:BSLE:BAND?`

BS Level	`CONF:SEQ:AMPL <real>` `CONF:SEQ:AMPL?`
Measurement BS Level	`CONF:SEQ:MEAS <real>` `CONF:SEQ:MEAS?`
Openloop BS Level (Open Loop TX Power BS Level)	`CONF:SEQ:OLP <real>` `CONF:SEQ:OLP?`
BER BS Level	`CONF:SEQ:BER <real>` `CONF:SEQ:BER?`
BER Frame	`CONF:SEQ:SENS:FRAM <int>` `CONF:SEQ:SENS:FRAM?`
FreqError BS Level	`CONF:SEQ:FRQ <real>` `CONF:SEQ:FRQ?`
RF Signal Output Mode	`CONF:SEQ:RFOU AUTO|ON` `CONF:SEQ:RFOU?`
Wait before Paging	`CONF:SEQ:WBP <int>` `CONF:SEQ:WBP?`

Table 6-6 SEQuence Command Summary

Item	Command

RFCH	`CONF:SEQ:VAR:RFCH:CHAN1 <int 1>,<int 2>`
	`CONF:SEQ:VAR:RFCH:CHAN1 ?`
	
	`CONF:SEQ:VAR:RFCH:CHAN2 <int 1>,<int 2>`
	`CONF:SEQ:VAR:RFCH:CHAN2 ?`
	
	`CONF:SEQ:VAR:RFCH:CHAN3 <int 1>,<int 2>`
	`CONF:SEQ:VAR:RFCH:CHAN3 ?`
	
	`CONF:SEQ:VAR:RFCH:CHAN4 <int 1>,<int 2>`
	`CONF:SEQ:VAR:RFCH:CHAN4 ?`
	
	`CONF:SEQ:VAR:RFCH:CHAN5 <int 1>,<int 2>`
	`CONF:SEQ:VAR:RFCH:CHAN5 ?`
	
	`CONF:SEQ:VAR:RFCH:CHAN6 <int 1>,<int 2>`
	`CONF:SEQ:VAR:RFCH:CHAN6 ?`

Open Loop TX Power	`CONF:SEQ:OPEN <int>` `CONF:SEQ:OPEN?`
Inner Loop Power	`CONF:SEQ:INNE <int>` `CONF:SEQ:INNE?`
MAX TX Power	`CONF:SEQ:TPOW <int>` `CONF:SEQ:TPOW?`
Frequency Error	`CONF:SEQ:FREQ <int>` `CONF:SEQ:FREQ?`
EVM	`CONF:SEQ:EVM <int>` `CONF:SEQ:EVM?`
Sensitivity/BER	`CONF:SEQ:SENS:BER <int>` `CONF:SEQ:SENS:BER?`
MIN TX Power	`CONF:SEQ: TPOW:MIN <int>` `CONF:SEQ: TPOW:MIN?`

Table 6-6 SEQuence Command Summary

Item	Command

RF Input Attenuation	`CONF:SEQ:LOSS:RFIN:CHAN1 <<`
	`<real 1>,<real 2>,<real 3>,<real 4>,<real 5>,<real 6>,<real 7>,<real 8>,<real 9>`
	`CONF:SEQ:LOSS:RFIN:CHAN1?`
	
	`CONF:SEQ:LOSS:RFIN:CHAN2 <<`
	`<real 1>,<real 2>,<real 3>,<real 4>,<real 5>,<real 6>,<real 7>,<real 8>,<real 9>`
	`CONF:SEQ:LOSS:RFIN:CHAN2?`
	
	`CONF:SEQ:LOSS:RFIN:CHAN3 <<`
	`<real 1>,<real 2>,<real 3>,<real 4>,<real 5>,<real 6>,<real 7>,<real 8>,<real 9>`
	`CONF:SEQ:LOSS:RFIN:CHAN3?`
	
	`CONF:SEQ:LOSS:RFIN:CHAN4 <<`
	`<real 1>,<real 2>,<real 3>,<real 4>,<real 5>,<real 6>,<real 7>,<real 8>,<real 9>`
	`CONF:SEQ:LOSS:RFIN:CHAN4?`
	
	`CONF:SEQ:LOSS:RFIN:CHAN5 <<`
	`<real 1>,<real 2>,<real 3>,<real 4>,<real 5>,<real 6>,<real 7>,<real 8>,<real 9>`
	`CONF:SEQ:LOSS:RFIN:CHAN5?`
	
	`CONF:SEQ:LOSS:RFIN:CHAN6 <<`
	`<real 1>,<real 2>,<real 3>,<real 4>,<real 5>,<real 6>,<real 7>,<real 8>,<real 9>`
	`CONF:SEQ:LOSS:RFIN:CHAN6?`

Table 6-6 SEQuence Command Summary

Item	Command
RF Output Attenuation	CONF:SEQ:LOSS:RFOUT:CHAN1 << <real 1>,<real 2>,<real 3>,<real 4>,<real 5>,<real 6>,<real 7>,<real 8>,<real 9> CONF:SEQ:LOSS:RFOUT:CHAN1? CONF:SEQ:LOSS:RFOUT:CHAN2 << <real 1>,<real 2>,<real 3>,<real 4>,<real 5>,<real 6>,<real 7>,<real 8>,<real 9> CONF:SEQ:LOSS:RFOUT:CHAN2? CONF:SEQ:LOSS:RFOUT:CHAN3 << <real 1>,<real 2>,<real 3>,<real 4>,<real 5>,<real 6>,<real 7>,<real 8>,<real 9> CONF:SEQ:LOSS:RFOUT:CHAN3? CONF:SEQ:LOSS:RFOUT:CHAN4 << <real 1>,<real 2>,<real 3>,<real 4>,<real 5>,<real 6>,<real 7>,<real 8>,<real 9> CONF:SEQ:LOSS:RFOUT:CHAN4? CONF:SEQ:LOSS:RFOUT:CHAN5 << <real 1>,<real 2>,<real 3>,<real 4>,<real 5>,<real 6>,<real 7>,<real 8>,<real 9> CONF:SEQ:LOSS:RFOUT:CHAN5? CONF:SEQ:LOSS:RFOUT:CHAN6 << <real 1>,<real 2>,<real 3>,<real 4>,<real 5>,<real 6>,<real 7>,<real 8>,<real 9> CONF:SEQ:LOSS:RFOUT:CHAN6?
Location Update	CONF:SEQ:SIGN:LOCUOFF|LU1|LU2 CONF:SEQ:SIGN:LOCU?
MS Call	CONF:SEQ:SIGN:MSCA ON|OFF|1|0 CONF:SEQ:SIGN:MSCA?
Talk Test (MS Call)	CONF:SEQ:SIGN:TALK ON|OFF|1|0 CONF:SEQ:SIGN:TALK?
BS Call (AMR)	CONF:SEQ:SIGN:BSCA:AMR ON|OFF|1|0 CONF:SEQ:SIGN:BSCA:AMR?
Talk Test (AMR)	CONF:SEQ:SIGN:TALK:AMR ON|OFF|1|0 CONF:SEQ:SIGN:TALK:AMR?
BS Call (RMC)	CONF:SEQ:SIGN:BSCA:RMC ON|OFF|1|0 CONF:SEQ:SIGN:BSCA:RMC?
RF Test	CONF:SEQ:SIGN:RFTEST ON|OFF|1|0 CONF:SEQ:SIGN:RFTEST?

Table 6-6 SEQuence Command Summary

Item	Command
Release or Handover(AMR)	`CONF:SEQ:SIGN:REL:AMR REL|HO` `CONF:SEQ:SIGN:REL:AMR?`
Release or Handover(RMC)	`CONF:SEQ:SIGN:REL:RMC REL|HO` `CONF:SEQ:SIGN:REL:RMC?`
3GPP System	`CONF:SEQ:3GPP <int>` `CONF:SEQ:3GPP?`

Configuration : Test Condition Screen

The following commands are used to set the controls and parameters associated with the [**Configuration : Test Condition**] screen.

Table 6-7 CONDition Command Summary

Item	Command
Current System	`CONF:COND:CUR GSM|WCDMA|CDMA2000` `CONF:COND:CUR?`
Radio System	`CONF:COND:RFOR W-CDMA` `CONF:COND:RFOR?`
Band	`CONF:COND:BAND <int>` `CONF:COND:BAND?`
Averaging	`CONF:COND:AVER OFF|<int>` `CONF:COND:AVER?`
BS Level	`CONF:COND:AMPL <real>` `CONF:COND:AMPL?`
BER Frames	`CONF:COND:SENS:FRAM <int>` `CONF:COND:SENS:FRAM?`
Others	
3GPPsystem	`CONF:COND:3GPP <int>` `CONF:COND:3GPP?`
Signaling Pattern	`CONF:COND:SIGN <int>` `CONF:COND:SIGN?`
Signaling Data	`CONF:COND:DAT PN9|PN15` `CONF:COND:DAT?`

Table 6-7 CONDition Command Summary

Item	Command
Mobile Country Code	CONF:COND:NETW:MCC <int> CONF:COND:NETW:MCC?
Mobile Network Code	CONF:COND:NETW:MNC <int> CONF:COND:NETW:MNC?
PRACH Power	CONF:COND:PRACH:STAT ON|OFF|1|0 CONF:COND:PRACH:STAT?
Wait RLC Ack	CONF:COND:WAITRLC ON|OFF|1|0 CONF:COND:WAITRLC?
Loopback Delay	CONF:COND:LDEL SHORT|MID|LONG CONF:COND:LDEL?
Location Update	CONF:COND:LOCU ON|OFF|1|0 CONF:COND:LOCU?
Ciphering	CONF:COND:CIPH ON|OFF|1|0 CONF:COND:CIPH?
Connection Wait	CONF:COND:CON <int> CONF:COND:CON?
Algorithm of power control	CONF:COND:TPCA 1|2 CONF:COND:TPCA?
Authentication Key	CONF:COND:AUTHK:T ORG|STD|USER CONF:COND:AUTHK:T? CONF:COND:AUTHK:K <string> CONF:COND:AUTHK:K?
RMC Handover Alert	CONF:COND:RMCHOA ON|OFF|1|0 CONF:COND:RMCHOA?
W06 Option	
W-CDMA Mode	CONF:COND:WCDMAMOD W-CDMA|HSDPA CONF:COND:WCDMAMOD?
3GPPsystem	CONF:COND:3GPP <int> CONF:COND:3GPP?
Meas. Type	CONF:COND:MEAST TTI|CQI,<int 2> CONF:COND:MEAST?
H-ARQ Retrans	CONF:COND:HARQR 1|4 CONF:COND:HARQR?
W09 Option	
BER Clock edge	CONF:COND:BERC POS|NEG CONF:COND:BERC?

Configuration : Test Condition (Loss) Screen

The following command is used to set the controls and parameters associated with the **[Configuration : Test Condition (Loss)]** screen.

Table 6-8 CONDition (Loss) Command Summary

Item	Command
Attenuation Control	CONF:LOSS ON|OFF|1|0 CONF:LOSS?
	CONF:LOSS:RFIN << <real 1>,<real 2>,<real 3>,<real 4>,<real 5>,<real 6>,<real 7>,<real 8>,<real 9> CONF:LOSS:RFIN?
	CONF:LOSS:RFOU << <real 1>,<real 2>,<real 3>,<real 4>,<real 5>,<real 6>,<real 7>,<real 8>,<real 9> CONF:LOSS:RFOU?

Configuration: Test Condition (Limit) Screen

The following commands are used to set the controls and parameters associated with the **[Configuration: Test Condition (Limit)]** screen.

Table 6-9 CONDition (Limit) Command Summary

Item	Command
Open Loop TX Power	CONF:COND:LIM:OPEN <real LO>,<real HI> CONF:COND:LIM:OPEN?
Inner Loop Power (Down Min)	CONF:COND:LIM:INNE:DMIN <real LO>,<real HI> CONF:COND:LIM:INNE:DMIN
Inner Loop Power (Down Max)	CONF:COND:LIM:INNE:DMAX <real LO>,<real HI> CONF:COND:LIM:INNE:DMAX?
Inner Loop Power (Up Min)	CONF:COND:LIM:INNE:UMIN <real LO>,<real HI> CONF:COND:LIM:INNE:UMIN?
Inner Loop Power (Up Max)	CONF:COND:LIM:INNE:UMAX <real LO>,<real HI> CONF:COND:LIM:INNE:UMAX

Table 6-9 CONDition (Limit) Command Summary

Item	Command
Inner Loop Power (10 slots Down)	`CONF:COND:LIM:INNE:10SD <real LO>,<real HI>` `CONF:COND:LIM:INNE:10SC`
Inner Loop Power (10 slots Up)	`CONF:COND:LIM:INNE:10SU <real LO>,<real HI>` `CONF:COND:LIM:INNE:10SU?`
Max TX Power	`CONF:COND:LIM:TXP <real LO>,<real HI>` `CONF:COND:LIM:TXP?`
Frequency Error Limit	`CONF:COND:LIM:FREQ <real LO>,<real HI>` `CONF:COND:LIM:FREQ?`
EVM	`CONF:COND:LIM:EVM <real HI>` `CONF:COND:LIM:EVM?`
Origin Offset	`CONF:COND:LIM:OOFF <real HI>` `CONF:COND:LIM:OOFF?`
BER	`CONF:COND:LIM:BER <real HI>` `CONF:COND:LIM:BER?`
Min TX Power	`CONF:COND:LIM:TXP:MIN <real HI>` `CONF:COND:LIM:TXP:MIN?`
ACLR DSB 5MHz	`CONF:COND:LIM:ACLR5 <real HI>` `CONF:COND:LIM:ACLR5?`
ACLR DSB 10MHz	`CONF:COND:LIM:ACLR10 <real HI>` `CONF:COND:LIM:ACLR10?`
OBW	`CONF:COND:LIM:OBW <real HI>` `CONF:COND:LIM:OBW?`
W06 Option	
Throughput R	`CONF:COND:LIM:THROUP <int LO>` `CONF:COND:LIM:THROUP?`
Median CQI	`CONF:COND:LIM:MCQI <int LO>,<int HI>` `CONF:COND:LIM:MCQI?`
CQI variance	`CONF:COND:LIM:CQIVAR <real LO>` `CONF:COND:LIM:CQIVAR?`

File Management Screens

The File commands are used to manage the test setup files in the HDD in the Tester or a USB memory device.

Table 6-10 FILE Command Summary

Item	Command
Save File	`CONF:FILE:SAVE <string FILENAME>, <string COMMENT>`
Recall File	`CONF:FILE:REC <string FILENAME>`
Delete File	`CONF:FILE:DEL <string FILENAME>`
Replace File	`CONF:FILE:REP`
Device Control	`CONF:FILE:DEV HDD|USB` `CONF:FILE:DEV?`
List Files	`CONF:FILE:LIST?`
File System	`CONF:FILE:SYST GSM|WCDMA|MULTI` `CONF:FILE:SYST?`

Network Setting Screen

The following commands are used to set the controls and parameters associated with the [**Configuration: Network Setting**] screen.

Table 6-11 NETwork Command Summary

Item	Command
Apply Address	`CONF:NET:APPL:ADDR`
IP Address	`CONF:NET:IP <string IPADDRESS>,<int>` `CONF:NET:IP?`
Default Gateway	`CONF:NET:DEF:GATE <enum>,<string DEFAULTGATEWAY>` `CONF:NET:DEF:GATE?`

Table 6-11 NETwork Command Summary

Item	Command

Gateway	`CONF:NET:GATE:SET1 <<`
	`<enum1>,<IPADDRESS1>,<enum2>,<IPADDRESS2>`
	`CONF:NET:GATE:SET1?`
	
	`CONF:NET:GATE:SET2 <<`
	`<enum1>,<IPADDRESS1>,<enum2>,<IPADDRESS2>`
	`CONF:NET:GATE:SET2?`
	
	`CONF:NET:GATE:SET3 <<`
	`<enum1>,<IPADDRESS1>,<enum2>,<IPADDRESS2>`
	`CONF:NET:GATE:SET3?`
	
	`CONF:NET:GATE:SET4 <<`
	`<enum1>,<IPADDRESS1>,<enum2>,<IPADDRESS2>`
	`CONF:NET:GATE:SET4?`
	
	`CONF:NET:GATE:SET5 <<`
	`<enum1>,<IPADDRESS1>,<enum2>,<IPADDRESS2>`
	`CONF:NET:GATE:SET5?`

Automatic Test Screens

Stand-by/Measuring Screens

The following commands are used to set the controls and parameters associated with the **[Stand-by]** and the **[Measuring]** screen.

Table 6-12 Stand-by / Measuring Screen Command Summary

Item	Command
Screen Mode	`TEST:AUTO:SCR SIMP|DET|VAL` `TEST:AUTO:SCR?`
Caller ID	`TEST:AUTO:CALL:ID <string>` `TEST:AUTO:CALL:ID?`
IMSI	`TESTs:AUTO:IMSI <string>` `TESTs:AUTO:IMSI?`

Table 6-12 Stand-by / Measuring Screen Command Summary

Item	Command
RFCH	`TEST:AUTO:VAR:RFCH:CHAN1 <int 1>,<int 2>`
	`TEST:AUTO:VAR:RFCH:CHAN1?`
	`TEST:AUTO:VAR:RFCH:CHAN2 <int 1>,<int 2>`
	`TEST:AUTO:VAR:RFCH:CHAN2?`
	`TEST:AUTO:VAR:RFCH:CHAN3 <int 1>,<int 2>`
	`TEST:AUTO:VAR:RFCH:CHAN3?`
	`TEST:AUTO:VAR:RFCH:CHAN4 <int 1>,<int 2>`
	`TEST:AUTO:VAR:RFCH:CHAN4?`
	`TEST:AUTO:VAR:RFCH:CHAN5 <int 1>,<int 2>`
	`TEST:AUTO:VAR:RFCH:CHAN5?`
	`TEST:AUTO:VAR:RFCH:CHAN6 <int 1>,<int 2>`
	`TEST:AUTO:VAR:RFCH:CHAN6?`
Talk Test Result	`TEST:AUTO:MEAS:TALK PASS|FAIL`
Signaling State	`TEST:AUTO:MEAS:SIGN:STAT?`
	`TEST:AUTO:MEAS:SIGN:STAT:EXP?`

Test Result

The following query commands return a set of result values of the Automatic Test.

Table 6-13 RESults Command Summary

Item	Command
All Tests Results (summary)	`TEST:AUTO:RES:ALL?`
	`TEST:AUTO:RES:ALL:EXP?`
Open Loop TX Power Measurement	`TEST:AUTO:RES:OPEN1?`
Inner Loop Power Measurement	
Down MIN Measurement	`TEST:AUTO:RES:INNE1:DMIN?`
	`TEST:AUTO:RES:INNE2:DMIN?`
	`TEST:AUTO:RES:INNE3:DMIN?`
	`TEST:AUTO:RES:INNE4:DMIN?`
	`TEST:AUTO:RES:INNE5:DMIN?`
	`TEST:AUTO:RES:INNE6:DMIN?`

Table 6-13 RESults Command Summary

Item	Command
Down MAX Measurement	`TEST:AUTO:RES:INNE1:DMAX?`
	`TEST:AUTO:RES:INNE2:DMAX?`
	`TEST:AUTO:RES:INNE3:DMAX?`
	`TEST:AUTO:RES:INNE4:DMAX?`
	`TEST:AUTO:RES:INNE5:DMAX?`
	`TEST:AUTO:RES:INNE6:DMAX?`
Up MIN Measurement	`TEST:AUTO:RES:INNE1:UMIN?`
	`TEST:AUTO:RES:INNE2:UMIN?`
	`TEST:AUTO:RES:INNE3:UMIN?`
	`TEST:AUTO:RES:INNE4:UMIN?`
	`TEST:AUTO:RES:INNE5:UMIN?`
	`TEST:AUTO:RES:INNE6:UMIN?`
Up MAX Measurement	`TEST:AUTO:RES:INNE1:UMAX?`
	`TEST:AUTO:RES:INNE2:UMAX?`
	`TEST:AUTO:RES:INNE3:UMAX?`
	`TEST:AUTO:RES:INNE4:UMAX?`
	`TEST:AUTO:RES:INNE5:UMAX?`
	`TEST:AUTO:RES:INNE6:UMAX?`
10 Slots Down Measurement	`TEST:AUTO:RES:INNE1:10SD?`
	`TEST:AUTO:RES:INNE2:10SD?`
	`TEST:AUTO:RES:INNE3:10SD?`
	`TEST:AUTO:RES:INNE4:10SD?`
	`TEST:AUTO:RES:INNE5:10SD?`
	`TEST:AUTO:RES:INNE6:10SD?`
10 Slots Up Measurement	`TEST:AUTO:RES:INNE1:10SU?`
	`TEST:AUTO:RES:INNE2:10SU?`
	`TEST:AUTO:RES:INNE3:10SU?`
	`TEST:AUTO:RES:INNE4:10SU?`
	`TEST:AUTO:RES:INNE5:10SU?`
	`TEST:AUTO:RES:INNE6:10SU?`
MAX TX Power Measurement	`TEST:AUTO:RES:TPOW1?`
	`TEST:AUTO:RES:TPOW2?`
	`TEST:AUTO:RES:TPOW3?`
	`TEST:AUTO:RES:TPOW4?`
	`TEST:AUTO:RES:TPOW5?`
	`TEST:AUTO:RES:TPOW6?`
Frequency Error Measurement	`TEST:AUTO:RES:FREQ1?`
	`TEST:AUTO:RES:FREQ2?`
	`TEST:AUTO:RES:FREQ3?`
	`TEST:AUTO:RES:FREQ4?`
	`TEST:AUTO:RES:FREQ5?`
	`TEST:AUTO:RES:FREQ6?`

Table 6-13 RESults Command Summary

Item	Command
EVM Measurement	`TEST:AUTO:RES:EVM1?`
	`TEST:AUTO:RES:EVM2?`
	`TEST:AUTO:RES:EVM3?`
	`TEST:AUTO:RES:EVM4?`
	`TEST:AUTO:RES:EVM5?`
	`TEST:AUTO:RES:EVM6?`
BER Measurement	`TEST:AUTO:RES:SENS:BER1?`
	`TEST:AUTO:RES:SENS:BER2?`
	`TEST:AUTO:RES:SENS:BER3?`
	`TEST:AUTO:RES:SENS:BER4?`
	`TEST:AUTO:RES:SENS:BER5?`
	`TEST:AUTO:RES:SENS:BER6?`
MIN TX Power Measurement	`TEST:AUTO:RES:TPOW:MIN1?`
	`TEST:AUTO:RES:TPOW:MIN2?`
	`TEST:AUTO:RES:TPOW:MIN3?`
	`TEST:AUTO:RES:TPOW:MIN4?`
	`TEST:AUTO:RES:TPOW:MIN5?`
	`TEST:AUTO:RES:TPOW:MIN6?`

MS Information Screen

The following commands are used to get information on the mobile phone under test.

Table 6-14 MSINformation Command Summary

Item	Command
MS Information	
IMSI information	TEST:AUTO:RES:MSIN:IMSI?
IMEI information	TEST:AUTO:RES:MSIN:IMEI?
DIAL information	TEST:AUTO:RES:MSIN:DIAL?

Manual Test Screens

Stand-by Screens

The following commands are used to set the controls and parameters associated with the **[Stand-by]** screen, and to define whether to execute each of measurement items.

Table 6-15 Command Cross Reference for [Stand-by] Screen

Item	Command

Change System	`TEST:MAN:SYST GSM|GPRS|EGPRS|WCDMA|<<`
	`HSDPA|MC1X|EVDO`
	`TEST:MAN:SYST?`

Radio System	`TEST:MAN:RFOR W-CDMA` `TEST:MAN:RFOR?`

RFCH	`TEST:MAN:RFCH:CHAN <int >`
	`TEST:MAN:RFCH:CHAN <int 1>,<int 2>`
	`TEST:MAN:RFCH:CHAN?`

Frequency	`TEST:MAN:RFCH:FREQ <real>`
	`TEST:MAN:RFCH:FREQ <int 1>,<real 2>`
	`TEST:MAN:RFCH:FREQ?`

BS Level	`TEST:MAN:AMPL <real>` `TEST:MAN:AMPL?`
BS Call Type	`TEST:MAN:BSCT AMR|RMC` `TEST:MAN:BSCT?`
Power Control Level	`TEST:MAN:PLEV CONTUP|CONTDOWN|HOLD <int>` `TEST:MAN:PLEV?`
OCNS	`TEST:MAN:OCNS ON|OFF|1|0` `TEST:MAN:OCNS?`
BER Frames	`TEST:MAN:SENS:FRAM <int>` `TEST:MAN:SENS:FRAM?`
Caller ID	`TEST:MAN:CALL:ID:SEND ON|OFF|1|0` `TEST:MAN:CALL:ID:SEND?`
IMSI	`TESTs:MANual:IMSI <string>` `TESTs:MANual:IMSI?`
Authentication Key Type	`TESTs:MANual:AUTHKey:Type ORG|STD|USER` `TESTs:MANual:AUTHKey:Type?`
Authentication Key	`TESTs:MANual:AUTHKey:Key <string>` `TESTs:MANual:AUTHKey:Key?`

Table 6-15 Command Cross Reference for [Stand-by] Screen

Item	Command
Averaging	`TEST:MAN:AVER OFF|<int>` `TEST:MAN:AVER?`
TX Power	`TEST:MAN:TXP:STAT ON|OFF|1|0` `TEST:MAN:TXP:STAT?`
Frequency Error	`TEST:MAN:FREQ:STAT ON|OFF|1|0` `TEST:MAN:FREQ:STAT?`
EVM	`TEST:MAN:EVM:STAT ON|OFF|1|0` `TEST:MAN:EVM:STAT?`
BER	`TEST:MAN:BER:STAT ON|OFF|1|0` `TEST:MAN:BER:STAT?`

UE Measurement Report(Meas REP)	`TEST:MAN:CPRS:STAT ON|OFF|1|0`
	`TEST:MAN:CPRS:STAT?`
	`TEST:MAN:REP:STAT ON|OFF|1|0`
	`TEST:MAN:REP:STAT?`

RF Signal Output	`TEST:MAN:RFOU ON|OFF|1|0` `TEST:MAN:RFOU?`
Set Beta Factor	`TEST:HSBF:3GPP <int>` `TEST:HSBF:3GPP?`
Beta Factor Ratios	`TEST:HSBF:RATIO?`
Call Drop Timer	`TEST:MAN:CDT ON|OFF|1|0` `TEST:MAN:CDT?`
Tx Power Control Algorithm	`TEST:MAN:TPCA 1|2` `TEST:MAN:TPCA?`
W06 Option	
FRC TYPE	`TEST:MAN:FRCTYPE <enum 1>,<enum 2>` `TEST:MAN:FRCTYPE?`
Ec/Ior	`TEST:MAN:ECIOR <enum>` `TEST:MAN:ECIOR?`
Meas. Type	`TEST:MAN:MEAST TTI|CQI,<int 2>` `TEST:MAN:MEAST?`
H-ARQ retrans	`TEST:MAN:HARQR 1|4` `TEST:MAN:HARQR?`
UE Category	`TEST:MAN:UECATE 1 – 6 |11|12` `TEST:MAN:UECATE?`
OCNS	`TEST:MAN:OCNS ON|OFF|1|0` `TEST:MAN:OCNS?`

Table 6-15 Command Cross Reference for [Stand-by] Screen

Item	Command
HS FRC Error	`TEST:MAN:HSDLE ON|OFF|1|0`
	`TEST:MAN:HSDLE?`
Throughput R Test	`TEST:MAN:THROUP:STAT ON|OFF|1|0`
	`TEST:MAN:THROUP:STAT?`
Median CQI Test	`TEST:MAN:CQI:STAT ON|OFF|1|0`
	`TEST:MAN:CQI:STAT?`
BLER Test	`TEST:MAN:BLER:STAT ON|OFF|1|0`
	`TEST:MAN:BLER:STAT?`
W07 Option	
ACLR Measurement	`TEST:MAN:ACLR:STAT ON|OFF|1|0`
	`TEST:MAN:ACLR:STAT?`

Measuring Screens

The following commands are used to set the controls and parameters associated with the **[Measuring]** screen.

Table 6-16 Command Cross Reference for [Measuring] Screen

Item	Command
Power Control Level	`TEST:MAN:PLEV UP|DOWN|CONTUP|CONTDOWN|HOLD <int>`
	`TEST:MAN:PLEV?`
Location Update	`TEST:MAN:LOC`
BS Call	`TEST:MAN:BSC`
BS Release	`TEST:MAN:BSR`
Handover to GSM	`TEST:MAN:HAND:GSM`
Handover to MC1X	`TEST:MAN:HAND:MC1X`
MS Answer	`TEST:MAN:MSA`
Change System	`TEST:MAN:SYST GSM|GPRS|EGPRS|WCDMA|HSDPA|MC1X|EVDO`
Signaling State	`TEST:MAN:SIGN:STAT?`
	`TEST:MAN:SIGN:STAT:EXP?`
Call Clear Status	`TEST:MAN:SCL`
Signaling Results	`TEST:MAN:RES:SIGN?`
	`TEST:MAN:RES:SIGN:EXP?`

Table 6-16 Command Cross Reference for [Measuring] Screen

Item	Command
UE Measurement Report (Meas REP)	TEST:MAN:CPRS:MEAS TEST:MAN:REP:MEAS

Test Result

The following query commands return a set of result values of the Manual Test. There is no command form of this command.

Table 6-17 Command Cross Reference for Manual Test Result

Item	Command
PRACH Power Measurement	TEST:MAN:RES:PRACH?
TX Power Measurement	TEST:MAN:RES:TXP?
Frequency Error Measurement	TEST:MAN:RES:FREQ?
EVM Measurement	TEST:MAN:RES:EVM?
Origin Offset Measurement	TEST:MAN:RES:OOFF?
BER Measurement	TEST:MAN:RES:BER?
CPICH Measurement	TEST:MAN:RES:CPRS? TEST:MAN:RES:ECNO?
W06 Option	
Throughput R Measurement	TEST:MAN:RES:THROUP?
Median CQI Measurement	TEST:MAN:RES:MCQI?
CQI Variance Measurement	TEST:MAN:RES:CQIVAR?
BLER Measurement	TEST:MAN:RES:BLER?
ACK, NACK, DTX Results	TEST:MAN:RES:ACK?
W07 Option	
ACLR DSB	TEST:MAN:RES:ACLR5? TEST:MAN:RES:ACLR10?

MS Information Screen

The following MSINformation commands are used to get information on the mobile phone under test.

Table 6-18 MSINformation Command Cross Reference

Item	Command
IMSI Information	`TEST:MAN:RES:MSIN:IMSI?`
IMEI Information	`TEST:MAN:RES:MSIN:IMEI?`
Dialed Information	`TEST:MAN:RES:MSIN:DIAL?`
W06 Option	
UE Category	`TEST:MAN:RES:MSIN:UECATE?`

SMS Screen

The following commands are used to set controls and parameters relating to the **[SMS]** screen.

Table 6-19 SMS Command Cross Reference

Item	Command

SMS Data	`TEST:MAN:SMS:ASC <string>`
	`TEST:MAN:SMS:ASC?`
	
	`TEST:MAN:SMS:BIN <int 1>,<int 2>,<string 3>`
	`TEST:MAN:SMS:BIN?`
	
	`TEST:MAN:SMS:RX?`

SMS Execute	`TEST:MAN:SMSM`

TX Analyzer Screens

Stand-by Screens

The following commands are used to set the controls and parameters associated with the **[Stand-by]** screen, and to define whether to execute each of measurement items.

Table 6-20 Command Cross Reference for [Stand-by] Screen

Item	Command
Radio System	`TXAN:RFOR W-CDMA` `TXAN:RFOR?`

RFCH	`TXAN:RFCH:CHAN <int>`
	`TXAN:RFCH:CHAN <int 1>,<int 2>`
	`TXAN:RFCH:CHAN?`

Frequency	`TXAN:RFCH:FREQ <real>`
	`TXAN:RFCH:FREQ <int 1>,<real 2>`
	`TXAN:RFCH:FREQ?`

Amplitude	`TXAN:AMPL <real>` `TXAN:AMPL?`

Modulation	`TXAN:MOD IDLE|IDLE+DPCH(PN9)| IDLE+DPCH(PN15)|<<`
	`IDLE+DPCH(PN9)+OCNS|IDLE+DPCH(PN15)+OCNS`
	`TXAN:MOD?`

RF Signal Output Mode	`TXAN:RFOU  ON|OFF|1|0` `TXAN:RFOU?`
Averaging	`TXAN:AVER OFF|2-99` `TXAN:AVER?`
Primary Scrambling Code	`TXANalyzer:PSCODe <int>` `TXANalyzer:PSCODe?`
Frequency Offset	`TXANalyzer:OFFSet <real>` `TXANalyzer:OFFSet?`
TX Power	`TXAN:TXP:STAT ON|OFF|1|0` `TXAN:TXP:STAT?`
Frequency Error	`TXAN:FREQ:STAT ON|OFF|1|0` `TXAN:FREQ:STAT?`
EVM	`TXAN:EVM:STAT ON|OFF|1|0` `TXAN:EVM:STAT?`
Change System	`TXAN:SYST GSM|WCDMA|CDMA2000` `TXAN:SYST?`
W06 Option	
Modulation	`TXAN:MOD IDLE|IDLE+DPCH||PN9|PN15` `TXAN:MOD?`
OCNS	`TXAN:OCNS ---|OFF|ON` `TXAN:OCNS?`
W07 Option	

Table 6-20 Command Cross Reference for [Stand-by] Screen

Item	Command
ACLR	`TXAN:ACLR:STAT ON|OFF|1|0`
	`TXAN:ACLR:STAT?`
OBW	`TXAN:OBW:STAT ON|OFF|1|0`
	`TXAN:OBW:STAT?`
W09 Option	
BER Frames	`TXAN:SENS:FRAM <int>`
	`TXAN:SENS:FRAM?`
BER	`TXAN:BER:STAT ON|OFF|1|0`
	`TXAN:BER:STAT?`

After Measure Screens

The following query commands are used to return the set of result values and Pass or Fail test results of the TX Analyzer Test.

Table 6-21 TPOWer/TXAMplitude Command Summary

Item	Command
TX Power Measurement	`TXAN:RES:TXP?`
Frequency Error Measurement	`TXAN:RES:FREQ?`
EVM Measurement	`TXAN:RES:EVM?`
Origin Offset Measurement	`TXAN:RES:OOFF?`
W07 Option	
ACLR DSB 5MHz	`TXAN:RES:ACLR5?`
ACLR DSB 10MHz	`TXAN:RES:ACLR10?`
OBW	`TXAN:RES:OBW?`

Signal Generator Screen

The following RFGenerator subsystem commands are used to configure the functions and parameters for RF signal generator.

Table 6-22 RFGenerator Subsystem Command Summary

Item	Command
Radio System	RFG:RFOR W-CDMA RFG:RFOR?
RFCH	RFG:CHAN <int> RFG:CHAN <int 1>,<int 2> RFG:CHAN?
Frequency	RFG:FREQ <real> RFG:FREQ <int 1>,<real 2> RFG:FREQ?
Amplitude	RFG:AMPL <real> RFG:AMPL?
Modulation	RFG:MOD OFF|IDLE|IDLE+DPCH(PN9)|IDLE+DPCH(PN15)|<< IDLE+DPCH(PN9)+OCNS|IDLE+DPCH(PN15)+OCNS RFG:MOD?
RF Signal Output	RFG:RFOU ON|OFF|1|0 RFG:RFOU?
Change System	RFG:SYST GSM|WCDMA|CDMA2000 RFG:SYST?
W06 Option	
Modulation	RFG:MOD <enum 1>,<enum 2> RFG:MOD?
UE Category	RFG:UECATE <int> RFG:UECATE?
Ec/Ior	RFG:ECIOR <enum> RFG:ECIOR?
OCNS	RFG:OCNS ---|OFF|ON RFG:OCNS?
Primary Scrambling Code	RFGenerator:PSCODe <int> RFGenerator:PSCODe?
Frequency Offset	RFGenerator:OFFSet <real> RFGenerator:OFFSet?
HS FRC Error	RFG:HSDLE ON|OFF|1|0 RFG:HSDLE?

Print Screen Function

The following HCOPy subsystem commands are used to control the printing function of the Tester:

Table 6-23 HCOPy Subsystem Command Summary

Item	Command
Dump Screen Image	HCOP:SDUM

System Control Function

The following commands are used to control and query the system status of the Tester:

Table 6-24 SYSTem Subsystem Command Summary

Item	Command
System Error	SYST:ERR?
Lock System Panel	SYST:KLOC ON|OFF|1|0 SYST:KLOC?
Softkey Memory	
Softkey Memory (Channel)	SYST:MEM:CHAN <int 1>,<int 2>,<int 3>,<int 4> << <int 5>,<int 6>,<int 7>,<int 8> SYST:MEM:CHAN?
Softkey Memory (BS Level)	SYST:MEM:AMPL <real 1>, <real 2>, <real 3>, <real 4> SYST:MEM:AMPL?
Menu Screen	
Display Menu Screen	SYST:RBT

Trigger Subsystem

The following commands are used to control the trigger function of the Tester:

Table 6-25 TRIGger Subsystem Command Summary

Item	Command
Trigger Immediately	TRIG:IMM
Trigger Mode	TRIG:MODE SING|CONT TRIG:MODE?
Abort	TRIG:ABOR

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7
Sample Program

This chapter explains a few example programs contained in the CD-R to be used for testing a W-CDMA mobile phone with the Tester. The example programs uses Microsoft Windows and Microsoft Visual Basic. Refer to the instruction manual of the Visual Basic for further information.

Summary of Sample Programs

The sample program in this chapter starts a test automatically when a test start button on the PC window is pressed. Operates the mobile phone by following the directions on the window. The performance of each test is described in the test event.

The following section describes the program structure.

1 Components of Screen. (Refer to Components of Screen).

2 Functions (status display, sent and received data) (Refer to Functions).

3 Test Events (Refer to Test Event).

Components of Screen

The sample program screen is shown in Figure 7-1.

Figure 7-1 Sample Program Screen
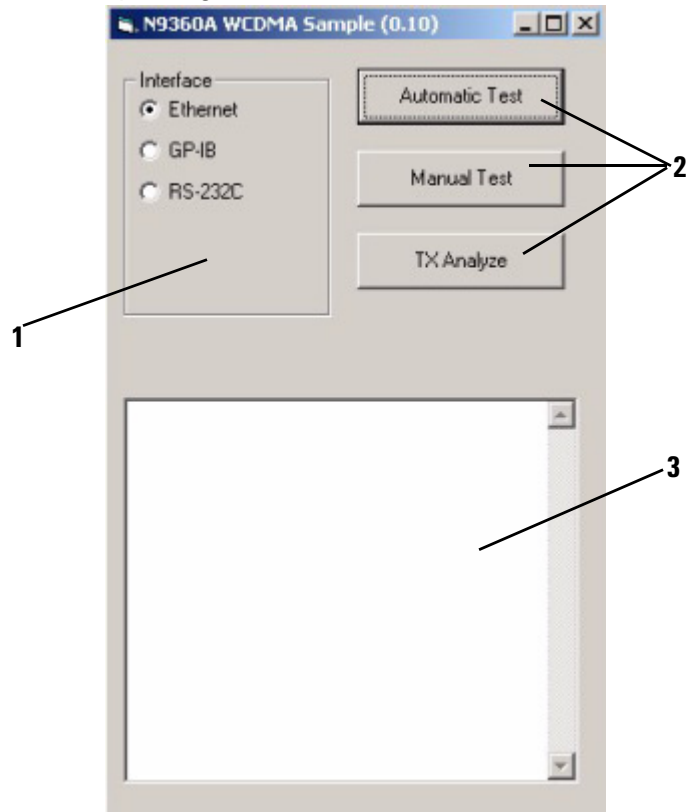
Components of the screen are as follows:

1 Interface field — Selects an interface from Ethernet, GP-IB or RS-232C. Controls the Tester by the selected interface. The configuration of the interface is shown in Figure 7-1.

2 Test buttons — Starts each test by pressing a button.

3 Status field — Displays the status and results of the test.

This program runs with the configuration shown in Table 7-1.

Table 7-1 Interface Configuration

		Tester	PC
Ethernet	IP Address	192.168.0.1	192.168.0.2 to 255
	Subnet Mask	255.255.255.0	255.255.255.0
	Port	10123 (fix)	10123 (fix)
GP-IB	GP-IB Address	2	1
	EOI	On	On
RS-232C	Port	—	COM1
	Baud Rate	9600 bps	9600 bps
	Parity	None	None
	Data Length	8 bit	8 bit
	Stop Bit	1 bit	1 bit
Common	Terminator (PC to Tester) (Tester to PC)	LF (fix) CR+LF or LF	LF (fix) CR+LF or LF

Functions

The sample programs are used to execute each individual function such as Automatic Test, Manual Test, etc. The functions described in Status display function and Functions for Sent and Received Data are called as subroutines from the modules explained in the following sections.

Status display function

The function to manipulate the status field display is described in Table 7-2. Refer to the manual of Visual Basic for further details about Visual Basic. If the GP-IB interface is used to control the Tester, refer to the manual of the GP-IB interface card.

Table 7-2 Status Display Function

Subroutine Name	Capability
AddStatus `string`	Displays the string in the status field.
ClrStatus	Clears the status field.

Functions for Sent and Received Data

The functions to communicate data between a PC and the Tester are described in Table 7-3. The interface is selected on the **interface** field.

Refer to the manual of Visual Basic for further details about Visual Basic. If the GP-IB interface is used to control the Tester, refer to the manual of the GP-IB interface card.

Table 7-3 Functions for Sending and Receiving Data

Subroutine Name	Capability
ENTER `string`	Sends a query command the `string` and receives a status.
OUTPUT **command**	Sends the **command**. (Displays the **command** after sending the **command**).
WAIT `string`, status	Sends a query command the `string` and waits until the status becomes the specified `string`.

Test Event

When the Test button is pressed, the program executes the test.

The Visual Basic standard functions are used to initialize, open and close Ethernet port and RS-232C port. The functions provided by the GP-IB interface card manufacture is used to initialize, open and close GP-IB port.

Outlines of the program are described below.

1 Initialize the interface specified on the Interface field.

2 Execute the Test Function according to the pressed test button. (Refer to the manual of Visual Basic for further details about Visual Basic. If the GP-IB interface is used to

control the Tester, refer to the manual of the GP-IB interface card)

3 Close the interface specified on the Interface field.

Automatic Test Function

The Tester is configured to required setting for the test at the beginning of this function. Then, the Tester executes the signaling tests and RF tests on a channel. The PASS or FAIL test results and measurement results are shown on the status field. Operations by an operator for test are shown on the status field.

```
1: Public Sub Automatic_Sample()
2: Dim value
3:
4: ClrStatus
5:
6:' Tester Status
7: value = Split(ENTER("*IDN?"), ",")
8: AddStatus value(0)
9: AddStatus value(1)
10: AddStatus value(2)
11: AddStatus value(3)
12:
13:' Configuration
14: OUTPUT "*RST"
15: OUTPUT "CONF:LOSS ON"
16: OUTPUT "CONF:LOSS:RFIN
    5.0,0.0,0.0,0.0,0.0,5.0,0.0,0.0,0.0,0.0"
17: OUTPUT "CONF:LOSS:RFOU
    5.0,0.0,0.0,0.0,0.0,5.0,0.0,0.0,0.0,0.0"
18: OUTPUT "CONF:COND:3GPP 2"
19: OUTPUT "CONF:SEQ:VAR:RFCH:CHAN1 1,9800"
20: OUTPUT "CONF:SEQ:VAR:RFCH:CHAN2 6,4200"
21:
22:' Measure Setup
```

```
23: OUTPUT "TEST:AUTO:SCR VAL"

24:

25:' Signaling Test

26: OUTPUT "TRIG:IMM"

27: AddStatus "Turn on the mobile phone. "

28: WAIT "TEST:AUTO:MEAS:SIGN:STAT?", 2

29: AddStatus "Please MS Call"

30: WAIT "TEST:AUTO:MEAS:SIGN:STAT?", 4

31: AddStatus "Talk"

32: If MsgBox("Talk Pass?", vbYesNo) = vbYes Then

33: OUTPUT "TEST:AUTO:MEAS:TALK PASS"

34: Else

35: OUTPUT "TEST:AUTO:MEAS:TALK FAIL"

36: End If

37: AddStatus "Please MS Release"

38: WAIT "TEST:AUTO:MEAS:SIGN:STAT?", 8

39: AddStatus "Please off hook"

40: WAIT "TEST:AUTO:MEAS:SIGN:STAT?", 32

41: AddStatus "Talk"

42: If MsgBox("Talk Pass?", vbYesNo) = vbYes Then

43: OUTPUT "TEST:AUTO:MEAS:TALK PASS"

44: Else

45: OUTPUT "TEST:AUTO:MEAS:TALK FAIL"

46: End If

47:

48: WAIT "*STB?", 0

49:

50:' RF Test

51: Dim channel As Integer

52:

53: For channel = 1 To 2

54: value = Split(ENTER("TEST:AUTO:RES:OPEN" +
    CStr(channel) + "?"), ",")

55: AddStatus "Open Loop TX Power :" + value(2) +
    "dBm " + IIf(value(1) And 1, "FAIL", "PASS")
```

```
56: value = Split(ENTER("TEST:AUTO:RES:INNE" +
    CStr(channel) + ":DMIN?"), ",")

57: AddStatus "ILP(Down Min)     :" + value(2) +
    "dB " + IIf(value(1) And 1, "FAIL", "PASS")

58: value = Split(ENTER("TEST:AUTO:RES:INNE" +
    CStr(channel) + ":DMAX?"), ",")

59: AddStatus "ILP(Down Max)     :" + value(2) +
    "dB " + IIf(value(1) And 1, "FAIL", "PASS")

60: value = Split(ENTER("TEST:AUTO:RES:INNE" +
    CStr(channel) + ":DMIN?"), ",")

61: AddStatus "ILP(Up Min)       :" + value(2) +
    "dB " + IIf(value(1) And 1, "FAIL", "PASS")

62: value = Split(ENTER("TEST:AUTO:RES:INNE" +
    CStr(channel) + ":DMAX?"), ",")

63: AddStatus "ILP(Up Max)       :" + value(2) +
    "dB " + IIf(value(1) And 1, "FAIL", "PASS")

64: value = Split(ENTER("TEST:AUTO:RES:INNE" +
    CStr(channel) + ":10SD?"), ",")

65: AddStatus "ILP(10Slots Down)  :" + value(2) +
    "dB " + IIf(value(1) And 1, "FAIL", "PASS")

66: value = Split(ENTER("TEST:AUTO:RES:INNE" +
    CStr(channel) + ":10SU?"), ",")

67: AddStatus "ILP(10Slots Up)    :" + value(2) +
    "dB " + IIf(value(1) And 1, "FAIL", "PASS")

68: value = Split(ENTER("TEST:AUTO:RES:TPOW" +
    CStr(channel) + "?"), ",")

69: AddStatus "MAX TX Power       :" + value(2) +
    "dBm " + IIf(value(1) And 1, "FAIL", "PASS")

70: value = Split(ENTER("TEST:AUTO:RES:FREQ" +
    CStr(channel) + "?"), ",")

71: AddStatus "Frequency Error    :" + value(2) +
    "Hz " + IIf(value(1) And 1, "FAIL", "PASS")

72: value = Split(ENTER("TEST:AUTO:RES:EVM" +
    CStr(channel) + "?"), ",")

73: AddStatus "EVM                :" + value(2) +
    "Hz " + IIf(value(1) And 1, "FAIL", "PASS")

74: value = Split(ENTER("TEST:AUTO:RES:SENS:BER"
    + CStr(channel) + "?"), ",")

75: AddStatus "Sensitivity/BER    :" + value(2) +
    "Hz " + IIf(value(1) And 1, "FAIL", "PASS")
```

```
76: Next

77:

78: AddStatus "Complete"

79: End Sub
```

Table 7-4 Program Comments

Row	Description
2:	Declares the variables to store test results.
4:	Erases the status field.
7:	Queries the manufacturer, model number, serial number and revision number of the firmware.
8-11:	Displays the manufacturer, model number, serial number and revision number of the firmware in the status field.
14:	Resets the Tester to the default setting for programming.
15:	Activates the Loss correction function.
16:	Sets the **Loss RF IN** field.
17:	Sets the **Loss RF OUT** field.
18:	Sets the 3GPP System.
19:	Sets the Band and RFCH.
20:	Sets the Band and RFCH.
23:	Selects the measurement value screen.
26:	Starts the Automatic Test.
27:	Directs a user: **Turn on the mobile phone.**
28:	Waits until the location update is completed.
29:	Directs the user: **Please MS Call.**
30:	Waits until the state is **Talk** test.
31:	Directs the user: **Talk.**
32-36:	Confirms PASS/FAIL of the voice loop-back test. Displays the test results, input to the Tester from the PC by the user, on the screen of the Tester.
37:	Directs the user: **Please MS Release.**
38:	Waits until the MS Release is completed.
39:	Directs the user: **Please off hook.**
40:	Waits until the state is **Talk** test.
41:	Directs the user: **Talk.**

Table 7-4 Program Comments

Row	Description
42-46:	Confirms PASS/FAIL of the voice loop-back test. Displays the test results, input to the Tester from the PC by the user, on the screen of the Tester.
48:	Waits until the measurement is completed.
51:	Defines the variable of channel number for the measurement result display.
52: (-76:)	For channel = 1 to 1.
54:	Queries the measurement result of Open Loop TX Power.
55:	Displays the measurement value and judgment result of Open Loop TX Power in the status field.
56:	Queries the measurement result of ILP (Down Min)
57:	Displays the measurement value and judgment result of ILP(Down Min) in the status field.
58:	Queries the measurement result of ILP (Down Max)
59:	Displays the measurement value and judgment result of ILP(Down Max) in the status field.
60:	Queries the measurement result of ILP (Up Min)
61:	Displays the measurement value and judgment result of ILP(Up Min) in the status field.
62:	Queries the measurement result of ILP (Up Max)
63:	Displays the measurement value and judgment result of ILP(Up Max) in the status field.
64:	Queries the measurement result of ILP (10 Slots Down)
65:	Displays the measurement value and judgment result of ILP(10 Slots Down) in the status field.
66:	Queries the measurement result of ILP (10 Slots Up)
67:	Displays the measurement value and judgment result of ILP (10 Slots Up) in the status field.
68:	Queries the measurement result MAX TX Power.
69:	Displays the measurement value and judgment result of MAX TX Power in the status field.
70:	Queries the measurement result of Frequency Error.
71:	Displays the measurement value and judgment result of Frequency Error in the status field.
72:	Queries the measurement result of EVM.
73:	Displays the measurement value and judgment result of EVM in the status field.
74:	Queries the measurement result of Sensitivity/BER.
75:	Displays the measurement value and judgment result of Sensitivity/BER in the status field.
78:	Displays **Complete** message in the status field.

Manual Test Function

The Tester is configured to the required setting for the test at the beginning of this function. Then, the Tester executes the TX Power, Frequency Error, EVM and BER measurement.

the PASS/FAIL test result and measurement results are shown on the status field. Operations by an operator for the test are shown on the status field.

```
1: Public Sub Manual_Sample()
2: Dim value
3:
4: ClrStatus
5:
6: ' Tester Status
7:  value = Split(ENTER("*IDN?"), ",")
8:  AddStatus value(0)
9:  AddStatus value(1)
10:  AddStatus value(2)
11:  AddStatus value(3)
12:
13: ' Configuration
14:  OUTPUT "*RST"
15:  OUTPUT "CONF:LOSS ON"
16:  OUTPUT "CONF:LOSS:RFIN
     5.0,0.0,0.0,0.0,0.0,5.0,0.0,0.0,0.0,0.0"
17:  OUTPUT "CONF:LOSS:RFOU
     5.0,0.0,0.0,0.0,0.0,5.0,0.0,0.0,0.0,0.0"
18:  OUTPUT "CONF:COND:3GPP 2"
19:
20: ' Measure Setup
21:  OUTPUT "TEST:MAN:BSCT RMC"
22:  OUTPUT "TEST:MAN:RFCH:CHAN 1,9800"
23:  WAIT "TEST:MAN:SIGN:STAT?", 16
24:  AddStatus "Turn on the mobile phone."
25:  WAIT "TEST:MAN:SIGN:STAT?", 32
```

26: AddStatus "Wait until the [Location Update] is passed."

27: WAIT "TEST:MAN:SIGN:STAT?", 16

28: OUTPUT "TEST:MAN:BSC"

29: WAIT "TEST:MAN:SIGN:STAT?", 2

30:

31:' CPICH RSCP

32: value = Split(ENTER("TEST:MAN:RES:CPRS?"), ",")

33: AddStatus "CPICH RSCP   :" + value(2) + "dBm " + IIf(value(1) And 1, "FAIL", "PASS")

34:

35:' Measure

36: OUTPUT "TRIG:IMM"

37: WAIT "*STB?", 0

38:

39:' TX Power

40: value = Split(ENTER("TEST:MAN:RES:TXP?"), ",")

41: AddStatus "Peak TX Power   :" + value(2) + "dBm " + IIf(value(1) And 1, "FAIL", "PASS")

42:

43:' Freq Error

44: value = Split(ENTER("TEST:MAN:RES:FREQ?"), ",")

45: AddStatus "Frequency Error : " + value(2) + "Hz " + IIf(value(1) And 1, "FAIL", "PASS")

46:

47:' EVM

48: value = Split(ENTER("TEST:MAN:RES:EVM?"), ",")

49: AddStatus "EVM   : " + value(2) + "% " + IIf(value(1) And 1, "FAIL", "PASS")

50:

51:' Origin Offset

52: value = Split(ENTER("TEST:MAN:RES:OOFF?"), ",")

```
53: AddStatus "Origin Offset   : " + value(2) +
    "dB " + IIf(value(1) And 1, "FAIL", "PASS")

54:

55:' BER

56: value = Split(ENTER("TEST:MAN:RES:BER?"),
    ",")

57: AddStatus "BER            : " + value(2) + "%
    " + IIf(value(1) And 1, "FAIL", "PASS")

58:

59:' BS Release

60: OUTPUT "TEST:MAN:BSR"

61:

62: AddStatus "Complete"

63: End Sub
```

Table 7-5 Programming Comments

Row	Description
2:	Declares the variable to store test results.
4:	Erases the status field.
7:	Queries the manufacturer, model number, serial number and revision number of the firmware.
8-11:	Displays the manufacturer, model number, serial number and revision number of the firmware on the status field.
14:	Resets the Tester to the default setting for programming.
15:	Activates the Loss correction function.
16:	Sets the **Loss RF IN** field.
17:	Sets the **Loss RF OUT** field.
18:	Sets the 3GPP System.
21:	Sets the **BS Call Type** to RMC.
22:	Sets the Band and RFCH.
23:	Completes settings and waits until the [Manual] screen is displayed.
24:	Directs a user: **Turn on the mobile phone.**
25:	Wait until the signaling state is **Location Update.**
26:	Directs a user: **Wait until [Location Update] is passed.**
27:	Wait until [Location Update] is passed.
28:	Executes the BS Call.

Table 7-5 Programming Comments

Row	Description
29:	Wait until the signaling state becomes **Connection (RMC)**.
32:	Queries the measurement result of CPICH RSCP
33:	Displays the measurement value and judgment result of CPICH RSCP in the status field.
36:	Starts the Peak TX Power measurement.
37:	Waits until the measurement is completed.
40:	Queries the measurement result of Peak TX Power.
41:	Displays the measurement value and judgment result of Peak TX Power in the status field.
44:	Queries the measurement result of Frequency Error.
45:	Displays the measurement value and judgment result of Frequency Error in the status field.
48:	Queries the measurement result of EVM.
49:	Displays the measurement value and judgment result of EVM in the status field.
52:	Queries the measurement result of Origin Offset.
53:	Displays the measurement value and judgment result of Origin Offset in the status field.
56:	Queries the measurement result of BER.
57:	Displays the measurement value and judgment result of BER in the status field.
60:	Executes the BS Release.
62:	Displays **Complete** message in the status field.

TX Analyzer Function

The Tester is configured to the Signal Generator mode at the beginning of this function. Then, the Tester executes the Peak TX Power , Frequency Error and EVM measurement with the TX Analyzer mode. The PASS/FAIL test results and measurement results are shown on the status field.

1: Public Sub TXAN_Sample()

2: Dim value

3:

4: ClrStatus

5:

6: ' Tester Status

7: value = Split(ENTER("*IDN?"), ",")

8: AddStatus value(0)

9: AddStatus value(1)

10: AddStatus value(2)

11: AddStatus value(3)

12:

13: OUTPUT "*RST"

14:

15: ' Configuration

16: OUTPUT "CONF:LOSS ON"

17: OUTPUT "CONF:LOSS:RFIN
5.0,0.0,0.0,0.0,0.0,5.0,0.0,0.0,0.0,0.0,0.0"

18: OUTPUT "CONF:LOSS:RFOU
5.0,0.0,0.0,0.0,0.0,5.0,0.0,0.0,0.0,0.0,0.0"

19: OUTPUT "CONF:COND:AVER 10"

20: OUTPUT "CONF:COND:AMPL -60.0"

21: OUTPUT "CONF:COND:3GPP 2"

22:

23: ' Signal Generator

24: OUTPUT "TXAN:MOD IDLE"

25: OUTPUT "TXAN:RFOU ON"

26:

27: ' Measure

28: OUTPUT "TXAN:RFCH:CHAN 1,9600"

29: OUTPUT "TRIG:IMM"

30: WAIT "*STB?", 0

31: value = Split(ENTER("TXAN:RES:TXP?"), ",")

32: AddStatus "Peak TX Power   :" + value(2) + "dBm " +
IIf(value(1) And 1, "FAIL", "PASS")

33: value = Split(ENTER("TXAN:RES:FREQ?"), ",")

34: AddStatus "Frequency Error :" + value(2) + "Hz " +
IIf(value(1) And 1, "FAIL", "PASS")

35: value = Split(ENTER("TXAN:RES:EVM?"), ",")

36: AddStatus "EVM   :" + value(2) + "% " + IIf(value(1) And
1, "FAIL", "PASS")

37: value = Split(ENTER("TXAN:RES:OOFF?"), ",")

38: AddStatus "Origin Offset   :" + value(2) + "dB " + IIf(value(1) And 1, "FAIL", "PASS")

39:

40: AddStatus "Complete"

41:

42: End Sub

Table 7-6 Program Comments

Row	Description
2:	Declares the variable to store test results.
4:	Erases the status field.
7:	Queries the manufacturer, model number, serial number and revision number of the firmware.
8-11:	Displays the manufacturer, model number, serial number and revision number of the firmware on the status field.
13:	Resets the Tester to the default setting for programming.
16:	Activates the Loss correction function.
17:	Sets the **Loss RF IN** field.
18:	Sets the **Loss RF OUT** field.
19:	Sets the Averaging.
20:	Sets the Amplitude (BS Level).
21:	Sets the 3GPP System.
24:	Sets the Modulation to IDLE.
25:	Sets the RF OUTPUT to ON.
28:	Sets the Band and RFCH.
29:	Starts the measurement.
30:	Waits until the measurement is completed.
31:	Queries the measurement result of TX Power.
32:	Displays the measurement value and judgment result of TX Power in the status field.
33:	Queries the measurement result of Frequency Error.
34:	Displays the measurement value and judgment result of Frequency Error in the status field.
35:	Queries the measurement result of EVM.
36:	Displays the measurement value and judgment result of EVM in the status field.
37:	Queries the measurement result of Origin Offset.

Table 7-6 Program Comments

Row	Description
38:	Displays the measurement value and judgment result of Origin Offset in the status field.
40:	Displays **Complete** message in the status field.

8
Syntax Diagrams
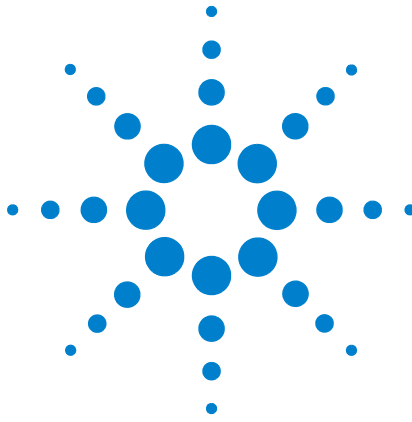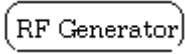
In this Appendix, the syntax diagram for each subsystem commands is shown. These diagrams use a graphical format to represent the hierarchical structure of system.

Graphical Conversions

The followings describe two graphical conversions used in the syntax diagrams.

RF Generator	: Represents a command. A query command trails a question mark.
:	: Indicates that a colon must be used between two commands.
sp	: Indicates that a space must be used as a part of the command line.
int	: Represents one or multiple parameters for integer, real, string or bool.

Query commands have different return values. Consult with the other section in this guide or the User's Guide for detailed information.

Syntax Diagrams

Figure 8-1 IEEE Common Commands

Figure 8-2 Top Menu Commands

Figure 8-3 Top Menu Commands

Figure 8-4 DISPlay Subsystem

Figure 8-5 INITialsoftkey Subsystem

Figure 8-6 Configure Subsystem

(a)   (b)   (d)

Figure 8-7 Configure Subsystem (continued)

Figure 8-8 Configure Subsystem (continued)

(a)   (b)   (d)

```
      :  ( 3GPPsystem? )───────────────────────────────────────────────────
      :  ( 3GPPsystem )──────────────────────────────( sp )──[ init ]───────
      :  ( SIGNalingpattern? )─────────────────────────────────────────────
      :  ( SIGNalingpattern )───────────────────────( sp )──[ init ]────────
      :  ( DATa? )─────────────────────────────────────────────────────────
      :  ( DATa )───────────────────────────────────( sp )──[ enum ]────────
      :  ( LDELay? )───────────────────────────────────────────────────────
      :  ( LDELay )─────────────────────────────────( sp )──[ enum ]────────
      :  ( LOCUpdate? )────────────────────────────────────────────────────
      :  ( LOCUpdate )──────────────────────────────( sp )──[ bool ]────────
      :  ( CIPHering? )────────────────────────────────────────────────────
      :  ( CIPHering )──────────────────────────────( sp )──[ bool ]────────
      :  ( TPCAlgorithm? )─────────────────────────────────────────────────
      :  ( TPCAlgorithm )───────────────────────────( sp )──[ enum ]────────
      :  ( CONnectionwait? )───────────────────────────────────────────────
      :  ( CONectionwait )──────────────────────────( sp )──[ init ]────────
      :  ( AUTHKey )
                    :  ( Type? )──────────────────────────────────────────
                    :  ( Type )──────────────────────( sp )──[ enum ]──────
                    :  ( Key? )───────────────────────────────────────────
                    :  ( Key )───────────────────────( sp )──[ string ]────
      :  ( RMCHOAlert? )───────────────────────────────────────────────────
      :  ( RMCHOAlert )─────────────────────────────( sp )──[ bool ]────────
      :  ( BERClockedge? )─────────────────────────────────────────────────
      :  ( BERClockedge )───────────────────────────( sp )──[ enum ]────────
      :  ( NETWork )
                    :  ( MCC? )──────────────────────────────────────────
                    :  ( MCC )───────────────────────( sp )──[ int ]───────
                    :  ( MNC? )──────────────────────────────────────────
                    :  ( MNC )───────────────────────( sp )──[ int ]───────
      :  ( PRACHpower )
                    :  ( STATe? )────────────────────────────────────────
                    :  ( STATe )─────────────────────( sp )──[ bool ]──────
      :  ( WAITRLCackho? )─────────────────────────────────────────────────
      :  ( WAITRLCackho )───────────────────────────( sp )──[ bool ]────────
```
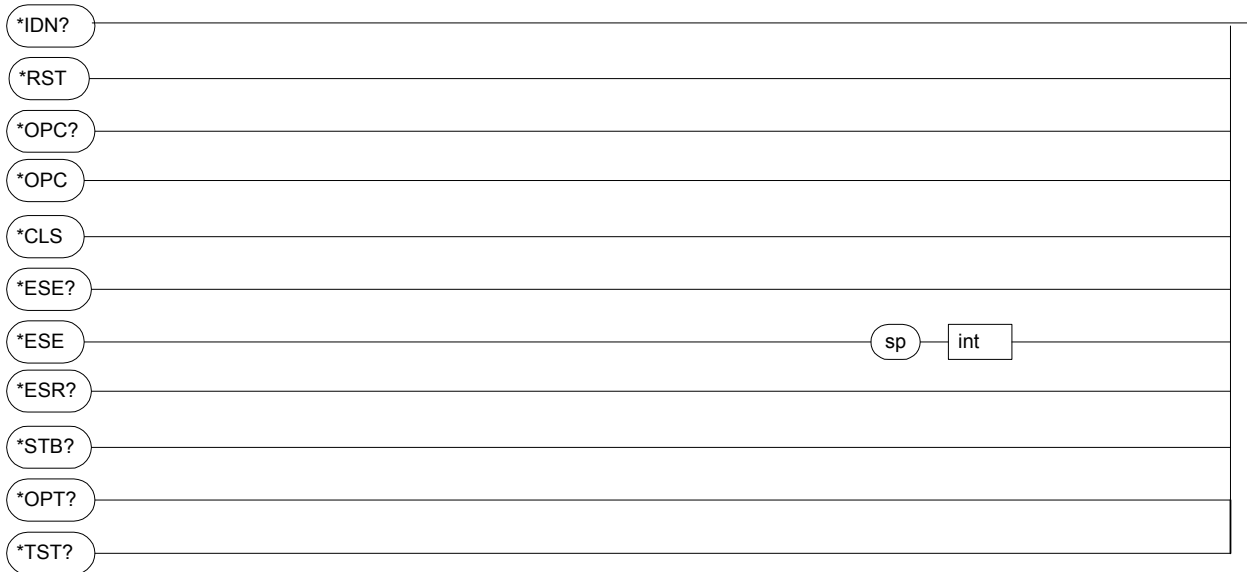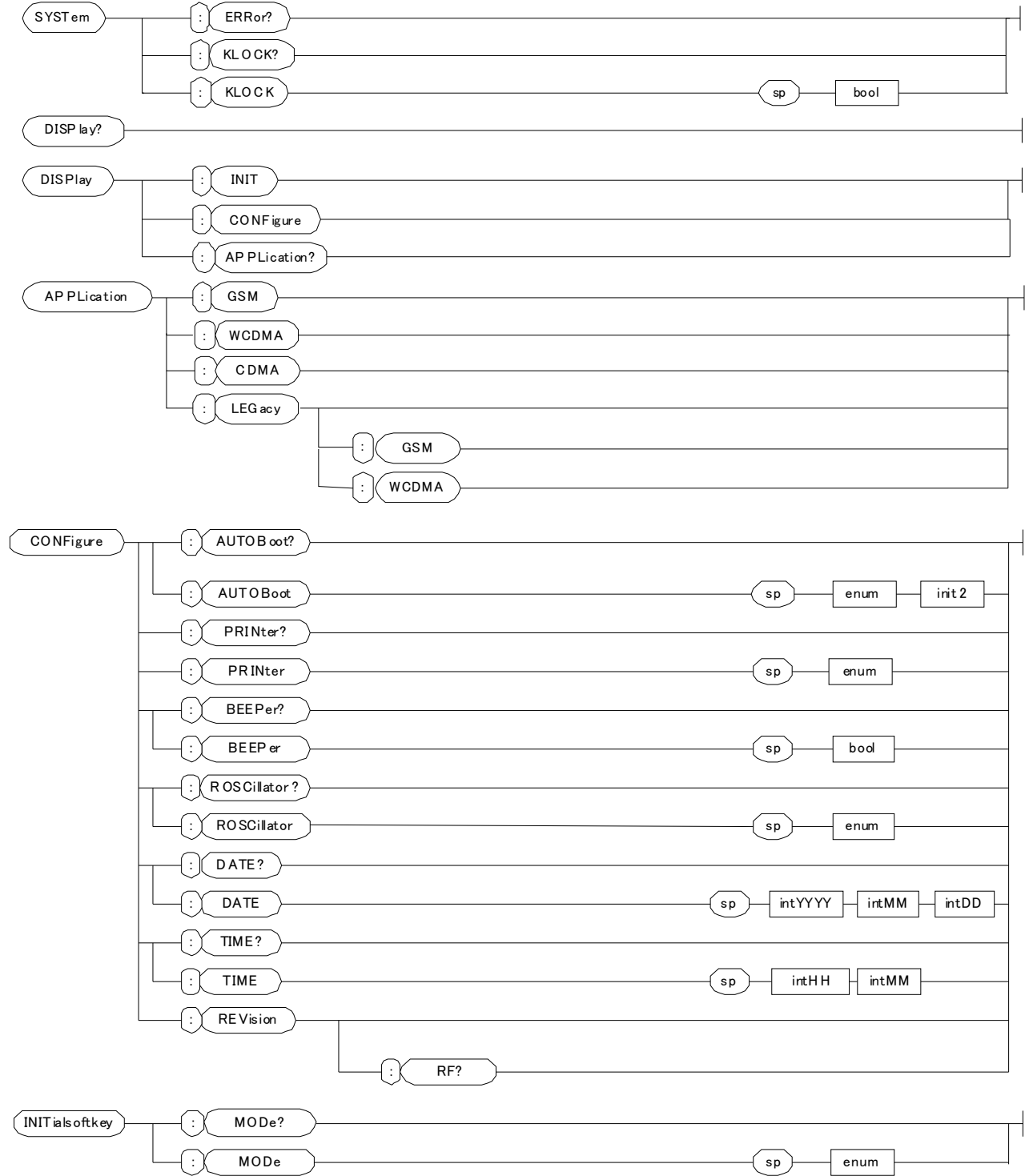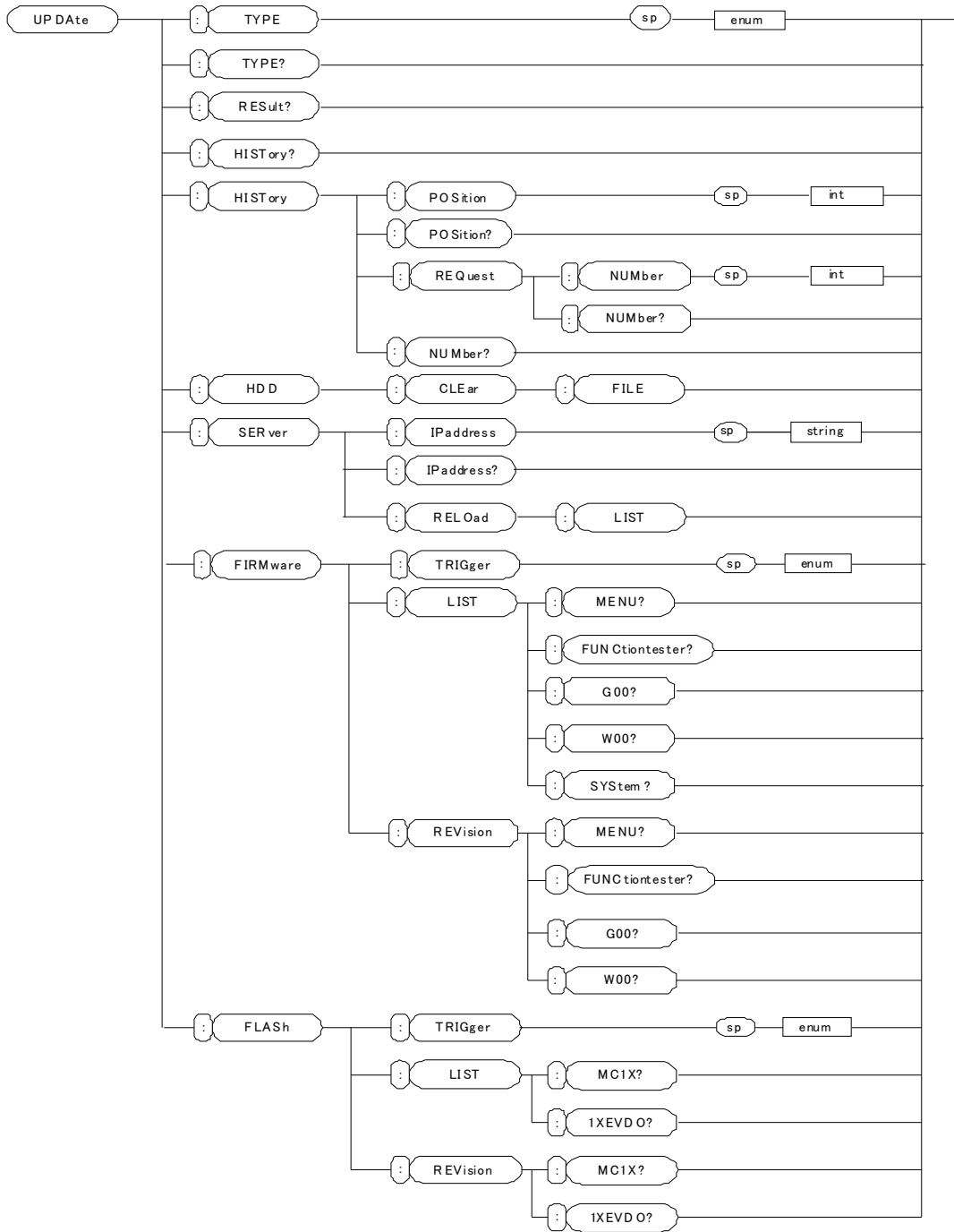
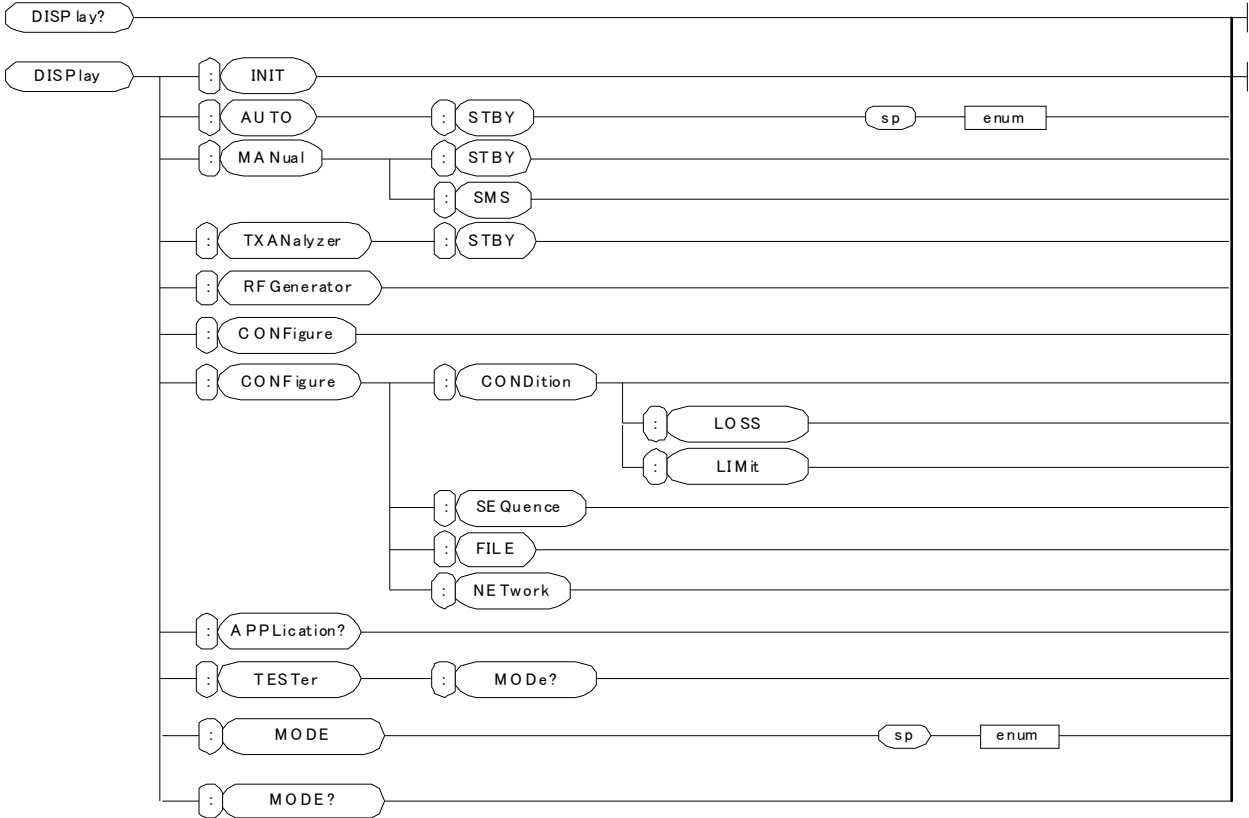(a)   (b)   (d)
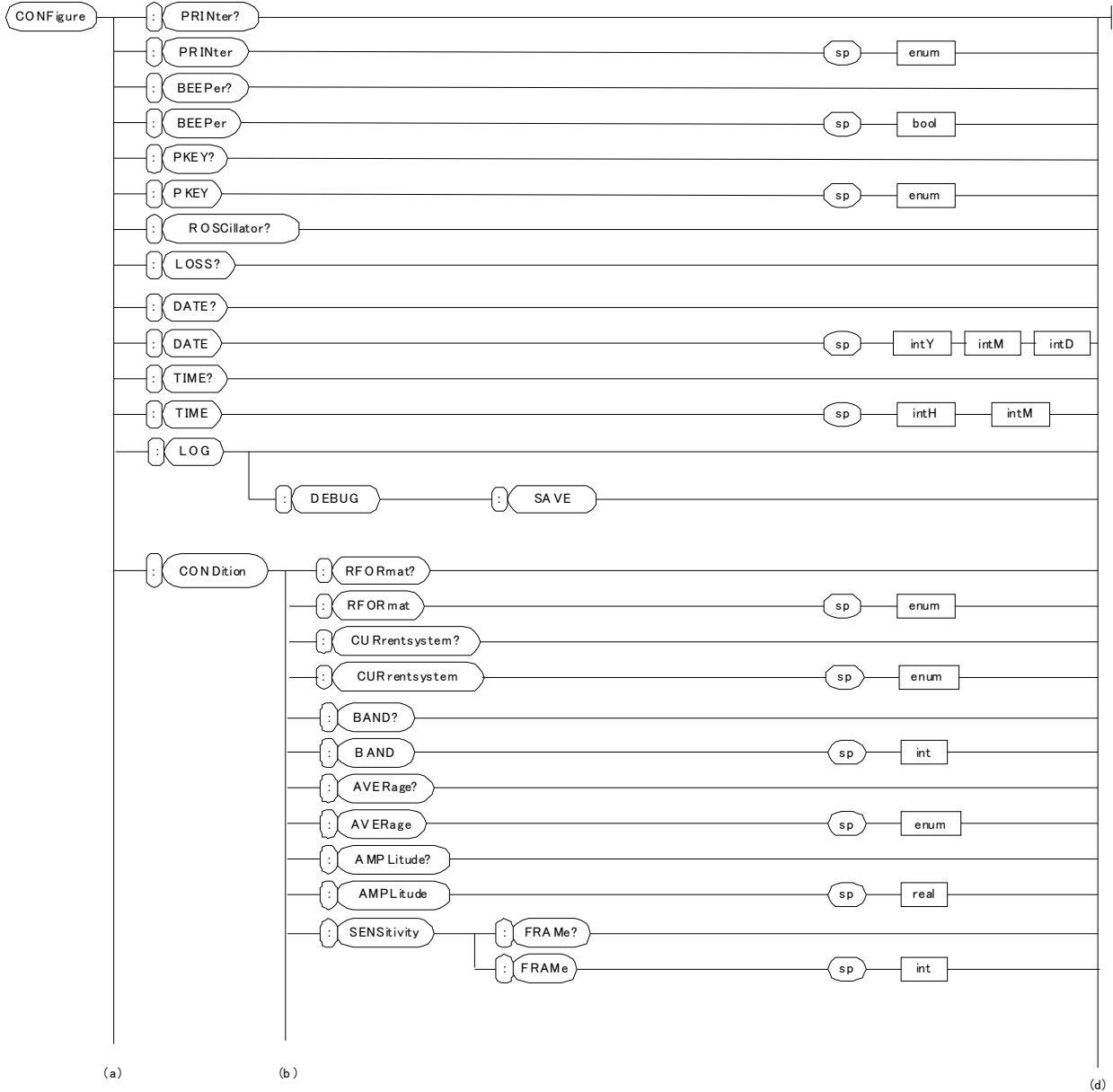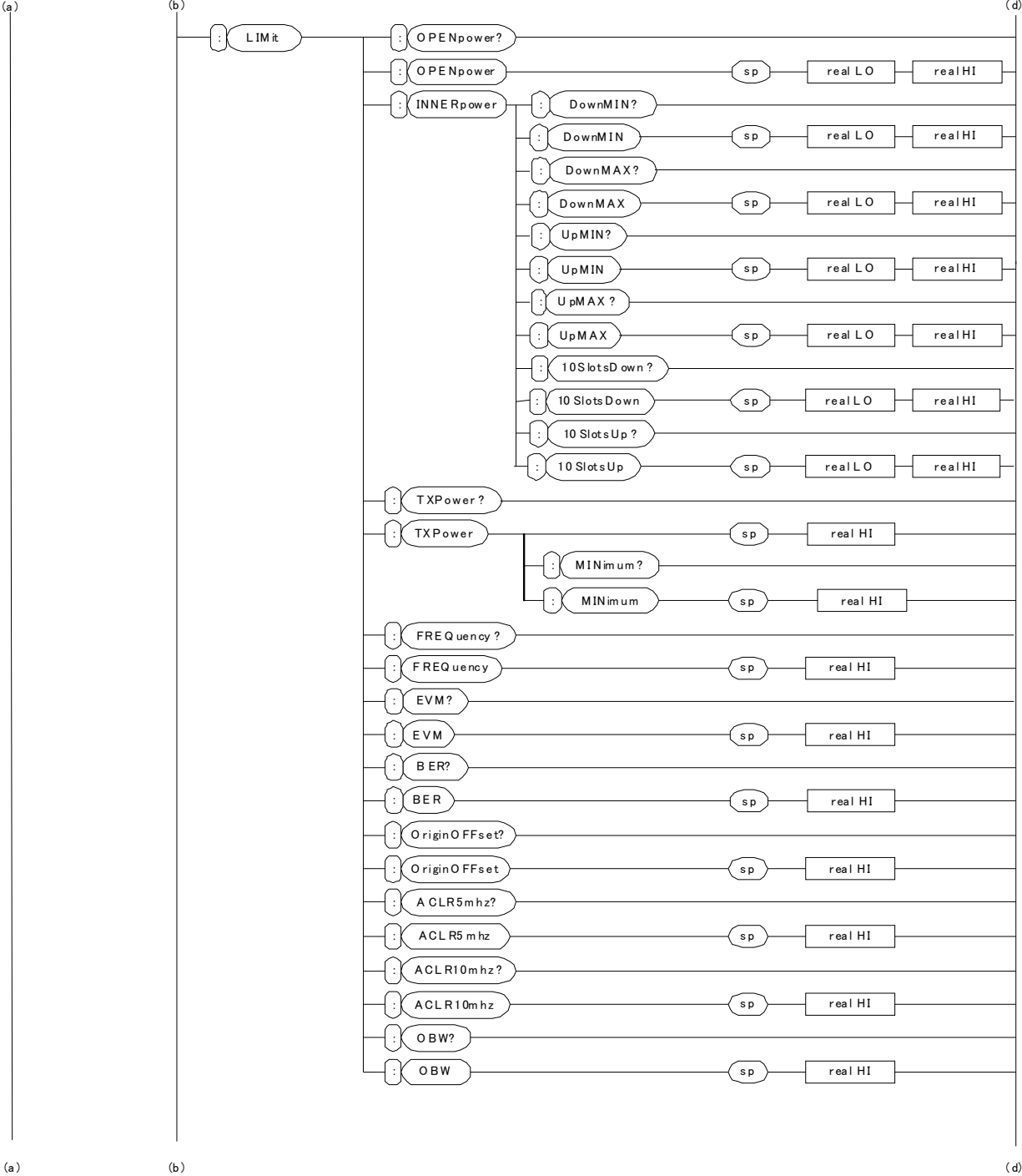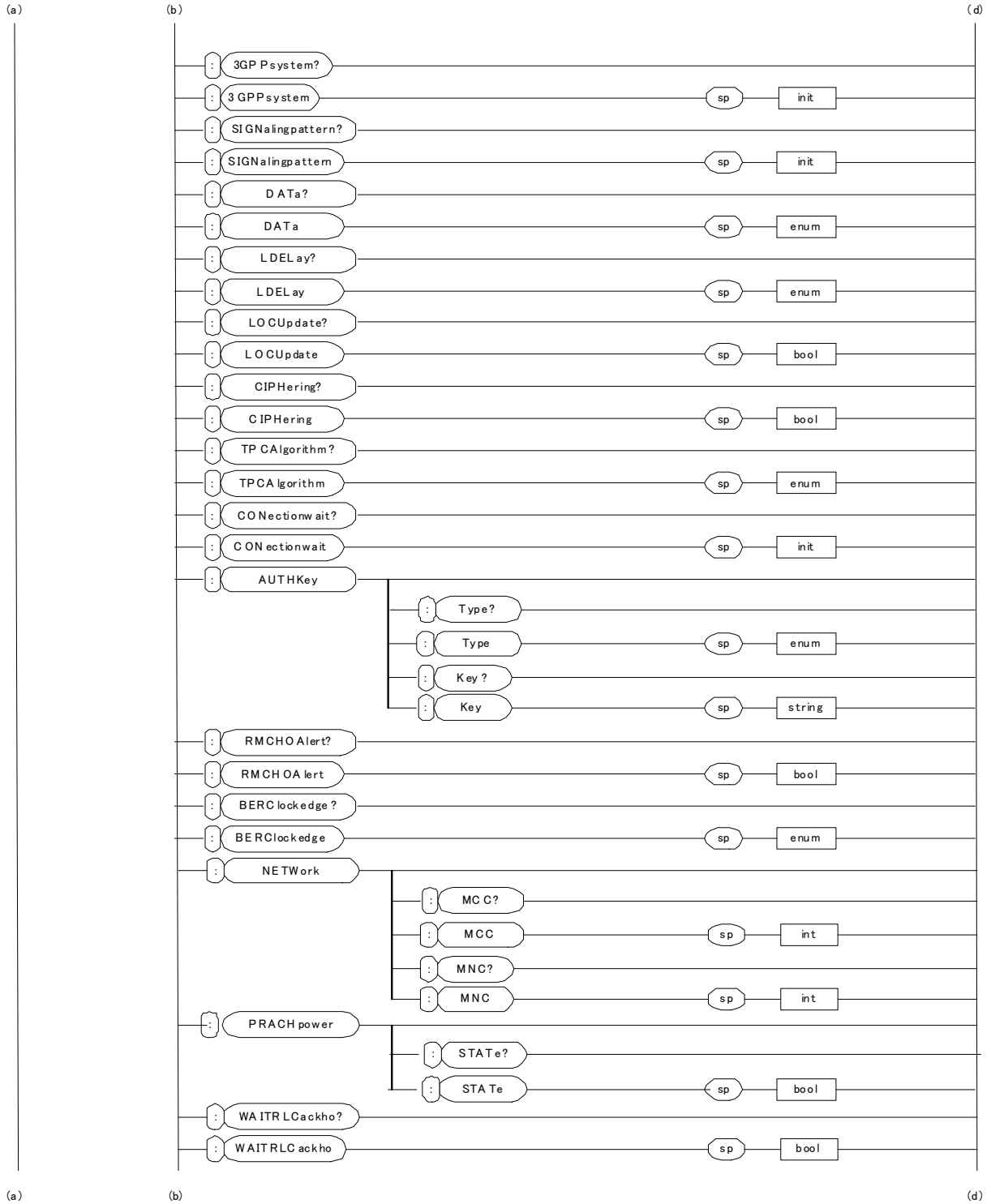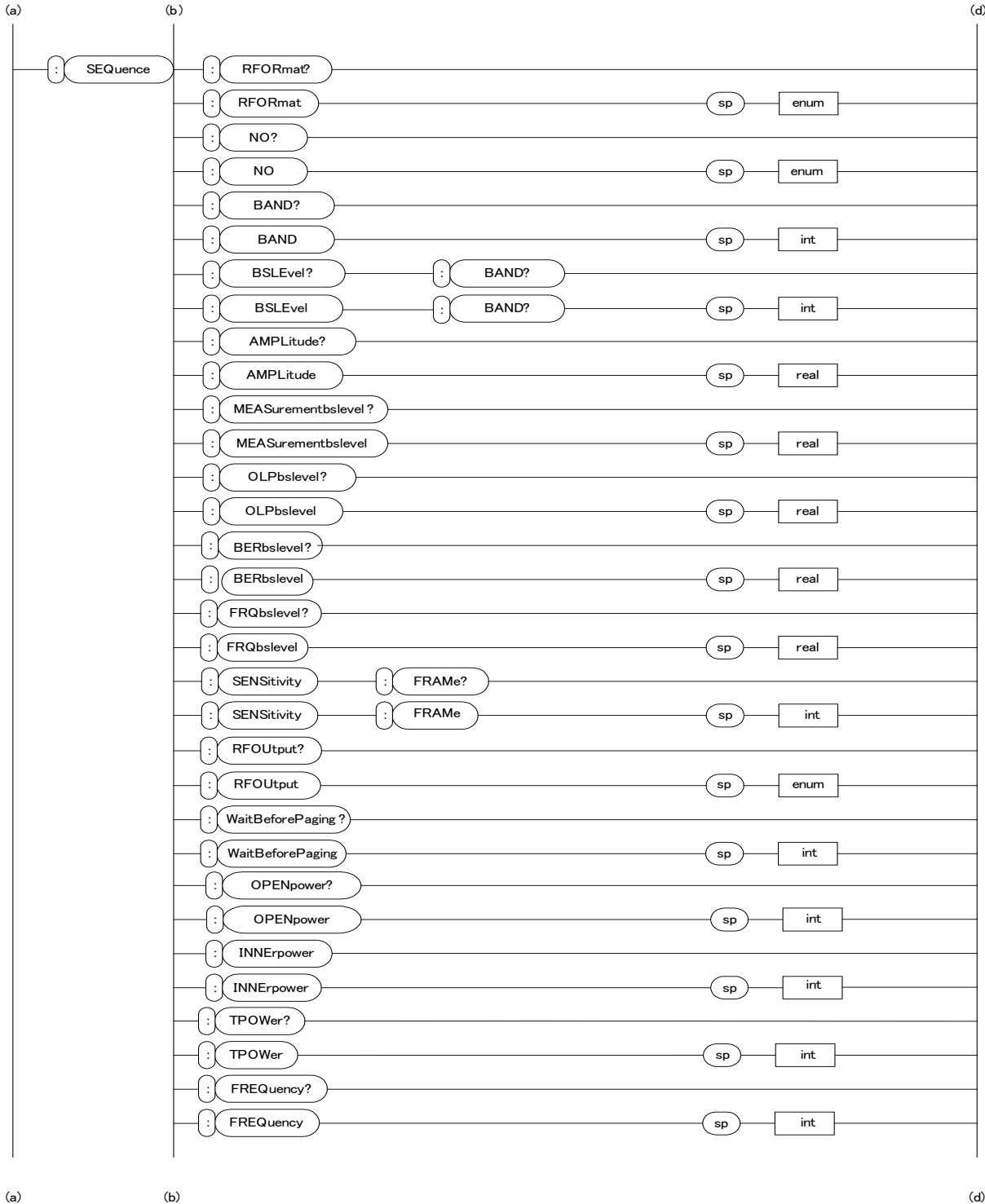
Figure 8-9 Configure Subsystem (continued)

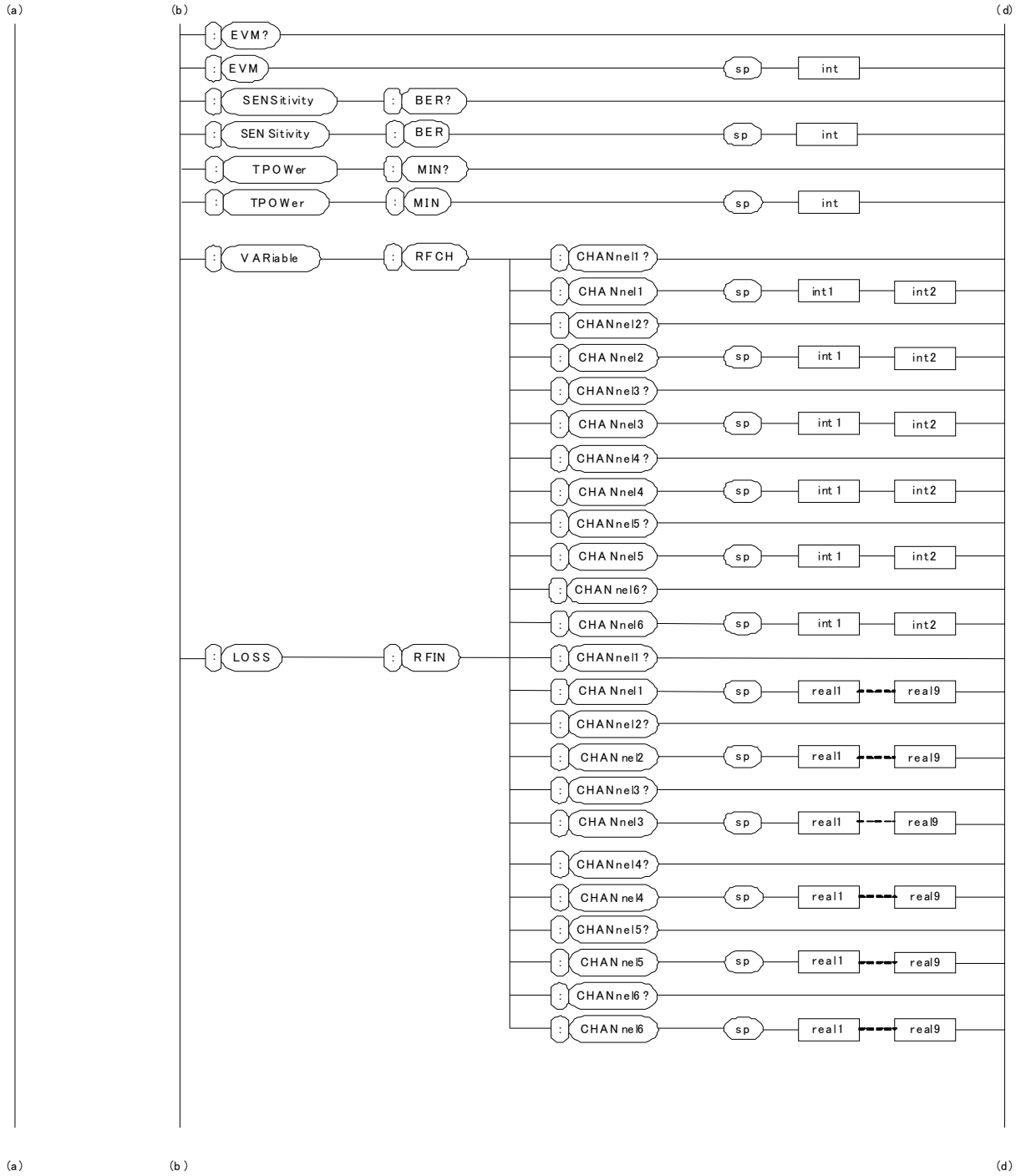**Figure 8-10** Configure Subsystem (continued)

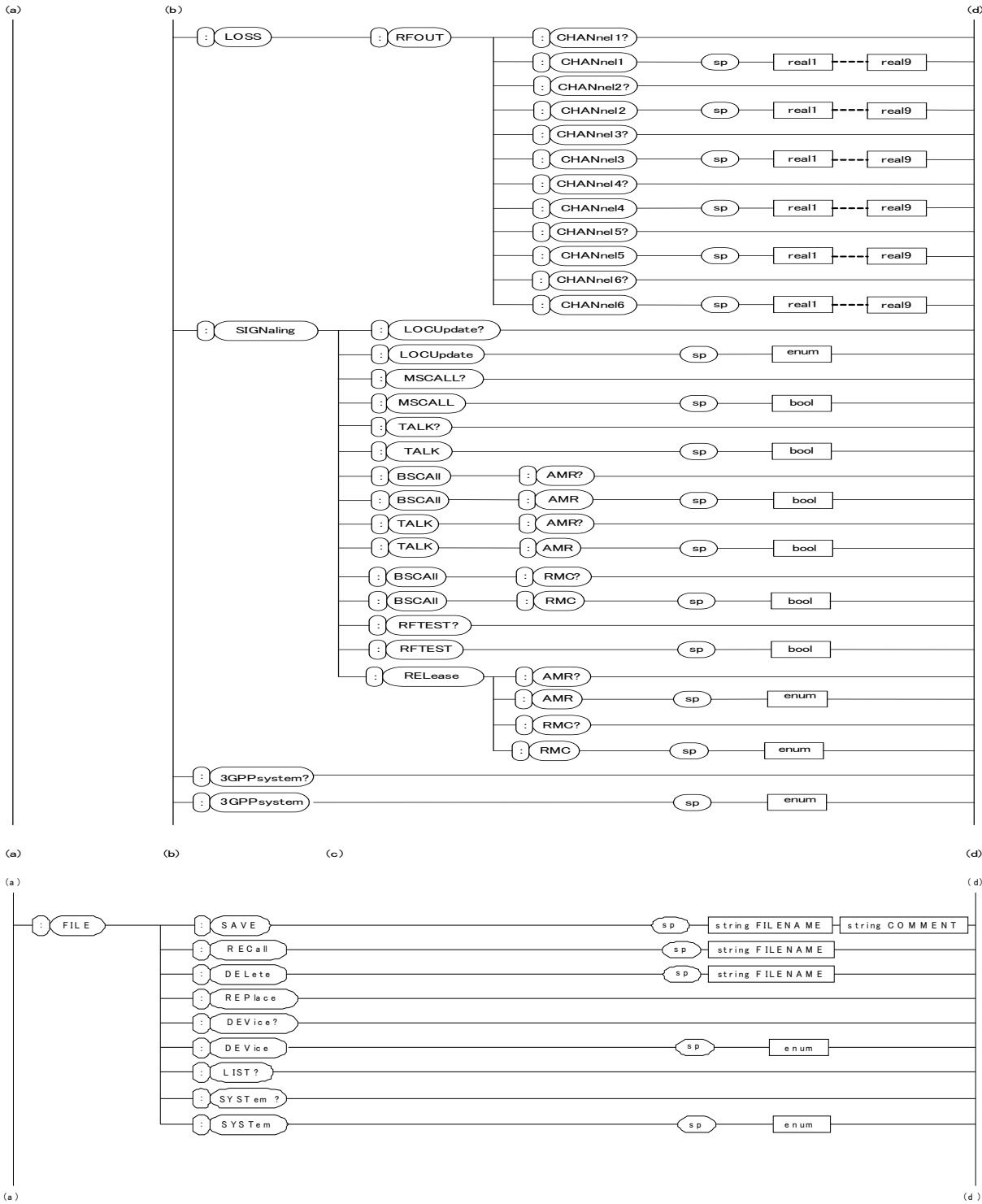**Figure 8-11** Configure Subsystem (continued)

Figure 8-12 Configure (Loss) Subsystem

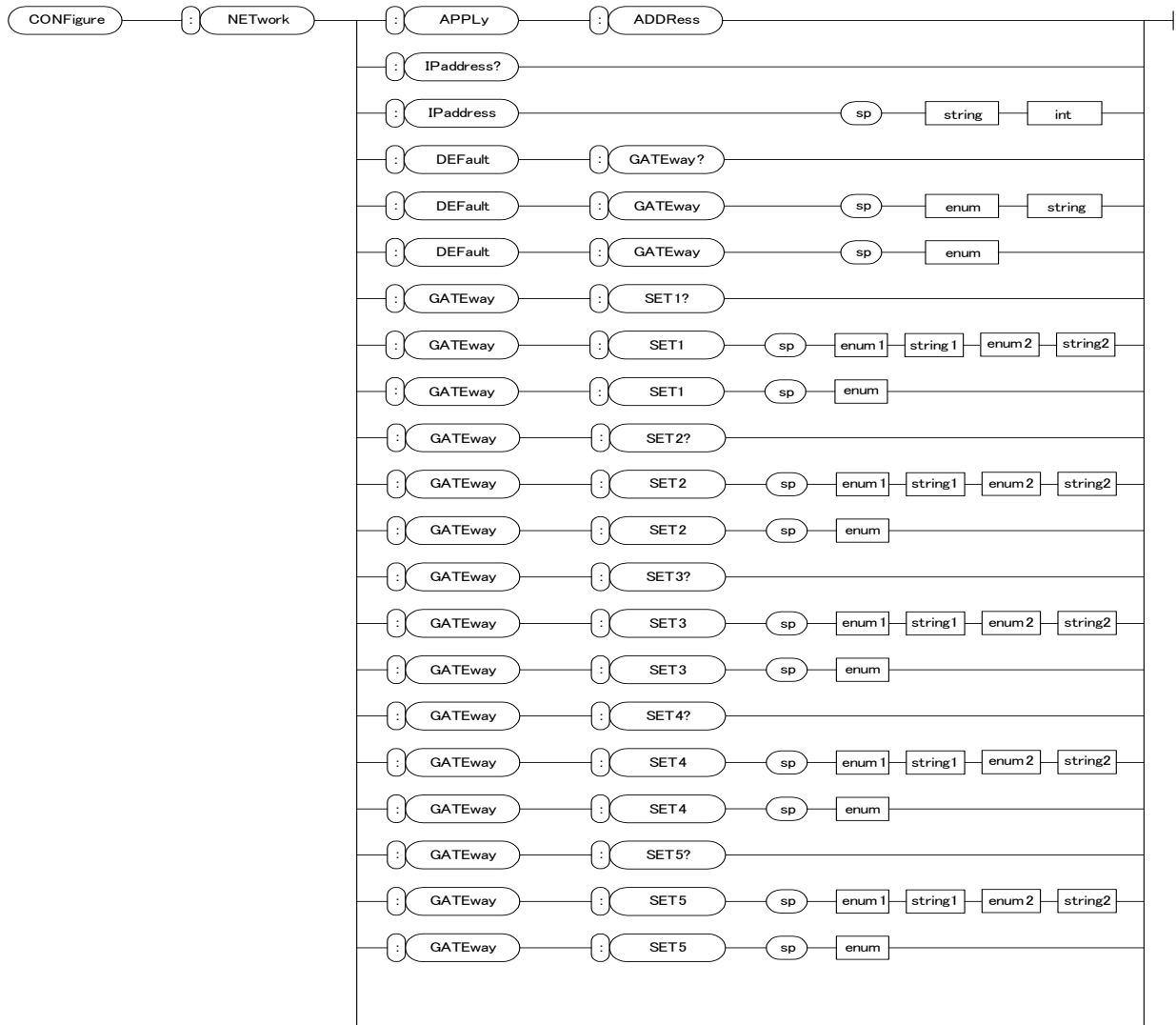**Figure 8-13**Configure (Network Setting) Subsystem

Figure 8-14 TESTs Subsystem for Automatic Test

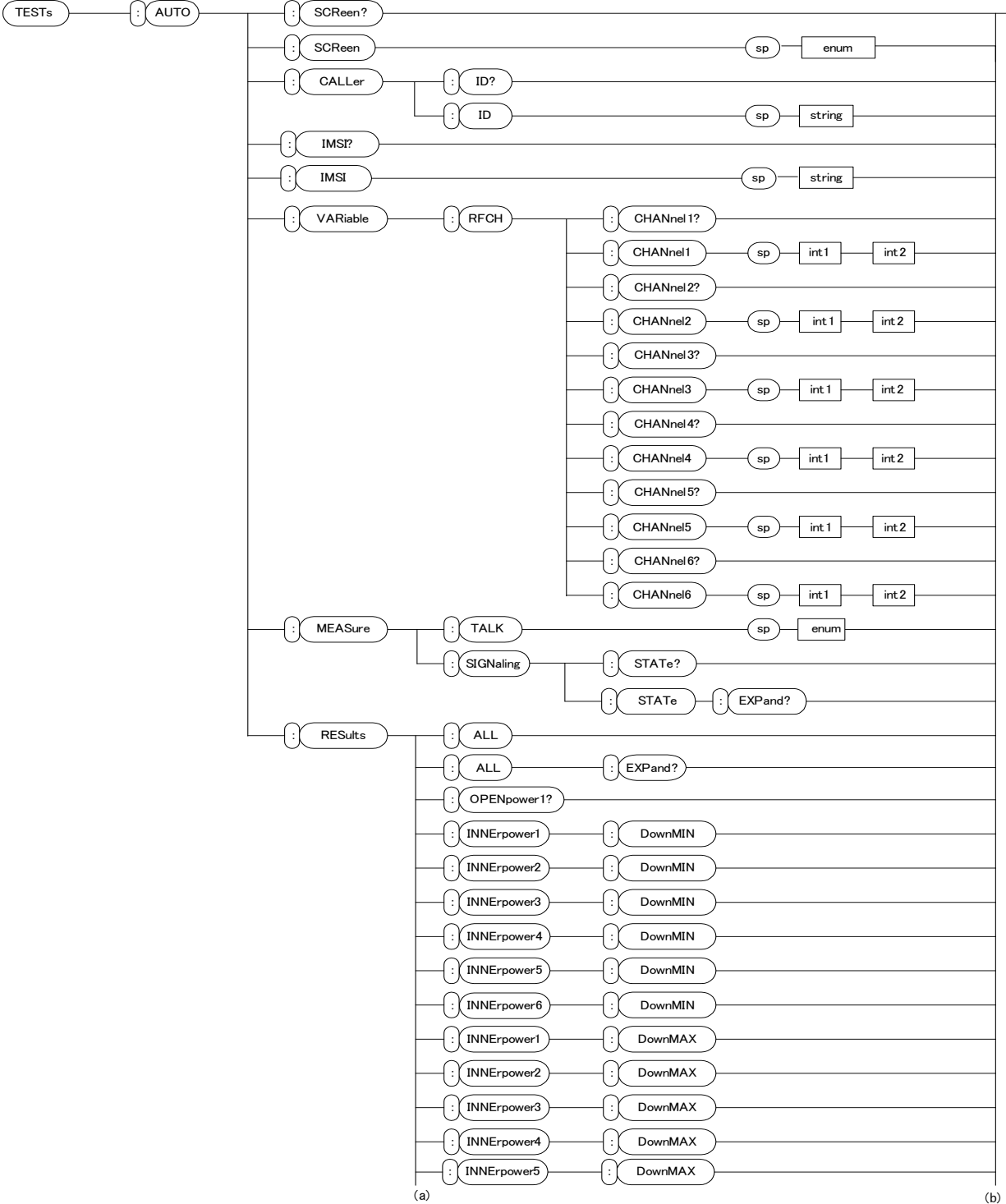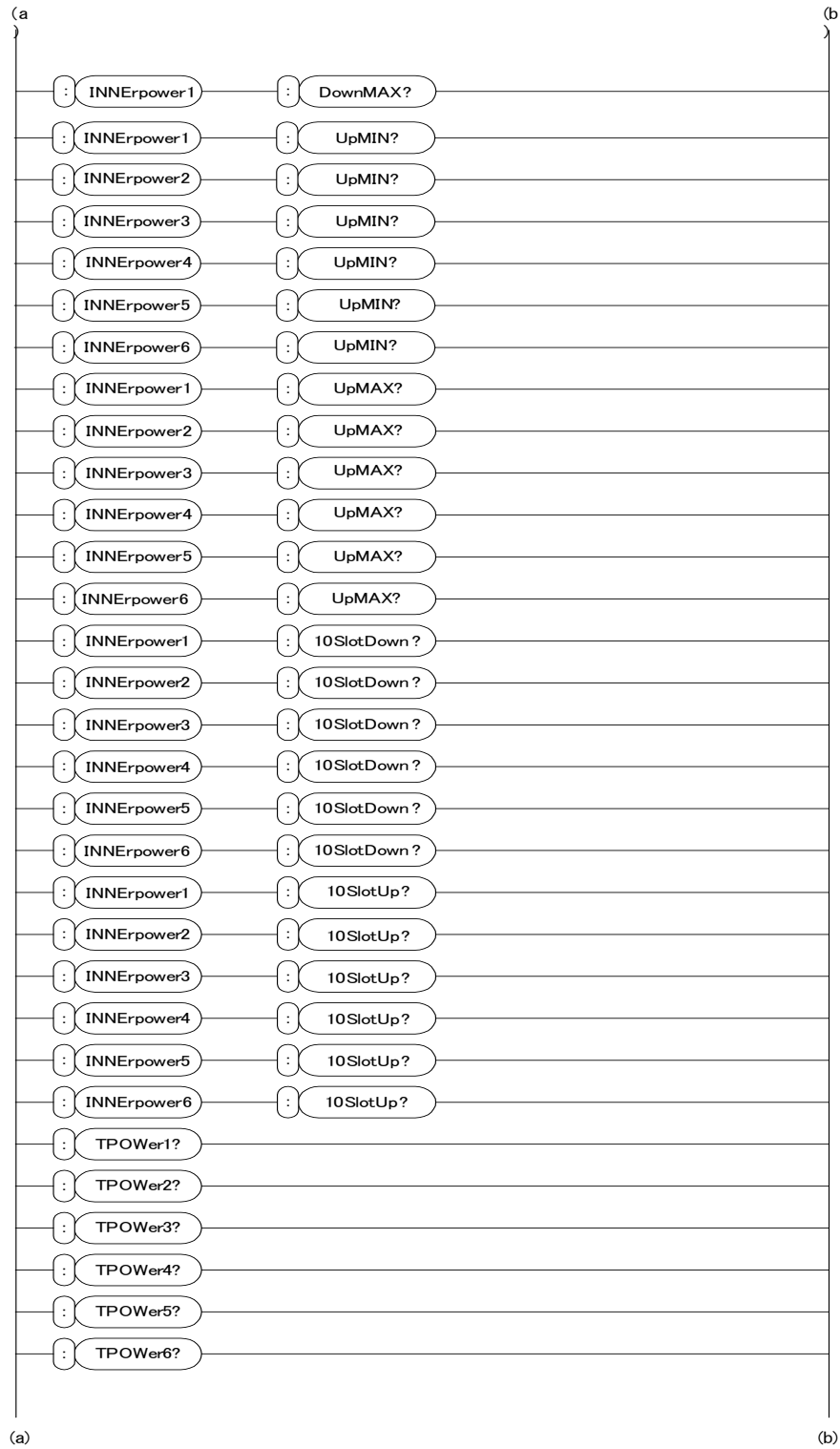**Figure 8-15** TESTs Subsystem for Automatic Test (continued)

Figure 8-16TESTs Subsystem for Automatic Test (continued)

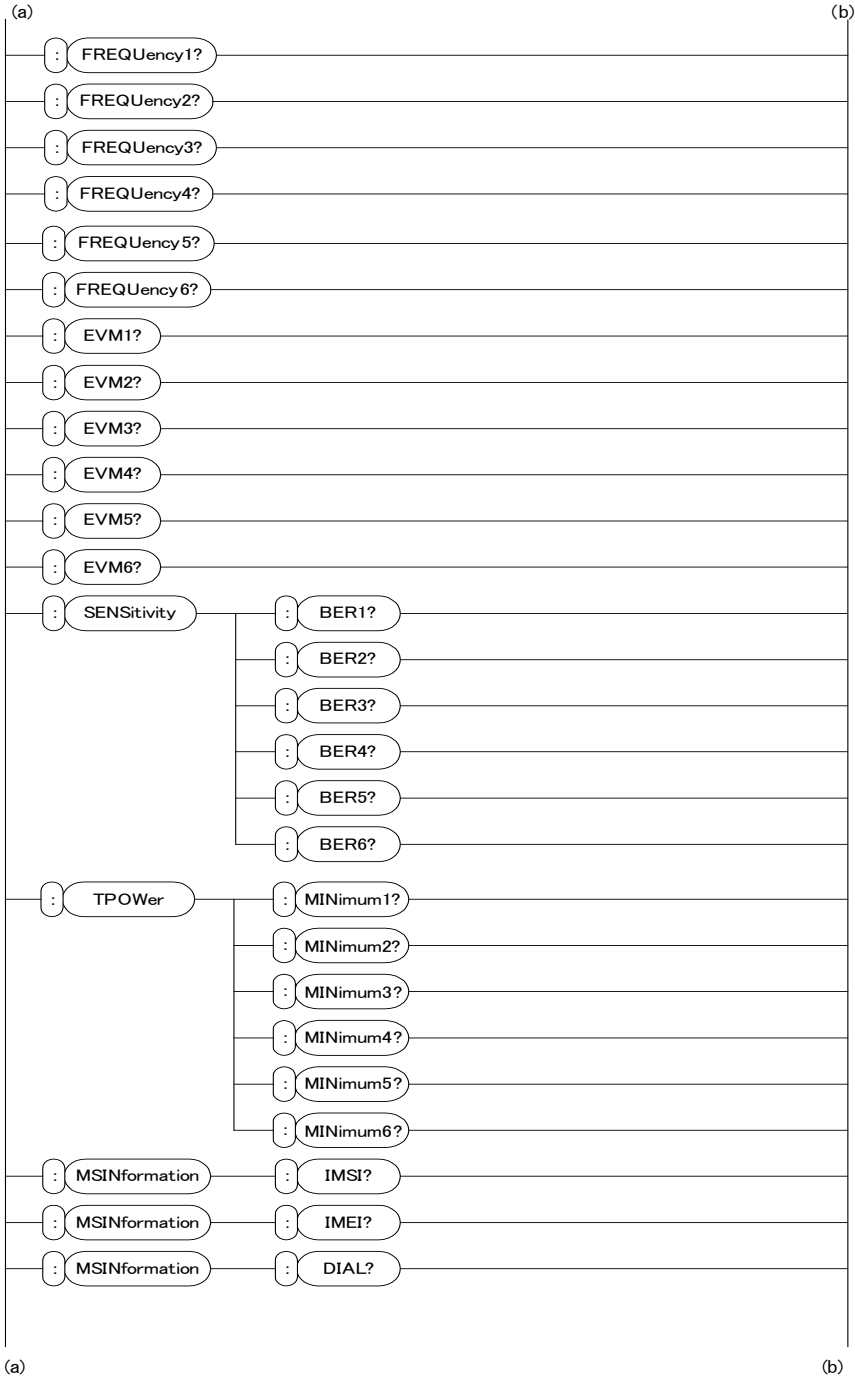(a)   (b)

```
  ┌─┐ ┌──────────────┐
──┤:├─┤ FREQUency1?   ├──────────────────────────────
  └─┘ └──────────────┘
  ┌─┐ ┌──────────────┐
──┤:├─┤ FREQUency2?   ├──────────────────────────────
  └─┘ └──────────────┘
  ┌─┐ ┌──────────────┐
──┤:├─┤ FREQUency3?   ├──────────────────────────────
  └─┘ └──────────────┘
  ┌─┐ ┌──────────────┐
──┤:├─┤ FREQUency4?   ├──────────────────────────────
  └─┘ └──────────────┘
  ┌─┐ ┌──────────────┐
──┤:├─┤ FREQUency5?   ├──────────────────────────────
  └─┘ └──────────────┘
  ┌─┐ ┌──────────────┐
──┤:├─┤ FREQUency6?   ├──────────────────────────────
  └─┘ └──────────────┘
  ┌─┐ ┌──────────┐
──┤:├─┤ EVM1?     ├──────────────────────────────────
  └─┘ └──────────┘
  ┌─┐ ┌──────────┐
──┤:├─┤ EVM2?     ├──────────────────────────────────
  └─┘ └──────────┘
  ┌─┐ ┌──────────┐
──┤:├─┤ EVM3?     ├──────────────────────────────────
  └─┘ └──────────┘
  ┌─┐ ┌──────────┐
──┤:├─┤ EVM4?     ├──────────────────────────────────
  └─┘ └──────────┘
  ┌─┐ ┌──────────┐
──┤:├─┤ EVM5?     ├──────────────────────────────────
  └─┘ └──────────┘
  ┌─┐ ┌──────────┐
──┤:├─┤ EVM6?     ├──────────────────────────────────
  └─┘ └──────────┘
  ┌─┐ ┌──────────────┐   ┌─┐ ┌────────┐
──┤:├─┤ SENSitivity  ├───┤:├─┤ BER1?  ├──────────────
  └─┘ └──────────────┘   └─┘ └────────┘
                         ┌─┐ ┌────────┐
                      ───┤:├─┤ BER2?  ├──────────────
                         └─┘ └────────┘
                         ┌─┐ ┌────────┐
                      ───┤:├─┤ BER3?  ├──────────────
                         └─┘ └────────┘
                         ┌─┐ ┌────────┐
                      ───┤:├─┤ BER4?  ├──────────────
                         └─┘ └────────┘
                         ┌─┐ ┌────────┐
                      ───┤:├─┤ BER5?  ├──────────────
                         └─┘ └────────┘
                         ┌─┐ ┌────────┐
                      ───┤:├─┤ BER6?  ├──────────────
                         └─┘ └────────┘
  ┌─┐ ┌──────────┐   ┌─┐ ┌────────────┐
──┤:├─┤ TPOWer   ├───┤:├─┤ MINimum1?  ├──────────────
  └─┘ └──────────┘   └─┘ └────────────┘
                     ┌─┐ ┌────────────┐
                  ───┤:├─┤ MINimum2?  ├──────────────
                     └─┘ └────────────┘
                     ┌─┐ ┌────────────┐
                  ───┤:├─┤ MINimum3?  ├──────────────
                     └─┘ └────────────┘
                     ┌─┐ ┌────────────┐
                  ───┤:├─┤ MINimum4?  ├──────────────
                     └─┘ └────────────┘
                     ┌─┐ ┌────────────┐
                  ───┤:├─┤ MINimum5?  ├──────────────
                     └─┘ └────────────┘
                     ┌─┐ ┌────────────┐
                  ───┤:├─┤ MINimum6?  ├──────────────
                     └─┘ └────────────┘
  ┌─┐ ┌──────────────┐   ┌─┐ ┌────────┐
──┤:├─┤ MSINformation├───┤:├─┤ IMSI?  ├──────────────
  └─┘ └──────────────┘   └─┘ └────────┘
  ┌─┐ ┌──────────────┐   ┌─┐ ┌────────┐
──┤:├─┤ MSINformation├───┤:├─┤ IMEI?  ├──────────────
  └─┘ └──────────────┘   └─┘ └────────┘
  ┌─┐ ┌──────────────┐   ┌─┐ ┌────────┐
──┤:├─┤ MSINformation├───┤:├─┤ DIAL?  ├──────────────
  └─┘ └──────────────┘   └─┘ └────────┘
```

(a)   (b)

Figure 8-17TESTs Subsystem for Manual Test

(a)   (b)
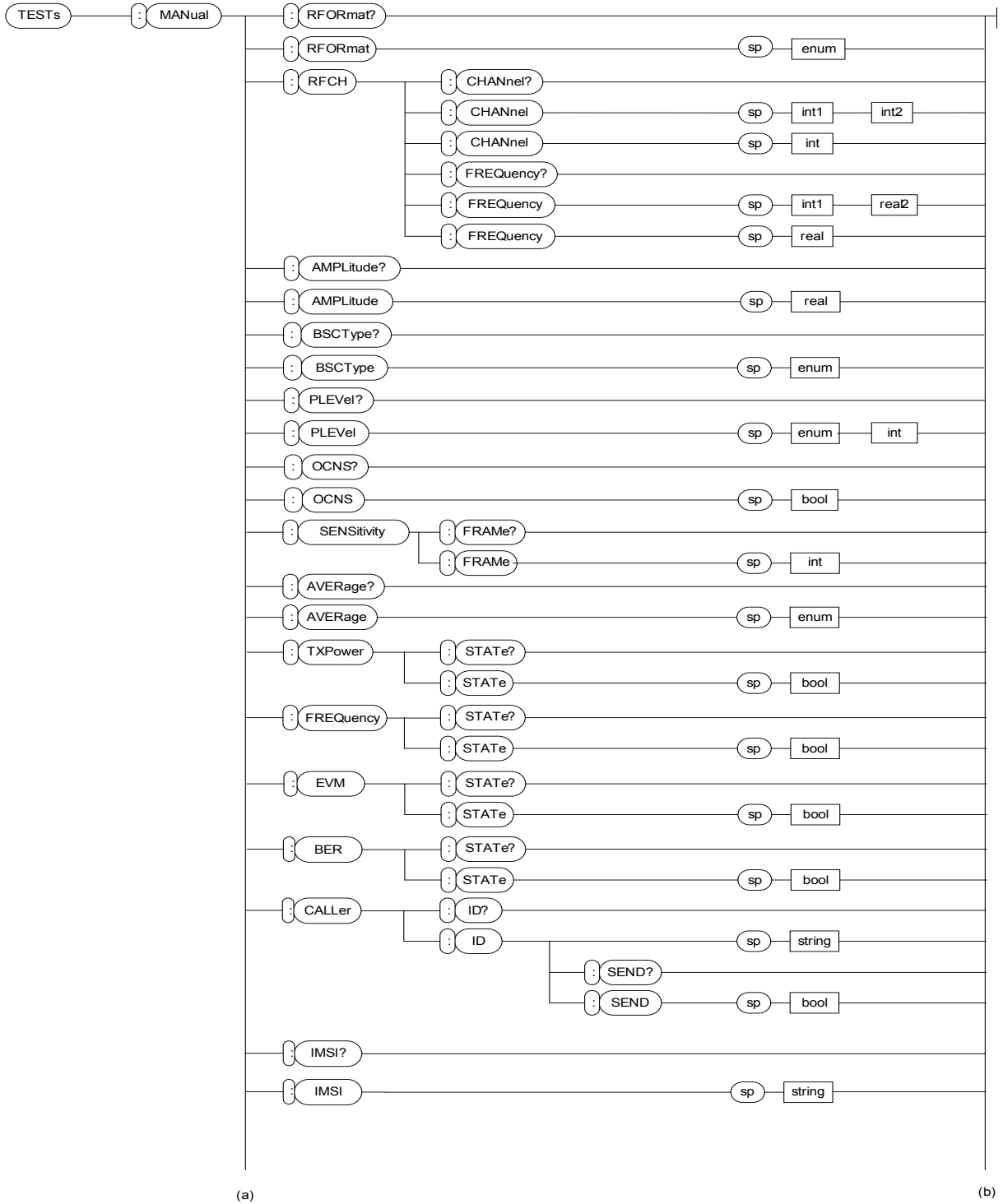
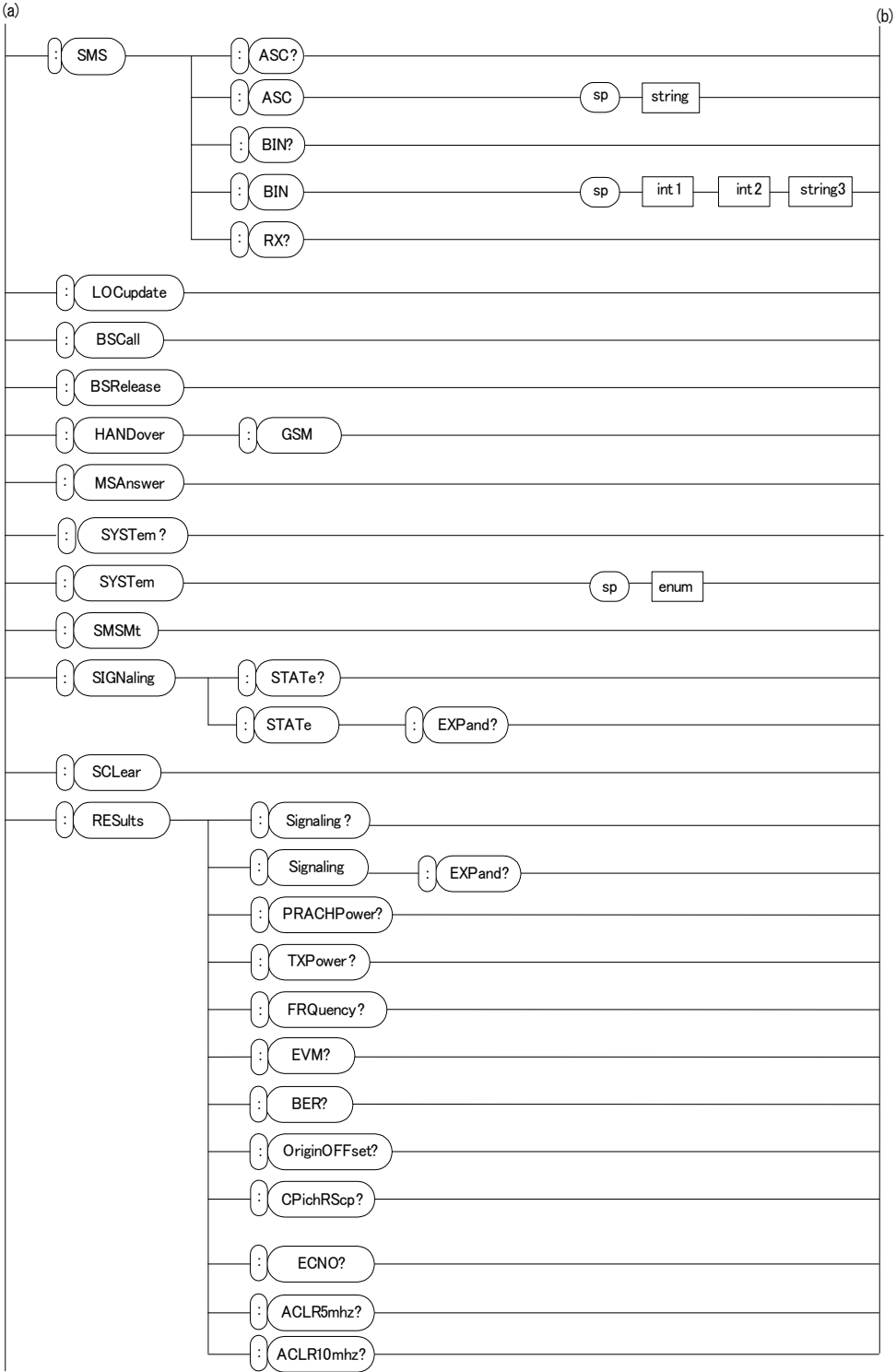**Figure 8-18** TESTs Subsystem for Manual Test (continued)
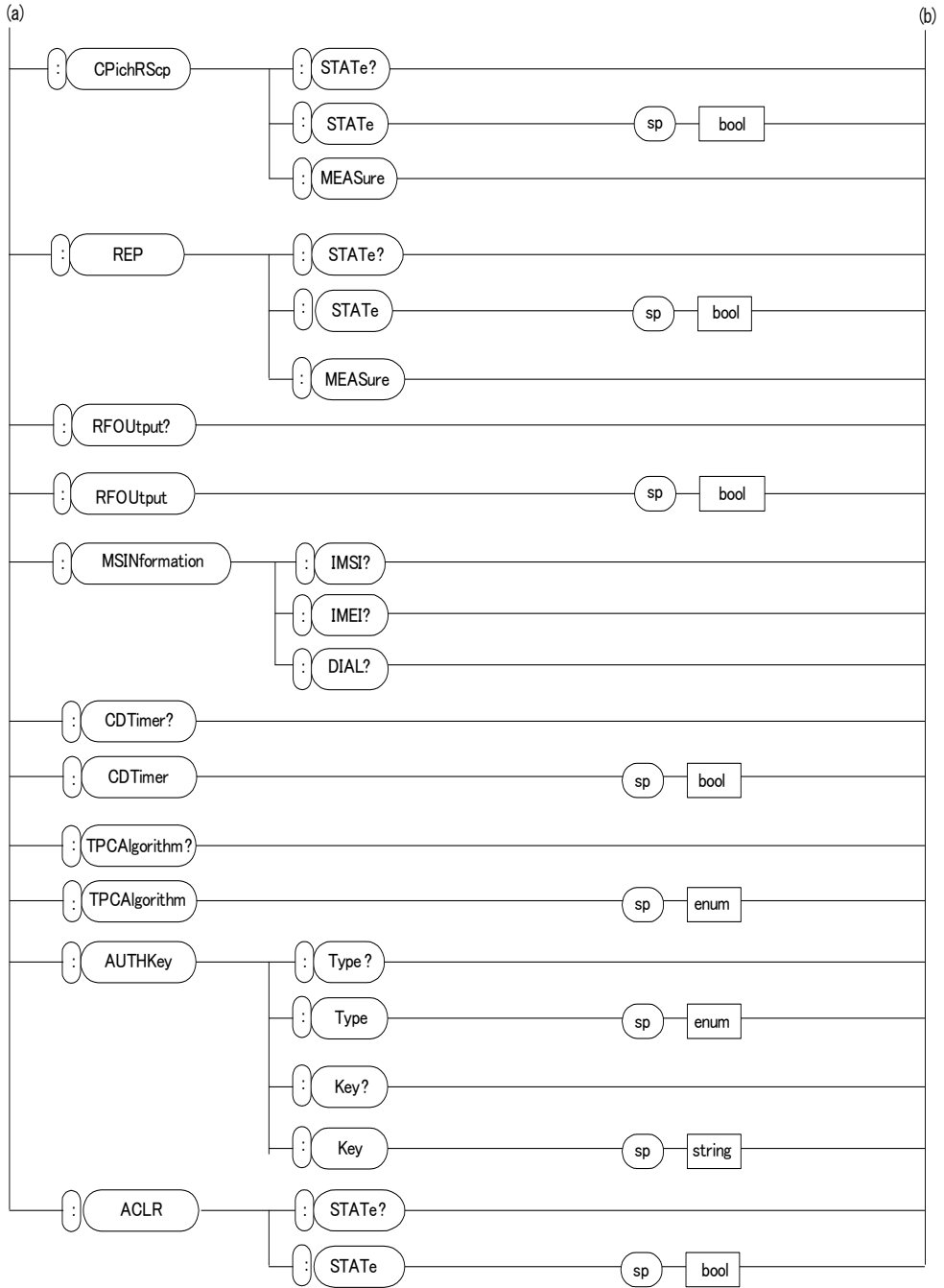
Figure 8-19TESTs Subsystem for Manual Test (continued)

Figure 8-20 TXANalyzer Subsystem

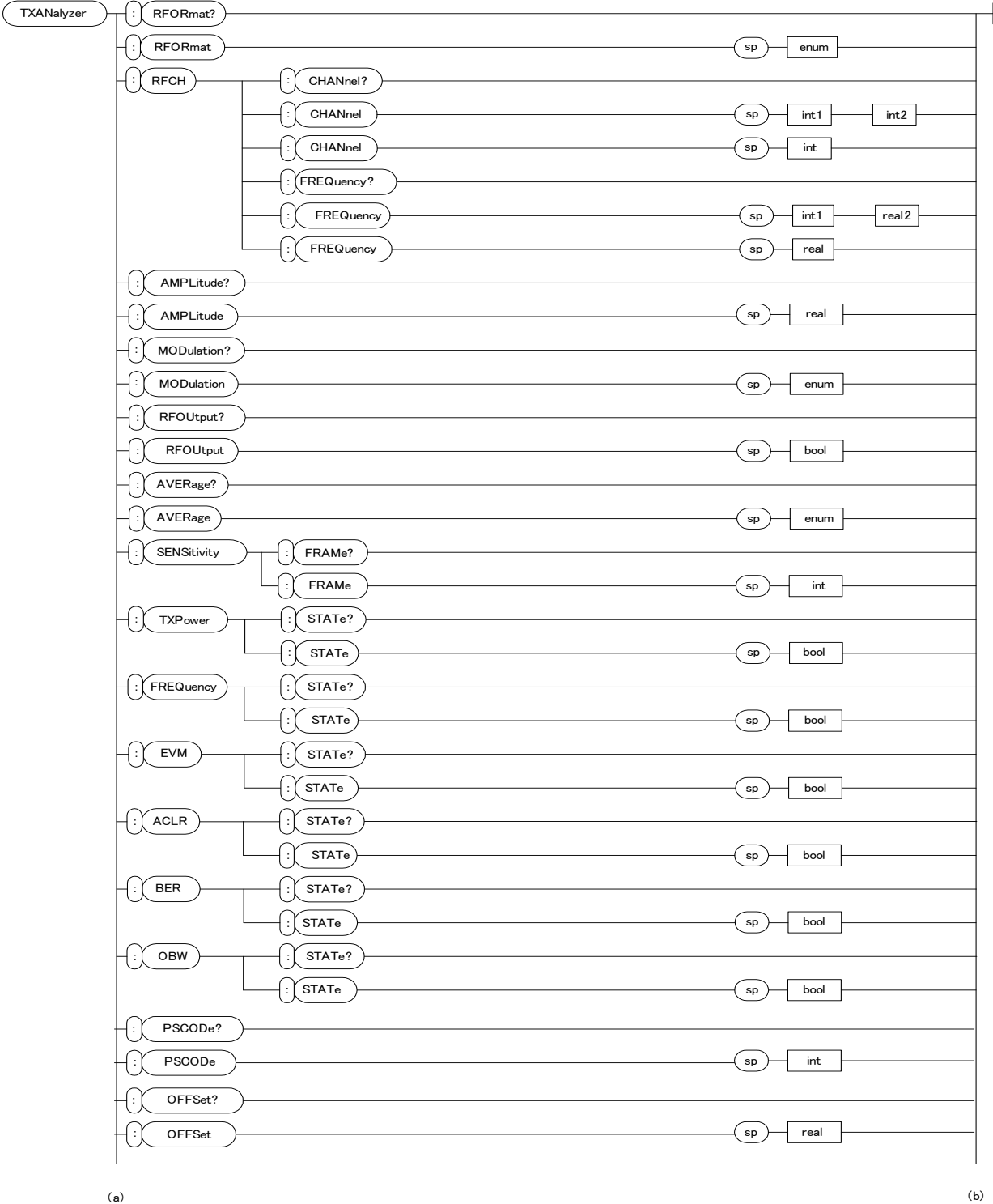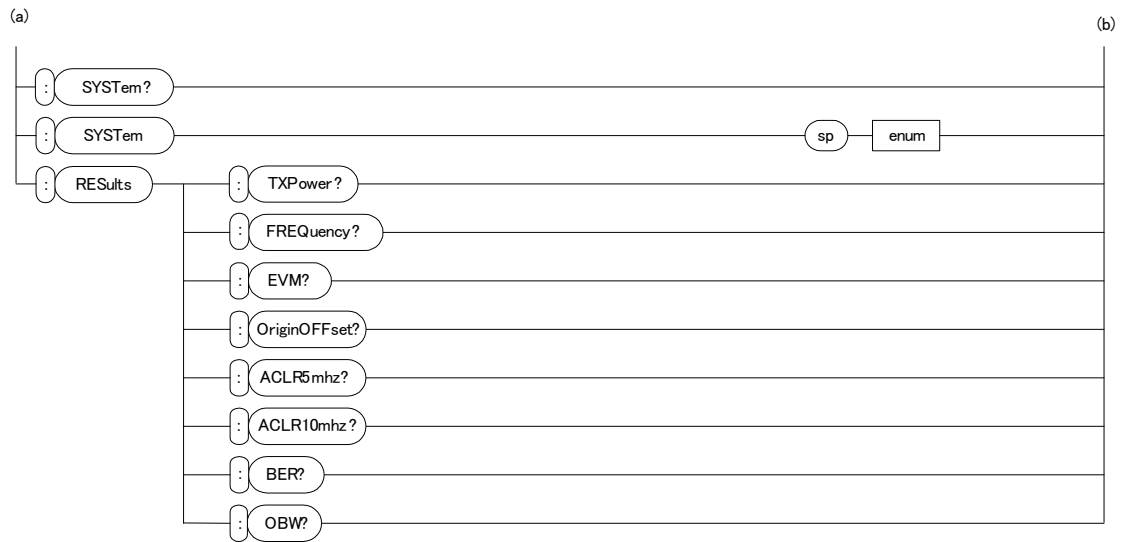(a)   (b)

Figure 8-21 TXANalyzer Subsystem (continued)
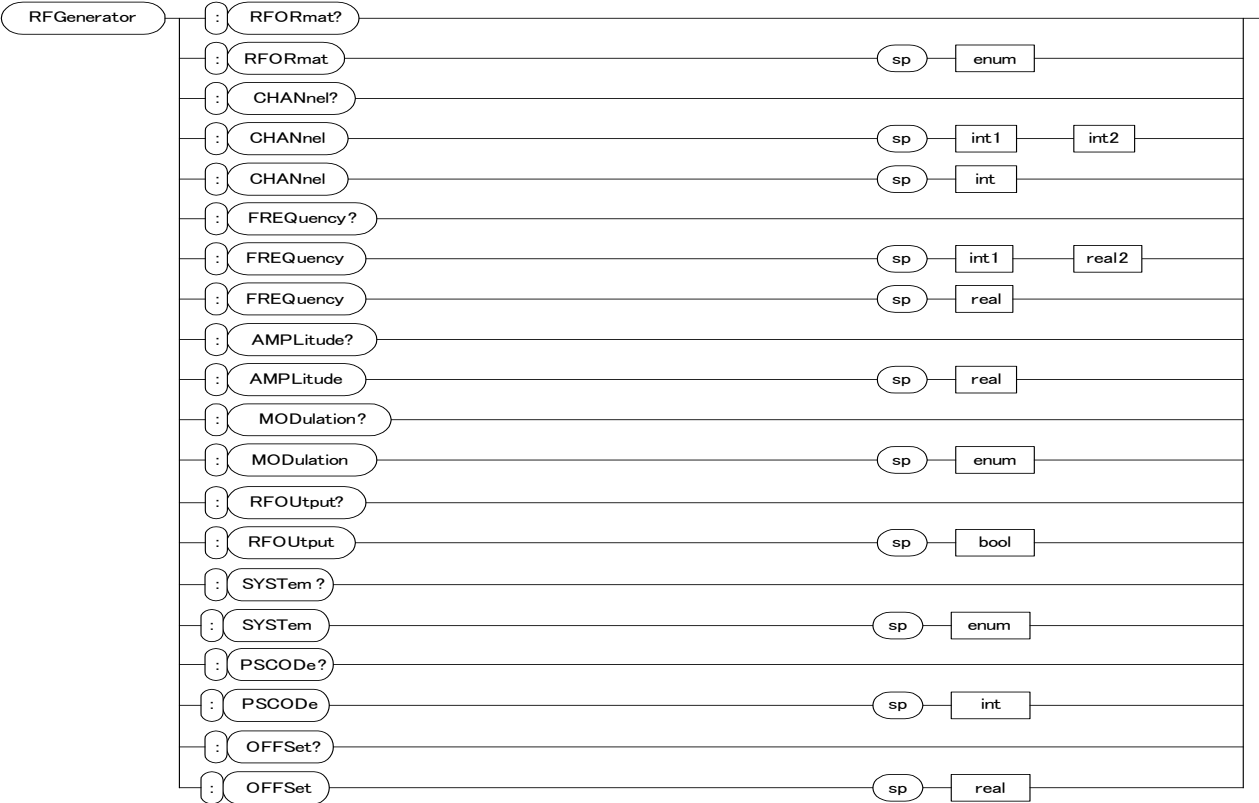
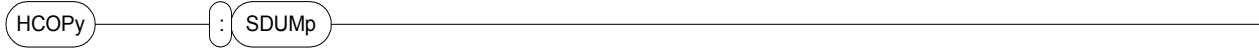**Figure 8-22** RFGenerator Subsystem

Figure 8-23 HCOPy Subsystem

Figure 8-24 System Subsystem

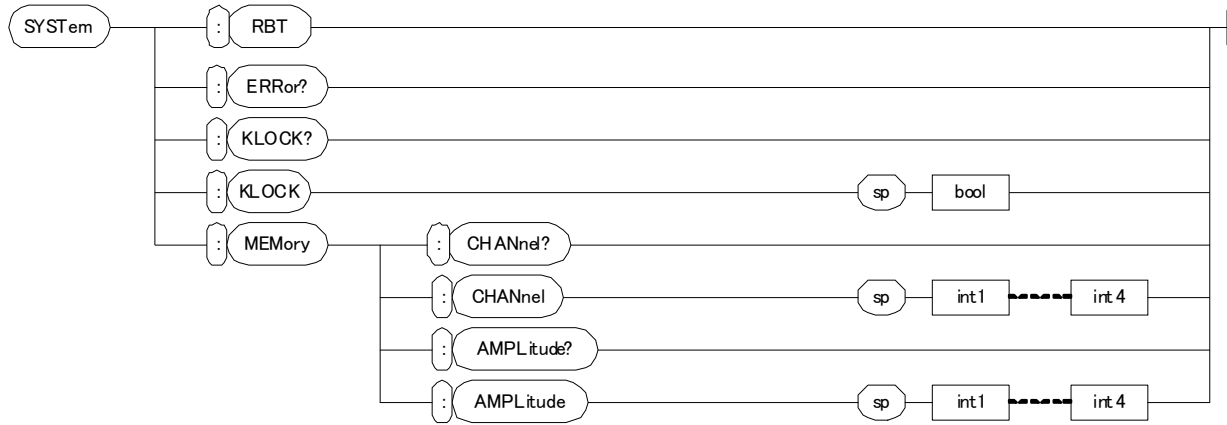**Figure 8-25**TRIGger Subsystem

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