User's Manual

VC200
Mobile Phone Tester

YOKOGAWA
Yokogawa Electric Corporation

IM 733015-01E
5th Edition

Product Registration

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Thank you for purchasing the VC200 Mobile Phone Tester.
This user's manual contains useful information about the functions, operating procedures, and handling precautions of the VC200. To ensure correct use, please read this manual thoroughly before beginning operation.
Keep this manual in a safe place for quick reference in the event a question arises.

Two manuals, including this one, are provided as manuals for the VC200. Please read all of them.

Manual Title	Manual No.	Description
VC200 User's Manual	IM 733015-01E	This manual. Explains all functions and procedures of the VC200 including the communication functions.
VC200 Signaling Tester Mode Setup Guide	IM 733015-02E	Explains the basic operations of auto test mode and manual test mode.

Notes

- The contents of this manual are subject to change without prior notice as a result of continuing improvements to the instrument's performance and functions. The figures given in this manual may differ from the actual screen.
- Every effort has been made in the preparation of this manual to ensure the accuracy of its contents. However, should you have any questions or find any errors, please contact your nearest dealer.
- Copying or reproducing all or any part of the contents of this manual without the permission is strictly prohibited.

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Revisions

1st Edition: December 2004
2nd Edition: February 2005
3rd Edition: May 2005
4th Edition: October 2005
5th Edition: December 2006

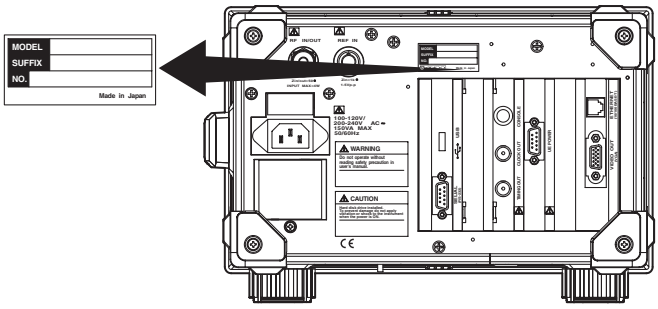
5th Edition: December 2006 (YK)

Checking the Contents of the Package

Unpack the box and check the contents before operating the instrument. If some of the contents are not correct or missing or if there is physical damage, contact the dealer from whom you purchased them.

VC200

Check that the model name and suffix code given on the name plate on the rear panel match those on the order. When contacting the dealer from which you purchased the instrument, please give them the instrument number.



MODEL

MODEL	SUFFIX	Description
733013		VC210 GSM Test Set
733014		VC220 WCDMA Test Set
733015		VC230 WCDMA/GSM Dual Test Set
Power cord	-D	UL/CSA Standards Power Cord (Part No.: A1006WD) Maximum Rated Voltage: 125 V, Maximum Rated Current: 7 A
	-F	VDE Standards Power Cord (Part No.: A1009WD) Maximum Rated Voltage: 250 V, Maximum Rated Current: 10 A
	-Q	BS Standards Power Cord (Part No.: A1054WD) Maximum Rated Voltage: 250 V, Maximum Rated Current: 10 A
	-R	AS Standards Power Cord (Part No.: A1024WD) Maximum Rated Voltage: 250 V, Maximum Rated Current: 10 A
	-H	GB Standards Power Cord (Part No.: A1064WD) Maximum Rated Voltage: 250 V, Maximum Rated Current: 10 A
Connector type	-N	Type N RF connector
	-T	Type TNC RF connector

NO. (Instrument Number)

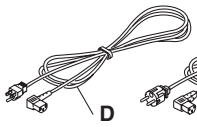
When contacting the dealer from which you purchased the instrument, please give them the instrument number.

Standard Accessories

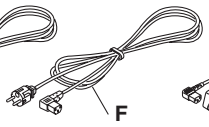
The standard accessories below are supplied with the instrument. Check that all contents are present and that they are undamaged.

Power Cord (one of the following power cords is supplied according to the instrument's suffix codes)

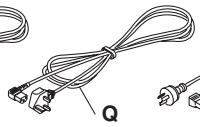
UL/CSA Standard A1006WD



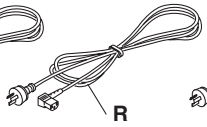
VDE Standard A1009WD



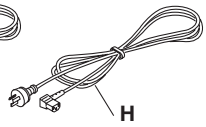
BS Standard A1054WD



AS Standard A1024WD



GB Standard A1064WD



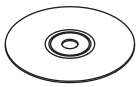
Clamp filter for the power cord 1 piece A1179MN

USB mouse 1 piece B8014KZ

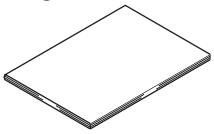
Rubber feet 2 sheets (4 pieces) A9088ZM

TNC-SMA adapter* 1 piece B8014RS

User's manual B8014UT



User's manual for checking the contents of the package and using the CD-ROM



* Included only when the suffix code is -T.

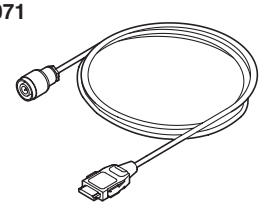
Note

In an environment with large power supply noise, attach the clamp filter for the power cord provided with the package to the VC200 side.

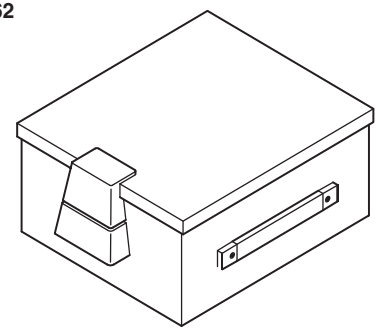
Optional Accessories (Sold Separately)

The optional accessories below are available for purchase separately. When you receive the order, check that all contents are present and that they are undamaged. For information and ordering, contact your nearest dealer.

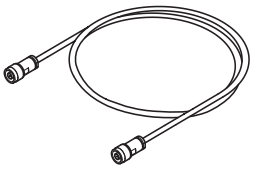
TNC-ARIB type A cable 1.5m 733071



VC-SHIELD Shield Box 733062



RF cable (Type N) 1m 739821



Test-USIM* 733065-E02

* A test USIM is required to perform the signaling test.

Safety Precautions

The instrument is an IEC safety class I instrument (provided with terminal for protective grounding).
The general safety precautions described herein must be observed during all phases of operation. If the instrument is used in a manner not specified in this manual, the protection provided by the instrument may be impaired. YOKOGAWA Electric Corporation assumes no liability for the customer's failure to comply with these requirements.

The following symbols are used on this instrument.

"Handle with care." (To avoid injury, death of personnel or damage to the instrument, the operator must refer to the explanation in the user's manual or service manual.

Alternating current

Make sure to comply with the precautions below. Not complying might result in injury or death.

WARNING

Power Supply

Before connecting the power cord, ensure that the source voltage matches the rated supply voltage of the VC200 and that it is within the maximum rated voltage of the provided power cord.

Power Cord and Plug

To prevent the possibility of electric shock or fire, be sure to use the power cord supplied by our company. The main power plug must be plugged into an outlet with a protective earth terminal. Do not invalidate this protection by using an extension cord without protective earth grounding.

Protective Grounding

Make sure to connect the protective earth to prevent electric shock before turning ON the power. The power cord that comes with the instrument is a three-pin type power cord. Connect the power cord to a properly grounded three-pin outlet.

Necessity of Protective Grounding

Never cut off the internal or external protective earth wire or disconnect the wiring of the protective earth terminal. Doing so poses a potential shock hazard.

Defect of Protective Grounding

Do not operate the instrument if the protective earth or fuse might be defective. Make sure to check them before operation.

Do Not Operate in an Explosive Atmosphere

Do not operate the instrument in the presence of flammable liquids or vapors. Operation in such environments constitutes a safety hazard.

Do Not Remove Covers

The cover should be removed by our company's qualified personnel only. Opening the cover is dangerous, because some areas inside the instrument have high voltages.

External Connection

Securely connect the protective grounding before connecting to the item under measurement or to an external control unit. If you are going to touch the circuit, make sure to turn OFF the circuit and check that no voltage is present.

How to Use This Manual

Structure of the Manual

This user's manual consists of the following sections:

Chapter	Title	Description
1	**Functional Explanation**	Describes the functions of the VC200. Operating procedures are not given in this chapter. However, reading this chapter will help you understand the operating procedures given in the chapters that follow.
2	**Names and Uses of Parts**	Describes the names and uses of each part of the VC200.
3	**Before Starting Tests**	Describes precautions on the use of the VC200, how to install it, how to connect it to the power supply, how to turn ON/OFF the power switch, how to set the date and time, and how to enter values.
4	**Signaling Test**	Describes how to carry out tests in signaling tester mode.
5	**Tx/Rx Test**	Describes how to carry out tests in Tx/Rx tester mode (W-CDMA).
6	**Tx/Rx Test (GSM)**	Describes how to carry out tests in Tx/Rx tester mode (GSM).
7	**File Operation**	Describes how to create directories, how to delete files, and other operations.
8	**Ethernet Connection**	Describes how to connect the VC200 to an Ethernet network.
9	**Other Functions**	Describes how to output VGA signals, how to turn ON/OFF the backlight, how to check the version, and other information.
10	**Command Communications**	Describes commands that are used to control the VC200 via the Ethernet network or the serial interface.
11	**Troubleshooting and Maintenance**	Describes probable causes of errors and their corrective actions, various messages that are displayed on the screen, and other information.
12	**Specifications**	Summarizes the main specifications of the VC200 in a table.
	Appendix	Describes the downlink DPCH cording rules and criteria for the GSM burst timing.
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Conventions Used in This Manual

Unit

k: Denotes “1000.” Example: 100 kHz

Note

The following markings are used in this manual.

Improper handling or use can lead to injury to the user or damage to the instrument. This symbol appears on the instrument to indicate that the user must refer to the user’s manual for special instructions. The same symbol appears in the corresponding place in the user’s manual to identify those instructions. In the manual, the symbol is used in conjunction with the word “WARNING” or “CAUTION.”

WARNING Describes precautions that should be observed to prevent serious injury or death to the user.

CAUTION Describes precautions that should be observed to prevent minor or moderate injury, or damage to the instrument.

Note Provides important information for the proper operation of the instrument.

Symbols Used on Pages Describing Operating Procedures

On pages that describe operating procedures in Chapter 3 through 9, the following symbols are used to distinguish the procedures from their explanations.

Function This section describes the setup items and the limitations regarding the procedures. A detailed description of the function is not provided in this section. For a detailed explanation of the function, see chapter 1.

Procedure This subsection contains the operating procedure used to carry out the function described in the current section. All procedures are written with inexperienced users in mind; experienced users may not need to carry out all the steps.

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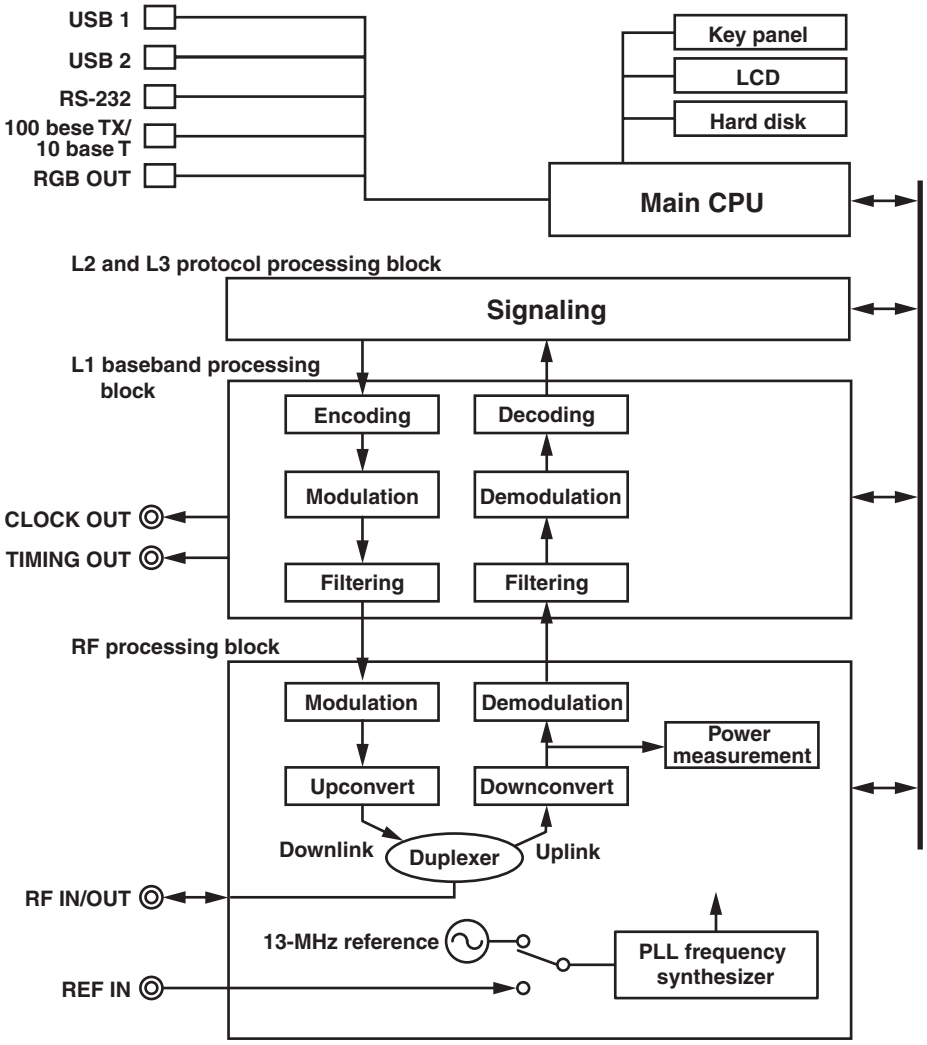
1.1 System Configuration and Block Diagram

System Configuration



Flow of Operation

The VC200 has two tester modes. One is Tx/Rx tester mode which performs measurements of the physical layer. The other is signaling tester mode which performs tests including the protocol operation.

In Tx/Rx tester mode, only the L1 baseband processing block and the RF processing block operate (the L2 and L3 protocol processing blocks do not operate) measuring the downlink physical layer signal transmission and uplink physical layer signal reception.

In signaling tester mode, the operation of the L2 and L3 protocol processing blocks are added to the physical layer processing. Signaling is performed against the mobile phone (UE/MS) under test, and a series of call connection tests and a radio characteristics test which is performed using loopback mode that is controlled by the Test Control protocol are executed.

1.2 Signaling Tester Mode

In signaling tester mode, protocols are activated (signaling state), and a basic call connection (signaling) control test and a radio characteristics test are executed against the W-CDMA or GSM mobile phone.

Test Modes

There are two modes in the signaling test.

- Auto test mode: Automatically executes a predefined test sequence and displays the results or measured values for each sequence. If the UE type in the model parameter file is set to W-CDMA+GSM, inter-RAT handovers can be executed from W-CDMA to GSM. The radio characteristics test can determine whether the measured values meet predefined criteria. The judgement result is displayed on the screen. Moreover, detailed information such as the measured values and judgement criteria can automatically be saved to the built-in hard disk. To execute the test when the VC200 and the mobile phone are connected via the USB, the International Mobile Equipment Identity (IMEI), model, and version number (TAF) are retrieved, and the results are displayed on the screen and saved to the hard disk.
  Test sequence and criteria are set with the model parameter file.
- Manual test mode: Of the possible test items including Registration (W-CDMA), Location Update (GSM), Call Setup from NW, Call Setup from UE, Call Release from NW, Call Release from UE, Handover from W-CDMA to GSM, test loop (close/open), GPRS (only when GSM mode), and radio characteristics, only those items selected on the VC200 screen are tested. Then, the results or measured values are displayed. In the radio characteristics test, measurements can be made by arbitrarily changing the downlink power and uplink power values.

Model Parameter File (See section 4.3 for the operating procedure)

This file is required when executing auto tests. A model parameter file is created for each mobile phone under test. The following items are set in the model parameter file.

- Setup conditions of the VC200
- Physical conditions, model information, and other information of the mobile phone under test
- Whether or not each test is to be executed
- Criteria for the radio characteristics test

Combination File (See section 4.4 for the operating procedure)

A file in which multiple model parameter files are registered. It is used to execute the auto tests consecutively.

Note

- IMEI, which stands for International Mobile Equipment Identity, is a unique 15-digit number used to identify each terminal.
- The mobile phone information (IMEI, model, and version number) can also be retrieved using a communication command via the USB.
- For details on models that support the USB and cables used for the connection, contact your nearest dealer.

Auto Test Mode ≡See sections 4.6 and 4.7 for the operating procedure≡

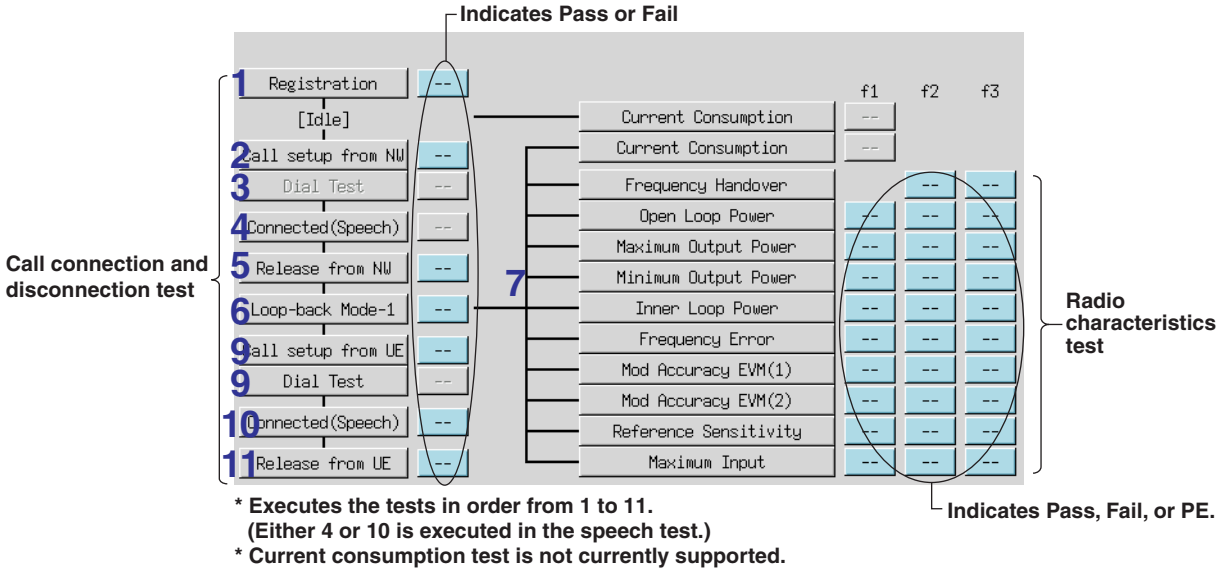
The following test is automatically executed according to the information in the model parameter file. Tests that are set to disable in the model parameter file are not performed.

- Position registration test
- Call connection and disconnection test: Tests whether call connection or disconnection operation completed normally. Indicates Pass or Fail.
- Inter-RAT handovers: Tests whether the handover from the W-CDMA system to the GSM system completed normally. Indicates Pass or Fail. Can be executed only when the UE type in the model parameter file is set to W-CDMA+GSM.
- Radio characteristics test: Tests whether the values of each test item meet the criteria. Indicates Pass, Fail, or PE.
- Speech test: Tests speech using the VC200 loopback mode after establishing a call. Indicates Pass or Fail.

Model Parameter Automatic Selection Function

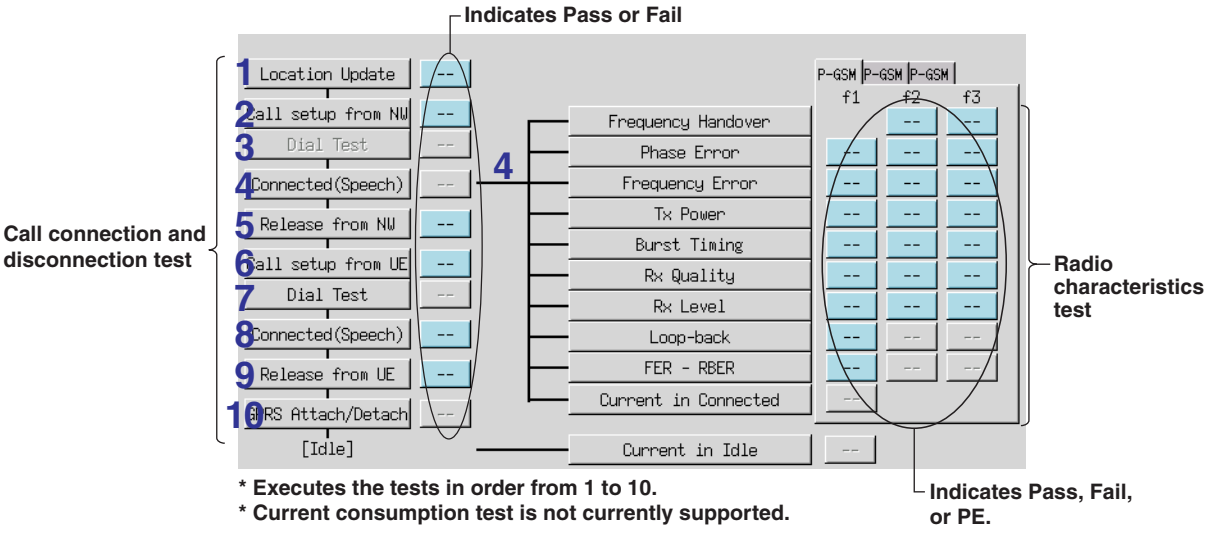
When the automatic selection function is used, before the auto test, location registration or location update is performed, then the IMEI is retrieved in the radio interval. The IMEI retrieve here is compared with the IMEI number in the previously created IMEI table, then the model parameter file or combination file is automatically selected from the corresponding directory. After the model parameter file or combination file is selected, you can press START on the front panel or click OK in the dialog box that is displayed on screen to start the auto test according to the selected model parameter file or combination file.

Auto test screen (W-CDMA)

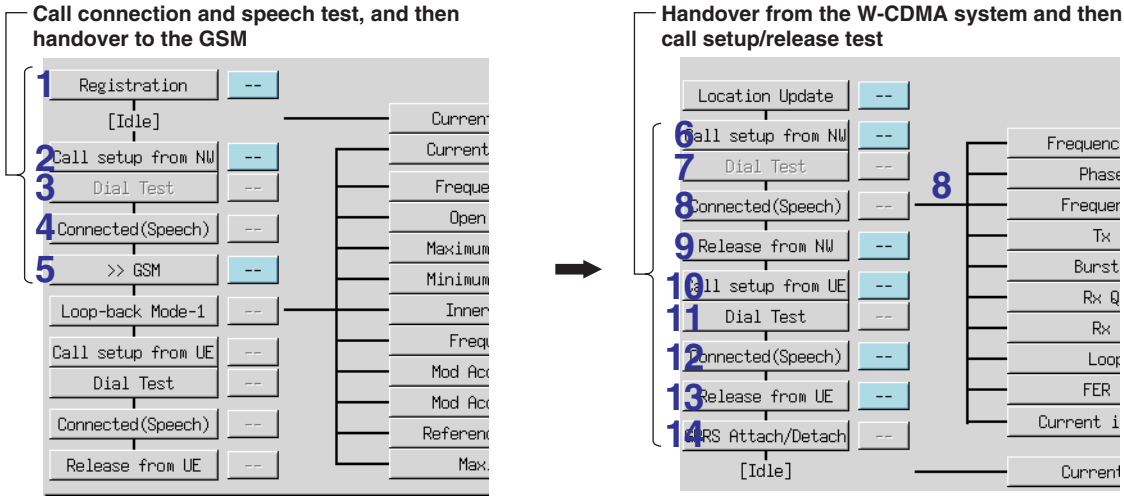


* Executes the tests in order from 1 to 11.
(Either 4 or 10 is executed in the speech test.)
* Current consumption test is not currently supported.

Auto test screen (GSM)



Auto test screen (system handover from W-CDMA to GSM)



Position registration test

Turning on the power to the mobile phone under test after pressing START on the front panel or clicking Start on the screen starts the position registration sequence. When the position registration sequence completes normally, the VC200 indicates “Pass” and enters standby mode. Otherwise, the VC200 indicates “Fail” and terminates the test.

Call Connection and Disconnection Test

- **Call setup from NW**
  Starts the call setup process from the VC200. When the mobile phone receives the call normally when the send button is pressed on the mobile phone after an alert is sounded and the call is established, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail” and terminates the test.

- **Release from NW**
  Disconnection procedure is started from the VC200. If the call is disconnected normally, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail” and terminates the test.

- **Loopback**
  Starts the TC (Test Control) protocol from the VC200. When the test loop is closed normally on the mobile phone under test, a loopback connection is established, the radio characteristics test (described in the next section) is executed, and the result is displayed. After the radio characteristics test completes, the test loop is opened.
  If the test loop could not be closed or opened, the VC200 indicates “Fail” and terminates the test.

- **Call setup from UE**
  Call setup process is started on the mobile phone under test (press the number and press the send button). When the VC200 receives the call normally and the call is established, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail” and terminates the test.

- **Release from UE**
  Release procedure is started on the mobile phone under test (press the end button). If the call is disconnected normally, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail” and terminates the test.

- **GPRS Test (GSM Only)**
  Executes Attach followed by Detach when the VC200 enters the idle mode at the end of the auto test sequence. If both Attach and Detach completes normally, the VC200 indicates “Pass.” If either one fails to complete normally, the VC200 indicates “Fail” and terminates the test.

System Handover

If the UE type in the model parameter file is set to W-CDMA+GSM, a W-CDMA call release test and GSM call setup test can be combined to achieve a handover test from the W-CDMA system to the GSM system.
A handover to the GSM system is carried out in call release 1 or call release 2 of the W-CDMA call release test. The screen is switched from the W-CDMA auto test screen to the GSM auto test screen.
In the call setup test of the GSM system, a frequency handover is made from the W-CDMA system to frequency 1 (f1) of GSM frequency band 1. If the handover is successful, "Pass" is displayed in the result of call setup 1. Otherwise, the VC200 indicates "Fail" and terminates the test.
You can specify handover settings such as whether to perform the handover test and the handover destination frequency in the model parameter file.

Speech Test

A speech test can be executed for Call Setup from NW/Call Release from NW or Call Setup from UE/Call Release from UE. Speech test is entered after Call Setup from NW or Call Setup from UE. The VC200 cannot check the status of the speech test. To end the speech test, follow the instructions in the dialog box and specify the test result. The entered result is displayed on the screen (Pass or Fail).

Radio Characteristics Test (W-CDMA)

- **Frequency handover**
  The ratio characteristics test can be executed by switching the frequency while the call is established. The frequencies to be switched are set with the model parameter file (up to 3).
  If a frequency handover setting exists, the VC200 starts the frequency handover procedure. When the transmission frequency of the mobile phone under test switches correctly, the VC200 indicates “Pass.” If the transmission frequency fails to switch correctly, the VC200 indicates “Fail” and terminates the test.

- **Dial test**
  If call setup from UE is selected for the call setup test, a dial test can be executed. A call is originated using the dial number registered in the model parameter file. If the number matches the dial number that the VC200 receives, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.” This test can be used as a keypad test of the mobile phone under test.

- **Open loop power**
  Measures the power of the RACH preamble signal that the mobile phone under test transmits. The measured value can be viewed on the result display screen. If the measured value is within the criteria range, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.”

- **Maximum output power**
  The VC200 continues to transmit the TPC command for increasing power and measures the average power transmitted by the mobile phone for over 1 time slot. The measured value can be viewed on the result display screen. If the measured value is within the criteria range, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.”

- **Minimum output power**
  The VC200 continues to transmit the TPC command for decreasing power and measures the average power transmitted by the mobile phone for over 1 time slot. The measured value can be viewed on the result display screen. If the measured value is within the criteria range, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.”

- **Inner loop power**
  The VC200 continuously sends the TPC Up command. When the output power of the mobile phone under test enters the criteria range of the maximum output power, the VC200 stops sending the TPC Up command and sends the TPC Down command. The power difference for each TPC down command and the power difference for every 10 commands are measured. The measured value can be viewed on the result display screen. If the measured value is within the criteria range, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.”
  If the output power of the mobile phone under test does not enter the criteria range of the maximum output power, the VC200 indicates “PE” (Power Error) and measures and displays the relative power at that point.

- **Frequency error**
  The VC200 continues to transmit the TPC command for increasing power so that the transmission power of the mobile phone is within the criteria range of the maximum output power. Then, the VC200 measures the relative error of the reception frequency from the mobile phone under test against the transmission frequency of the VC200. The measured value can be viewed on the result display screen. If the measured value is within the criteria range, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.”
  If the transmission power of the mobile phone under test does not enter the criteria range of the maximum output power, the VC200 indicates “PE” (Power Error) and measures and displays the frequency error at that point.

- **Modulation accuracy 1 (at maximum output power)**
  The VC200 continues to transmit the TPC command for increasing power so that the transmission power of the mobile phone is within the criteria range of the maximum output power. Then, the VC200 measures the modulation accuracy (EVM rms value). The measured value can be viewed on the result display screen. If the measured value is within the criteria range, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.”
  If the transmission power of the mobile phone under test does not enter the criteria range of the maximum output power, the VC200 indicates “PE” (Power Error) and measures and displays the modulation accuracy at that point.

- **Modulation accuracy 2 (at arbitrary output power)**
  The VC200 transmits the TCP command for increasing or decreasing the power so that the transmission power of the mobile phone is within the UL (uplink) transmission power setting range. When the transmission power enters the criteria range, the VC200 measures the modulation accuracy (EVM rms value). The measured value can be viewed on the result display screen. If the measured value within the criteria range of modulation accuracy 2, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.”
  If the transmission power of the mobile phone under test does not enter the UL transmission power setting range, the VC200 indicates “PE” (Power Error) and measures and displays the modulation accuracy at that point.

- **Reference sensitivity**
  The VC200 continues to transmit the TPC command for increasing power. When the transmission power of the mobile phone is within the criteria range of the maximum output power, the downlink transmission power of the VC200 is set to the value specified for reference sensitivity.
  Using RMC 12.2 kbps, the VC200 measures the BER of the DPCH that is looped back from the mobile phone under test. The measured value can be viewed on the result display screen. If the measured value within the criteria range of the reference sensitivity, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.”
  If the transmission power of the mobile phone under test does not enter the criteria range of the maximum output power, the VC200 indicates “PE” (Power Error) and measures and displays the reference sensitivity at that point.

- **Maximum input reception**
  The VC200 continues to transmit the TPC command for increasing power. When the transmission power of the mobile phone is within the criteria range of the maximum output power, the downlink transmission power of the VC200 is set to the value specified for maximum input reception.
  Using RMC 12.2 kbps, the VC200 measures the BER of the DPCH that is looped back from the mobile phone under test. The measured value can be viewed on the result display screen. If the measured value within the criteria range of the maximum input reception, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.”
  If the transmission power of the mobile phone under test does not enter the criteria range of the maximum output power, the VC200 indicates “PE” (Power Error) and measures and displays the maximum input reception at that point.

Note

- The measured value of the radio charactics test can be viewed on the log file that is described in “Test Results.”
- You can set whether to cancel the origin offset for modulation accuracy 1 and 2 of the radio characteristics test.

Setup Items and Judgement Criteria for the Radio Characteristics Test (W-CDMA)

The various settings for the radio characteristics test are registered in the model parameter file. For the procedure, see section 4.3.

- **W-CDMA auto test items**

Item	Setting
Call setup 1	Select call setup from NW or call setup from UE
Dial test	Register a number with up to 15 digits
Call release 1	Select call release from NW, call release from UE or to GSM*
Call setup 2	Select call setup from NW or call setup from UE
Dial test	Uses the same dial number as call setup 1
Call release 2	Select call release from NW, call release from UE or to GSM*
Speech test	Select when to execute the test, after a call setup from NW or after a call setup from UE
Test loop (radio characteristics)	
Frequency handover	f1/f2/f3
Open loop power	–
Maximum output power	Measure count (1 to 100)
Minimum output power	Measure count (1 to 100)
Inner loop power	–
Frequency error	Measure count (1 to 100)
Modulation accuracy (1)	Measure count (1 to 100)
Modulation accuracy (2)	Measure count (1 to 100)
Reference sensitivity (BER)	Measure time (1 to 180 s)
Maximum input reception (BER)	Measure time (1 to 180 s)

* "to GSM" can be selected only when the UE type in the model parameter file is set to W-CDMA+GSM.

- **W-CDMA auto test criteria**

Item	Selectable Range/Criteria
Power adjustment	
DL(f1)	0.0 to +30.0dB (0.1 dB step)
UL(f1)	0.0 to +30.0dB (0.1 dB step)
DL(f2)	0.0 to +30.0dB (0.1 dB step)
UL(f2)	0.0 to +30.0dB (0.1 dB step)
DL(f3)	0.0 to +30.0dB (0.1 dB step)
UL(f3)	0.0 to +30.0dB (0.1 dB step)
Downlink output power	–110.0 to –10.0 (0.1 step)
Downlink frequency channel*1*2	
f1/f2/f3	BandI: 10550 to 10850 (General, 1step) BandII: 9650 to 9950 (General, 1step), or select from 412/437/462/487/512/537/562/587/612/637/662/687 (Additional) BandIII: 1162 to 1513 (General, 1step) Band V: 4357 to 4458 (General, 1step), or select from 1007/1012/1032/1037/1062/1087 (Additional) BandVI: 4375 to 4425 (General, 1step), or select from 1037/1062 (Additional) BandIX: 9237 to 9387 (General, 1step)
Open loop power	
Upper limit	–70.0 to +35.0 (0.1 step)
Lower limit	–70.0 to +35.0 (0.1 step)
Maximum output power	
Downlink output power setting	–110.0 to –10.0 (0.1 step)
Upper limit	–70.0 to +35.0 (0.1 step)
Lower limit	–70.0 to +35.0 (0.1 step)
Minimum output power	
Downlink output power setting	–110.0 to –10.0 (0.1 step)
Upper limit	–70.0 to +35.0 (0.1 step)

Item	Selectable Range/Criteria
Inner loop power (–1 dB step)	
Downlink output power setting	–110.0 to –10.0 (0.1 step)
Upper limit for 1 command	–2.0 to 0.0 (0.1 step)
Lower limit for 1 command	–2.0 to 0.0 (0.1 step)
Upper limit for 10 commands	–15.0 to –5.0 (0.1 step)
Lower limit for 10 commands	–15.0 to –5.0 (0.1 step)
Frequency error	
Downlink output power setting	–110.0 to –10.0 (0.1 step)
Criteria	±0.001 to ±100.000 ppm (0.001 step)
Modulation accuracy (1) (at maximum uplink output power)	
Downlink output power setting	–110.0 to –10.0 dBm (0.1 step)
Upper limit	0.0 to 20.0% (0.1 step)
Origin offset cancel	On/Off
Modulation accuracy (2) (at arbitrary uplink output power)	
Downlink output power setting	–110.0 to –10.0 dBm (0.1 step)
Uplink output power setting	–70.0 to +35.0 dBm (0.1 step)
Upper limit	0.0 to 20.0% (0.1 step)
Origin offset cancel	On/Off
Reference sensitivity (BER)	
Downlink output power setting Ior	–110.0 to –10.0 dBm (0.1 step)
Upper limit	0.0000 to 50.0000% (0.0001 step)
Maximum input reception (BER)	
Downlink output power setting Ior	–110.0 to –10.0 dBm (0.1 step)
Upper limit	0.0000 to 50.0000% (0.0001 step)
Authentication key	default*3/user

*1 Band I, II, III, V, VI and IX are supported.
For details on the settings, see the 3GPP specifications.

*2 The uplink frequency is the value that results by subtracting the following values from the frequency set on the downlink frequency channel.
BandI: 190 MHz
BandII: 80 MHz
BandIII: 95 MHz
BandV: 45 MHz
BandVI: 45 MHz
BandIX: 95 MHz

*3 Selected when the optional accessory Test USIM (Model 733065-XXX) is used.

Radio Characteristics Test (GSM)

- **Frequency handover**

  The ratio characteristics test can be executed by switching the frequency while the call is established. The handover frequencies are specified in the model parameter file (up to three frequency bands and three frequencies in each band).
  If a frequency handover setting exists, the VC200 starts the frequency handover procedure. When the transmission frequency of the mobile phone under test switches correctly, the VC200 indicates “Pass” and executes the radio characteristics test at that frequency. If the transmission frequency fails to switch correctly, the VC200 indicates “Fail” and terminates the test.

- **Dial test**

  If call setup from UE is selected for the call setup test, a dial test can be executed. A call is originated using the dial number registered in the model parameter file. If the number matches the dial number that the VC200 receives, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.” This test can be used as a keypad test of the mobile phone under test.

- **Phase error**
  The VC200 checks the system information message and measures the peak and rms values of the phase error when the Tx power of the mobile phone under test reaches the preset power control level (PCL of the phase/frequency error). The PCL can be set to High, Middle, or Low (three types).
  The measured value can be viewed on the result display screen. If the measured value within the criteria range of the phase error, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.”

- **Frequency error**
  The VC200 checks the system information message and measures the frequency error when the Tx power of the mobile phone under test reaches the preset power control level (PCL of the phase/frequency error). The PCL can be set to High, Middle, or Low (three types).
  The measured value can be viewed on the result display screen. If the measured value within the criteria range of the frequency error, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.”

- **Tx power**
  The VC200 checks the system information message and measures the Tx power when the Tx power of the mobile phone under test reaches the preset power control level (PCL of the Tx power). The PCL can be set to High, Middle, or Low (three types).
  The measured value can be viewed on the result display screen. If the measured value within the criteria range of the Tx power, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.”

- **Burst timing**
  The VC200 checks the system information message and determines the burst timing when the Tx power of the mobile phone under test reaches the preset power control level (PCL of the burst timing). The PCL can be set to High, Middle, or Low (three types).
  The judgement result can be viewed on the result display screen. If the burst timing is within the power burst template range determined by the GSM frequency band and the upper and lower limits of the PCL, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.”
  The VC200 can display a graph of the uplink signal at the time of judgement and the power burst template. You can check the status of the signal when the judgement result is Fail on the graph.

- **Rx quality**
  The VC200 sets the downlink Tx power to the value specified in the model parameter file (downlink Tx power for Rx quality) and receives the RX_QUALITY measurement report from the mobile phone under test. The downlink Tx power can be set to High or Low (two types).
  The received result can be viewed on the result display screen. If the received result is within the criteria range of the Rx quality, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.”

- **Rx level**
  The VC200 sets the downlink Tx power to the value specified in the model parameter file (downlink Tx power for Rx level) and receives the RX_LEVEL measurement report from the mobile phone under test. The downlink Tx power can be set to High or Low (two types).
  The received value can be viewed on the result display screen. If the received value is within the criteria range of the Rx level, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.”

- **FER (frame erasure ratio)/RBER(residual bit error ratio)**
  The VC200 establishes a call in loopback mode, transmits a PN pattern to TCH, and sets the downlink Tx power to the value specified by the model parameter file (downlink Tx power for FER•BER). The VC200 compares the TCH looped back by the mobile phone under test against the PN pattern, and measures the FER/RBER. The downlink Tx power can be set to High or Low (two types).
  The measured value can be viewed on the result display screen. If the measured value within the criteria range of the FER and RBER, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.”

Setup Items and Judgement Criteria for the Radio Characteristics Test (GSM)

The various settings for the radio characteristics test are registered in the model parameter file. For the procedure, see section 4.3.

- **GSM auto test items**

Item	Setting
Location update	–
Call setup 1 Dial test Call release 1	Select call setup from NW or call setup from UE* Register a number with up to 15 digits Select call release from NW or call release from UE
Call setup 2 Dial test Call release 2	Select call setup from NW or call setup from UE Uses the same dial number as call setup 1 Select call release from NW or call release from UE
GPRS test	–
Speech test	–
Frequency handover	f1/f2/f3 (frequency band 1) f21/f22/f23 (frequency band 2) f31/f32/f33 (frequency band 3)
Tx power High Middle Low	Number of measurements (1 to 100)
Burst timing High Middle Low Output to file	Number of measurements (1 to 100) ON: Saves the burst waveform graph to the result log file. OFF: Does not save the burst waveform graph to the result log file.
Phase/Frequency error High Middle Low	Number of measurements (1 to 100)
Rx quality High Low	Number of measurements (1 to 100)

Item	Setting
Rx level	Number of measurements (1 to 100)
High	
Low	
FER•RBER	Timeout (1 to 180 s)
High	
Low	

* For the inter-RAT handovers, call setup from NW and call setup from UE cannot be selected. It is set to "from W-CDMA."

- **GSM auto test criteria**

Item	Selectable Range/Criteria
GSM frequency band	Select GSM850, P-GSM, E-GSM, R-GSM, DCS1800, or PCS1900
BCCH* and TCH frequency channel	
GSM850	128 to 251 (1 step)
P-GSM	1 to 124 (1 step)
E-GSM	0 to 124, 975 to 1023 (1step)
R-GSM	0 to 124, 955 to 1023 (1step)
DCS1800	512 to 885 (1 step)
PCS1900	512 to 810 (1 step)
Power adjustment	
BCCH-DL*	0.0 to +30.0 dB (0.1 step)
BCCH-UL*	0.0 to +30.0 dB (0.1 step)
TCH1-DL	0.0 to +30.0 dB (0.1 step)
TCH1-UL	0.0 to +30.0 dB (0.1 step)
TCH2-DL	0.0 to +30.0 dB (0.1 step)
TCH2-UL	0.0 to +30.0 dB (0.1 step)
TCH3-DL	0.0 to +30.0 dB (0.1 step)
TCH3-UL	0.0 to +30.0 dB (0.1 step)
Downlink Tx power*	–110.0 to –10.0 dBm (0.1 step)
Phase/Frequency error	
PCL (High)	0 to 31 (1 step)
PCL (Middle)	0 to 31 (1 step)
PCL (Low)	0 to 31 (1 step)
Phase error	
Peak upper limit	0.0 to 45.0 degrees (0.1 step)
RMS upper limit	0.0 to 20.0 degrees (0.1 step)
Frequency error	Upper limit: 0 to ±10000 Hz (1 step)
Tx power	
PCL (High)	0 to 31 (1 step)
Upper limit (High)	–40.0 to +40.0 dBm (0.1 step)
Lower limit (High)	–40.0 to +40.0 dBm (0.1 step)
PCL (Middle)	0 to 31 (1 step)
Upper limit (Middle)	–40.0 to +40.0 dBm (0.1 step)
Lower limit (Middle)	–40.0 to +40.0 dBm (0.1 step)
PCL (Low)	0 to 31 (1 step)
Upper limit (Low)	–40.0 to +40.0 dBm (0.1 step)
Lower limit (Low)	–40.0 to +40.0 dBm (0.1 step)
Burst timing	
PCL (High)	0 to 31 (1 step)
PCL (Middle)	0 to 31 (1 step)
PCL (Low)	0 to 31 (1 step)
Rx quality	
Downlink Tx power (High)	–110.0 to –10.0 dBm (0.1 step)
Upper limit (High)	0 to 7 (1 step)
Downlink Tx power (Low)	–110.0 to –10.0 dBm (0.1 step)
Upper limit (Low)	0 to 7 (1 step)

* You can set only when the frequency handover setting is frequency band 1.

Item	Selectable Range/Criteria
Rx level	
Downlink Tx power (High)	–110.0 to –10.0 dBm (0.1 step)
Upper limit (High)	0 to 63 (1 step)
Lower limit (High)	0 to 63 (1 step)
Downlink Tx power (Low)	–110.0 to –10.0 dBm (0.1 step)
Upper limit (Low)	0 to 63 (1 step)
Lower limit (Low)	0 to 63 (1 step)
FER•RBER	
Downlink Tx power (High)	–110.0 to –10.0 dBm (0.1 step)
FER upper limit (High)	0.0000 to 18.0000% (0.0001 step)
RBER 1b upper limit (High)	0.0000 to 18.0000% (0.0001 step)
RBER 2 upper limit (High)	0.0000 to 18.0000% (0.0001 step)
Downlink Tx power (Low)	–110.0 to –10.0 dBm (0.1 step)
FER upper limit (Low)	0.0000 to 18.0000% (0.0001 step)
BER 1b upper limit (Low)	0.0000 to 18.0000% (0.0001 step)
RBER 2 upper limit (Low)	0.0000 to 18.0000% (0.0001 step)
Power control	
UL Power	SACCH/Assignment Command
Power control mode	Normal/Simple

Test Results

Each time a test is executed, the detailed information shown below is automatically saved to the built-in hard disk as a log file. The contents of the log file can be also viewed on the test result display screen of the VC200. The test results can also be printed by connecting a printer to the VC200 via the USB.

- **Model parameter**
  Model parameter file name, UE type, comment, user name, company name, VC serial number, IME, and IMSI
  The following items are also displayed when using the USB.
  IMEI, model, and version number (TAF)

- **W-CDMA**
  Tolerance, measured value, and criteria of each test item*
  * Registration, Call setup from NW, Release from NW, Speech Test, Test Loop (close/open), Call setup from UE, Release from UE, Maximum Output Power, Minimum Output Power, Open Loop Power, Inner Loop Power, Frequency Error, Modulation Accuracy (1), Modulation Accuracy (2), Reference Sensitivity, Maximum Input, Current Consumption in Idle, and Current Consumption in Connected

- **GSM**
  Tolerance, measured value, and criteria of each test item*
  * Location update, GPRS (Attach/Detach), call setup from NW, call setup from UE, call release from NW, call release from UE, frequency handover, dial test, speech, phase error, frequency error, Tx power, burst timing, Rx quality, and Rx level.

Note

- If output to file is turned ON in the burst timing setting in the model parameter file, the graph of the uplink signal during the burst timing test can be saved to the result log file.
- You can check whether Attach and Detach in the GPRS test completed normally in the result log file.

Manual Test Mode (W-CDMA) ≡See section 4.8 for the operating procedure≡

The following tests can be performed.

- Registration test: Executed automatically when the manual test is started.
- Call setup/release test: Of the operations Call Setup from NW, Call Setup from UE, Call Release from NW, Call Setup from UE, and Test Loop (Close/Open), the selected operation is executed. When the operation completes successfully, "Pass" is indicated; otherwise, "Fail" is indicated.
- Speech test: Executed when the speech test is selected on the screen.
- Radio characteristics test: When you establish a loopback or call connection, a radio characteristics test of Tx characteristics and Rx characteristics is executed according to the previously established measurement mode (Repeat/Single), and the value is displayed/updated.

Registration Test

When the mobile phone's power is turned ON after starting the manual test, the registration sequence is automatically started. When the registration sequence completes normally, the VC200 indicates "Pass" and enters idle mode. Otherwise, the VC200 indicates "Fail" and the test is forcibly terminated.

Call Setup/Release Test

- **Call Setup from NW**
  If a call setup from NW is executed in the idle mode after the registration test completes normally, the VC200 starts the call setup procedure. If an alert is sounded on the mobile phone under test, and it receives the call normally when the talk button on the mobile phone is pressed resulting in the establishment of the call, the VC200 indicates "Pass." Otherwise, the VC200 indicates "Fail" and the test is forcibly terminated.

- **Call Setup from UE**
  If a call setup from UE is executed in the idle mode after the registration test completes normally, call setup from the mobile phone under test becomes possible. Entering a number on the mobile phone under test and pressing the talk button starts the call setup procedure. If the VC200 receives the call normally and the call is established, the VC200 indicates "Pass." Otherwise, the VC200 indicates "Fail" and the test is forcibly terminated.

- **Call Release from NW**
  When "Call Release from NW" is executed while a call is established (by a call setup from NW or a call setup from UE), the VC200 starts the call release procedure. If the call is released normally, the VC200 indicates "Pass" and enters idle mode. Otherwise, the VC200 indicates "Fail" and the test is forcibly terminated.

- **Call Release from UE**
  When "Call Release from UE" is executed while a call is established (by a call setup from NW or a call setup from UE), call release from the mobile phone under test becomes possible. When the end button on the mobile phone under test is pressed, the call release procedure is started. If the call is released normally, the VC200 indicates "Pass" and enters idle mode. Otherwise, the VC200 indicates "Fail" and the test is forcibly terminated.

- **Test Loop (Close/Open)**
  - **Close**
    If “Close” is executed in the idle mode after the registration test completes normally, Test Loop Mode 1 of the Test Control protocol starts from the VC200 against the mobile phone under test. If a loopback is established on the mobile phone under test, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail” and the test is forcibly terminated.
  - **Open**
    If “Open” is executed when a loopback is established, the VC200 starts the test loop open procedure. If the loopback is opened normally, the VC200 indicates “Pass” and enters idle mode. Otherwise, the VC200 indicates “Fail” and the test is forcibly terminated.
  - **Inter-RAT handovers**
    Handover from the W-CDMA system to the GSM system can be executed by combining the call release test of the W-CDMA and the call setup test of the GSM. The handover destination frequency and channel are set using GSM items (BCCH/ TCH) in the test condition setup dialog box (see sections 4.5 and 4.6).

Speech Test

The test is executed when a call is established through Call Setup from NW or Call Setup from UE and the speech test is selected. The speech test ends when Call Release from NW or Call Release from UE is executed.

Radio Characteristics Test

You can select from one of the following two measurement methods that are available after establishing the loopback or call connection.

- Repeat: Performs repetitive measurements of the previously selected items of the Tx characteristics and Rx characteristics radio characteristics tests on screen, and the value is displayed/updated. You can change the items under test after completion of the test (stop).
- Single: Perform a single measurement of the selected items of the Tx characteristics and Rx characteristics radio characteristics tests, and after the value is displayed/updated, it enters a loopback or call connection status (radio characteristics test wait state).

When the Tx characteristics test is in progress, the mobile phone power is controlled so that it matches the uplink power value specified on the screen.
When the Rx characteristics test is in progress, the VC200 outputs the downlink power value dedicated for the Rx characteristics test that is specified on the screen.

- **Tx characteristics test**
  - **Open loop power**
    Measures the power of the RACH preamble signal that the mobile phone under test transmits. Repeat measurement is not performed for the open loop power measurement. It is measured once when executing call setup from NW, call setup from UE, or closing the loop. The downlink transmission power value for the protocol test/Tx characteristics test is used.
  - **Tx Power**
    Measures the average power transmitted by the mobile phone for over 1 time slot.
  - **Freq. Error**
    Measures the relative error of the uplink output frequency of the mobile phone under test with respect to the downlink output frequency of the VC200.
  - **EVM rms**
    Measures the modulation accuracy (EVM rms value) of the uplink output signal of the mobile phone under test.
    You can set whether to cancel the origin offset at the time of measurement.

- **Inner loop power**
  The measurement method varies depending on the selected test segment.
  - **StepE**
    The VC200 continuously sends the TPC Up command. When the transmission power of the mobile phone under test reaches its maximum, the VC200 sends the TPC Down command. The power difference for each TPC Down command and the power difference for every 10 commands are measured.
  - **StepF**
    The VC200 continuously sends the TPC Down command. When the transmission power of the mobile phone under test reaches its minimum, the VC200 sends the TPC Up command. The power difference for each TPC Up command and the power difference for every 10 commands are measured.

  - **Result display of the inner loop power measurement**
    Determines whether the measured values are okay and displays on the screen the number of time slots that failed. In addition, the following detailed results can also be displayed.
    - Average/maximum/minimum
    - Detailed information of the time slot at which the test failed

- **Rx characteristics test**
  - Loopback BER
    The downlink output signal RMC 12.2 kbps from the VC200 is looped back to the uplink output signal of the mobile phone under test using Test Loop Mode 1. The VC200 measures the bit error ratio (BER) of the loopback signal. However, a measurement while call is connected always results in SyncLoss. The code domain power can be selected from the following two types.
    Minimum Sensitivity
    Maximum Input Level
  - CPICH
    The VC200 transmits the downlink power value specified on the screen and displays the CPICH-EcNO and CPICH-RSCP values from the measurement report received from the mobile phone under test.

Power Setting

- **During the protocol test**
  The downlink power value specified on the screen is transmitted.
  The uplink power is controlled so that it corresponds to the maximum power of the mobile phone under test.

- **During the Tx characteristics test**
  The downlink power value specified on the screen is transmitted.
  The uplink power is controlled so that it corresponds to the uplink power value dedicated to the Tx characteristics test that is specified on the screen.

- **During the Rx characteristics test**
  The downlink power value dedicated to the Rx characteristics test that is specified on the screen is transmitted.
  The uplink power is controlled so that it corresponds to the maximum power of the mobile phone under test.

Setting the Test Conditions

The test conditions for the manual test are set in the test condition setup dialog box. For the procedure, see sections 4.5 and 4.6.

- **W-CDMA manual test conditions**

Setup Item	Selectable Range (Default Value)
Condition 1	
UE Information	
Profile	Profile_01 to 08 (Profile_01)
Battery Voltage*	2.5 to 4.5 V (4.3 V)
Frequency & Power	
Frequency	412 to 10850 (10688)
DL Power	–110.0 to –10.0 dBm (–65.0 dBm)
Compensation Value	
DL	band1/band2/band3/band5, 6/band9 0.0 to +30.0 dB (3.0 dB)
UL	band1/band2/band3/band5, 6/band9 0.0 to +30.0 dB (3.0 dB)
Authentication key	default/User definition(default)
Condition 2	
Tx Characteristics	
UL Power	–70.0 to 35.0 dBm, Min, or Max (0.0 dBm)
Measure Count	
Tx Power	1 to 100 times (1)
Freq Error/EVM	1 to 100 times (1)
Inner Loop Power	1 to 100 times (1)
Measure Time	
Current in Idle*	1 to 180 s (1 s)
Current in Connected*	1 to 180 s (1 s)
Inner Loop Power	Step E/Step F (Step E)
Origin Offset Cancel	On/Off (On)
Rx Characteristics	
DL Power	–110.0 to –10.0 dBm (–80.0 dBm)
Measure Time (Loop-back BER)	1 to 180 s (1 s)
Code Domain Power	Minimum Sensitivity/Maximum Input Level (Minimum Sensitivity)
Speech Test	
Delay Time	0.2 to 1.5 s (0.5 s)
Measure Mode	Repeat/Signle (Repeat)

* Current consumption test is not currently supported.

- **GSM manual test conditions**

Setup Item	Selectable Range (Default Value)
Condition 1	
Frequency & Power	
BCCH (frequency band)	GSM850/P-GSM/E-GSM/R-GSM/DCS1800/PCS1900 (P-GSM)
BCCH (channel number)*1	(1)
TCH (frequency band)	GSM850/P-GSM/E-GSM/R-GSM/DCS1800/PCS1900 (P-GSM)
TCH (channel number)*1	(1)
DL Power	–110.0 to –10.0 dBm (–75.0 dBm)
Compensation Value	
DL	GSM900/DCS1800/PCS1900 0.0 to +30.0 dB (3.0 dB)
UL	GSM900/DCS1800/PCS1900 0.0 to +30.0 dB (3.0 dB)
Tx Characteristics	
UL Power	0 to 31 (5)
Measure Count	
Tx Power	1 to 100 times (1)
Burst Timing	1 to 100 times (1)
Phase/Freq Error	1 to 100 times (1)
Rx Characteristics	
DL Power	–110.0 to –10.0 dBm (–65.0 dBm)
Measure Time (FER-RBER)	1 to 180 s (1 s)
Speech Test	
Delay Time	0.2 to 1.5 s (0.5 s)
Condition 2	
Power control	
UL power	SACCH/Assignment Command(SACCH)
Power control mode*2	Normal/Simple (simple)
Measurement mode	Repeat/Single (repeat)

*1 The selectable range for each frequency band is as follows:
GSM850: 128 to 251
P-GSM: 1 to 124
E-GSM: 0 to 124, 975 to 1023
R-GSM: 0 to 124, 955 to 1023
DCS1800: 512 to 885
PCS1900: 512 to 810

*2 The following differ depending on the DL power/UL power used in each test. Also, as Simple mode is a simplification of Power control mode, you can reduce the measurement time compared to Normal mode.

- **In Normal mode**

	DL power	UL power
Speech test	DL power set in Frequency & Power	-
Tx characteristics test	DL power set in Frequency & Power	UL power dedicated to the Tx characteristics
Rx characteristics test	DL power dedicated to the Rx characteristics	Maximum power that can be output by mobile phone under test

- **In Simple mode**

	DL power	UL power
Speech test	DL power dedicated for Rx characteristics	-
Tx characteristics test	DL power dedicated to the Rx characteristics	UL power set in Tx characteristics
Rx characteristics test	DL power dedicated to the Rx characteristics	UL power set in Tx characteristics

Manual Test Mode (GSM) ≡See section 4.9 for the operating procedure≡

The following tests can be performed.

- Location update test: This test can be executed when the VC200 is in idle mode. If the updating of the location completes successfully, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.”
- GPRS test: This test can be executed when the VC200 is in idle mode. The Attach (registration) test is carried out followed by the Detach (call release) test. When each test completes successfully, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.”
- Call setup/release test: Of the operations Call Setup from NW, Call Setup from UE, Handover from W-CDMA, Call Release from NW, and Call Setup from UE, the selected operation is executed. When the operation completes successfully, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.”
- Frequency handover test: The VC200 executes frequency handover while the call is established through call setup. If the handover is successful, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.”
- Loopback test: The VC200 executes loopback while the call is established through call setup. If the loopback is successful, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.”
- Speech test: Speech test can be performed when the call is established through call setup.
- Radio characteristics test: When you establish a call by call connection, a radio characteristics test of Tx characteristics and Rx characteristics is executed according to the previously established measurement mode (Repeat/Single), and the value is displayed/updated.
- Radio characteristics test (FER/RBER): When entering loop back mode per the loop back test, according to the previously established measurement mode (repeat/single), execute a FER/RBER test, and display/update the value.

Location Update Test

When a manual test is started, the VC200 enters idle mode. If “location update” is executed in this condition, the VC200 starts the location update procedure. If the procedure completes successfully, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail.”

GPRS Test

The Attach (registration) test is carried out followed by the Detach (call release) test while the VC200 is in idle mode. The test result of each test is displayed on the screen. If either test fails to complete normally, the test is terminated.

- When the test completes normally: Pass
- When the test does not complete normally: Fail

If the Attach test does not complete normally, the Detach test is not carried out. If this happens, the result of the Detach test indicates “---.”

- **Test conditions of the GPRS test**

  Coding Scheme: CS-1

  MultiSlot: 1

Call Setup/Release Test

- **Call Setup from NW**
  If "Call Setup from NW" is executed while GSM signal is detected on the mobile phone under test (idle mode), the VC200 starts the procedure for call setup from NW. If an alert is sounded on the mobile phone under test, and it receives the call normally when the talk button on the mobile phone is pressed resulting in the establishment of the call, the VC200 indicates "Pass." Otherwise, the VC200 indicates "Fail" and aborts the test.

- **Call Setup from UE**
  If "Call Setup from UE" is executed while GSM signal is detected on the mobile phone under test (idle mode), call setup from the mobile phone under test becomes possible. Entering a number on the mobile phone under test and pressing the talk button starts the call setup procedure. If the VC200 receives the call normally and the call is established, the VC200 indicates "Pass." Otherwise, the VC200 indicates "Fail" and aborts the test.

- **Inter-RAT handovers**
  Handover from the W-CDMA system to the GSM system can be executed by combining the call release test of the W-CDMA and the call setup test of the GSM. Handover is made to the frequency band/channel that is specified for BCCH/TCH on the GSM test conditions setup dialog box (see section 4.6).

- **Call Release from NW**
  When "Call Release from NW" is executed while a call is established (by a call setup from NW or a call setup from UE), the VC200 starts the call release procedure. If the call is released normally, the VC200 indicates "Pass" and enters idle mode. Otherwise, the VC200 indicates "Fail" and aborts the test.

- **Call Release from UE**
  When "Call Release from UE" is executed while a call is established (by a call setup from NW or a call setup from UE), call release from the mobile phone under test becomes possible. When the end button on the mobile phone under test is pressed, the call release procedure is started. If the call is released normally, the VC200 indicates "Pass" and enters idle mode. Otherwise, the VC200 indicates "Fail" and aborts the test.

- **Frequency handover**
  If "Frequency Handover" is executed during the speech test, the VC200 starts the frequency handover procedure. If the frequency handover completes successfully, the VC200 indicates "Pass" and executes the radio characteristics test at the new frequency. Otherwise, the VC200 indicates "Fail" and aborts the test.

- **Loopback**
  - **Close**
    If "Loopback" is executed while the call is established, the VC200 starts the test loop close procedure on the mobile phone under test. If a loopback is established on the mobile phone under test, the VC200 indicates "Pass." Otherwise, the VC200 indicates "Fail" and aborts the test.
  - **Open**
    If "Open" is executed while a loopback is established, the VC200 starts the test loop open procedure and transits to the call connected condition.

Speech Test

A speech test can be performed when a call is established through Call Setup from NW or Call Setup from UE. The speech test ends when Call Release from NW or Call Release from UE is executed.

Radio Characteristics Test

You can select from one of the following two measurement methods that are available after establishing the call setup from NW or call setup from UE.

- Repeat: Performs repetitive measurements of the previously selected items of the Tx characteristics and Rx characteristics radio characteristics tests on screen, and the value is displayed/updated. You can change the items under test after completion of the test (stop).
- Single: Performs a single measurement of the selected items of the Tx characteristics and Rx characteristics radio characteristics tests, and after the value is displayed/updated, it enters call connection status (radio characteristics test wait state).

When the Tx characteristics test is in progress, the power on the mobile phone is controlled so that it matches the uplink power value specified on the screen. When the Rx characteristics test is in progress, the VC200 outputs the downlink power value specified on the screen.

- **Tx characteristics test**
  - **Tx power**
    Measures the power that the mobile phone under test outputs.
  - **Burst timing**
    Determines whether the uplink output signal of the mobile phone under test is within the power burst template range and displays the result as follows:
    - Pass: The waveform is within the range.
    - TSCN: Training sequence error
    - -----: Power measurement timeout
    - Fail_|: The waveform rising section is out of range.
    - Fail~: The center section of the waveform is out of range.
    - Fail|_: The waveform falling section is out of range.

    In addition, the uplink signal during the burst timing test can be displayed on a graph. This allows you to check the signal status on the screen when the judgement result is Fail.
  - **Phase error**
    Measures the phase error (peak and rms values) of the uplink output signal of the mobile phone under test.
  - **Frequency error**
    Measures the relative error of the uplink output frequency of the mobile phone under test with respect to the downlink output frequency of the VC200.

- **Rx characteristics test**
  - **Rx quality**
    Receives and displays the RX_QUALITY measurement report from the mobile phone under test.
  - **Rx level**
    Receives and displays the RX_LEVEL measurement report from the mobile phone under test.

- **FER/RBER test**
  You can select from one of the following two measurement methods that are available after entering loop back mode through the loop back test.
  - Repeat: Performs repeat measurement of the FER/RBER test, and displays/updates the value.
  - Single: Performs a single measurement of the FER/RBER test, displays/updates the value, and enters the loopback state (FER/RBER test wait state).

  The VC200 transmits the downlink power value specified in the test condition setup dialog box and measures the bit error rate (BER) of the uplink output signal that is looped back from the mobile phone under test. When the test is finished (stopped), the setting for enabling or disabling the FER/RBER measurement can be changed.

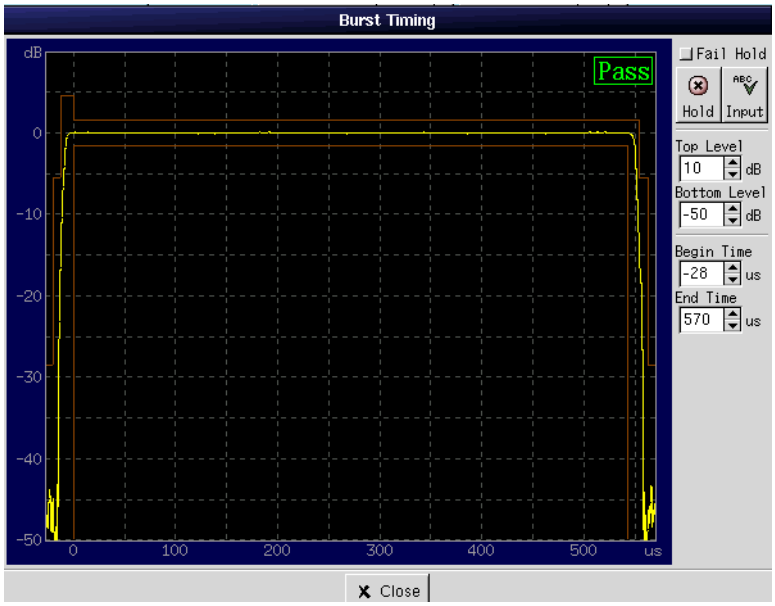
Power Setting

The uplink power and downlink power settings can be changed while the radio characteristics test (Tx characteristics test, Rx characteristics test, or FER/RBER test) is in progress.

- **Uplink power setting in the Tx characteristics test**
  When the Tx characteristics test is in progress, the power control level on the mobile phone under test is controlled so that the uplink power of the mobile phone matches the value specified on the screen.
- **Downlink power setting in the Rx characteristics test**
  The downlink transmission power during the Rx characteristics test (FER/RBER test) is set to the DL power value dedicated to the Rx characteristics test specified on the screen.

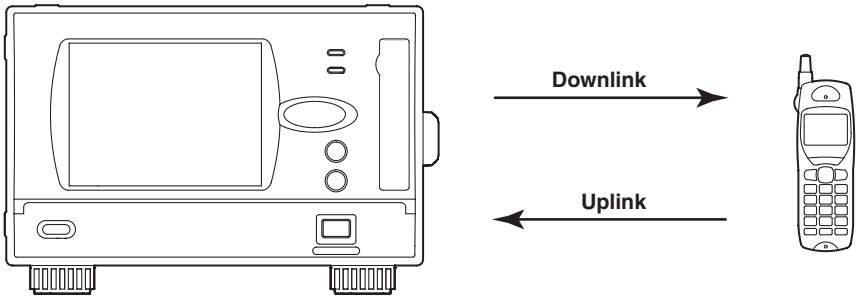
Displaying the Graph of the Transmission Power

The uplink signal during the burst timing test and the power burst template can be displayed on a graph. You can check the signal status when the burst timing test fails.



1.3 Tx/Rx Tester Mode (W-CDMA)

In Tx/Rx tester mode, the following operations are carried out simultaneously without activating the protocol (no signaling): transmission of downlink signals to the W-CDMA mobile phone, reception of uplink signals from the mobile phone, and measurements of error vector magnitude (EVM), frequency error, and transmission power. You can perform a receiver characteristics test (Rx test) and a transmitter characteristics test (Tx test) of mobile phones without signaling.



Downlink ≡See section 5.2 for the operating procedure≡

Code Channel and Symbol Rate of the Downlink Signal to Be Transmitted

- P-SCH
- S-SCH
- P-CCPCH: 15 ksps (fixed*1)
- P-CPICH: 15 ksps (fixed*1)
- S-CPICH: 15 ksps (fixed*1)
- PICH: 15 ksps (fixed*1)
- DPCH: Selectable from 7.5 ksps, 15 ksps, 30 ksps, 60 ksps, 120 ksps, 240 ksps, 480 ksps, and 960 ksps
- OCNS: 30 ksps (fixed*2)

*1 Conforms to 3GPP TS25.211 V3.8.0 (2001-09)
*2 Conforms to 3GPP TS25.101 V3.8.0 (2001-09) Annex C Table C.6

Frequency Channel Number

The RF transmission frequency is set using the UARFCN (UTRA Absolute Radio Frequency Channel Number).

Turning ON/OFF the Modulation

When turned ON, the VC200 transmits a CDMA modulated signal according to the specified parameters (scrambling code number, channelization code number, timing offset, code power, and other parameters). When turned OFF, the VC200 transmits an unmodulated carrier.

DPCH Symbol Rate

At 30 k, 120 k, 240 k, and 480 ksps, the transport channel consists of a symbol sequence that has been encoded and mapped using RMC (Reference Measurement Channel) as defined by 3GPP TS25.101 V3.8.0 (2001-09) Annex A.3
At 7.5 k, 15 k, 60 k, and 960 ksps in which no RMS regulation exists, the transport channel consists of a symbol sequence that has been encoded using a representative encoding parameter for the symbol rate. (For details, see Appendix.)
The transport channel at that point consists a PN sequence created by the generator polynomial X^9+X^4+1. The channel can be used as a signal source for BER measurement.

Scrambling Code Number

This parameter specifies the downlink scrambling code number as defined by 3GPP TS25.213.

The scrambling code number is used in the spreading of all code channels.

Channelization Code Number

You can set the channelization code number for S-CPICH, PICH, and DPCH.

RF Transmission Power

This parameter specifies the RF power of transmission. By using the display correction function, the RF transmission power value that reflects phenomena such as the power loss of the cable can be displayed. The display correction function is applied only to the displayed value; it does not affect the actual output power. You can also turn ON/OFF the RF output.

Timing Offset

This parameter specifies the timing offset of PICH and DPCH with respect to P-CCPCH.

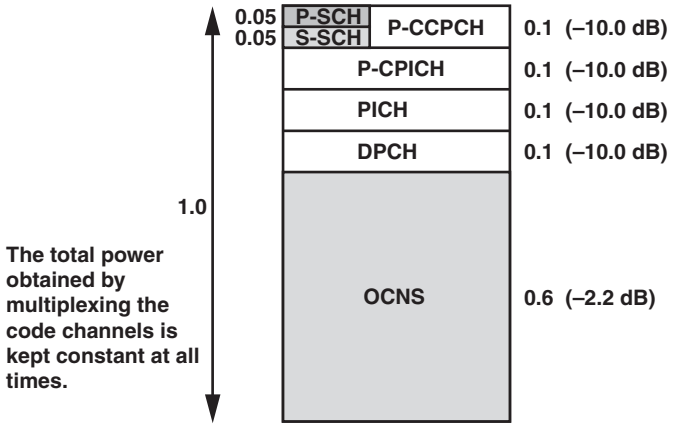
Code Power

This parameter specifies the attenuation (power ratio) of each code channel with respect to the total power in decibels. The remaining power of each code channel with respect to the total power is input to OCNS, so that the total power obtained by multiplexing the code channels is constant.

SCH is obtained by multiplexing equal powers of P-SCH and S-SCH at 1/2 power level each. The total power is equal to P-CCPCH.

Example: Power ratio diagram when the code power setting is as follows:

- SCH+PCCPCH: –10.0 dB
- P-CPICH: –10.0 dB
- S-CPICH: –∞ dB
- PICH: –10.0 dB
- DPCH: –10.0 dB
- OCNS: –2.2 dB



Note

- To maintain a constant total power after multiplexing, the channelization code setting of each code channel must maintain orthogonality.
- Since the channelization codes of DPCH and PICH can be set freely, if they are not set to achieve orthogonality, correlation between code channels occur. This causes a fluctuation in the total power. Consequently, this fluctuation appears in the RF power.

Uplink ≡See section 5.3 for the operating procedure≡

Channel and Bit Rate of the Uplink Signal to Be Received

DPCCH: 15 kbps (fixed)
DPDCH: 15 kbps, 30 kbps, 60 kbps, and 120 kbps

Frequency Channel Number

The RF reception frequency is indicated using the UARFCN (UTRA Absolute Radio Frequency Channel Number). The number obtained by subtracting the following value from the transmission frequency channel number of the downlink settings is set automatically.
Band I: 950 (the actual frequency is 190 MHz)
Band II: 400 (the actual frequency is 80 MHz)
Band III: 225 (the actual frequency is 95 MHz)
Band V: 225 (the actual frequency is 45 MHz)
Band VI: 225 (the actual frequency is 45 MHz)
Band IX: 475 (the actual frequency is 95 MHz)
If you need to change the setting, change the transmission frequency of the downlink.

Scrambling Code Number

This parameter specifies the scrambling code number of the uplink signal to be received. You can specify this number only when the mode is set to “Synchronous.”

DPDCH Bit Rate

This parameter specifies the DPDCH bit rate of the uplink signal to be received. You can specify this value only when the mode is set to “Synchronous.”

RF Reception Power

You can turn RF reception power input ON/OFF.
When using the instrument for output only, you can improve the power accuracy when the level of the RF output power is low by turning RF reception power input OFF. Note that measurement cannot be performed when this setting is OFF.

Mode

Synchronous mode and asynchronous mode are available. When the uplink signal to be received is not synchronized with the downlink signal of the VC200, use asynchronous mode.
When the uplink signal to be received is synchronized with the downlink signal of the VC200, you can use asynchronous or synchronous mode.

- **Asynchronous mode**
  In asynchronous mode, the power ratio of DPDCH and DPCCH of the transmission source under measurement is assumed to be known. You must set the “power ratio” described later. For the value, you will select the power ratio rank, either βc or βd as defined by 3GPP TS25.213.
- **Synchronous mode**
  The VC200 automatically detects the power ratio of DPDCH and DPCCH. Therefore, input signals with arbitrary power ratios can be analyzed. However, to carry out synchronization, “scrambling code number,” “DPDCH bit rate,” and “timing offset” must be specified to match the transmission condition of the mobile phone under test.

Power Ratio

This parameter specifies the gain ratio between the control channel (DPCCH) and the data channel (DPDCH) of the uplink signal (HPSK modulated signal) to be received.
You can specify this value only when the mode is set to “Asynchronous.”

Timing Offset

This parameter specifies the timing offset of the uplink signal to be received with respect to SCH+PCCPCH that the VC200 transmits.
You can specify this value only when the mode is set to “Synchronous.”
Since the VC200 can compensate up to ±15 chips of offset between the uplink signal and the downlink signal of the VC200, reception in synchronous mode is possible. If the offset is greater than ±15 chips, set the timing offset and specify whether to receive the signal using synchronous or asynchronous mode.

Transmitter Measurement Values ≡See section 5.4 for the operating procedure≡

Starting/Stopping Transmission/Reception (Downlink/Uplink)

The VC200 starts transmission/reception when you press the START key on the front panel or Start on the screen; it stops transmission/reception when you press the STOP key on the front panel or Stop on the screen.

Measuring the Uplink Signal (Transmitter Characteristics)

The VC200 measures and displays the following parameters of the received uplink signal.

- **EVM**
  Displays the rms value of the EVM of the received uplink signal. You can set whether to cancel the origin offset at the time of measurement.
- **Frequency error**
  Measures the difference between the carrier frequency of the received uplink signal and the reference frequency of the VC200 using a EVM method and displays the result. If the mobile phone under test is synchronized to the downlink transmission frequency of the VC200 through tracking, the difference can be measured as a frequency error as defined by 3GPP 34.121.
- **Transmission power**
  Measures the RF power of the received uplink signal (transmission power of the mobile phone under test) and displays the value. The VC200 carries out power measurement without bandwidth limitation.
  If you enter a correction value such as the amount the power loss in the cable in the Correction entry box, the value that is displayed is the value obtained by canceling the loss.

Selecting the Measurement Mode

- Repeat mode: Performs measurements repetitively while signal is being received and automatically updates the display each time measurement results are obtained.
- Single mode: Performs a measurement once and displays the result. The display is held. Since the transmission/reception continues until the STOP key is pressed, you can obtain the measurement result at an arbitrary timing by pressing the START key again.

Note

If you press the START key or click Start on the screen while transmission/reception is in progress in repeat mode, an error message is displayed.

Average

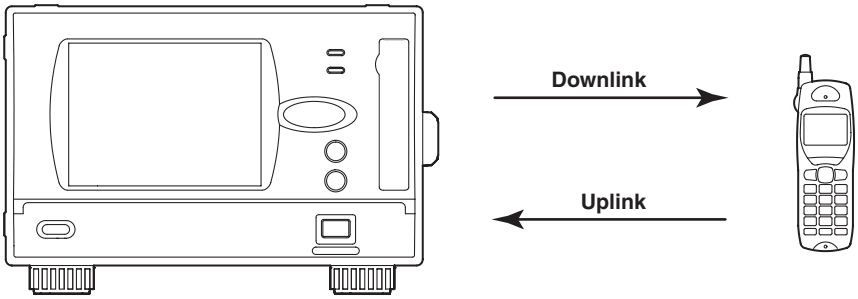
Measures the EVM, frequency error, or transmission power the number of specified times (0 to 1000) and displays the averaged value. The measurement count number and the intermediate value are also displayed while averaging is in progress.
The operation varies depending on the measurement mode.

- Repeat: After finishing one set of averaging operation, the averaging operation is restarted. The operation is repeated.
- Single: One set of averaging operation is performed each time the START key is pressed or Start on the screen is clicked, and the result is displayed.

The average count for the EVM and frequency error is common.

1.4 Tx/Rx Tester Mode (GSM)

In Tx/Rx tester mode, the following operations are carried out simultaneously without activating the protocol (no signaling): transmission of downlink signals to the GSM mobile phone, reception of uplink signals from the mobile phone, and measurements of phase error, frequency error, Tx power, and burst timing. You can perform a receiver characteristics test (Rx test) and a transmitter characteristics test (Tx test) on mobile phones without signaling.



Downlink ≡See section 6.2 for the operating procedure≡

GSM Band

The frequency band to be used is selected from below.
GSM850, P-GSM, E-GSM, R-GSM, DCS1800, and PCS1900

Frequency Channel Number

The RF transmission frequency is set using the ARFCN (UTRA Absolute Radio Frequency Channel Number).

Modulation Mode

The modulation mode of the transmitted downlink signal is selected from below.

- All 0: All transmission data are modulated as 0s.
- PN: The transmission data is modulated as a PN pattern.
- OFF: Transmits unmodulated carrier.

RF Power

This parameter specifies the RF power of transmission. By using the display correction function, the RF Tx power value that reflects phenomena such as the power loss of the cable can be displayed. The display correction function is applied only to the displayed value; it does not affect the actual Tx power. You can also turn ON/OFF the RF output.

Transmitter Measurement Values ≡See section 6.3 for the operating procedure≡

Selecting the Measurement Mode

- Repeat mode: Performs measurements repetitively while signal is being received and automatically updates the display each time measurement results are obtained.
- Single mode: Performs a measurement once and displays the result. The display is held. Since the transmission/reception continues until the STOP key is pressed, you can obtain the measurement result at an arbitrary timing by pressing the START key again.

Note

If you press the START key or click Start on the screen while transmission/reception is in progress in repeat mode, an error message is displayed.

Rx Mode

Selects the format of the signal to be applied to the VC200.

- Burst: Measures the burst waveform.
- CW: Measures the CW (continuous waveform). If CW is selected, only the Tx power is measured.

RF Reception Power

You can turn RF reception power input ON/OFF.
When using the instrument for output only, you can improve the power accuracy when the level of the RF output power is low by turning RF reception power input OFF. Note that measurement cannot be performed when this setting is OFF.

Average

Measures the phase error, frequency error, or Tx power the number of specified times (0 to 1000) and displays the averaged value. The measurement count number and the intermediate value are also displayed while averaging is in progress.
The operation varies depending on the measurement mode.

- Repeat: After finishing one set of averaging operation, the averaging operation is restarted. The operation is repeated.
- Single: One set of averaging operation is performed each time the START key is pressed or Start on the screen is clicked, and the result is displayed.

The average count setting applies to both the phase error and frequency error.

Starting/Stopping Transmission/Reception (Downlink/Uplink)

The VC200 starts transmission/reception when you press the START key on the front panel or Start on the screen; it stops transmission/reception when you press the STOP key on the front panel or Stop on the screen.

Measuring the Uplink Signal (Transmitter Characteristics)

The VC200 measures and displays the following parameters of the received uplink signal.

- **Phase error**
  Displays the peak and rms values of the phase error of the received uplink signal. This is measured only when Rx mode is set to Burst.
- **Frequency error**
  Measures the difference between the carrier frequency of the received uplink signal and the reference frequency of the VC200 and displays the result. This is measured only when Rx mode is set to Burst.
- **Tx Power**
  Measures the RF power of the received uplink signal (Tx power of the mobile phone under test) and displays the value. The VC200 carries out power measurement without bandwidth limitation.
  If you enter a correction value such as the amount the power loss in the cable in the Correction entry box, the value that is displayed is the value obtained by canceling the loss.

- **Burst timing**
  Determines whether the received uplink signal is within the power burst template range and displays the result. In addition, the uplink signal during the burst timing test and the power burst template can be displayed on a graph. This allows you to check the signal status on the screen when the judgement result is Fail. The number of times to execute the measurement can be specified.
  This is measured only when Rx mode is set to Burst.

1.5 Other Functions

Auxiliary Input/Output ≡See sections 9.2 to 9.4 for the operating procedure≡

Reference Input

The VC200 has a built-in reference frequency source. However, you can also input an external reference signal to the REF IN connector on the rear panel and use it as the frequency reference.

Clock Output

- **W-CDMA**

  One of the following clock signals can be output from the CLOCK OUT connector on the rear panel.

  - Chip ×4 Clock: Outputs a clock (15.36 MHz) that is 4 times the chip clock (3.84 MHz) that is synchronized to the downlink signal.
  - Chip Clock: Outputs the chip clock (3.84 MHz) that is synchronized to the downlink signal.
  - PCCPCH Symbol Clock: Outputs the symbol clock (15 kHz) that is synchronized to PCCPCH.
  - DPCH Symbol Clock: Outputs the symbol clock that is synchronized to DPCH with a symbol rate specified on the menu.

- **GSM**

  Outputs the bit clock (270.833 kHz)

Timing Signal Output

- **W-CDMA**

  One of the following timing signals can be output from the TIMING OUT connector on the rear panel.

  - Frame Timing: Outputs a timing signal (10 ms cycle, positive pulse with a width of approx. 66.7 μs) of a frame synchronized to PCCPCH.
  - Time Slot Timing: Outputs a timing signal (approx. 667 μs cycle, positive pulse with a width of approx. 66.7 μs) of a time slot synchronized to PCCPCH.

- **GSM**

  Frame Timing: Outputs the timing signal (positive pulse with a period of 4.615 ms and width of 3.7 μs) of the downlink frame.

VGA Output ≡See section 9.6 for the operating procedure≡

You can use the VGA output function to display the VC200 screen on a monitor. Connectable monitors are VGA monitors or multi-sync monitors capable of displaying VGA.

Command Communications ≡See chapter 10 for details≡

You can use an external controller to control the VC200 via the Ethernet interface or the serial (RS-232) interface.

DHCP Client Function

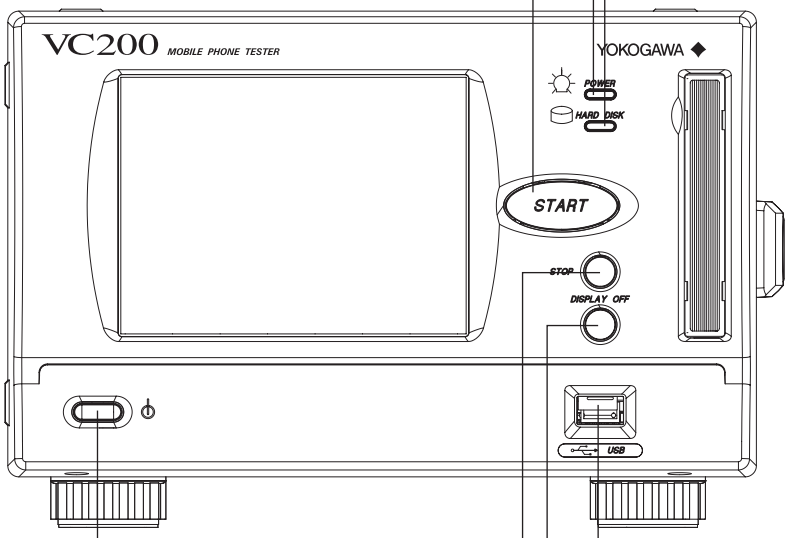
This function automatically retrieves information that is required in connecting to the network when the power is turned ON. The following information is retrieved:

- IP address
- Subnet mask
- Broadcast
- Default gateway

Self Test/Frequency Adjustment ≡See chapter 11 for the operating procedure≡

If you are in doubt as to whether the instrument has malfunctioned, you can run a self-test. You can check the revision number of the FPGA and run BB tests and RF tests. In addition, the frequency accuracy of the VC200 can be adjusted. You can use this function to make fine adjustments at short intervals.

2.1 Front Panel



START key
Starts the tests.

POWER lamp
Illuminates when the power is turned ON (while the system is running).

Hard disk lamp
Illuminates while the hard disk is being accessed.

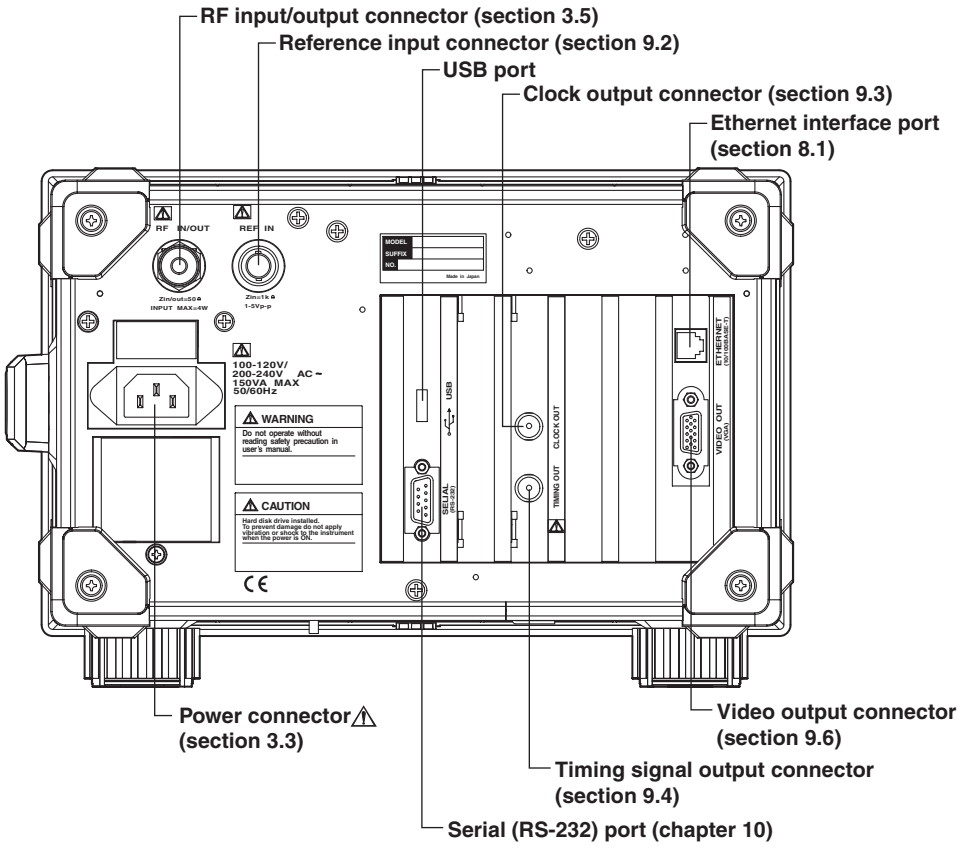
Power switch (Section 3.4)

STOP key
Stops the tests.

DISPLAY OFF key
Turns OFF the LCD backlight.

USB port
Connect the USB mouse that came with the package.

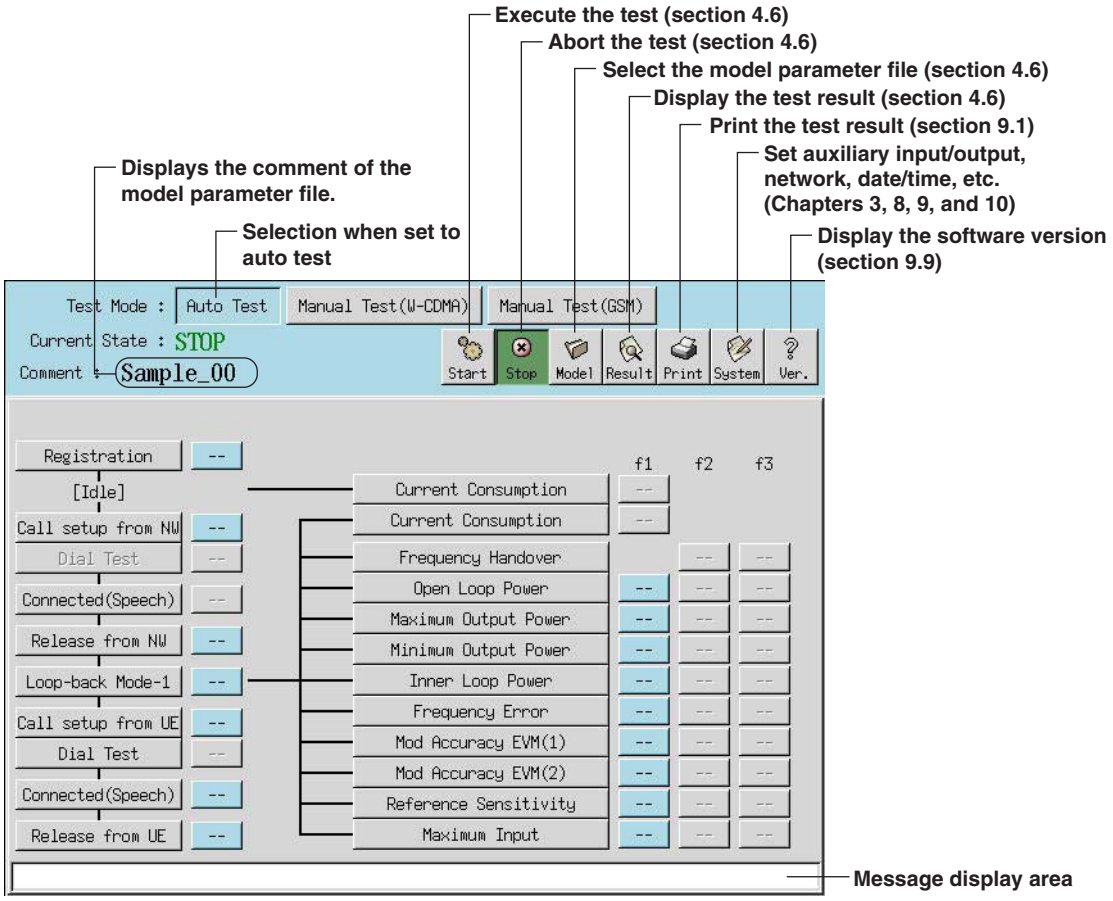
2.2 Rear Panel



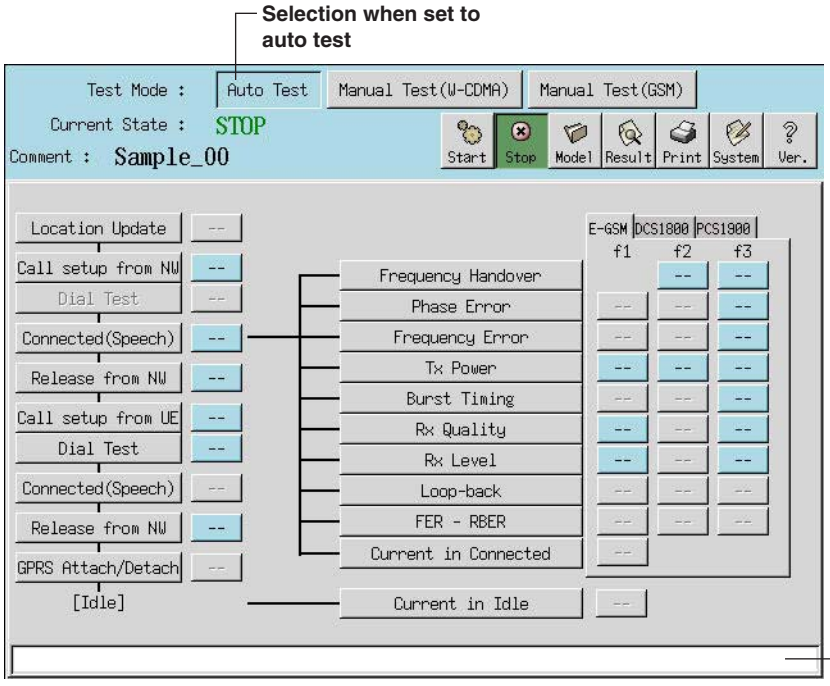
2.3 Screen Display

Signaling Tester Mode

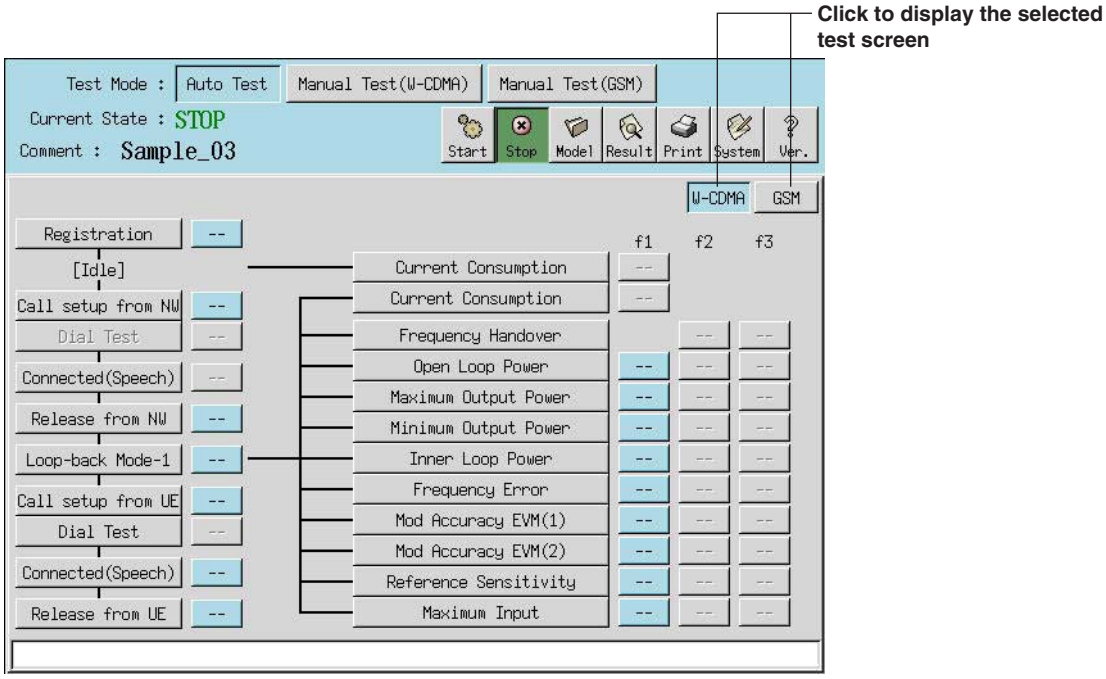
Auto test screen (W-CDMA)



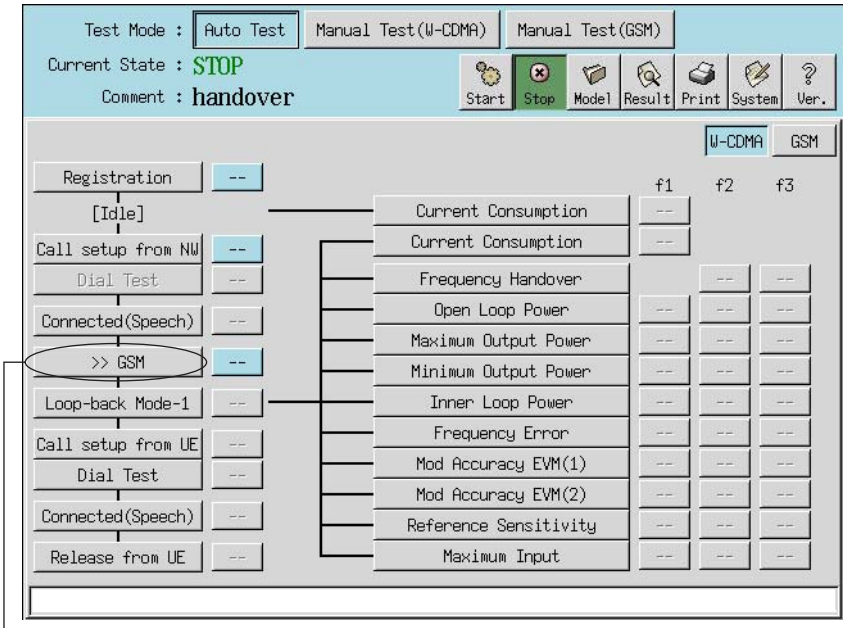
Auto test screen (GSM)



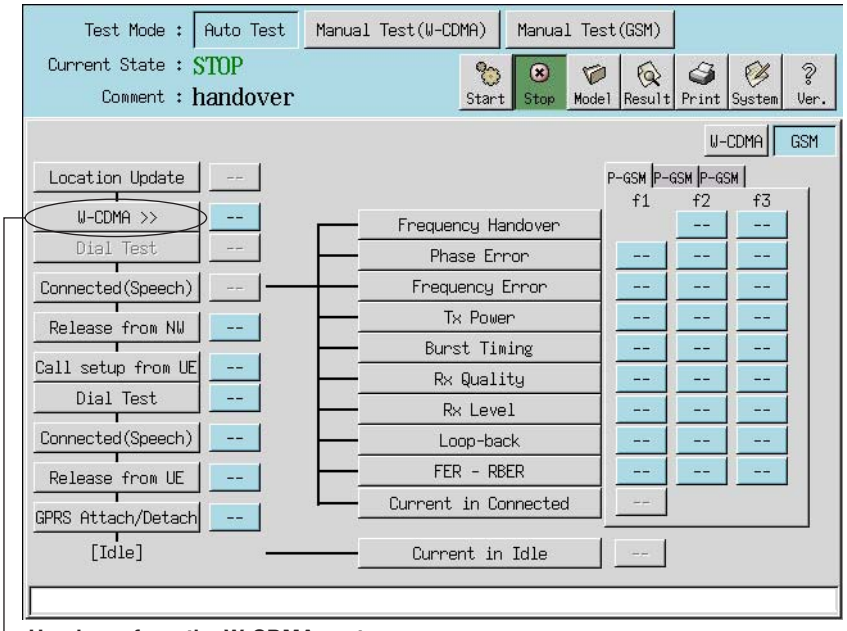
Auto test screen (W-CDMA+GSM)



Auto test screen (system handover)

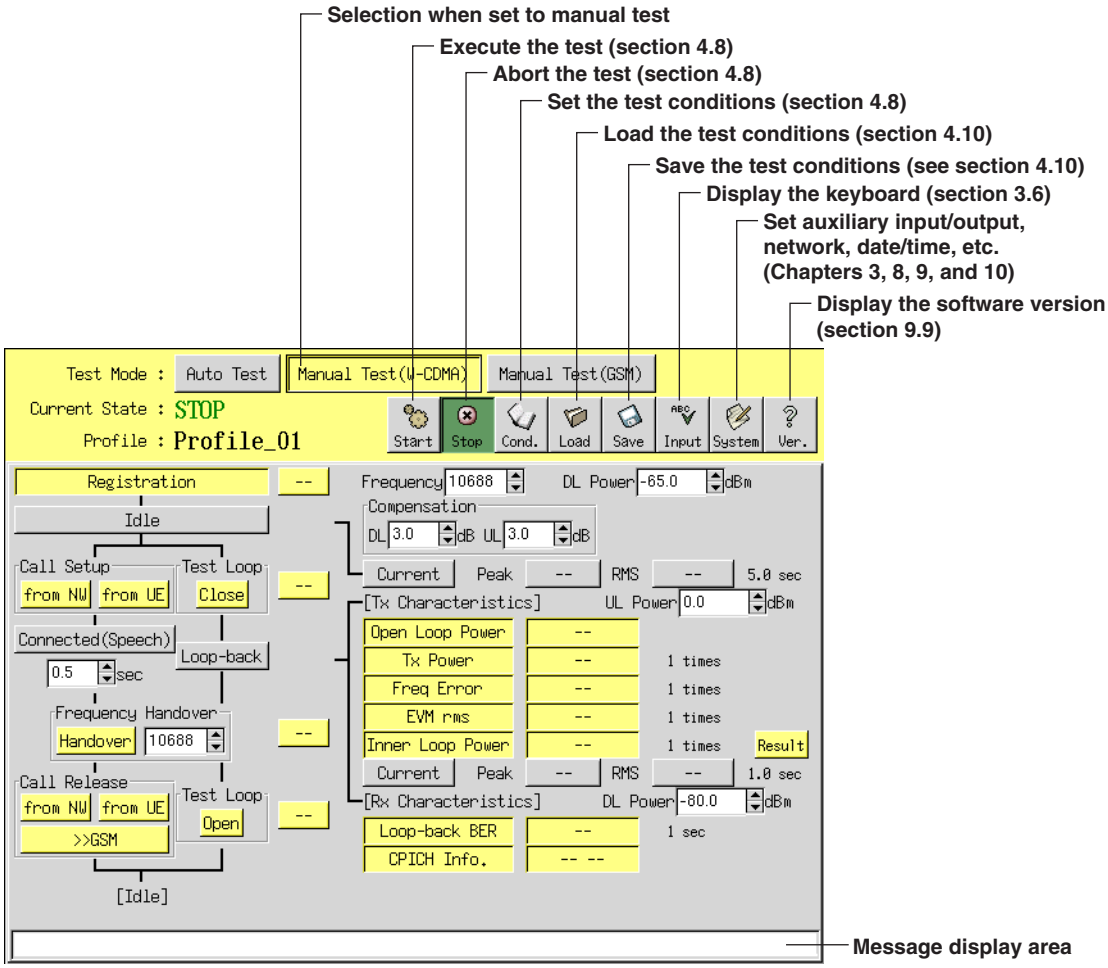


Handover to the GSM system

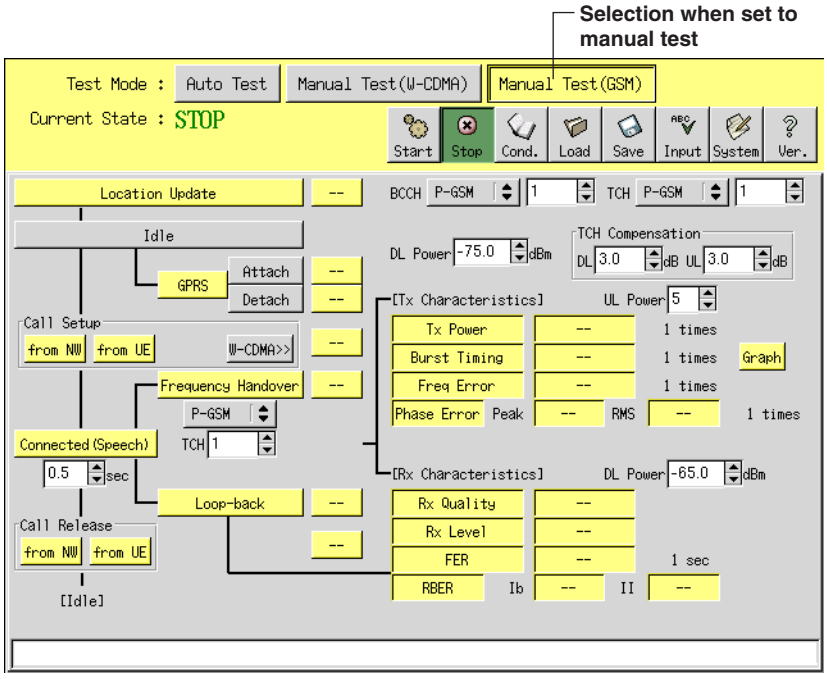


Handover from the W-CDMA system

Manual test screen (W-CDMA)

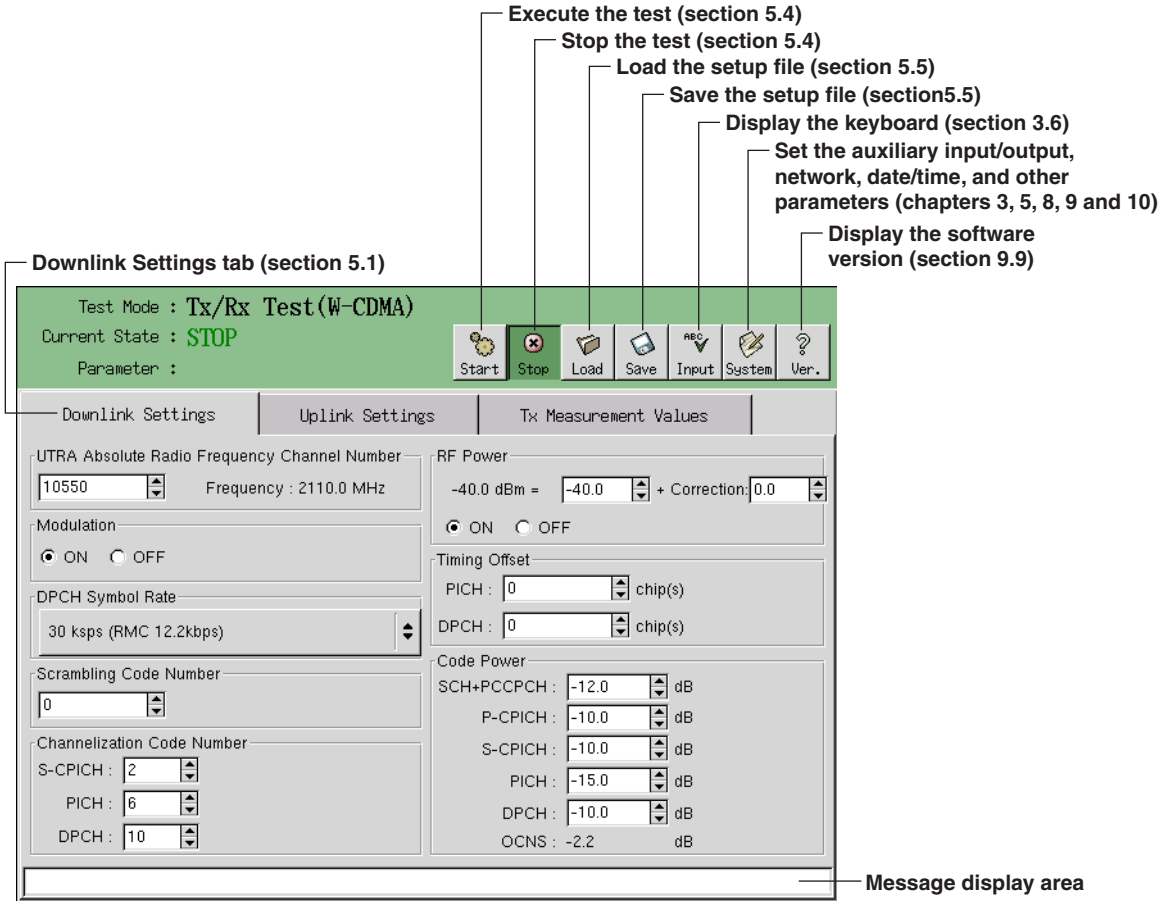


Manual test screen (GSM)

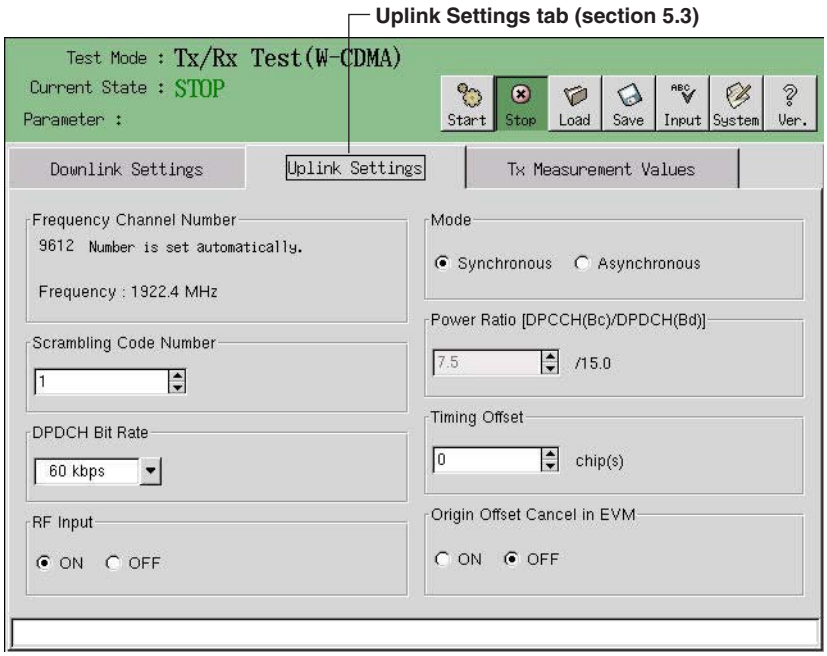


Tx/Rx Tester Mode (W-CDMA)

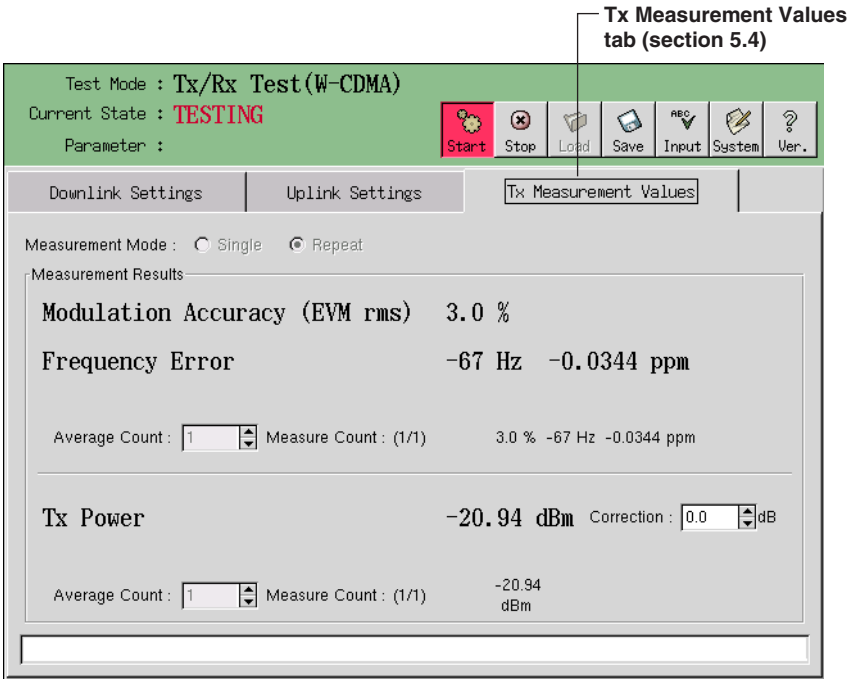
Downlink Setup Display



Uplink Setup Display

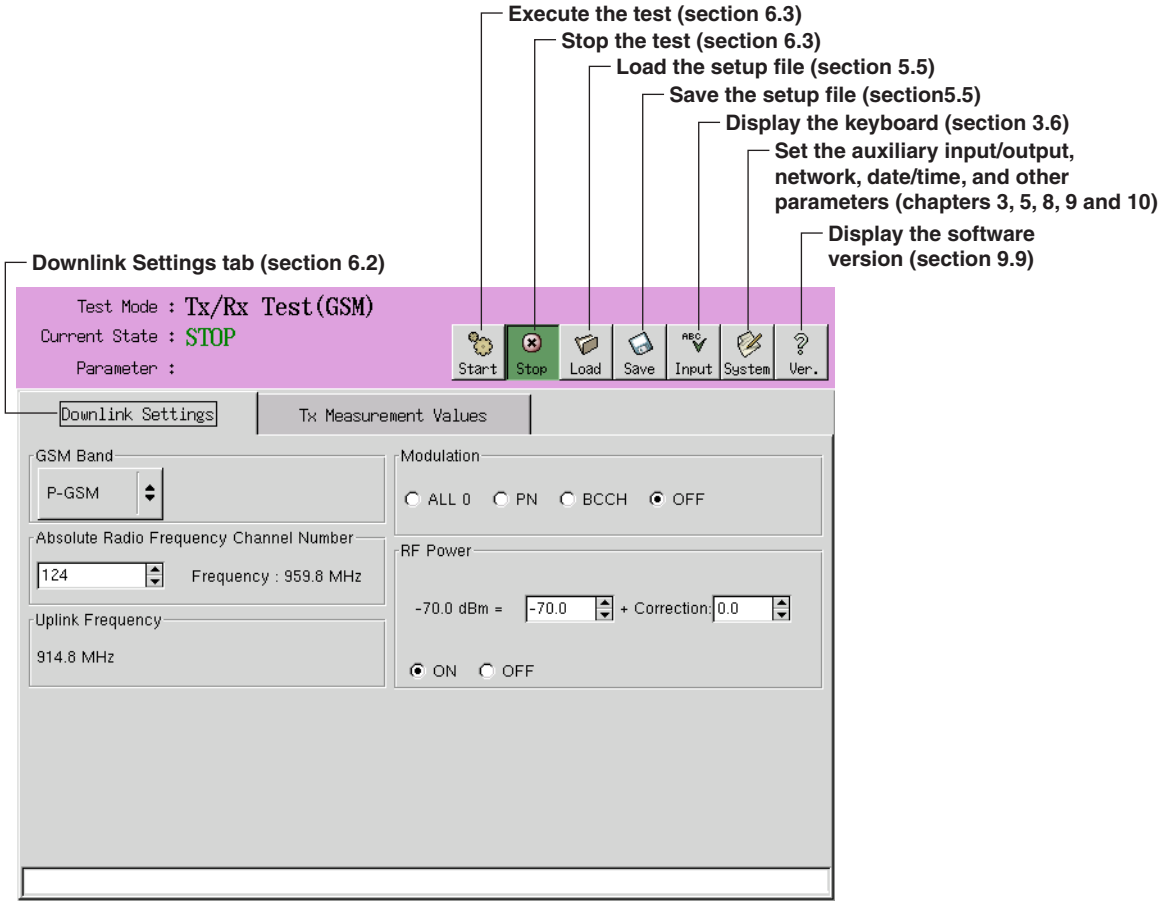


Tx Measurement Display

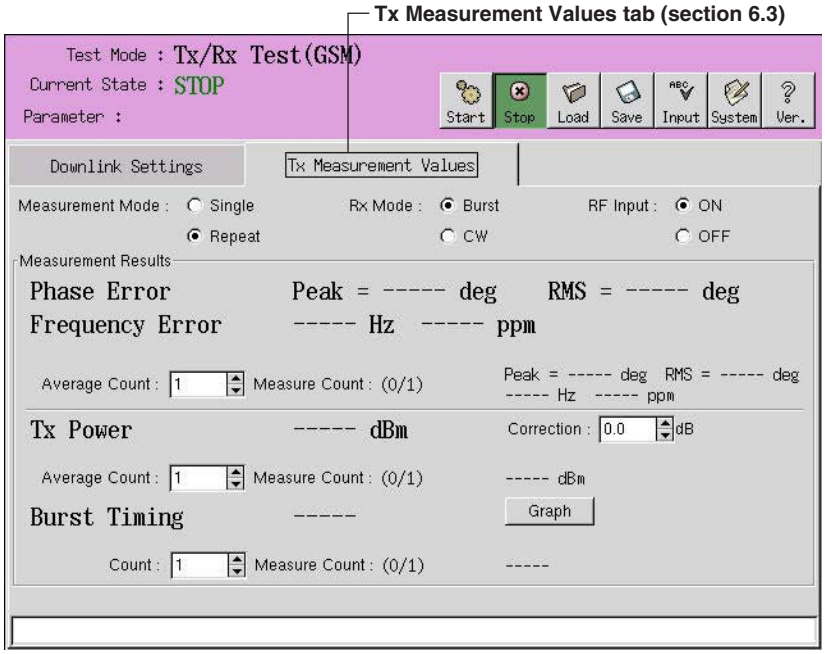


Tx/Rx Tester Mode (GSM)

Downlink Setup Display



Tx Measurement Display



3.1 Handling Precautions

Safety Precautions

Safety Precautions

When using the VC200 for the first time, make sure to read the “Safety Precautions” given on pages iv and v.

Do Not Remove the Case

Do not remove the case from the instrument. Some sections inside the instrument have high voltages that are extremely dangerous. For internal inspection or adjustment, contact your nearest dealer.

Abnormal Behavior

Stop using the instrument if there are any symptoms of trouble such as strange odors or smoke coming from the instrument. If these symptoms occur, immediately turn OFF the power and unplug the power cord. Then, contact your nearest dealer.

If the Cooling Fan Stops

If error code 1027 appears on the display, the cooling fan is stopped. Immediately turn OFF the power switch. If error message 1027 appears when you turn ON the power switch again, it is probably a malfunction. Contact your nearest dealer.

Power Cord

Nothing should be placed on top of the power cord. The power cord should also be kept away from any heat sources. When unplugging the power cord from the outlet, never pull by the cord itself. Always hold and pull by the plug. If the power cord is damaged, check the part number indicated on page ii and purchase a replacement.

General Handling Precautions

Do Not Place Objects on Top of the Instrument

Never place any objects containing water on top of the instrument. Such act can lead to malfunction.

Do Not Apply Shock or Vibration

Do not apply shock or vibration. Such act can lead to malfunction. Take extra care when dealing with the built-in hard disk, because it is prone to shock and vibrations. In addition, applying shock to the input/output terminal or the connected cable can cause electrical noise to enter or output from the instrument.

Do Not Damage the LCD

The LCD is very vulnerable to scratches. Be careful not to damage the surface with sharp objects. Also, do not apply vibration or shock to it.

Keep Electrically Charged Objects Away from the Instrument

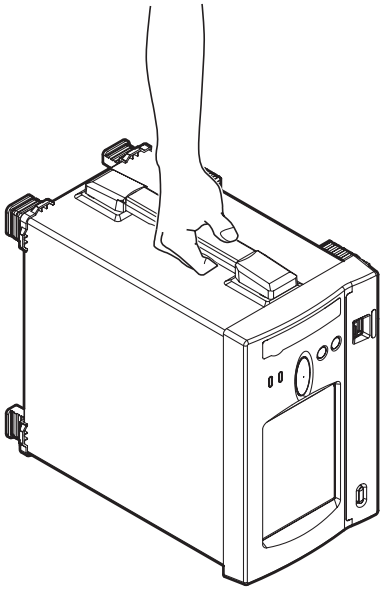
Do not bring charged objects near the input connector. They may damage the internal circuitry.

When Not Using the Instrument for an Extended Time

Turn OFF the power switch and remove the power cord from the outlet.

When Carrying the Instrument

First, remove the power cord and connection cables. The VC200 weighs approximately 7 kg. To carry the instrument, use the handle as shown in the figure below, and move it carefully.



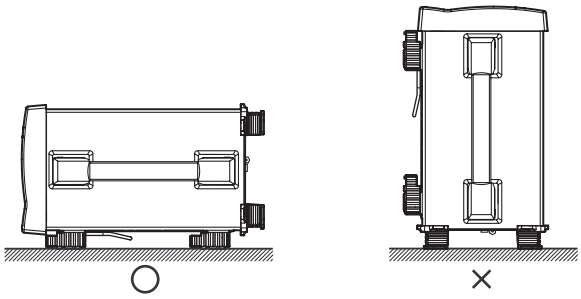
When Wiping off Dirt

When wiping off dirt from the case or operation panel, turn OFF the power switch and remove the power cord from the outlet. Then, gently wipe with a soft dry clean cloth. Do not use volatile chemicals as this may cause discoloring and deformation.

3.2 Installing the VC200

WARNING

To avoid the possibility of fire, never use the instrument with the rear panel facing down. There are vent holes for the cooling fan on the rear panel. Placing the instrument with the rear panel down can cause a fire when the instrument malfunctions.



Installation Condition

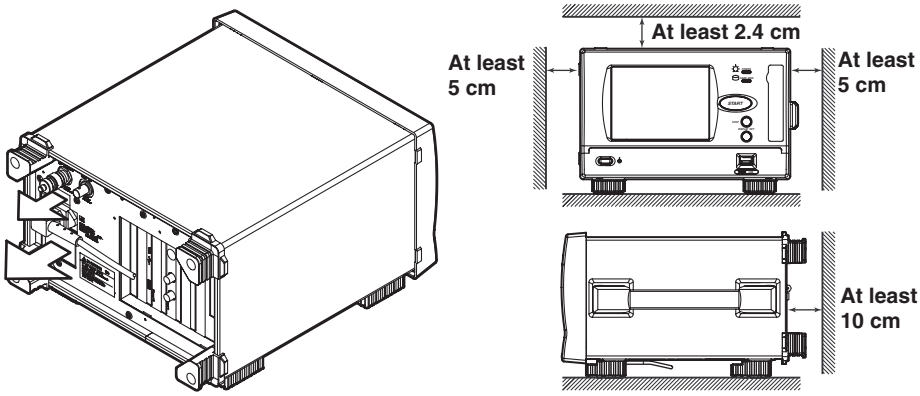
Install the instrument in a place that meets the following conditions:

Flat, Even Surface

Install the instrument in a stable horizontal place. Accurate measurements may be hindered when the instrument is used in an unstable place or tilted position.

Well-Ventilated Location

There are vent holes on the rear panel of the instrument. To prevent internal overheating, allow for enough space around the instrument and do not block the vent holes.



Ambient Temperature and Humidity

Use the instrument in the following environment:

- Ambient temperature: 5 to 35 °C
  However, in order to obtain highly accurate measurements, operate the instrument in the 23±5 °C temperature range.
- Ambient humidity: 20 to 80% RH
  No condensation should be present. However, in order to obtain highly accurate measurements, operate the instrument in the 50±10% RH range.

Note

Condensation may occur if the instrument is moved to another place where the ambient temperature is higher, or if the temperature changes rapidly. In this case, let the instrument adjust to the new environment for at least an hour before using the instrument.

Do Not Install the Instrument in the Following Places:

- In direct sunlight or near heat sources.
- Where an excessive amount of soot, steam, dust, or corrosive gas is present.
- Near strong magnetic field sources.
- Near high voltage equipment or power lines.
- Where the level of mechanical vibration is high.
- In an unstable place.

Storage Location

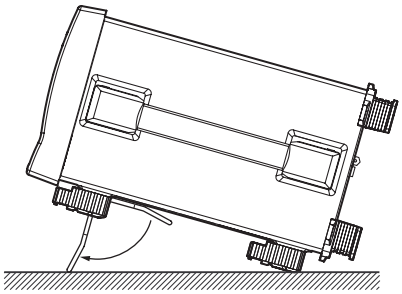
When storing the VC200, avoid the following types of locations:

- A place with a relative humidity of 80% or more.
- Where the level of mechanical vibration is high.
- In direct sunlight.
- Where corrosive or explosive gas is present.
- Where the temperature is 60 °C or higher.
- Where an excessive amount of soot, dust, salt, and iron are present.
- Near a high humidity or heat source.
- Where water, oil, or chemicals may splash.

We strongly recommend you store the VC200 in an environment with a temperature between 5 to 40 °C and a relative humidity between 20 to 80% RH.

Installation Position

Place the instrument in a horizontal position or inclined position using the stand as shown in the figure below.



Rubber Feet

You can place rubbers on the bottom feet to prevent the instrument from slipping when the instrument is inclined as shown in the above figure. Four rubbers are included in the package.

3.3 Connecting the Power Supply

Before Connecting the Power Supply

To prevent the possibility of electric shock and damage to the instrument, follow the warnings below.

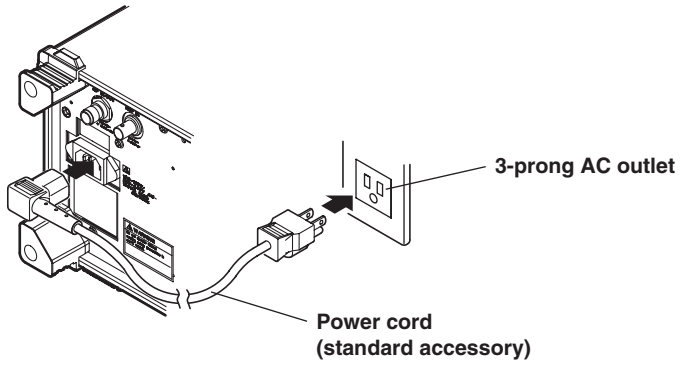
WARNING

- Connect the power cord only after confirming that the voltage of the power supply matches the rated electric power voltage for the instrument.
- Do not cut off the power supply while the VC200 is turned ON. Doing so can damage the VC200.
- To prevent the possibility of electric shock or fire, always use the power cord supplied by YOKOGAWA.
- Make sure to perform protective grounding to prevent the possibility of electric shock. Connect the power cord to a 3-prong AC outlet with a protective earth terminal.
- Do not use an extension cord without protective earth ground. Otherwise, the protection function will be compromised.

Connecting the Power Cord

1. Connect the power cord plug to the power connector on the rear panel. (Use the power cord that came with the package.)
2. Connect the plug on the other end of the power cord to an outlet that meets the conditions below. The AC outlet must be of a 3-prong type with a protective earth ground terminal.

Item	Specifications
Rated supply voltage	100-120 VAC/200-240 VAC
Permitted supply voltage range	90-132 VAC/180-264 VAC
Rated supply voltage frequency	50/60 Hz
Permitted supply voltage frequency range	48 to 63 Hz
Maximum power consumption	150 VA



3.4 Turning ON/OFF the Power Switch

Things to Check before Turning ON the Power

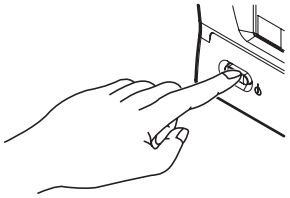
- Is the instrument properly installed? -> Section 3.2, “Installing the Instrument”
- Is the power cord properly connected? -> Section 3.3, “Connecting the Power Supply”

WARNING

When the VC200 is turned ON (when the POWER lamp on the front panel is illuminated), do not remove the power cord or cut off the power supply. Doing so can damage the VC200.

Location of the Power Switch and ON/OFF Operation

The power switch is located at the lower left corner of the front panel. The power switch is a push button. Press once to turn it “ON” and press again to turn it “OFF.”



Note

When turning OFF the power, press the power switch once. Pressing the switch numerous times can cause abnormal termination. If you turn ON the power switch after an abnormal termination, a disk check is performed causing the VC200 to take longer to start up.

Power Up Operation

When the power switch is turned ON, the VC200 starts up and performs a self test. When the VC200 starts up normally, a normal display (any of the displays in section 2.3) appears.

Note

- If the VC200 does not operate as described above when the power switch is turned ON, check the following points.
  - Is the power cord is securely connected to the outlet?
  - Is the correct voltage coming to the power outlet? -> See section 3.3.

  If the VC200 still fails to power up when the power switch is turned ON after checking these points, it is probably a malfunction. In such case, contact your nearest dealer for repairs.
- A lithium battery is used to hold settings in memory. When the voltage in the lithium battery becomes low, the unit does not start up normally even when the power switch is turned ON (the normal start-up screen is not displayed). In this case, the lithium battery must be replaced immediately by a qualified technician. Please contact your nearest dealer (do not attempt to replace the battery yourself). For information on the battery life, see section 11.5.
- Some items will fail in the startup process, if the power switch is turned ON with the Connect to Network check box unselected (http, for example).

To Carry Out Accurate Transmission/Reception

Under the installation condition indicated in section 3.2, allow the instrument to warm up for at least 30 minutes after the power switch is turned ON.

Shutdown Operation

When the power switch is turned OFF, a shutdown program is executed and the power is turned OFF. The setup information that exists immediately before the power is turned OFF is stored.

However, note that the following items are not stored:

- Start/Stop condition of signal generation (when the power switch is turned ON, signal generation is stopped)
- LCD backlight ON/OFF (when the power switch is turned ON, the backlight is ON)

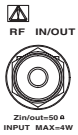
CAUTION

Do not turn OFF the power switch while the shutdown program is running. If you do, the instrument may malfunction.

3.5 Connecting the Mobile Phone under Test and USB Mouse

Location of the RF Connector

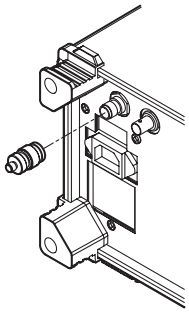
The connector is located at the lower left section of the rear panel.



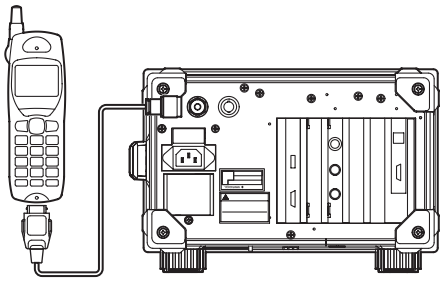
Connection Example

Using the TNC-SMA adapter (provided on models with suffix code -T) or a TNC-ARIB type A cable that is sold separately, connect the VC200 and the mobile phone under test as follows:

Using the TNC-SMA adapter that is provided



Using the TNC-ARIB type A cable that is sold separately



Specifications of the RF Connector

Item	Specifications
Connector type	TNC type or N type*1
Number of connectors	1
Input/output impedance	50 Ω (Typical*2)

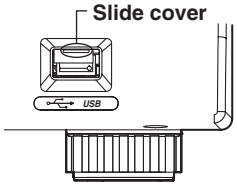
*1 Varies depending on the suffix code.
*2 The typical value is a representative or standard value. It is not a warranted value.

CAUTION

Do not apply power exceeding 4 W to the RF connector. This may cause damage to the input/output section.

Connecting the USB Mouse

Slide the USB port cover on the front panel upward, and connect the USB mouse provided.



3.6 Entering Values

Function

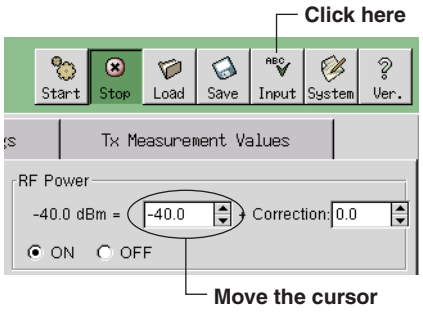
The following two methods can be used to enter values.

- **Using the virtual keyboard**
  If you click Input when the cursor is at a value or string entry box, virtual numeric keypad or a virtual keyboard appears on the screen. You can use this keyboard to enter values and characters.
- **Using the up and down buttons**
  The value is incremented or decremented by a step each time you click the up or down button at the right of the value entry box.

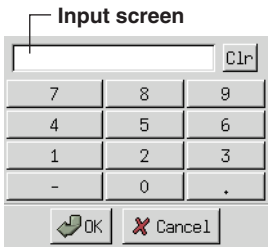
Procedure

Using the Virtual Keyboard

1. Move the cursor to the entry box you wish to enter the value or character string.

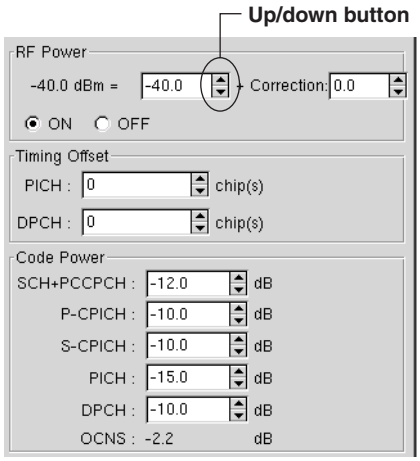


2. Press **Input** to display the virtual keyboard.
3. Click the value or character you wish to enter. The selected value or character appears on the input screen.
4. Click **OK** to confirm the value or character string.



Using the Up and Down Buttons

1. Click the up or down button of the box you wish to enter the value. Click ▲ to increment by a step; click ▼ to decrement by a step.



Note

- Select a setup item that requires entry before clicking **Input**. Otherwise, the keyboard does not appear.
- The following five file names cannot be used.
  AUX, CON, PRN, NUL, and CLOCK

3.7 Setting the Date and Time

Function

Time Zone

Set the time difference from GMT (Greenwich Mean Time). Select the time zone in which the VC200 will be used.

Date

Sets the year, month, and date.

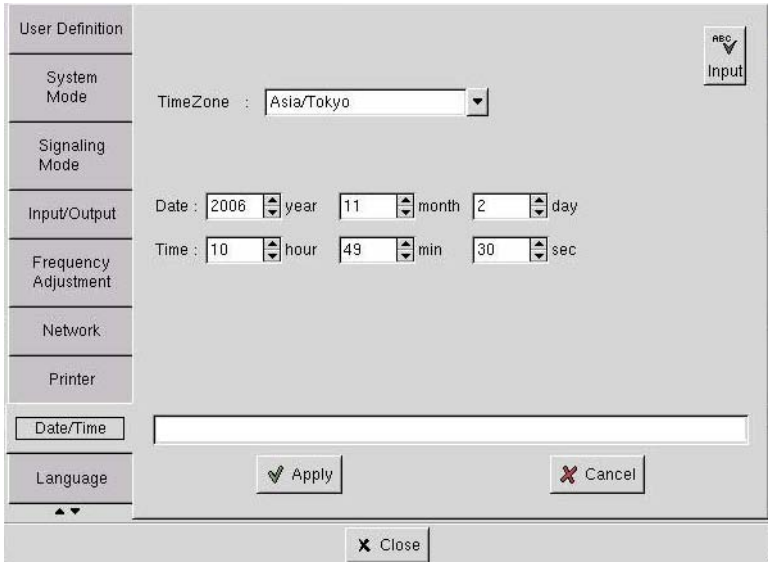
Time

Set the time using a 24-hour clock.

Procedure

1. Click **System**.

2. Click the **Date/Time** tab to display the following screen.



3. Select the time zone.
4. Enter the date and time.
   For details how to enter the values, see section 3.6.
5. Click **Apply** to confirm the settings.
6. Click **Close** to close the dialog box.

4.1 Selecting the Tester Mode

Function

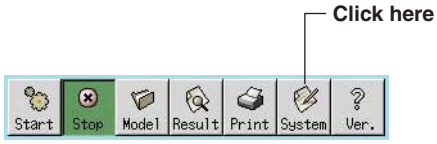
The VC200 provides the following three tester modes.

- **Signaling Tester Mode**
  With signaling operation, performs basic call connection control test and measures the radio characteristics under loopback connection. In the signaling tester mode, you can select whether the USB is used for the connection between the VC200 and the mobile phone.
- **Tx/Rx Tester Mode (W-CDMA)**
  Operates as a standard W-CDMA signal source and transmitter tester only for the physical layer without signaling operation.
- **Tx/Rx Tester Mode (GSM)**
  Operates as a standard GSM signal source and transmitter tester only for the physical layer without signaling operation.

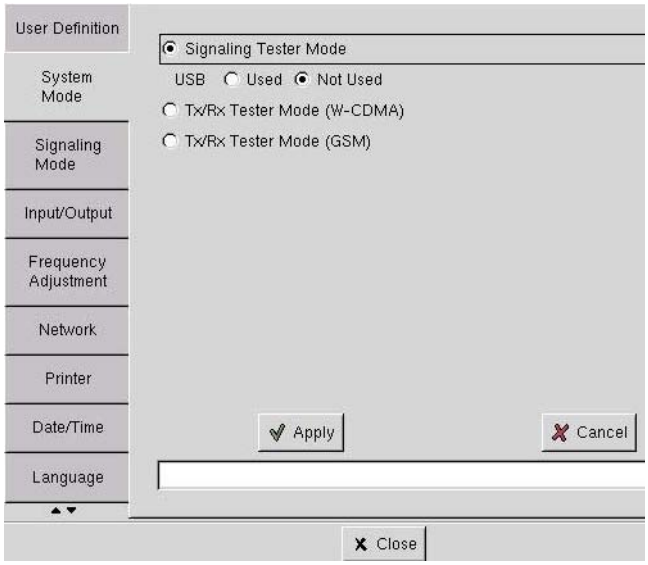
Procedure

Testing in Signaling Tester Mode

1. Click **System**.



2. Click the **System Mode** Tab to display the following screen.



3. Select the Signaling Tester button.
   To retrieve mobile phone information via the USB, select Used.
4. Click **Apply** to confirm the settings. Click **Cancel** to discard the settings.
5. Click **Close** to close the dialog box.

Note

You can also retrieve mobile phone information using a communication command via the USB. For details on models that support the USB and cables used for the connection, contact your nearest dealer.

4.2 Setting the Password

Function

To perform the signaling test, a model parameter file must be created on the Web server of the VC200. The model parameter file is created via the network using a Web browser on your PC. You must enter the user name and password to access the Web server of the VC200.

Web server URL
Host name or IP address under Setup > Network

User Name and Password
By factory default, the VC200 can be accessed using the following user name and password. Be sure to change the password in advance. The user name cannot be changed.
User name: vc200
Password: master

Changing the Password
Password can be changed using up to 16 alphanumeric characters.

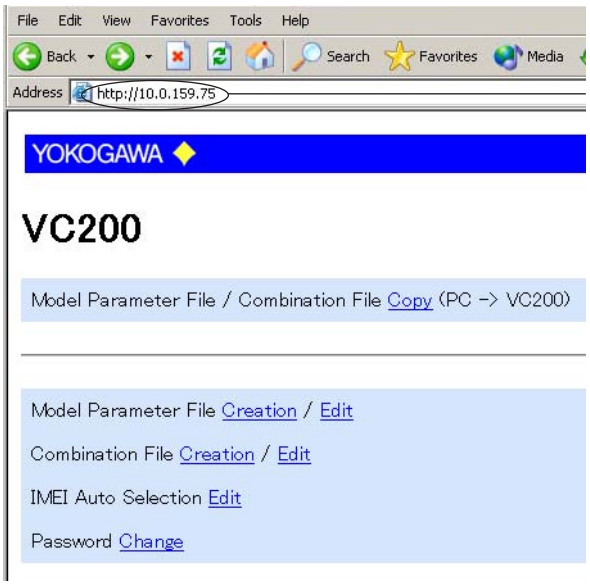
Recommended Browser
Internet Explorer 5.0 or higher

Note

- The method for setting TCP/IP varies depending on the PC. Set the IP address, subnet mask, DNS, and other parameters accordingly.
- If you forget the password, consult your nearest YOKOGAWA dealer.

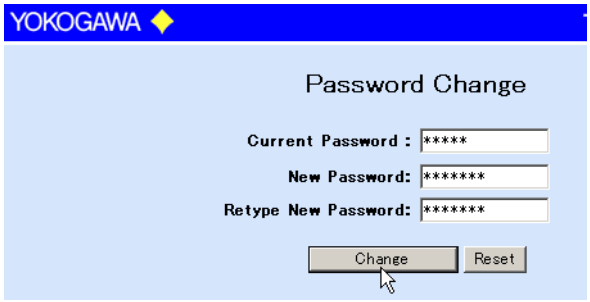
Procedure

1. Start the Web browser on your PC.
2. Enter the host name or IP address of the VC200 as the URL address. The following page appears.



Changing the Password

3. Click **Password Change** to display the following page.



4. Enter the **current password**.
5. Enter the **new password**. Enter the same password in **Retype New Password**.
6. Click **Change** to register the new password. Click **Reset** to retain the current password.

4.3 Creating a New Model Parameter File and Editing a Model Parameter File

≡For a functional description, see section 1.2.≡

Function

The model parameter file is created and edited via the network using a Web browser on your PC. When accessing the Web server on the VC200 for the first time, you must enter the user name and password.

Creating a New Model Parameter File

The title, terminal (model), power class, and settings complying with the 3GPP standard for the mobile phone under test are entered. For details on the setup parameters, see section 1.2.

Editing a Model Parameter File

An existing model parameter file can be edited.

Copying Files

Model parameter files on a PC can be copied to the VC200.

Saving the Model Parameter File

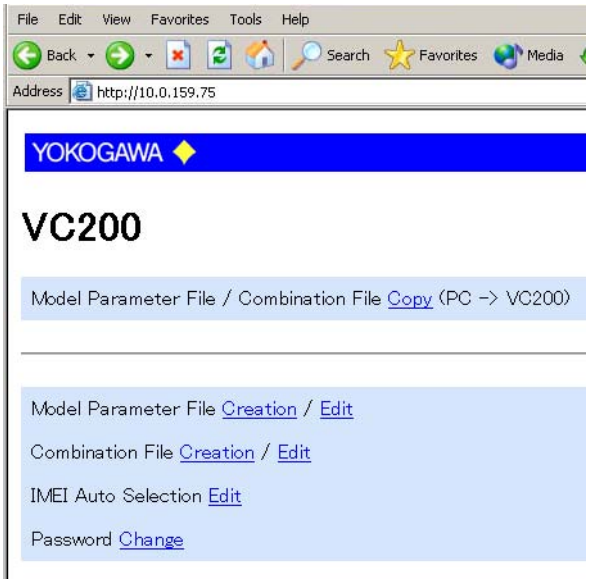
The model parameter file can be saved in the directory /home/vc200/param on the VC200 Web server. You can arbitrarily create save destination directories within /home/vc200/param.

Note

- If the /home/vc200/param directory has been deleted, model parameter files and save destination directories for model parameter files cannot be created. If the directory has been deleted, create the /home/vc200/param directory according to the procedures given in section 7.2.
- Several types of model parameter files are stored in advance by default.

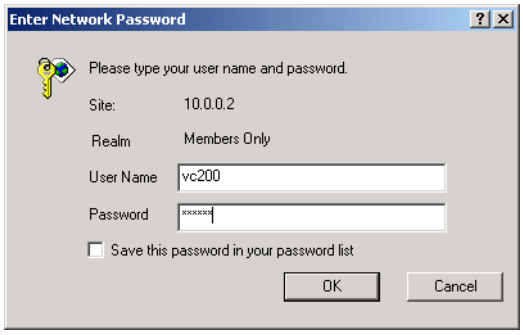
Procedure

1. Start the Web browser on your PC.
2. Enter the host name or IP address of the VC200 as the URL address. The following page appears.

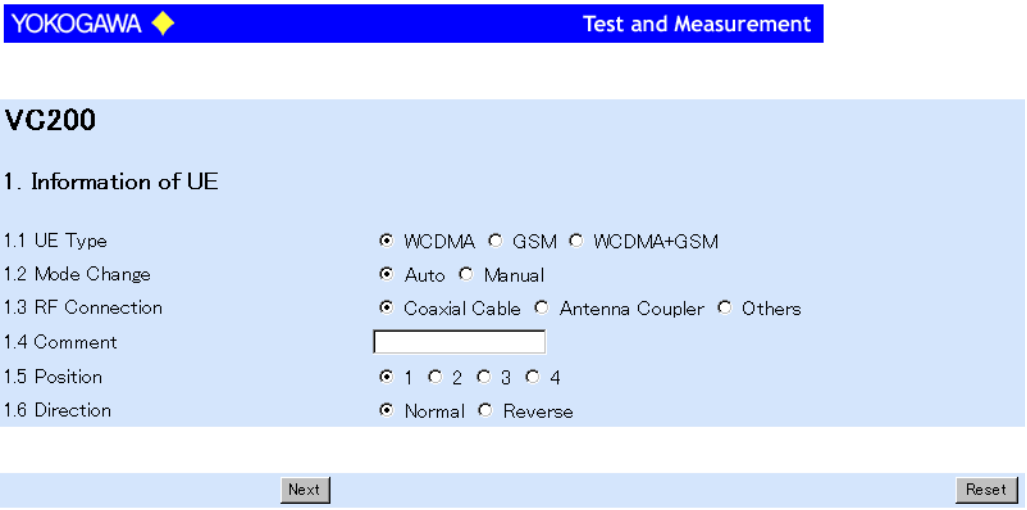


Creating a New Model Parameter File

3. Click Model Parameter File **Creation**. The following user verification dialog box appears only when the URL address of the VC200 is specified for the first time after the browser is started. If the user verification dialog box does not appear, proceed to step 5.

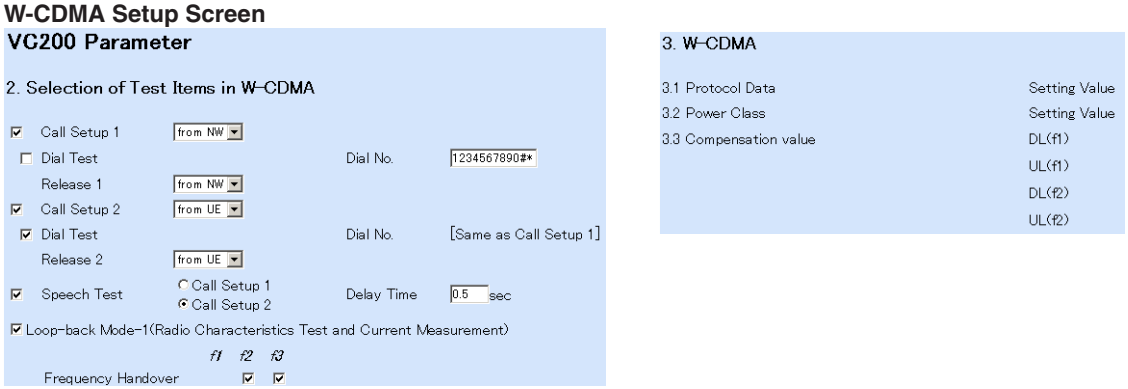


4. Enter the user name (vc200) and password. The following model parameter setup screen appears.

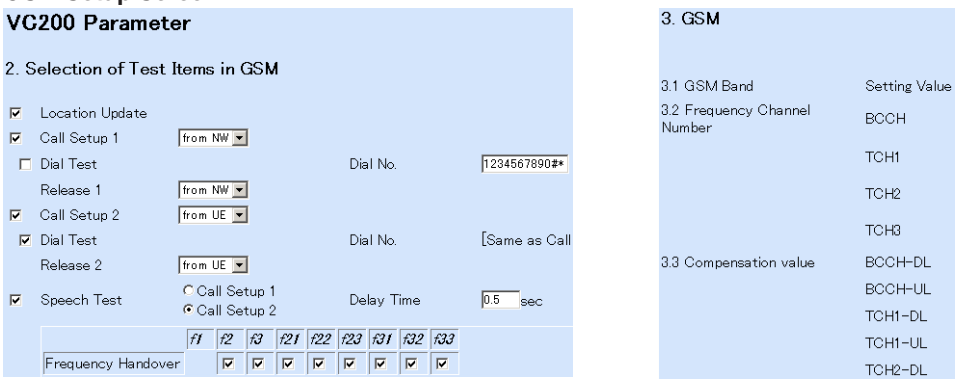


5. Select the **UE type**, **mode change** (valid only when the UE type is WCDMA+GSM), and **RF connection**.
6. Enter a **comment** and click **Next**. The VC200 Parameter Setup screen appears.
7. Select the auto test items to be executed and set the criteria.

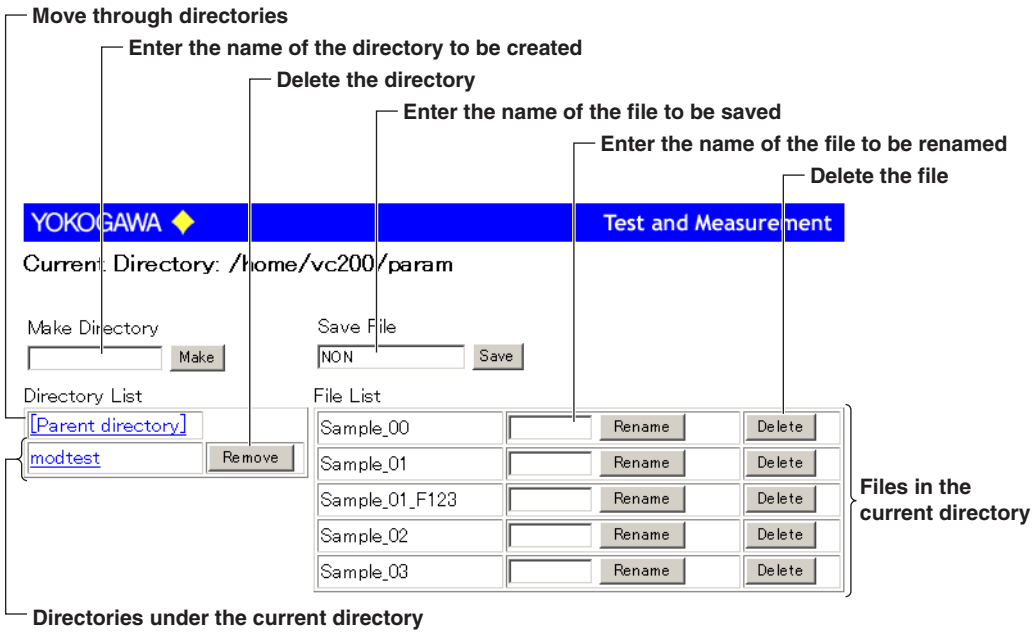
W-CDMA Setup Screen



GSM Setup Screen



8. When all items have been set, click **Next**. The entered settings are displayed. To correct the settings, click the Back button on the browser's toolbar to return to the previous screen.
9. If all the settings are correct, click **Confirm**. The File Save page shown below appears.

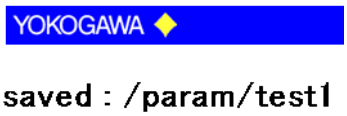


Move through Directories

10. To move up a directory (parent directory), click [Parent directory]. To move to a lower directory, click the desired directory in the Directory List.

Saving Files

11. Enter the file name in the Save File box and click **Save**.
    The following confirmation message appears.



Carry out steps 12 to 17 as necessary.

Creating a Directory

12. Change the current directory according to step 10.
13. Enter the directory name in the Make Directory box and click **Make**.

Deleting a Directory

14. Display the directory you wish to delete in the Directory List according to step 10.
15. Click **Remove** to the right of the directory to be deleted.

Renaming a File

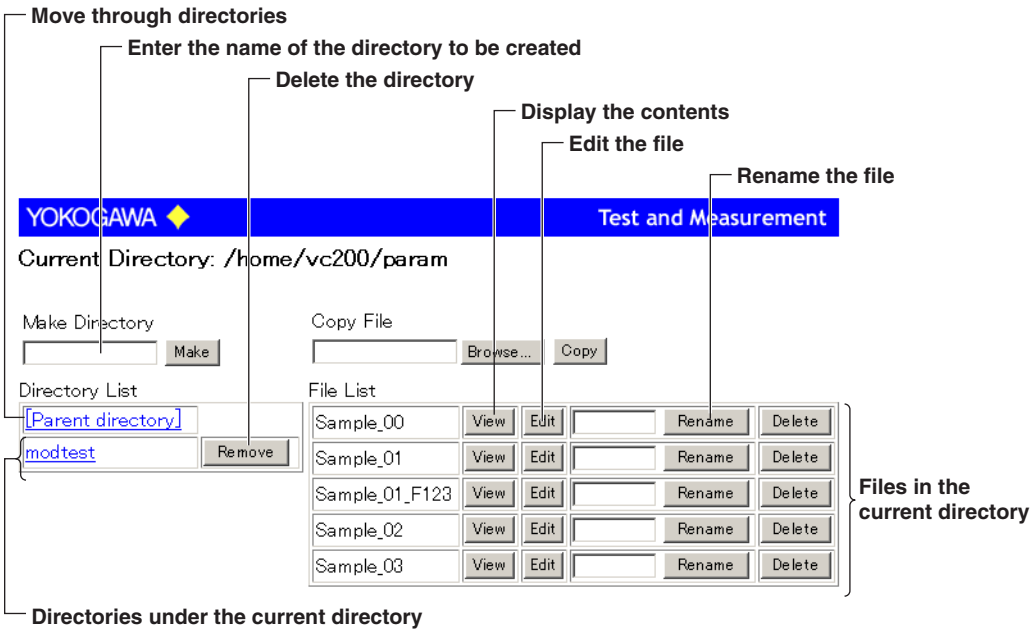
16. Enter the new file name in the box to the right of the file name and click **Rename**.

Deleting a File

17. Click **Delete** to the right of the file name to be deleted.

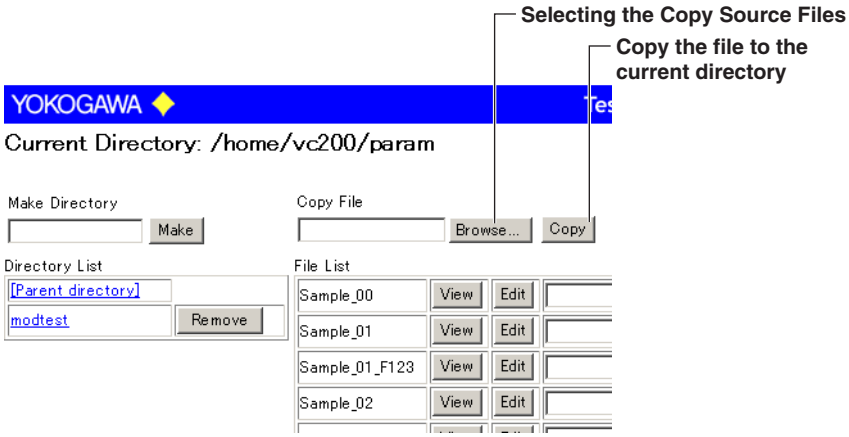
Editing a Model Parameter File

3. After step 2, click **Edit** of Parameter to display the user verification dialog box. The user verification dialog box appears only when the URL address of the VC200 is specified for the first time after the browser is started. If it is not the first time, proceed to step 5.
4. Enter the user name (vc200) and password to display file selection screen.
5. Move to the directory containing the file you wish to edit.
6. Click **View** in the File List to display the contents of the model parameter file corresponding to the selected file.
7. Click **Edit** in the File List to display the model parameter setup screen corresponding to the selected file. Change the settings as when a new file is created and save the file.



Copying Files

3. After step 2, click Model Parameter File/Combination File Copy (PC->VC200). The following dialog box opens.



4. Select the copy destination directory according to step 10.
5. Click **Browse**. The file selection dialog box opens.
   Select the file to be copied.
6. Click **Copy**.

Note

- Directories that contain files cannot be deleted.
- The number of characters and the characters that can be used in file names and directory names are indicated below.
  Number of characters: 1 to 35 characters
  Characters: 0 to 9, A to Z, a to z, %, _, (,), -
- The following settings under Information of UE are valid only on the VC230
  - Mode Switching: Auto/Manual
- If only the GPRS check box is selected under “Selection of Test Items in GSM” on the GSM setup screen, an error occurs in step 8. Be sure to check at least one of the following check boxes: Location Update, Call Setup 1, or Call Setup 2.

4.4 Creating a New Combination File or Editing an Existing File

Function

Auto tests can be executed consecutively by loading into the VC200 a file in which multiple model parameter files are registered (combination file).
A combination file is created and edited via the network using a Web browser on your PC. When accessing the Web server on the VC200 for the first time, you must enter the user name and password (see section 4.2).

Creating a New Combination File or Editing an Existing File

Select the necessary files among the model parameter files created in advance. The combination file can also be edited later on.

- **Number of Files That Can Be Registered**
  Up to 10 files can be registered.
- **Pause Function**
  When multiple model parameter files are registered, a dialog box can be displayed to prompt you to select whether to continue to the next auto test after carrying out the auto test according to the contents of one model parameter file.
- **File Name Extension**
  cmbf

Copying Files

Combination files on a PC can be copied to the VC200.

Saving the Combination File

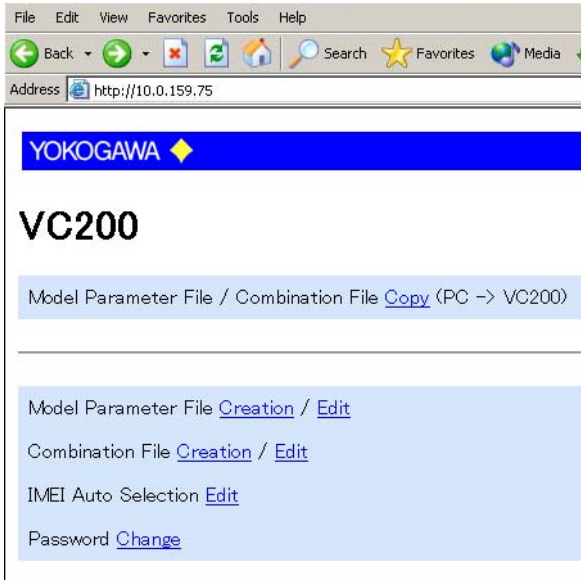
The combination file can be saved in the directory /home/vc200/param on the VC200 Web server. You can arbitrarily create save destination directories within /home/vc200/param.

Note

If the /home/vc200/param directory has been deleted, combination files and save destination directories for combination files cannot be created. If the directory has been deleted, create the /home/vc200/param directory according to the procedures given in section 7.2.

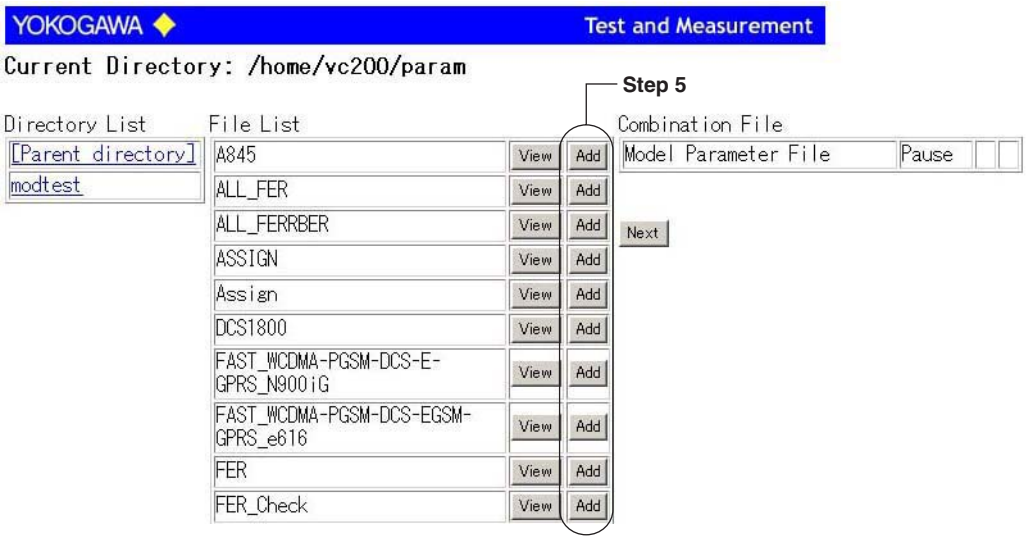
Procedure

1. Start the Web browser on your PC.
2. Enter the host name or IP address of the VC200 as the URL address. The following page appears.



Creating a New Combination File

3. Click **Creation** by Combination File. The following combination file creation screen appears.
   The following user verification dialog box appears when the URL address of the VC200 is specified for the first time after the browser is started. If the user verification dialog box appears, enter the user name (vc200) and password.

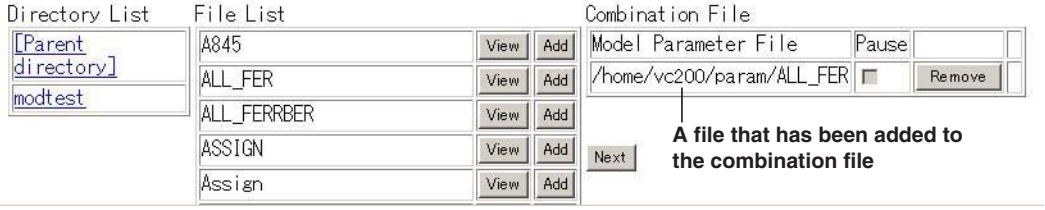


Moving/Creating/Deleting Directories and Renaming/Deleting Files

4. For the procedure of moving/creating/deleting directories and renaming/deleting files, see section 4.3.

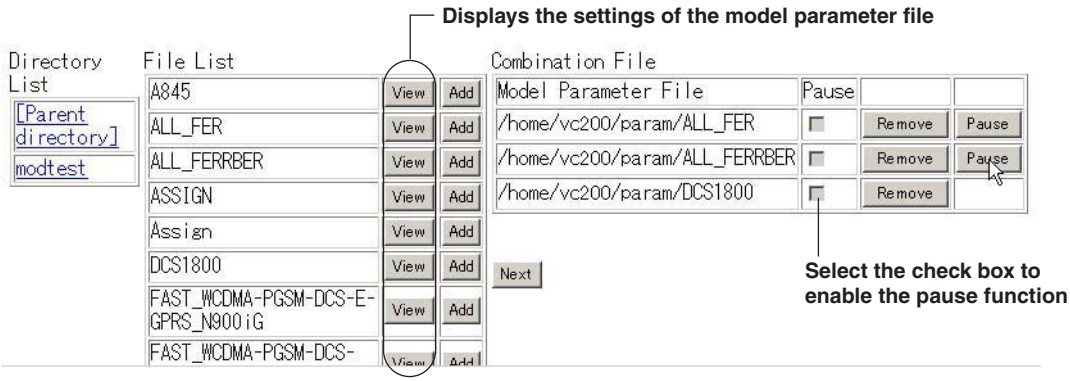
Registering Model Parameter Files to the Combination File

5. Click the **Add** button corresponding to the model parameter file you with to register. The selected file is added to the combination file list.



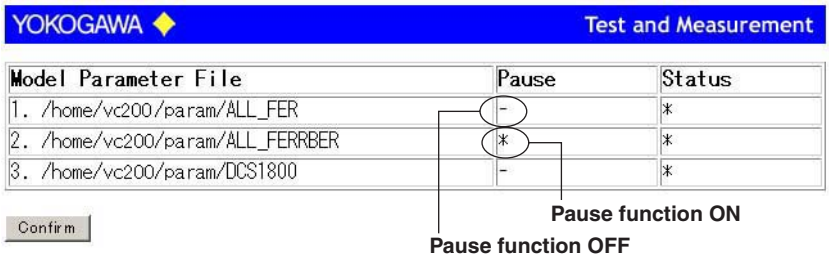
Pause Function

6. To use the pause function, click the **Pause** check box in the combination file list to select it.

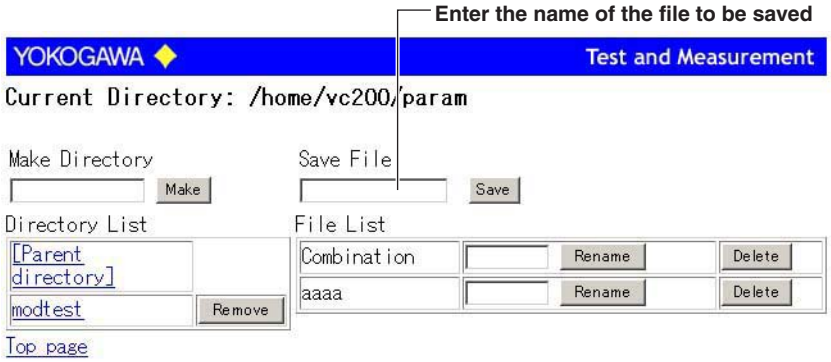


Saving the File

7. Click **Next**. A confirmation screen appears.

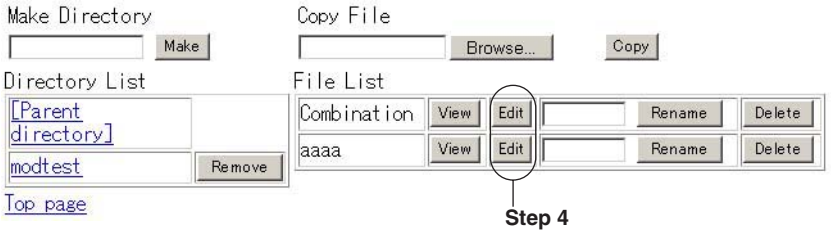


8. If the settings are correct, click **Confirm**. The file save screen shown below appears.
   To correct the settings, click the **Back** button on the browser's toolbar to display the previous screen and reregister.
9. Enter the file name in the Save File box and click **Save**.

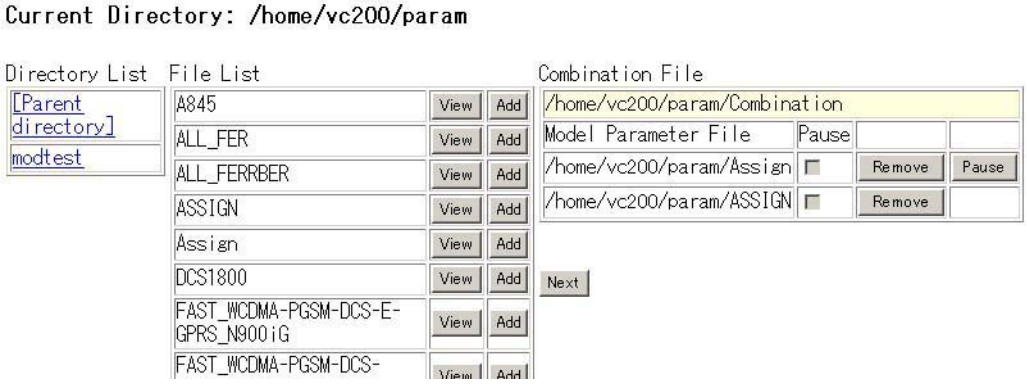


Editing a Combination File

3. After step 2, click **Edit** by Combination File. The following combination file creation screen appears.



4. Click **Edit** by the desired file. The following screen appears.



5. To delete a registered file, click **Delete** for the corresponding file. To add a file, click **Add** of the corresponding file. To change the setting of the pause function, click **Pause** or **Unpause** of the corresponding file.
6. When you are done editing, click **Next**.
   Save the file according to "Saving the File" (steps 7 to 9) when a new combination file is created.

4.5 Setting Up Model Parameter Automatic Selection

Function

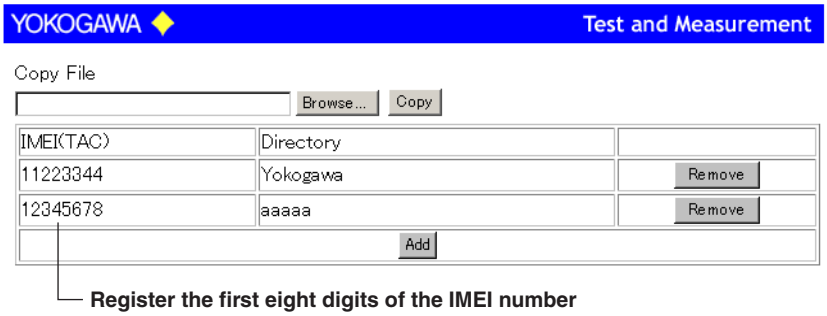
Model Parameter Automatic Selection

You can have a model parameter file or combination file be automatically selected based on the first eight digits of the IMEI number of the mobile phone under test, and start the auto test.

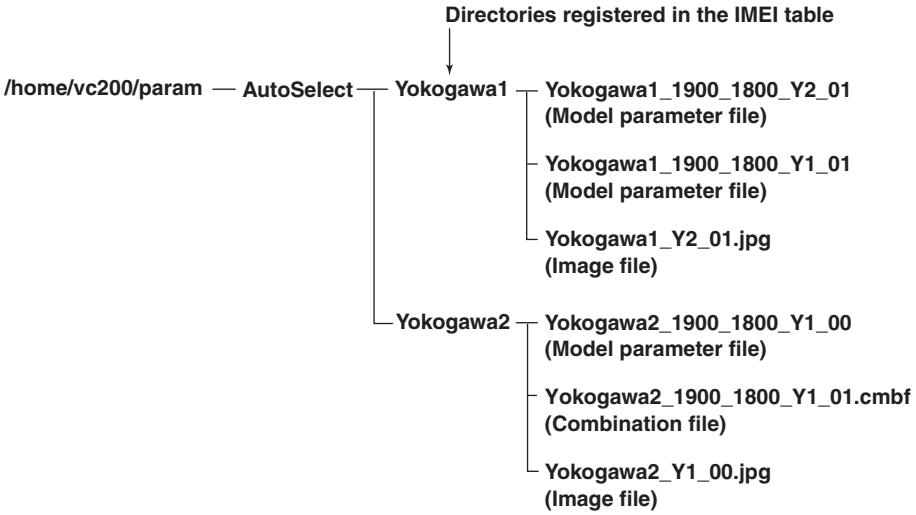
To use the model parameter automatic selection function, you must prepare a table (IMEI table) that corresponds to the IMEI number and model parameter file or combination file in advance.

IMEI Table

A table such as the one below has been stored in the instrument. Directories containing model parameter files or combination files are registered in the table with IMEI numbers. The table can be edited via network by using a browser on a PC. Note that if a directory registered in the IMEI table does not exist, the directory is created automatically.



Directory location and file structure



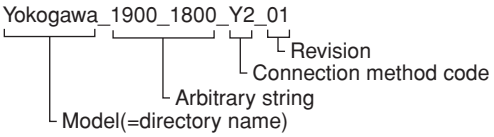
Directories to be registered in the IMEI table are created in /home/vc200/param/AutoSelect.
The following files are required in each directory.

- Model parameter file or combination file
- Image file (JPEG)
  When the model parameter file is automatically selected, the image file is displayed in the VC200 screen. An image that shows where to place the mobile phone in the shield box can be a helpful setup guide.

Creating a Model Parameter File or Combination File

You can create model parameter files or combination files and save them to the directories registered in the IMEI table by following the instructions in sections 4.3 and 4.4. Only files whose names meet the following criteria are available for automatic selection.

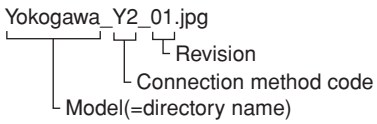
- **File name**
  model_arbitrary string_connection method_revision
  - **Model**
    Use the same name as the directory name that appears in the IMEI table.
  - **Arbitrary string**
    The following characters can be used.
    Alphanumeric English characters, hyphens (-), and underscores (_).
  - **Connection method**
    Specify one of the following codes for the connection method of the mobile phone. Files that match the connection method set on the instrument (see section 4.7) are available for selection.
    {Y1|Y2|X1|X2|X3|X4|CB}
    (VC-SHIELD shield BOX 733061, 733062, non-Yokogawa shield box 1 to 4, cable connection)
  - **Revision**
    Specify a file revision using a 2 digit (00–99) number. If duplicate connection method codes are encountered, the file with the largest revision number is selected.
  - **Extension**
    When combination files are saved, the extension .cmbf is automatically added.
  - **File name example**



Saving (Copying) Image Files

JPEG files created on a PC are copied via network to the directory in the instrument's Web server using a browser from a PC (PC -> VC200). Only files whose names meet the following criteria are available for automatic selection.

- **File name**
  model_connection method_revision
  - **Model**
    Use the same name as the directory name that appears in the IMEI table.
  - **Connection method**
    Specify one of the following codes for the connection method of the mobile phone.
    {Y1|Y2|X1|X2|X3|X4|CB}
    (VC-SHIELD shield BOX 733061, 733062, non-Yokogawa shield box 1 to 4, cable connection)
  - **Revision**
    Specify a file revision using a 2 digit (00–99) number. If duplicate connection method codes are encountered, the file with the largest revision number is selected.
  - **Extension**
    jpg
  - **File name example**



- **Copy destination directory**
  Sets the directory registered in the IMEI table as the copy destination.

- **File size**
  Images larger than 400 _ 300 pixels are automatically reduced to 400 _ 300 pixels before being copied.

Model Parameter Automatic Selection Method

With model parameter automatic selection, the IMEI table is searched for the directory corresponding to the IMEI number retrieved in the radio interval, then that directory is searched for the model parameter file or combination file and image file whose names contain the code that matches the connection method set on the instrument (see section 4.7).

Turning Model Parameter Automatic Selection ON/OFF

For instructions on turning automatic selection ON (auto) and OFF (manual), see section 4.7.

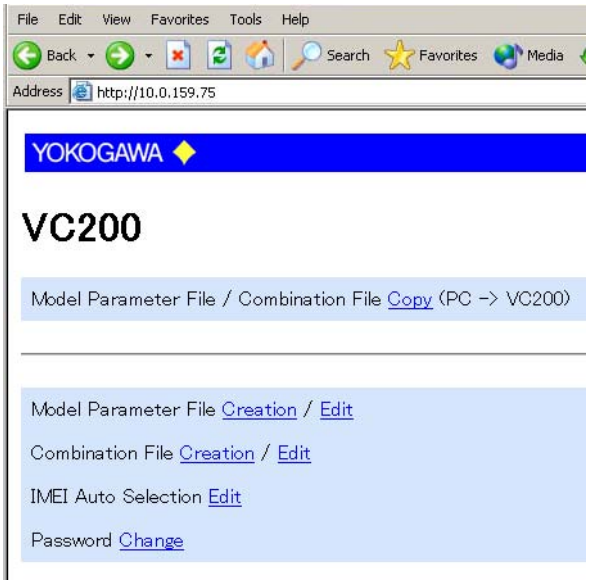
Note

- If the names of the model parameter file and combination file are the same (the model name and connection method are the same), the combination file is loaded.
- If no JPEG file exists in the directory, the VC200 displays a white screen.

Procedures

Adding Items to an IMEI Table

1. Start the Web browser on the PC.
2. Follow the procedure in section 4.3 to display a page such as the following.



3. Click IMEI Auto Selection **Edit**.
4. An IMEI table such as the one below is displayed.

5. Click **Add** to display the screen for adding table items.

6. Input the IMEI number and directory name you want to add and click **Add**.
   The IMEI number and directory name are added to the IMEI table.

Deleting Items from the IMEI Table

7. Click **Remove** in the right column of the item you wish to delete.
   The item is deleted.

Creating a Model Parameter File or Combination File

8. Follow the procedures in sections 4.3 and 4.4 to create/save a file.

Saving (Copying) Image Files

9. Following steps 3 to 6 on page 4-8, copy the JPEG file created on the PC to the VC200.

4.6 Auto Test Mode (Model Parameter Manual Selection)

≡For a functional description, see page 1-3.≡

Function

In auto test mode, signaling test is executed according to the contents of the model parameter file or combination file, and the result (OK or NG) is displayed for each item. The following two auto test modes are available.

- Single test mode: One sequence of the test is executed according to the contents of the selected model parameter file. When the test is complete, the total judgement result is displayed in the total judgement dialog box.
- Continuous test mode: Tests are executed consecutively for the registered number of model parameter files in the selected combination file. If the pause function is enabled, you can select whether to continue to the next sequence each time a sequence of tests is finished. When all test sequences are finished, the total judgement results of all sequences are displayed in the total judgement dialog box.

Model Parameter Selection

- **Auto**
  Using the model parameter automatic selection function, a model parameter file or combination file is automatically selected from the directory registered in the IMEI table, and the auto test begins.
- **Manual (Model Parameter Manual Selection)**
  The test is conducted automatically based on the contents of a manually selected model parameter file or combination file.

Model Parameter File

If a model parameter file is selected (see section 4.3), the auto test mode is automatically set to single test. The settings of the selected parameter file can be confirmed on the VC200 for each of the following items.

- UE
- W-CDMA Setting
- W-CDMA Limit
- W-CDMA Test Item
- GSM Setting
- GSM Limit
- GSM Test Item

* Only the GSM settings can be confirmed on the VC210.
Only the W-CDMA settings can be confirmed on the VC220.
Both W-CDMA and GSM settings can be confirmed on the VC230.

Combination File

If a combination file (see section 4.4) is selected, the auto test mode is automatically set to continuous test. The list of model parameter files registered in the selected combination file and the contents of each model parameter file can be viewed on the VC200.

Result List

The test items, criteria, measured values, and judgement results of the auto test can be listed. In the burst timing test, the uplink signal at the time of the test can be displayed on a graph.

One of the following results is displayed in the result column.

Judgment Result	Meaning	Note
Pass	Pass	
Fail	Fail	
TSCN	Training sequence error	Only during the burst timing test
-----	Power measurement timeout	Only during the burst timing test
Fail_|	The waveform rising section is out of range.	Only during the burst timing test
Fail~	The center section of the waveform is out of range.	Only during the burst timing test
Fail|_	The waveform falling section is out of range.	Only during the burst timing test

Result Log File

Detailed information such as test items, criteria, measured values (average, minimum, and maximum), and judgement is automatically saved for each sequence to the built-in hard disk. The saved detailed information can be displayed on the VC200 screen.

The file name and save destination are as follows:

- **File name**
  IMEI (International Mobile Equipment Identity) of the mobile phone + the date/time the test ended (Example: 350217000854030-2003-09-01-09-50-12(15-digit IMEI-2003-September 1st-9:50:12 am)
- **Save destination**
  Up to 5000 files are saved automatically to the directory /home/vc200/result/. If over 5000 are saved, a new directory is created within the result directory, and the oldest files are automatically moved to the new directory as new ones are added to the result directory.

  Automatically created directory names
  Date/time when the 500^{1st} file is created
  (Example: 20061031152800 (2006, Oct. 31, 15:28:00))

- **Results Log File from Continuous Measurement Mode (Combination File)**
  In the case of continuous measurement mode, the following folder is created automatically, and the results log files of each sequence are saved within them.
  Directory name: Combination file name + test start date/time of the combination file
  (Example: Comb_Test-2005-09-02-14-36-41/September 2, 2005, 14 Hrs, 36 Min., 41 Sec.)

Printing the Test Results

By connecting a printer to the VC200 via the USB or network, the test results displayed on the screen and result log files saved on the built-in hard disk can be printed. For the printing procedure and a list of connectable printers, see section 9.1.

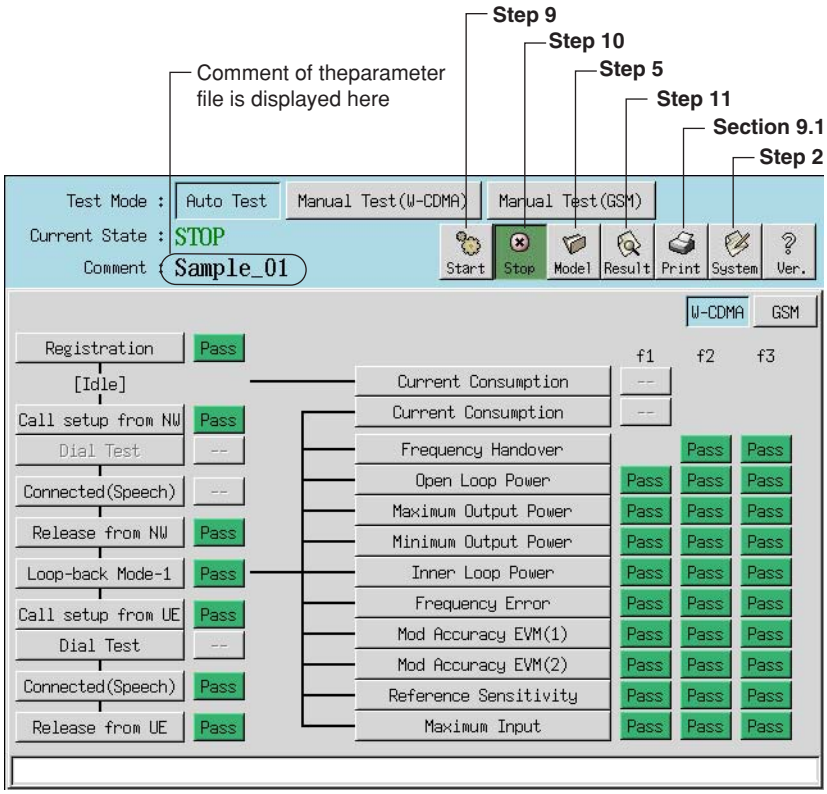
Note

- If the IMEI could not be retrieved for some reason, the file name is set to only the date/time.
- If the Output to file check box in the burst setting of the model parameter file is selected, the graph of the uplink signal is also automatically saved to the result log file.
- The log file of a sequence that could not be executed during continuous test mode is not created.

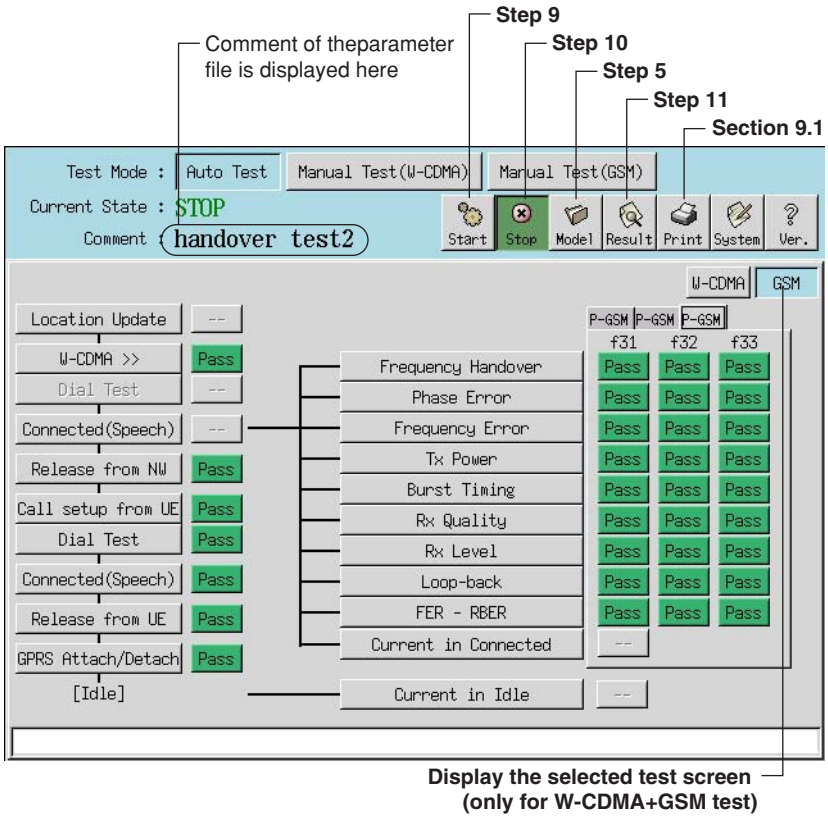
Procedure

1. Click the **Auto Test** to display the following screen.

W-CDMA Auto Test Screen

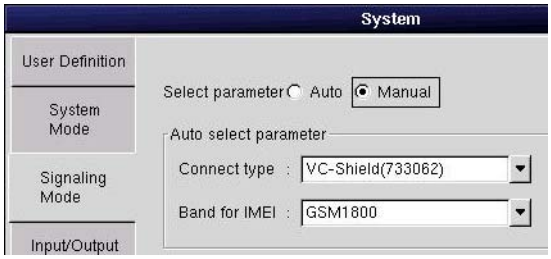


GSM Auto Test Screen



Model Parameter Selection Settings

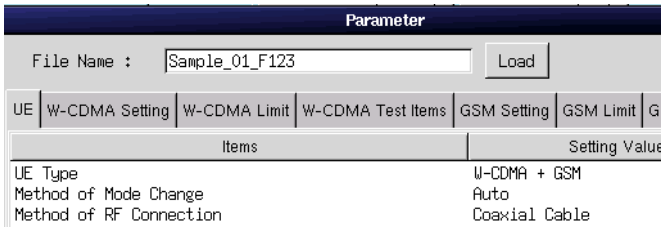
2. Click **System**.
3. Click the **Signaling Mode** tab to display the following screen.



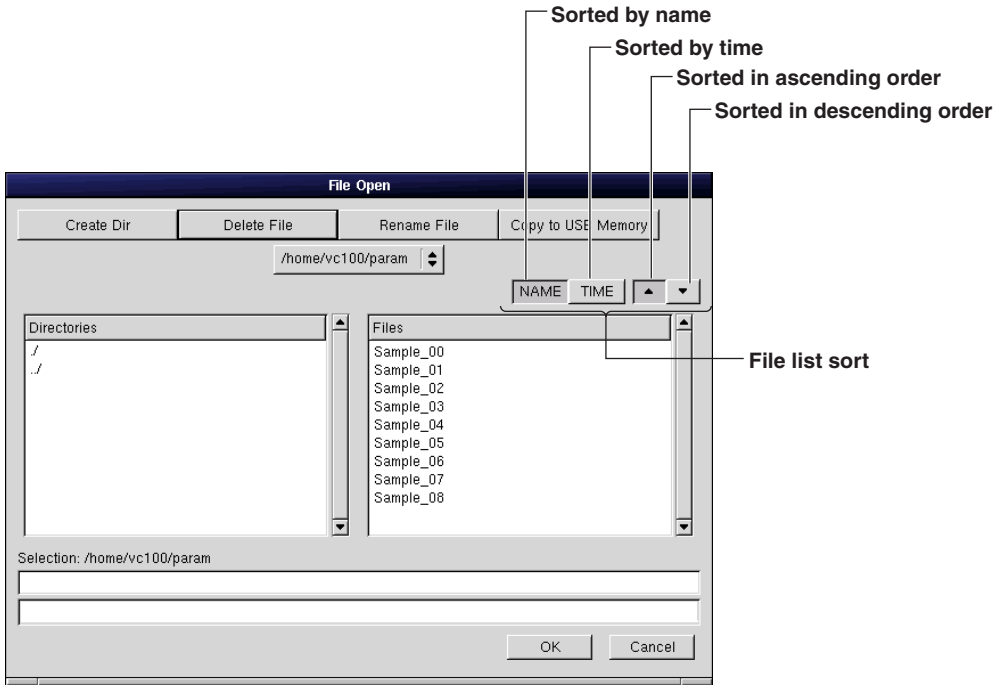
4. Select the **Manual** option next to Select Parameter.

Selecting the Model Parameter File/Combination File

5. Click **Model** to display a file selection menu.

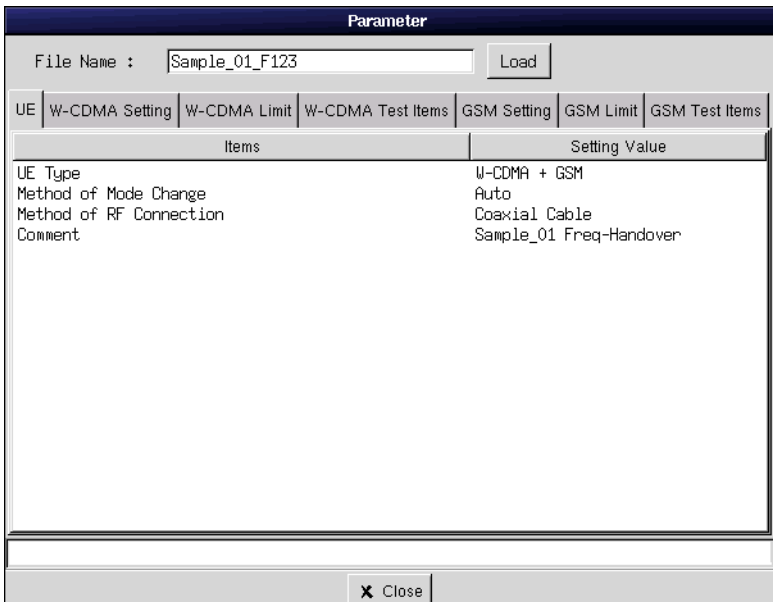


6. Click **Load** to display the File Open dialog box. Select the model parameter file or combination file, used in the test according to the procedure given in chapter 7. Then, click **OK**.

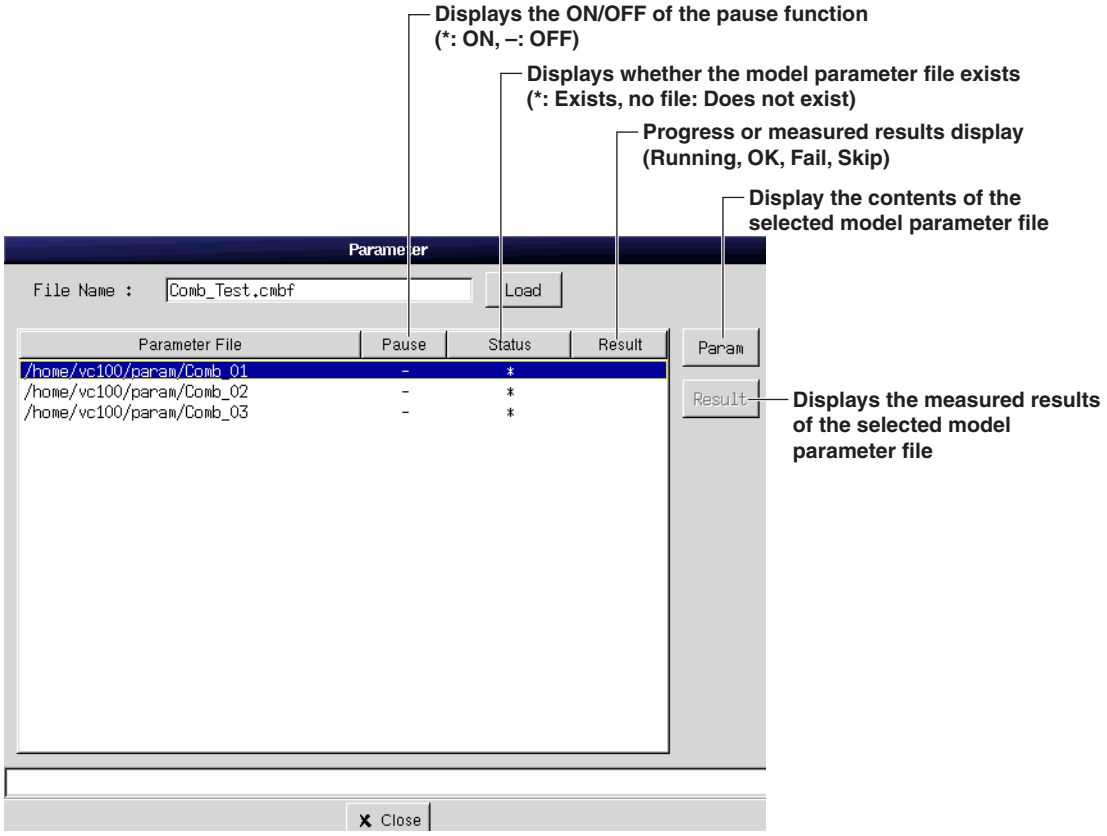


7. The name of the selected file appears in the file name box on the Parameter dialog box.

- **Model Parameter File (Single Test Mode)**
  Click various tabs to view the setup parameters.



- **Combination File (Continuous Test Mode)**



*** You can select result Botton only when the test is finished.**

8. After checking the contents, click **Close**.

Executing the Test

9. Turning on the power to the mobile phone under test after pressing **START** on the front panel or clicking **Start** on the screen starts the test. Operate the mobile phone according to the instructions in the dialog box.

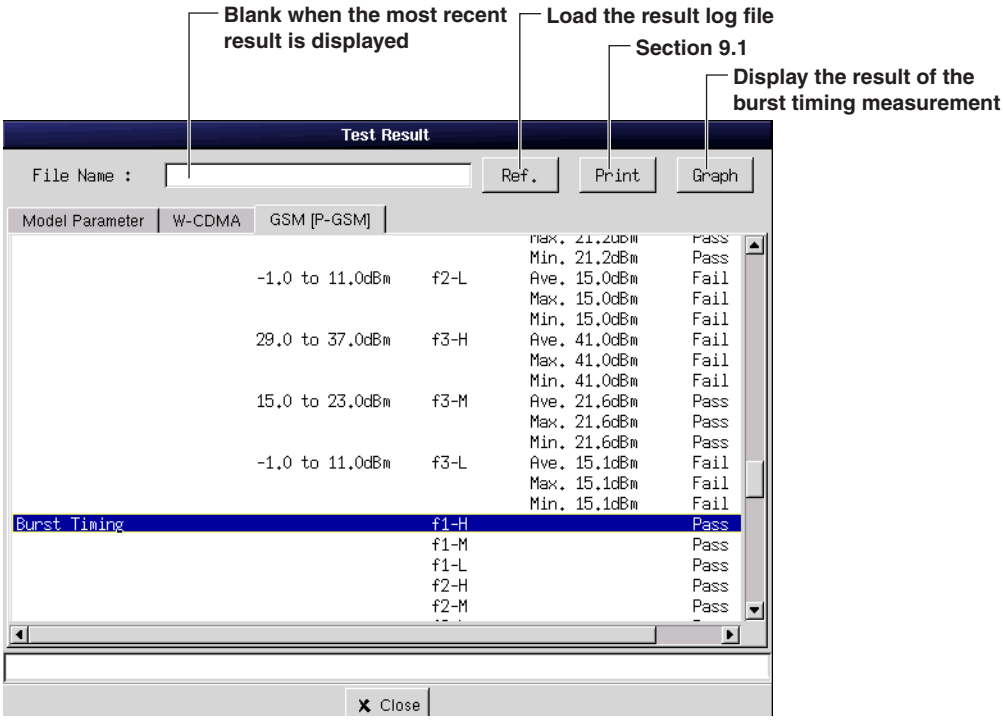
- **During Single Test Mode**
  When the test of each item completes normally, “Pass” is displayed. If not, “Fail” is displayed.
  If “Fail” occurs in the call connection and disconnection test, the test is aborted.
  When all tests are complete, the total judgement result is displayed in the total judgement dialog box.
- **During Continuous Test Mode**
  When the test of each item completes normally, “Pass” is displayed. If not, “Fail” is displayed. If the test of one sequence completes successfully, the next sequence is loaded from the model parameter file, and the test is executed. If the pause function is enabled, a confirmation dialog box opens before continuing to the next sequence. Click **OK** to start the next test. Click **Cancel** to abort the continuous test.
  When all test sequences are finished, the total judgement results of all sequences are displayed in the total judgement dialog box.

Aborting the Test

10. Press **STOP** on the front panel or click **Stop** on the screen to abort the test. However, the Stop button cannot be used if there is a dialog box shown on the screen.

List of Results

11. Click **Result** to display the following dialog box. If the file name box is empty, the most recent result is displayed.



12. Click **Ref.** to display the File Open dialog box. Select the file containing the result you wish to display and click **OK**. The result is displayed on the Test Result dialog box.
13. Click the **Model Parameter, W-CDMA** or **GSM (***)** tab to list the items of the selected tab.

Note

- The VC200 cannot check the status of the speech test. When ending the speech test, enter the test result using one of the methods below. When you release the call after entering the result, the result is displayed on the screen (Pass or Fail).
  - Press the VC200 START button (Pass) or STOP button (Fail).
  - Click Yes (Pass) or No (Fail) in the dialog box.
- In the dual mode (W-CDMA+GSM) auto test, the W-CDMA test is executed first and then the GSM test. The auto test result display can be switched by clicking the W-CDMA or GSM button at the upper right corner of the auto test screen.
- The graph of the uplink signal can be displayed by clicking the Graph button when a burst timing item is highlighted in the Test Result dialog box. However, for a result log file loaded from the internal hard disk, the graph can only be displayed if the Output to file check box in the burst timing setting of the model parameter file is selected.
- In the dual mode auto test, inter-RAT handovers from the W-CDMA system to the GSM system can be executed. The inter-RAT handovers is configured with the model parameter file.
- GPRS Test (GSM Only)
  Executes Attach followed by Detach when the VC200 enters the idle mode at the end of the test sequence. If both Attach and Detach completes normally, the VC200 indicates “Pass.” If either one fails to complete normally, the VC200 indicates “Fail” and terminates the test. The results of the Attach and Detach tests can be verified in the result log file.
- If a model parameter file registered in the combination file does not exist, the file is skipped, and the test continues to the next sequence.
- If a protocol error occurs during the test, the continuous test is aborted.
- If you click the model on the automatic test screen during execution of the test after selecting a combination file, the Parameter dialog box appears (page 4-22).
- If Select Parameter is set to Auto, a model parameter file or combination file cannot be selected manually. Select a file after setting the function to Manual.

4.7 Auto Test Mode (Model Parameter Automatic Selection)

≡For a functional description, see page 1-3.≡

Function

In auto test mode (model parameter automatic selection), the signaling test is executed according to the contents of the model parameter file or combination file selected automatically from the IMEI retrieved in the radio interval, and the results for each item (OK or NG) are displayed on screen.

- Single test mode: One sequence of the test is executed according to the contents of the selected model parameter file. When the test is complete, the total judgement result is displayed in the total judgement dialog box.
- Continuous test mode: Tests are executed consecutively for the registered number of model parameter files in the selected combination file. If the pause function is enabled, you can select whether to continue to the next sequence each time a sequence of tests is finished. When all test sequences are finished, the total judgement results of all sequences are displayed in the total judgement dialog box.

Model Parameter File
Combination File
Result List
Result Log File
Printing the Test Results
For details, see section 4.6.

Model Parameter Selection

- **Auto (Model Parameter Automatic Selection)**
  Using the model parameter automatic selection function, a model parameter file or combination file is automatically selected from the directory registered in the IMEI table, and the auto test begins.
- **Manual**
  The test is conducted automatically based on the contents of a manually selected model parameter file or combination file.

Automatic Selection Method
Searches the directory corresponding to the IMEI number retrieved in the radio interval as found in the IMEI table (see section 4.5), for the model parameter file or combination file and image file whose names contain the code that matches the connection method (explained on the next page) set on the instrument. If multiple files have the same name (model name and connection method are the same), the file of the most recent revision is selected. If the names of the model parameter file and combination file are the same (the model name and connection method are the same), the combination file is selected.

Settings When Model Parameter Automatic Selection is ON

- **Connection method**
  Select one of the methods below for connecting the mobile phone and instrument. Only the files of the selected connection method are available for automatic selection.
  {Y1|Y2|X1|X2|X3|X4|CB}
  Y1: VC-SHIELD shield BOX 733061
  Y2: VC-SHIELD shield BOX 733062
  X1 to X4: Non-Yokogawa shield box 1 to 4
  CB: Cable connection

- **Band for Retrieving the IMEI**
  Select a band for retrieving the IMEI from the choices below. The unit attempts to retrieve the IMEI on the selected band. If location registration (W-CDMA) or location update (GSM) on the selected band fails, the unit switches the band and tries again.
  GSM1800, GSM1900, W-CDMA

Instruments Supported by Model Parameter Automatic Selection (Only with WCDMA)

In W-CDMA systems, the model parameter automatic selection function can be used when the mobile phone is set up as follows:

Profile: Profile01
Authentication key: AAAAAAAAAAAAAAAAAAAAAAAAAAAAAA, SIM

If the mobile phone is not set up as above, the appropriate model parameter file cannot be loaded from the IMEI. If using a mobile phone that is not set up as above, set the IMEI retrieval band to GSM1800 or GSM1900.

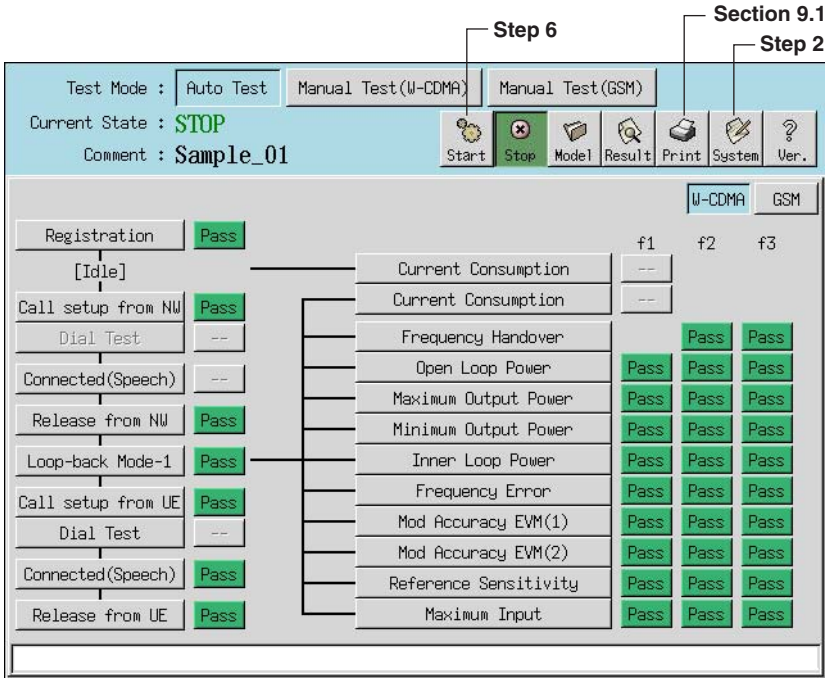
Note

With the VC210 (Model 733013), select an IMEI retrieval band of GSM1800 or GSM1900.
With the VC220 (Model 733014), the IMEI retrieval band can only be set to W-CDMA.

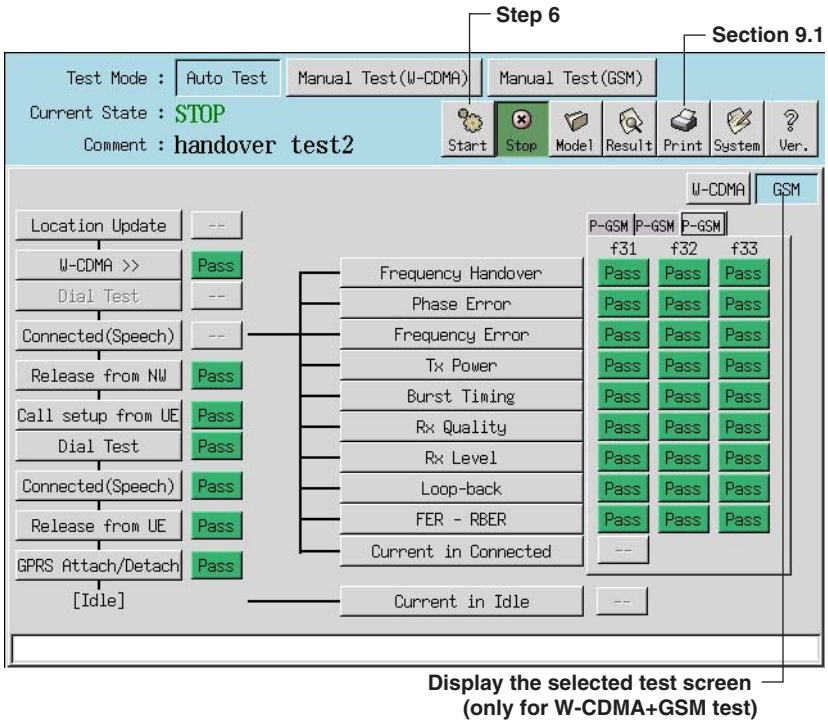
Procedure

1. Click the **Auto Test** to display the following screen.

W-CDMA Auto Test Screen

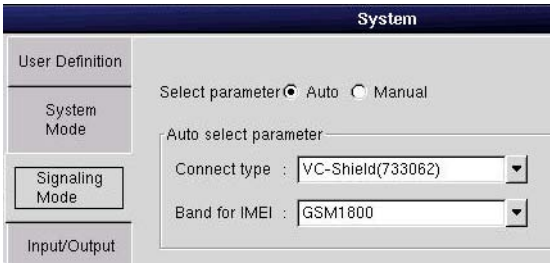


GSM Auto Test Screen



Model Parameter Selection Settings

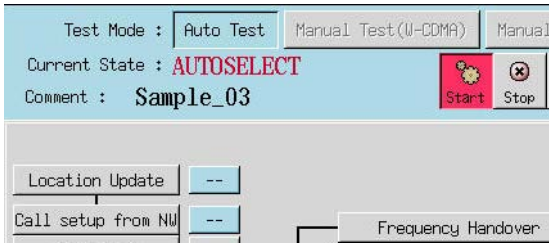
2. Click **System**.
3. Click the **Signaling mode** tab to display the following screen.



4. Select the **Auto** option next to Select Parameter.
5. Select the connection method and IMEI retrieval number from the list.
   Executing the Test

Executing the Test

6. Turning on the power to the mobile phone under test after pressing **START** on the front panel or clicking **Start** on the screen starts the test.
   When the IMEI number is retrieved, a model parameter file is automatically selected, and the Test Result dialog box (image file) is displayed.
7. After placing the mobile phone in the shield box according to the displayed image, click OK to start the auto test according to the contents of the selected model parameter file or combination file.
   Perform the test by following step 6 in section 4.6.



Canceling the Test and Displaying the Results List

See steps 7 to 10 in section 4.6.

Note

- If for some reason the IMEI could not be retrieved, the auto test is cancelled.
- If the IMEI retrieved in the radio interval is not found in the IMEI table, the IMEI table is displayed. Select the desired IMEI manually from the table.
- If neither the model parameter file nor combination file exists in the directory registered in the IMEI table, the auto test is cancelled.

4.8 Manual Test Mode (W-CDMA)

Function

In the manual test mode, registration is automatically started when the mobile phone's power is turned ON after starting the test. When the registration is complete, the idle mode is maintained.
In the idle mode, call setup (call setup from NW or call setup from UE) or test loop close can be executed.
When a call or loopback is established, the connected mode, speech test or loopback mode is maintained.
When a call is established by call setup from NW or call setup from UE and connected mode or speech test is entered, the call can be released using call release from NW or call release from UE. When a loopback is established by test loop close, the loopback can be released using test loop open. When a call or loopback is released, the VC200 returns to the idle mode.
When a loopback or call is established, the test items of the radio characteristics (Tx characteristics or Rx characteristics) selected on the screen are repeatedly measured. To reselect the items of the speech test or radio characteristics test, terminate the test once.

Speech Test
The speech test is executed using the VC200 loopback mode and continues until the call is released.

Radio Characteristics Test
In the transmitter power, frequency error, and modulation accuracy tests of the Tx characteristics test, the average value of the specified measurement count is repeatedly measured, and the value is displayed. The open loop power is measured at the time of connection (call setup from NW, call setup from UE, or close), and is not repeated. The inner loop power is measured repeatedly the specified number of times, and the number of time slots that failed during the repeated measurement is indicated. If you click the Result button on the manual test screen, the average, maximum, and minimum as well as the details of the time slots that failed for all measurements can be displayed.
In the Rx characteristics (loopback BER) test, the BER over the specified measurement time is repeatedly measured, and the value is displayed.

Setting the Test Conditions

Set the conditions necessary for executing the manual test. The settings can be saved and loaded. For the saving and loading procedure, see section 4.10.

Item	Selectable Range (Default Value)	Change during the Test*1
Condition 1		
UE Information		
Profile	Profile_01 to 08 (Profile_01)	No
Battery Voltage*2	2.5 to 4.5 V (4.3 V)	No
Frequency & Power		
Frequency	412 to 10850 (10688)	Yes
DL Power	–110.0 to –10.0 dBm (–65.0 dBm)	Yes
Compensation Value		
DL	band1/band2/band3/band5, 6/band9 0.0 to +30.0 dB (3.0 dB)	Yes
UL	band1/band2/band3/band5, 6/band9 0.0 to +30.0 dB (3.0 dB)	Yes
Authentication key	Default/User	No
Condition 2		
Tx Characteristics		
UL Power	–70.0 to 35.0 dBm, Min, Max (0.0 dBm)	Yes
Measure Count		
Tx Power	1 to 100 times (1)	No
Freq Error/EVM	1 to 100 times (1)	No
Inner Loop Power	1 to 100 times (1)	No
Measure Time		
Current in Idle*2	1 to 180 s (1 s)	No
Current in Connected*2	1 to 180 s (1 s)	No
Inner Loop Power	Step E/Step F (Step E)	No
Origin Offset Cancel	On/Off (On)	No
Rx Characteristics		
DL Power	–110.0 to –10.0 dBm (–80.0 dBm)	Yes
Measure Time (Loop-back BER)	1 to 180 s (1 s)	No
Code Domain Power	Minimum Sensitivity/Maximum Input Level (Minimum Sensitivity)	No
Speech Test		
Delay Time	0.2 to 1.5 s (0.5 s)	
Measure Mode	Repeat/Single (Repeat)	No

*1 The settings that can be changed during the test can also be changed on the manual test screen. In addition, all W-CDMA settings in the test condition setup dialog box can be changed while the GSM test is in progress.
*2 Current consumption test is not currently supported.
*3 If you are using the YOKOGAWA's optional accessory Test USIM (Model 733065-XXX), select "Default."

Test Items

Tests on the following items can be performed.

- Call setup from NW and Call setup from UE
- Call release from NW and Call release from UE
- Speech test: Delay time (0.2 to 1.5 s)
- Test Loop Close and Test Loop Open
- Frequency handover
- Radio characteristics test
  - Tx characteristics test: Transmitter power, frequency error, and modulation accuracy (set the measurement count in the test condition setup dialog box)
  - Rx characteristics test: Loopback BER (set the measurement time in the test condition setup dialog box)

Setting the Uplink Power Value or Downlink Power Value

- **Uplink power setting in the Tx characteristics test**
  When the Tx characteristics test is in progress, the power is controlled so that the uplink power of the mobile phone under test matches the value specified on the screen.

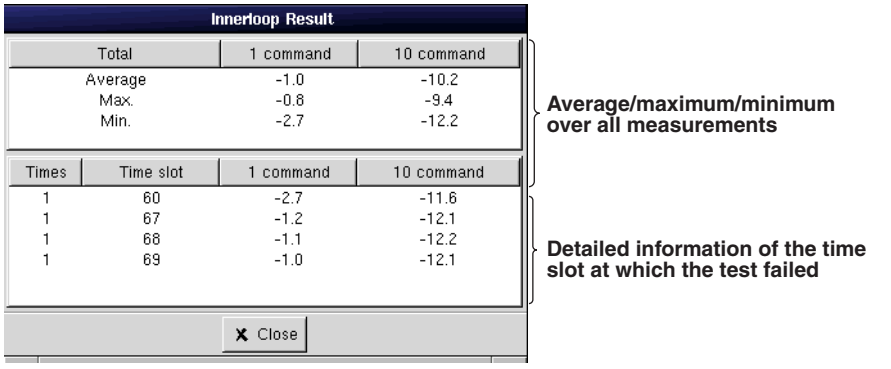
- **Downlink power setting in the Rx characteristics test**
  The downlink transmission power during the Rx characteristics test (loopback BER) is set to the DL power value dedicated to the Rx characteristics test specified on the screen.

Detailed Display of the Inner Loop Power Measurement Results

- **Average/maximum/minimum**
  The average, maximum, and minimum values are displayed for the specified number of measurement counts, for each command, and for every 10 commands.
- **Detailed display of the time slot for which the judgement resulted in Fail**
  The following information is displayed for all time slots that failed.
  - Measurement count (the nth measurement)
  - Time slot number
  - Power difference for each command
  - Power difference for every 10 commands

- **Criteria of the inner loop power measurement**
  The judgement is Pass if the measured value is within the following range. Otherwise, the judgement is Fail.

	Step E	Step F
1 command	–1.5 dB to –0.5 dB	0.5 dB to 1.5 dB
10 commands	–12.0 dB to –8.0 dB	8.0 dB to 12.0 dB

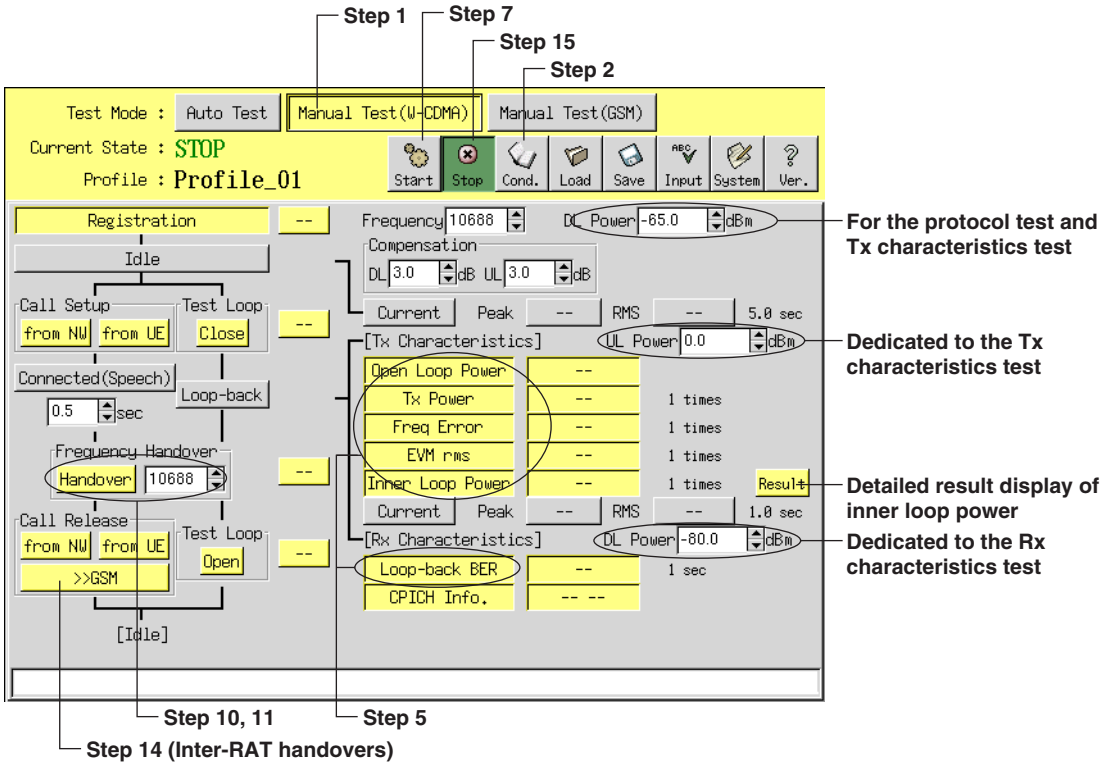


Note

- An established call (connected mode) using call setup from NW or call setup from UE can only be released using call release from NW or call release from UE. The call cannot be released using test loop open.
- A loopback established using test loop close can only be released using test loop open. The loopback cannot be released using call release from NW or call release from UE.
- While the test is in progress, changes cannot be made to the radio characteristics test item selection, speech test item selection and measurement count/measurement time. Stop the test temporarily and make the change.
- The measurement count setting applies to both frequency error and modulation accuracy.
- The uplink power setting of the Tx characteristics test is applied only when the Tx characteristics test is in progress. The uplink power value when the Tx characteristics test is not in progress is controlled so that it is always at maximum power.
- The DL power assigned specifically for the Rx characteristics test is applied only during the Rx characteristics test. The downlink power for tests other than the Rx characteristics test is the value specified for the DL power of the protocol/Tx characteristics test.
- The settings such as RF adjustment, and downlink power also follow the model parameter values in the manual test mode.

Procedure

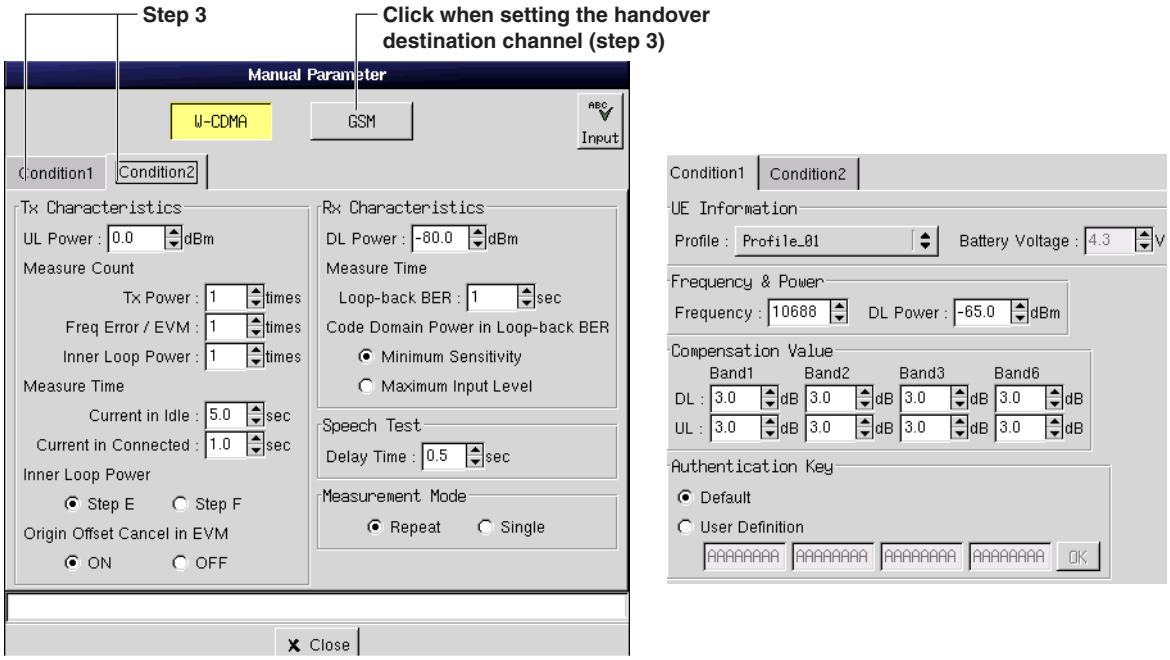
1. Click the **Manual Test (W-CDMA)** to display the following screen.



Setting the Test Conditions

2. Click **Cond**. The W-CDMA test condition setup dialog box opens.
3. Set the items for Condition 1 and Condition 2.
   The handover destination frequency band/channel is specified using BCCH/TCH on the screen that appears when the GSM button is clicked. For the procedure of setting the GSM test conditions, see section 4.6.

4. Click **Close**.
   You can also load the saved test conditions. For the saving/loading procedure of test conditions, see section 4.10.



Selecting the Radio Characteristics Test Items

5. Click the **Connected (Speech)** button, or click the buttons corresponding to **Tx Power**, **Freq. Error**, and **EVM rms** of Tx characteristics, **loopback BER** of Rx characteristics, and set the indication color of the buttons to a cream color (measured) or a gray color (not measured).

Setting the Delay Time (Speech Test)

6. Click the ▲▼ button or click **Input** and set the delay time.

Executing the Registration Test

7. Turning ON the power to the mobile phone under test after pressing **START** on the front panel or clicking **Start** on the screen starts the registration test. When the registration test completes normally, the VC200 indicates “Pass” and enters the idle mode. When in idle mode, the [Idle] indication on the screen turns orange. If the test does not complete normally, the VC200 indicates “Fail” and terminates the test.

Call Setup

8. Click the **Call Setup** from NW or **Call Setup** from UE button. When a call is established normally, the VC200 indicates “Pass.” When a call is established, the [Connected] indication on the screen turns orange. Otherwise, the VC200 indicates “Fail” and returns to the idle mode, or the test is forcibly terminated.
   When a call is established, the radio characteristics test items selected in step 5 are repeatedly measured until the call is released.
   In the Tx characteristics test (Tx power, frequency error, and modulation accuracy), the average of the measured results of the specified count is displayed.
   In the inner loop power test, the number of time slots that failed is displayed. The measurement result of the Rx characteristics test is always SyncLoss.

Call Establishment

9. Click the Test Loop **Close** button. When a loopback is established normally, the VC200 indicates “Pass” and the [Loopback] indication on the screen turns orange. Otherwise, the VC200 indicates “Fail” and returns to the idle mode, or the test is forcibly terminated.
   When a loopback is established, the radio characteristics test items specified in step 5 are repeatedly measured until the loopback is released.
   In the Tx characteristics test (Tx power, frequency error, and modulation accuracy), the average of the measured results of the specified count is displayed.
   In the inner loop power test, the number of time slots that failed is displayed. In the Rx characteristics test, the measured result of BER over the specified time is displayed.

Frequency handover

10. Click the ▲▼ button or click Input and set the frequency.
11. Click the **handover** button. If the frequency switches normally, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail” and terminates the test.

Call Release (When a Call Is Established Using Call Setup from NW or Call Setup from UE ([Connected] Indication Is Orange))

12. Click the **Call Release** from NW or **Call Release** from UE button. When the call is released normally, the VC200 indicates “Pass” and returns to the idle mode. Otherwise, the VC200 indicates “Fail” and returns to the idle mode, or the test is forcibly terminated.

Loopback Release (When a Loopback Is Established ([Loopback] Indication Is Orange))

13. Click the Test Loop **Open** button. When the loopback is opened normally, the VC200 indicates “Pass” and returns to the idle mode.
    Otherwise, the VC200 indicates “Fail” and returns to the idle mode, or the test is forcibly terminated.

Handover (When a Call Is Established Using Call Setup from NW or Call Setup from UE ([Connected (Speech)] Indication Is Orange))

14. Click the **>> GSM** button. The manual test screen for GSM appears, and a handover is made to the frequency band/channel specified for BCCH/TCH in the GSM test condition setup dialog box. For the procedure of setting the GSM test conditions, see section 4.6.

Terminating the Test

15. Press **STOP** on the front panel or click **Stop** on the screen to terminate the manual mode. However, the Stop button cannot be used if there is a dialog box shown on the screen.

4.9 Manual Test Mode (GSM)

Function

In the manual test mode, the idle mode is maintained when the mobile phone's power is turned ON after starting the test.
In the idle mode, location update, call setup (call setup from NW or call setup from UE) or GPRS can be executed.
When a call is established, communication/speech test, frequency handover test, or loopback test can be executed.
When the VC200 enters the communication/speech test mode after a call is established by call setup from NW or call setup from UE, the call can be released using call release from NW or call release from UE. Loopback can be released by transiting back to call connected condition during loopback. When a call is released, the VC200 returns to the idle mode.
During loopback, the test items of the radio characteristics (FER/RBER) are repeatedly measured. To reselect the items of the speech test or radio characteristics test, terminate the test once.

Speech Test

The speech test is executed using the VC200 loopback mode and continues until the call is released.

Radio Characteristics Test

In the Tx characteristics (Tx power, burst timing*, frequency error, and phase error) test, the average value of the specified measurement count is repeatedly measured, and the values are displayed.
In the Rx characteristics test, the Rx quality and Rx level are received from the mobile phone under test, and the values are displayed.
In the FER/RBER test, the bit error ratio (BER) is measured on the uplink output signal that is looped back from the mobile phone under test, and the values are displayed. The bit error ratio can be measured only during the loopback mode.

* If the judgement result is Fail in the burst timing test, the VC200 terminates the measurement even if the specified number of measurements has not been reached and moves to the next test. In addition, the uplink output signal during the burst timing test and the power burst template can be displayed on a graph. This allows you to check the signal status on the screen when the judgement result is Fail.

Setting the Test Conditions

Set the conditions necessary for executing the manual test. The settings can be saved and loaded.
For the saving and loading procedure, see section 4.10.

Item	Selectable Range (Default Value)	Change during the Test*1
Condition 1		
Frequency & Power		
BCCH (frequency band/channel number)*2		No
TCH (frequency band/channel number)*2		Yes
DL Power	–110.0 to –10.0 dBm (–65.0 dBm)	Yes
Compensation Value		
DL	GSM900/DCS1800/PCS1900	
	0.0 to +30.0 dB (3.0 dB)	Yes
UL	GSM900/DCS1800/PCS1900	
	0.0 to +30.0 dB (3.0 dB)	Yes

*1 The settings that can be changed during the test can also be changed on the manual test screen. In addition, all GSM settings in the test condition setup dialog box can be changed while the W-CDMA test is in progress.
*2 When an Inter-RAT handovers is executed, a handover is made from the W-CDMA system to this frequency band/channel number.

Item	Selectable Range (Default Value)	Change during the Test*1
Tx Characteristics		
UL Power	0 to 31 (5)	Yes
Measure Count		
Tx Power	1 to 100 times (1)	No
Burst Timing	1 to 100 times (1)	No
Phase/Freq Error	1 to 100 times (1)	No
Rx Characteristics		
DL Power	–110.0 to –10.0 dBm (–65.0 dBm)	Yes
Measure Time (FER-RBER)	1 to 180 s (1 s)	No
Speech Test		
Delay Time	0.2 to 1.5 s (0.5 s)	Yes
Condition 2		
Power Control		
UL Power	SACCH/Assignmrnt Command (SACCH)	No
Power Control Mode	Normal/Simple (simple)	No
Measurement Mode	Repeat/Single (repeat)	No

*1 The settings that can be changed during the test can also be changed on the manual test screen. In addition, all GSM settings in the test condition setup dialog box can be changed while the W-CDMA test is in progress.

Test Items

Tests on the following items can be performed.

- GPRS Test: The Attach/Detach test for GPRS can be executed when the VC200 is in idle mode.
- Call setup from NW and Call setup from UE
- Call release from NW and Call release from UE
- Speech (delay time: 0.2 to 1.5 s)
- Frequency handover: The radio characteristics test can be executed by making frequency handovers while the call is established. Select the frequency band, and then set the frequencies for the handover. The following settings can be changed if the test is not in progress.
  BCCH: Can be changed when the test is stopped.
  TCH: Can be changed when in idle mode or when the test is stopped.
- Loopback
- Radio characteristics test
  - Tx characteristics test: Tx power, burst timing, phase error, and frequency error (set the measurement count in the test condition setup dialog box)
  - Rx characteristics test: Rx quality and Rx level (measurement count: fixed to 1)
  - FER/RBER test: FER (frame erasure ratio), RBER (residual bit error ratio) (set the measurement time in the test condition setup dialog box)

Setting the Uplink Power Value or Downlink Power Value

- **Uplink power setting in the Tx characteristics test**
  When the Tx characteristics test is in progress, the power control level on the mobile phone under test is controlled so that the uplink power of the mobile phone matches the value specified on the screen.
- **Downlink power setting in the Rx characteristics test**
  The downlink transmission power during the Rx characteristics test (FER/RBER test) is set to the DL power value dedicated to the Rx characteristics test specified on the screen.

Example of an Uplink Signal Graph

The uplink signal and the power burst template can be displayed on a graph during the burst timing test in the radio characteristics test.

- **Waveform zoom function**
  The display scale (Top Level, Bottom Level, Begin Time, and End Time) can be changed. You can expand the section of the waveform that failed by changing the scale.
  The selectable range for each parameter is as follows:
  Top Level: Bottom Level to 10 dB
  Bottom Level: –50 dB to Top Level
  Begin Time: –28 μs to End Time
  End Time: Begin Time to 570 μs

- **Screen hold function**
  If the Fail Hold check box is selected, the updating of the screen stops when the signal goes out of the template (holds the screen at the point the test failed).

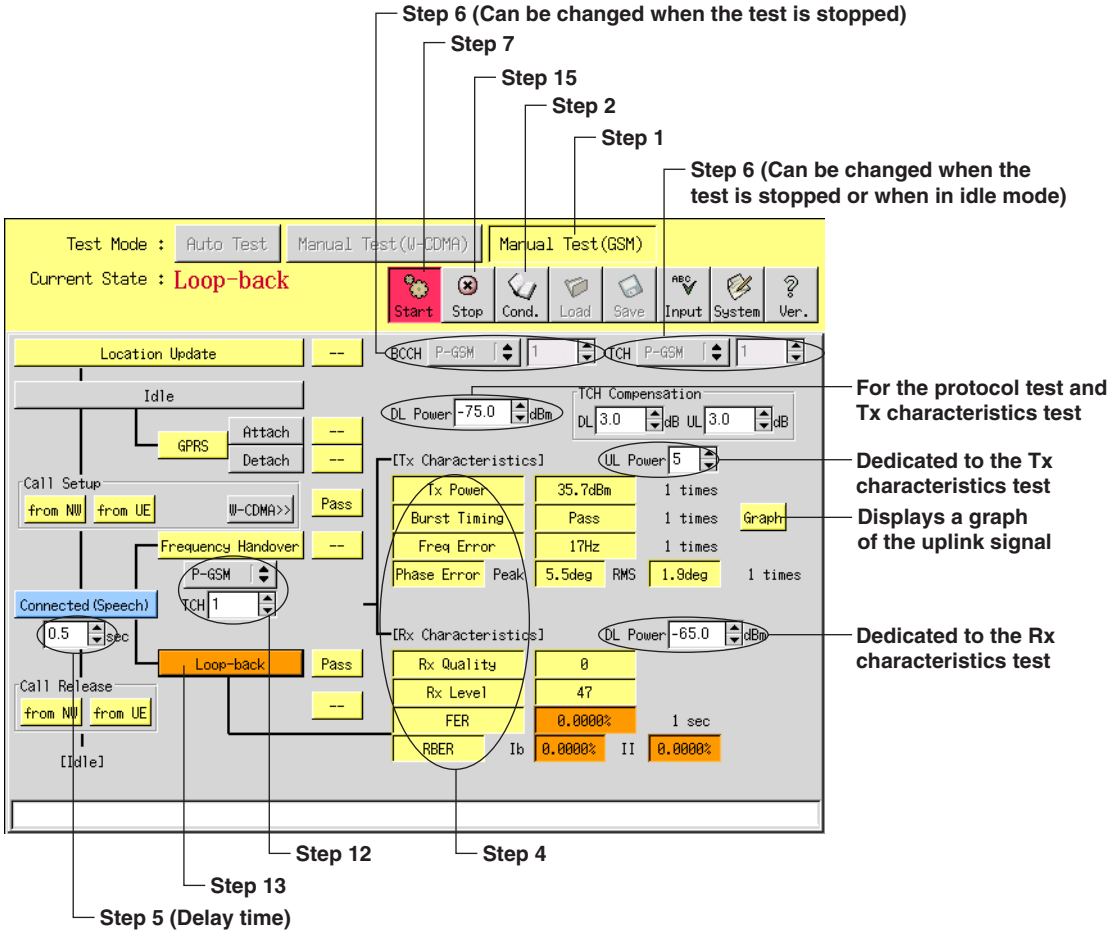
- **Scrolling the Screen**
  If you drag the screen with the mouse, you can scroll the screen horizontally or vertically.

Note

- While the test is in progress, changes cannot be made to the speech test selection or the radio characteristics test item selection, measurement count/measurement time, etc. Stop the test temporarily and make the change.
- The measurement count setting applies to both phase error and frequency error.

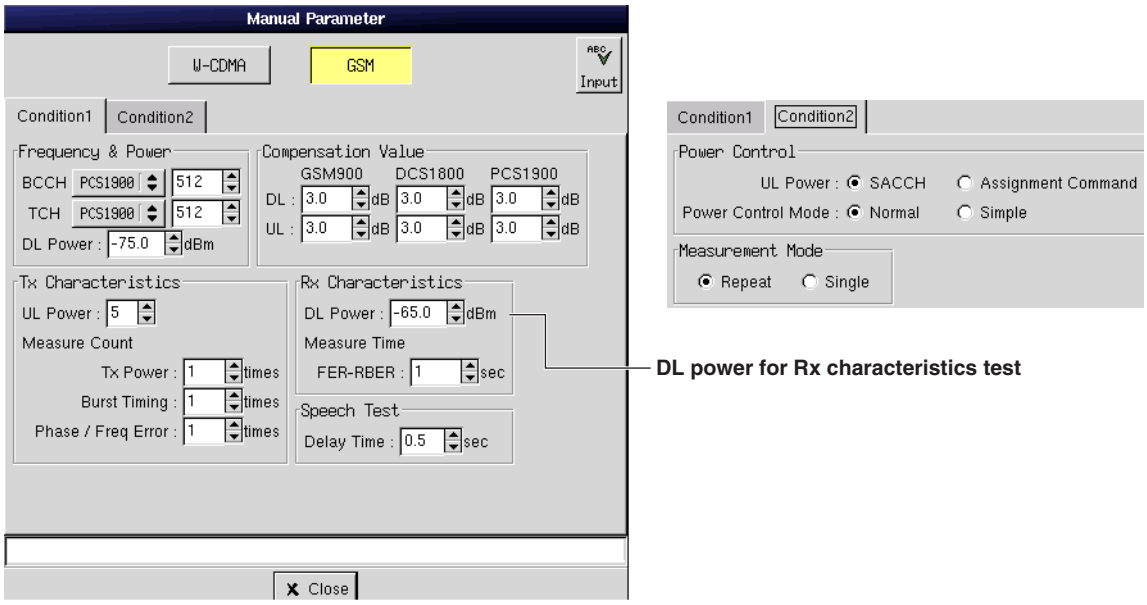
Procedure

1. Click the **Manual Test (GSM)** to display the following screen.



Setting the Test Conditions

2. Click **Cond**. The GSM test condition setup dialog box opens.
3. Enter settings for condition 1 and condition 2.
4. Click **Close**.
   You can also load the saved test conditions. For the saving/loading procedure of test conditions, see section 4.10.



Selecting Test Items

4. From the radio characteristic test items, click the buttons corresponding to the items you wish to execute the test. Cream-colored buttons correspond to items are to be measured. Grey buttons correspond to items that are excluded from the measurement.

Setting the Delay Time (Speech Test)

5. Click the ▲▼ button or click Input and set the delay time.

Setting the Frequency to Be Used

6. Click the ▲▼ buttons to set the BCCH and GSM bands and then set TCH.

Starting the Test

7. Press **START** on the front panel or click **Start** on the screen. The VC200 enters the idle mode. When in idle mode, the [Idle] indication on the screen turns orange.
8. When the VC200 is in idle mode, turn ON the mobile phone.

Location Update

9. Click the **Location Update** button when in idle mode to execute the location update. If the location is updated correctly, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail” and aborts the test.

GPRS Test

10. Click the **GPRS** button when the VC200 is in idle mode. Location update and release are executed in the order Attach and Detach. If each test completes normally, the VC200 indicates “Pass.” Otherwise, the VC200 indicates “Fail” and aborts the test.

Call Setup

11. Click the **Call Setup from NW** or **Call Setup from UE** button. If a call is established normally, the VC200 indicates "Pass." When a call is established, the [Connected] indication on the screen turns orange. Then, the radio characteristics test is executed. If a call cannot be established, the VC200 indicates "Fail" and aborts the test.

Frequency Handover

12. Click the ▲▼ buttons to select the frequency band, change the TCH, and then click the Frequency Handover button. If the handover completes normally, the VC200 indicates "Pass" and executes the radio characteristics test. If the handover does not complete normally, the VC200 indicates "Fail" and terminates the test.

Loopback

13. Click the **Loop-back** button. The test loop close procedure is executed. If the procedure completes normally, the VC200 indicates "Pass," the **Speech** button turns light blue, and the VC200 executes the radio characteristics test (FER/RBER). If the test loop cannot be closed, the VC200 indicates "Fail" and aborts the test.
    If you click the Connected (Speech) button during loopback, the test loop open procedure is executed, and the Connected (Speech) button turns orange.

Call Release

14. Click the **Call Release from NW** or **Call Release from UE** button. When the call is released normally, the VC200 indicates "Pass" and returns to the idle mode.
    If a call cannot be released normally, the VC200 indicates "Fail" and aborts the test.

Terminating the Test

15. Press **STOP** on the front panel or click Stop on the screen to terminate the manual mode. However, the **Stop** button cannot be used if there is a dialog box shown on the screen.

Note

- If the mobile phone under test is turned ON before the VC200 enters the idle mode, the mobile phone may connect to the actual base station.
- The VC200 cannot detect whether the test loop open procedure has been completed normally on the mobile phone under test. If the mobile phone fails to complete the test loop open procedure normally, the call may be disconnected during the Tx or Rx characteristics measurement, or the test results indicated below may show errors.
  Frequency handover, loopback, call release (from NW or from UE)
- If the mobile phone under test cannot execute Attach automatically during the GPRS Attach test, manual set the mobile phone to data mode.
- Each FER/RBER test is selected and executed in Set.

4.10 Saving and Loading Test Conditions

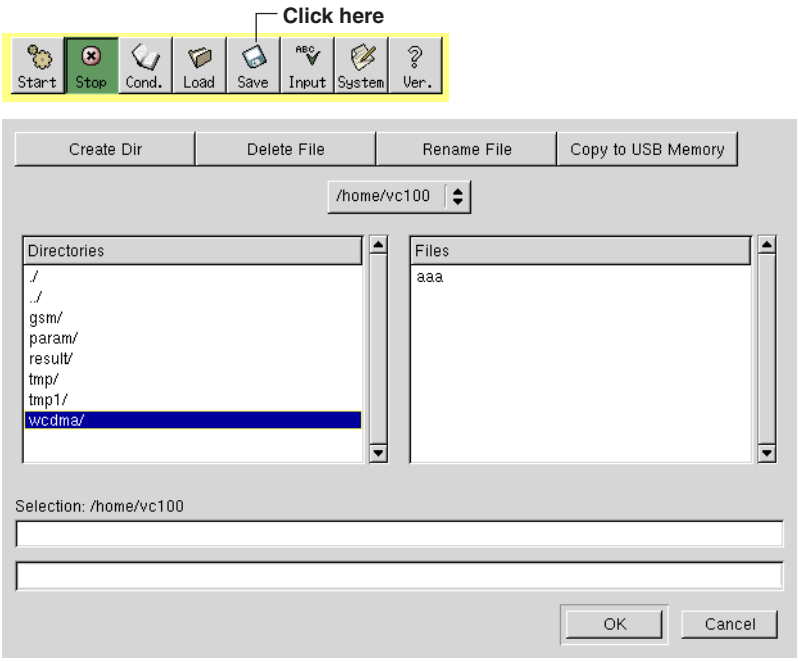
Function

The test conditions of manual test can be stored or loaded from the built-in hard disk.

Procedure

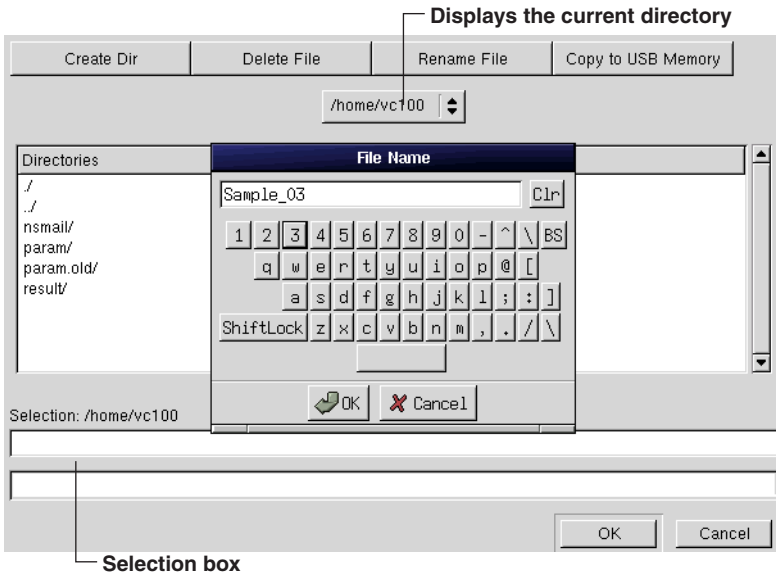
Saving the Settings

1. Click **Save** to display the File Select dialog box.



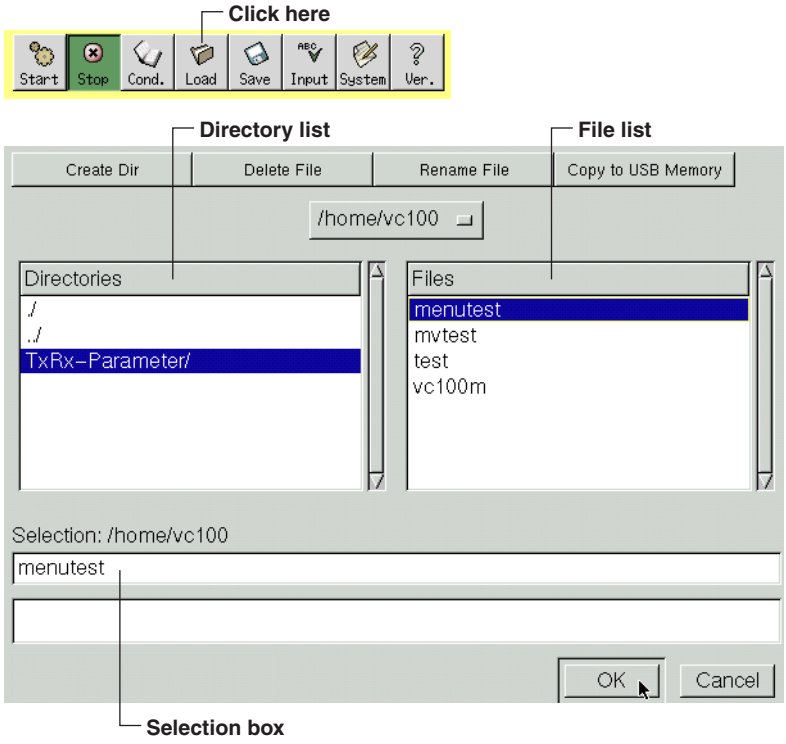
2. Select the save destination directory.
   For the procedure in selecting the directory, see section 7.1.
3. Move the cursor to the selection box and enter the name of the file to be saved using the keyboard that appears. Then, click **OK**.
   For the procedure in entering the file name, see section 3.6.

4. Click **OK** to save the parameters. Click **Cancel** to cancel the save operation.



Load the Test Conditions

1. Click **Load** to display the File Select dialog box.



2. Select the directory in which the file you wish to load exists.
   For the procedure in selecting the directory, see section 7.1.
3. Select the file you wish to load in the file list.
   The name of the selected file appears in the selection box.

4. Click **OK** to load the settings of the selected file.

Note

The number of characters and the characters that can be used in file names and directory names are indicated below.
Number of characters: 1 to 35 characters
Characters: 0 to 9, A to Z, a to z, %, _, (,), -

5.1 Selecting the Tester Mode

Function

The VC200 provides the following three tester modes.

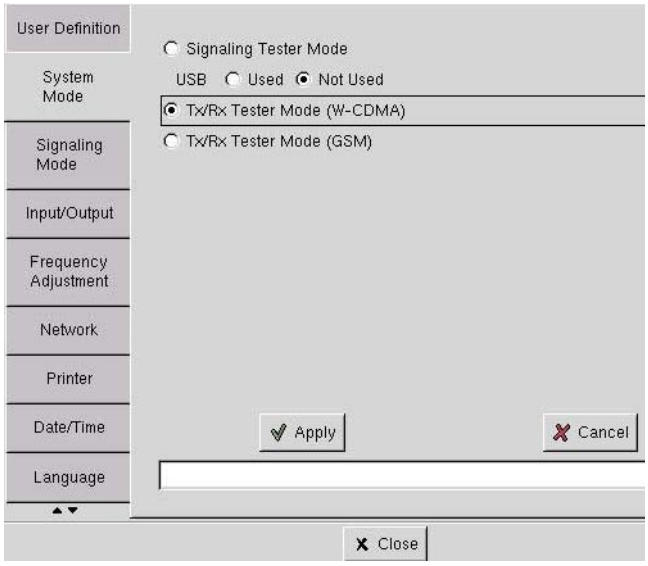
- **Signaling Tester Mode**
  With signaling operation, performs basic call connection control test and measures the radio characteristics under loopback connection. In the signaling tester mode, you can select whether the USB is used for the connection between the VC200 and the mobile phone.
- **Tx/Rx Tester Mode (W-CDMA)**
  Operates as a standard W-CDMA signal source and transmitter tester only for the physical layer without signaling operation.
- **Tx/Rx Tester Mode (GSM)**
  Operates as a standard GSM signal source and transmitter tester only for the physical layer without signaling operation.

Procedure

Testing in Tx/Rx Tester Mode

1. Click **System**.

2. Click the **System Mode** Tab to display the following screen.



3. Select the Tx/Rx Tester Mode (W-CDMA) button.
4. Click **Apply** to confirm the settings. Click **Cancel** to discard the settings.
5. Click **Close** to close the dialog box.

5.2 Downlink Settings

≡For a functional description, see section 1.3.≡

Function

Set the following parameters to carry out the receiver characteristics test.

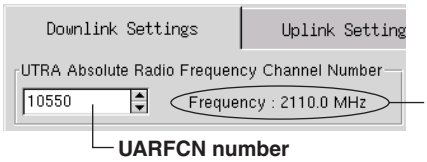
Frequency Channel Number (UARFCN)

Set the output RF frequency using the UARFCN channel number. The actual transmission frequency (actual frequency) corresponding to the specified channel is displayed to the right of the entry box.

The selectable range is as follows:

Band	UARFCN (resolution: 1)	Actual frequency
I	10550 to 10850	2110.0 MHz to 2170.0 MHz
II	9650 to 9950	1930.0 MHz to 1990.0 MHz
	412, 437, 462, 487, 512, 537, 562, 587, 612, 637, 662, 687	1932.5, 1937.5, 1942.5, 1947.5, 1952.5, 1957.5, 1962.5, 1967.5, 1972.5, 1977.5, 1982.5, 1987.5 MHz
III	1162 to 1513	1805.0 MHz to 1880.0 MHz
V	4357 to 4458	871.4 MHz to 891.6 MHz
	1007, 1012, 1032, 1037, 1062, 1087	871.5, 872.5, 876.5, 877.5, 882.5, 887.5 MHz
VI	4375 to 4425	875.0 MHz to 885.0 MHz
	1037, 1062	877.5, 882.5 MHz
IX	9237 to 9387	1847.4 MHz to 1877.4 MHz

* Band IV is not supported.



Turning ON/OFF the Modulation

You can select whether to modulate the transmission signal.

DPCH Symbol Rate

Select the symbol rage from the following:

7.5 ksps, 15 ksps, 30 ksps, 60 ksps, 120 ksps, 240 ksps, 480 ksps, and 960 ksps

Scrambling Code Number

Selectable range: 0 to 8191 (in 1 steps)

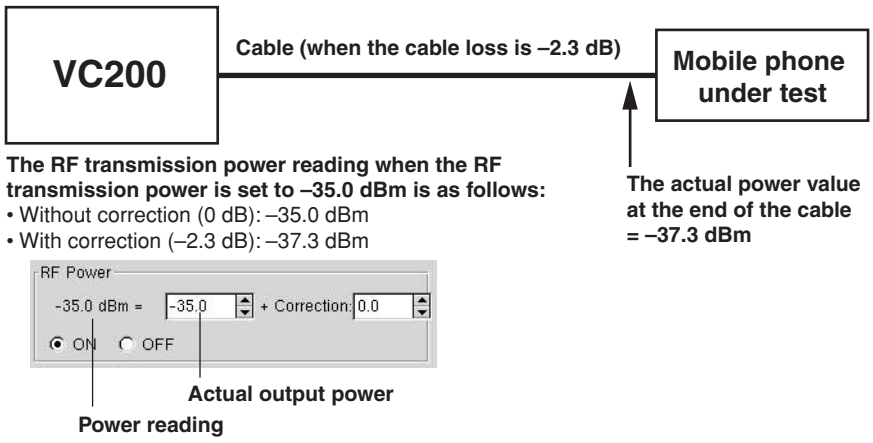
Channelization Code Number

Set the S-CPICH, PICH, and DPCH numbers. The upper limit of the number is equal to the “spread factor – 1” of the channel.

RF Power

Selectable range: –110.0 to –10.0 dBm (in 0.1 dBm steps)
By using the display correction function, the value that reflects phenomena such as the power loss of the cable can be read directly. The display correction function is applied only to the displayed value; it does not affect the actual output power.
The selectable range of the display correction value is as follows:
–40.0 to 0.0 dB (in 0.1 dB steps)

- **Correction value example**
  The value in the left entry box is the output power value at the RF input/output connector of the VC200. For example, if you set the cable loss in the correction entry box on the right, the RF transmission power on the screen displays the actual power value at the end of the cable.



Timing Offset

Set the timing offset of PICH and DPCH with respect to P-CCPCH.
Selectable range:

- PICH: 0 to 30464 chips (in 256 chip steps)
- DPCH: 0 to 144896 chips (in 256 chip steps)

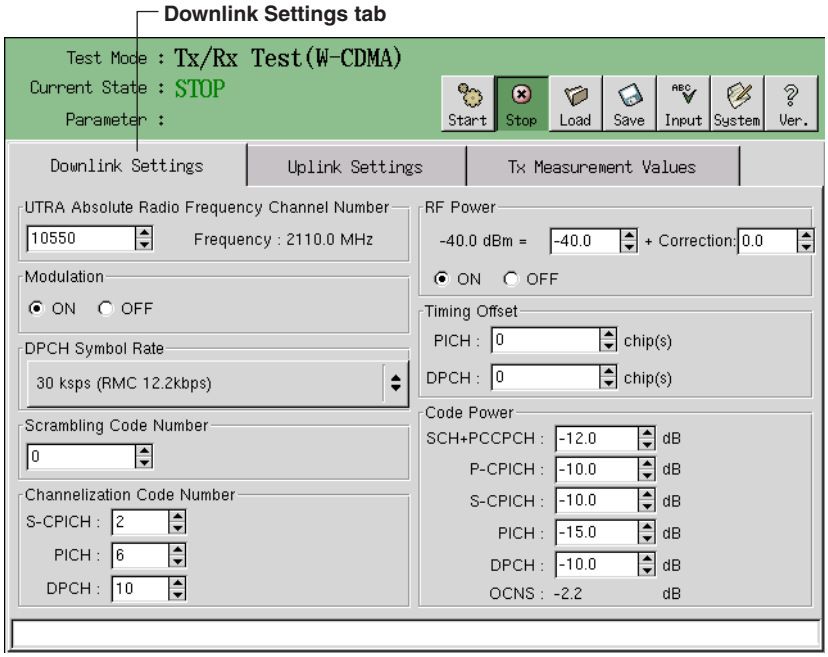
Code Power

Set the power ratio of the following code channels.
SCH+PCCPCH, P-CPICH, S-CPICH, PICH, DPCH, and OCNS*
Selectable range: –30.0 to 0.0, –∞ dB (in 0.1 dB steps)

* The remaining value of the power of each code channel with respect to the total power is input to OCNS.

Procedure

1. Click the **Downlink Settings** tab to display the following screen.



2. Set the parameters as necessary.

Note

- To maintain a constant total power after multiplexing, the channelization code setting of each code channel must maintain orthogonality.
- Since the channelization codes of DPCH and PICH can be set freely, if they are not set to achieve orthogonality, correlation between code channels occur. This causes a fluctuation in the total power. Consequently, this fluctuation appears in the RF power.
- The downlink settings are not applied to the signaling test mode.

5.3 Uplink Settings

≡For a functional description, see section 1.3.≡

Function

Set the following parameters to carry out the transmitter characteristics test.

Frequency Channel Number

The RF reception frequency is displayed using the UARFCN channel number and the actual frequency.

The number obtained by subtracting the following value from the transmission frequency channel number of the downlink settings is set automatically.

Band I: 950 (the actual frequency is 190 MHz)
Band II: 400 (the actual frequency is 80 MHz)
Band III: 225 (the actual frequency is 95 MHz)
Band V: 225 (the actual frequency is 45 MHz)
Band VI: 225 (the actual frequency is 45 MHz)
Band IX: 475 (the actual frequency is 95 MHz)

Scrambling Code Number

Set the scrambling code number of the uplink signal to be received. This number can be specified only when the mode is set to “Synchronous.”

The selectable range is as follows:

0 to 16777215 (in 1 steps)

DPDCH Bit Rate

Select the DPDCH bit rate of the uplink signal to be received. Select from the following only when the mode is set to “Synchronous.”

15 kbps, 30 kbps, 60 kbps, and 120 kbps

RF Reception Power

You can turn RF reception power input ON/OFF.

When using the instrument for output only, you can improve the power accuracy when the level of the RF output power is low by turning RF reception power input OFF. Note that measurement cannot be performed when this setting is OFF.

Mode

Set whether the uplink signal is synchronized to the downlink signal of the VC200.

Power Ratio

Select the gain ratio between the control channel side (DPCCH) and the data channel side (DPDCH) of the uplink signal to be received from the following. This value can be selected only when the mode is set to “Asynchronous.”

1/15 to 15/15

Timing Offset

Set the timing offset of the uplink signal to be received with respect to SCH+PCCPCH that the VC200 is transmitting. This value can be specified only when the mode is set to “Synchronous.”

The selectable range is as follows:

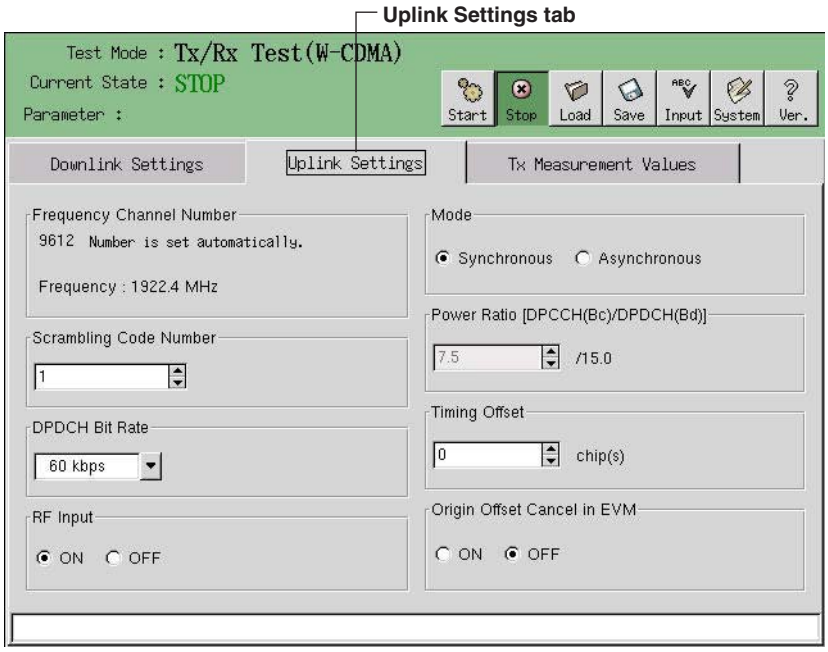
0 to 38399 chips (in 1 chip steps)

Note

Since the VC200 can compensate up to ±15 chips of offset between the uplink signal and the downlink signal of the VC200, reception in synchronous mode is possible. If the offset is greater than ±15 chips, set the timing offset and specify whether to receive the signal using synchronous or asynchronous mode.

Procedure

1. Click the **Uplink Settings** tab to display the following screen.



2. Set the parameters as necessary.

Note

The uplink settings are not applied to the signaling test mode.

5.4 Starting Uplink/Downlink and Measuring the Uplink Signal

≡For a functional description, see page 1-27.≡

Function

Starting/Stopping Downlink/Uplink (Transmission/Reception)

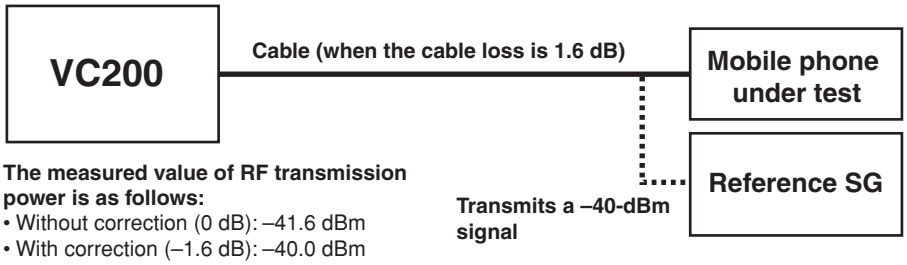
Press START on the front panel or Start on the screen to start transmission/reception.
Press STOP on the front panel or Stop on the screen to stop transmission/reception.

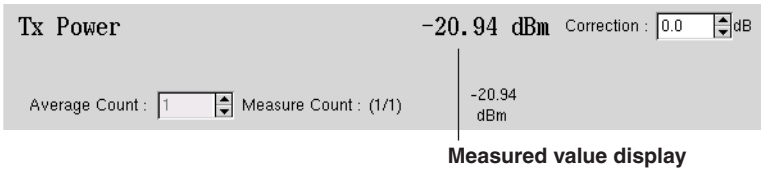
Measuring the Uplink Signal (Transmitter Characteristics)

The following parameters of the received uplink signal are measured.

- EVM
- Frequency error
- Transmission power (displays the value with the specified correction added as the measured value)

Correction Value Example of Transmission Power





Measurement Mode

Select either single or repeat.

Average

You can set an average count for the EVM/frequency error and transmission power, separately. If you do not wish to average, set the average count to 1.
Selectable range: 0 to 1000

Precautions during Transmission/Reception

When the operation is started, only the following parameters can be changed.

- **Downlink Settings**
  Frequency channel number
  Modulation
  RF Power
  Code power
- **Uplink Settings**
  Power ratio
  Timing offset
- **System > Frequency Adjustment**

Procedure

Starting Transmission/Reception

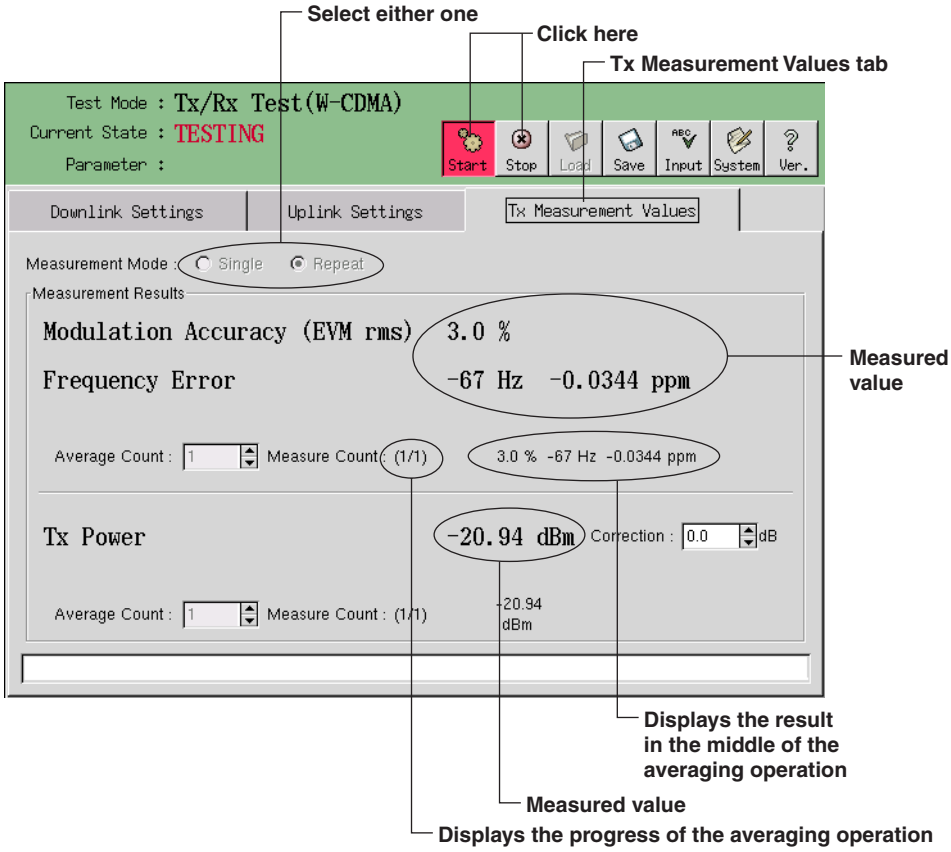
1. Press **START** on the front panel or **Start** on the screen to start signal transmission/reception.

Stopping Transmission/Reception

2. Press **STOP** on the front panel or **Stop** on the screen to stop signal transmission/reception.

Displaying the Measurement Results

3. Click the **Tx Measurement Values** tab to display the following screen.



5.5 Saving and Loading Downlink/Uplink Settings

Function

The downlink and uplink settings can be stored or loaded from the built-in hard disk.

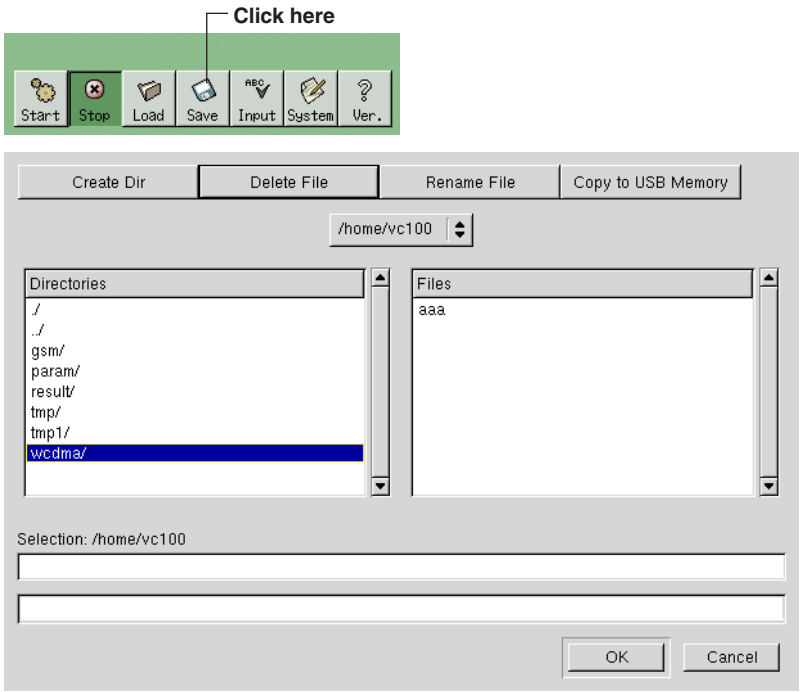
Items That Are Saved

The setup information in the Downlink Settings, Uplink Settings, and Tx Measurement Values tabs can be saved.
The contents of the setup button, measured values, and input/output settings cannot be saved.

Procedure

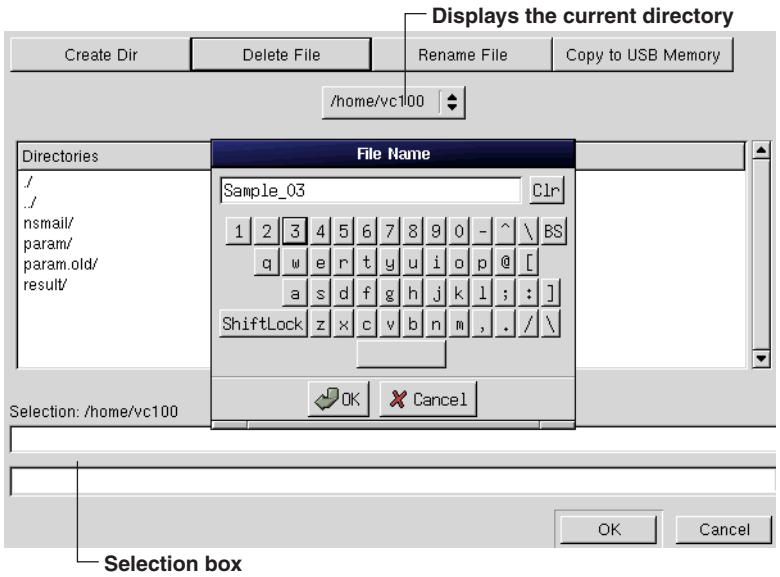
Saving the Settings

1. Click **Save** to display the File Select dialog box.



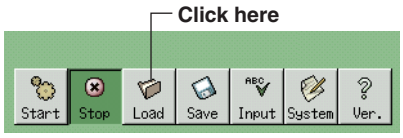
2. Select the save destination directory.
   For the procedure in selecting the directory, see section 7.1.
3. Move the cursor to the selection box and enter the name of the file to be saved using the keyboard that appears. Then, click **OK**.
   For the procedure in entering the file name, see section 3.6.

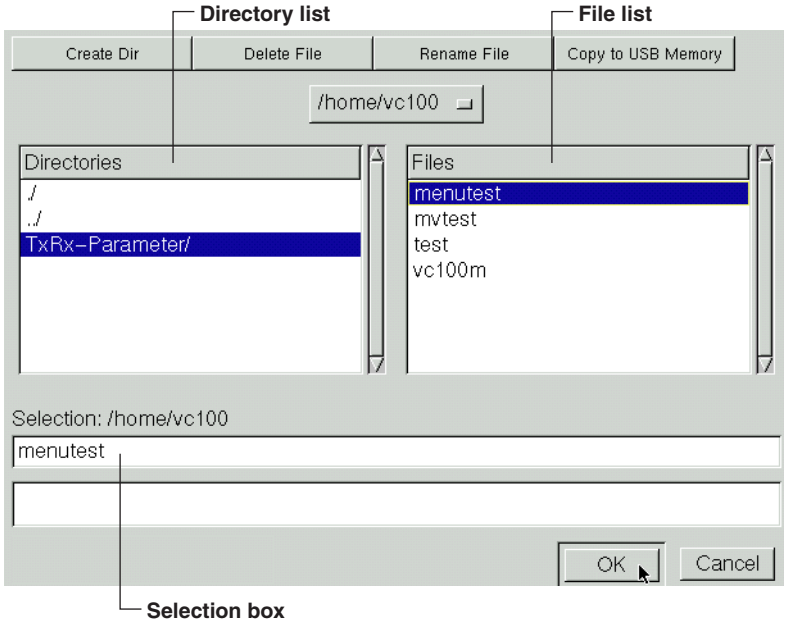
4. Click **OK** to save the parameters. Click **Cancel** to cancel the save operation.



Load the Settings

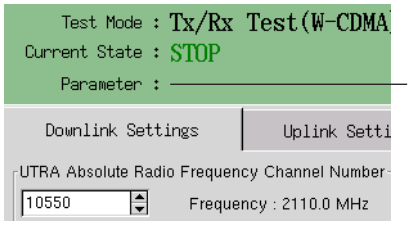
1. Click **Load** to display the File Select dialog box.





2. Select the directory in which the file you wish to load exists.
   For the procedure in selecting the directory, see section 7.1.
3. Select the file you wish to load in the file list.
   The name of the selected file appears in the selection box.

4. Click **OK** to load the settings of the selected file.
   The name of the loaded file appears by the Parameter item on the screen.



Note

The number of characters and the characters that can be used in file names and directory names are indicated below.
Number of characters: 1 to 35 characters
Characters: 0 to 9, A to Z, a to z, %, _, (,), -

6.1 Selecting the Tester Mode

Function

The VC200 provides the following three tester modes.

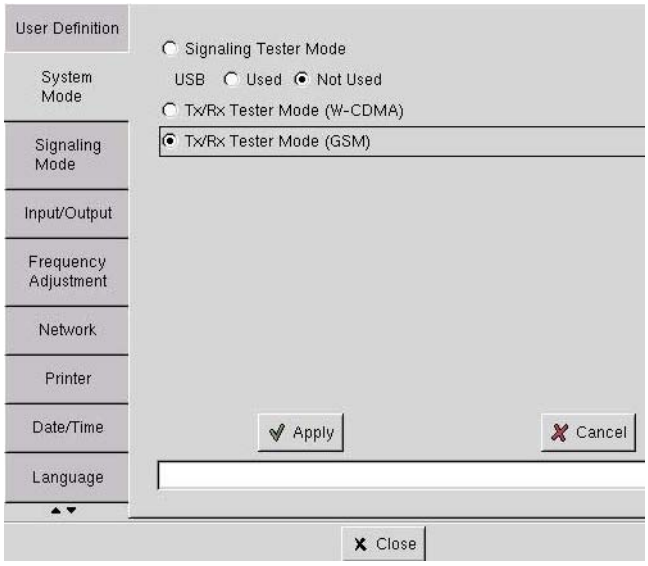
- **Signaling Tester Mode**
  With signaling operation, performs basic call connection control test and measures the radio characteristics under loopback connection. In the signaling tester mode, you can select whether the USB is used for the connection between the VC200 and the mobile phone.
- **Tx/Rx Tester Mode (W-CDMA)**
  Operates as a standard W-CDMA signal source and transmitter tester only for the physical layer without signaling operation.
- **Tx/Rx Tester Mode (GSM)**
  Operates as a standard GSM signal source and transmitter tester only for the physical layer without signaling operation.

Procedure

Testing in Tx/Rx Tester Mode

1. Click **System**.

2. Click the **System Mode** Tab to display the following screen.



3. Select the Tx/Rx Tester Mode (GSM) button.
4. Click **Apply** to confirm the settings. Click **Cancel** to discard the settings.
5. Click **Close** to close the dialog box.

6.2 Downlink Settings

≡For a functional description, see section 1.4.≡

Function

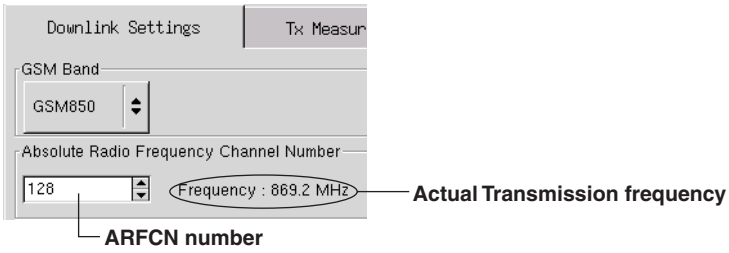
Set the following parameters to carry out the receiver characteristics test.

Frequency Channel Number (ARFCH)

Set the output RF frequency using the ARFCH channel number. The actual transmission frequency (actual frequency) corresponding to the specified channel is displayed to the right of the entry box. The Rx frequency is indicated under Uplink Frequency

The selectable channel numbers vary depending on the GSM Type as follows:

GSM Type	Selectable Channel Numbers
GSM850	128 to 251
P-GSM	1 to 124
E-GSM	0 to 124, 975 to 1023
R-GSM	0 to 124, 955 to 1023
DCS1800	512 to 885
PCS1900	512 to 810



Modulation Mode

The modulation mode of the transmitted signal is selected from below.

- OFF: Not modulated.
- All 0: All transmission data are modulated as 0s.
- BCCH: The transmission data is modulated as BCCH.
- PN: The transmission data is modulated as a PN pattern.

RF Power

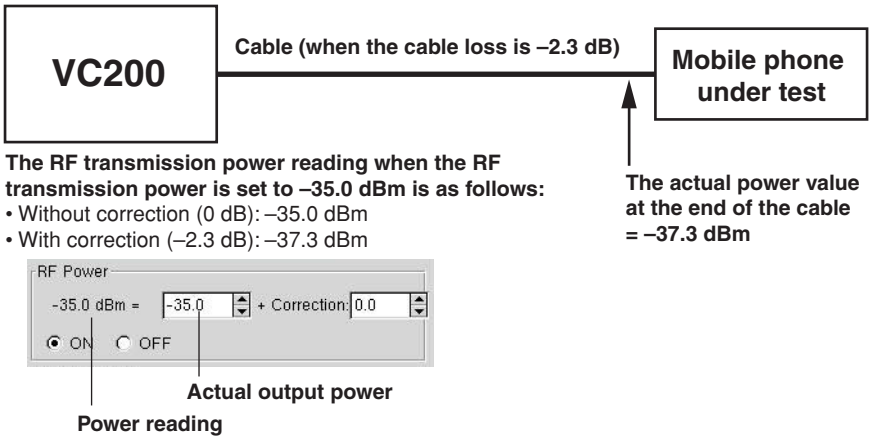
Selectable range: –110.0 to –10.0 dBm (in 0.1 dBm steps)

By using the display correction function, the value that reflects phenomena such as the power loss of the cable can be read directly. The display correction function is applied only to the displayed value; it does not affect the actual output power.

The selectable range of the display correction value is as follows:

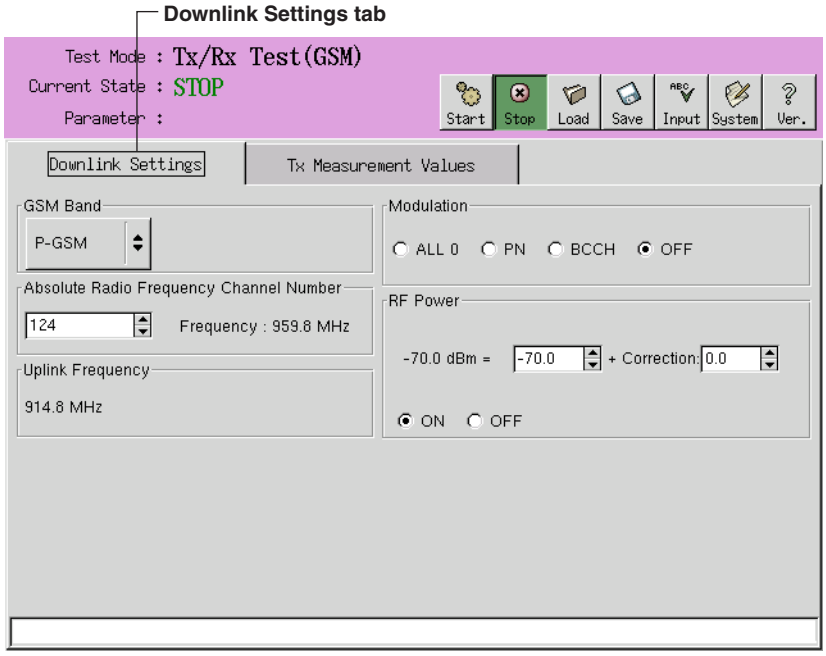
–40.0 to 0.0 dB (in 0.1 dB steps)

- **Correction value example**
  The value in the left entry box is the output power value at the RF input/output connector of the VC200. For example, if you set the cable loss in the correction entry box on the right, the RF transmission power on the screen displays the actual power value at the end of the cable.



Procedure

1. Click the **Downlink Settings** tab to display the following screen.



2. Set the parameters as necessary.

Note

The downlink settings are not applied to the signaling test mode.

6.3 Starting Uplink/Downlink and Measuring the Uplink Signal

≡For a functional description, see page 1-30.≡

Function

Starting/Stopping Downlink/Uplink (Transmission/Reception)

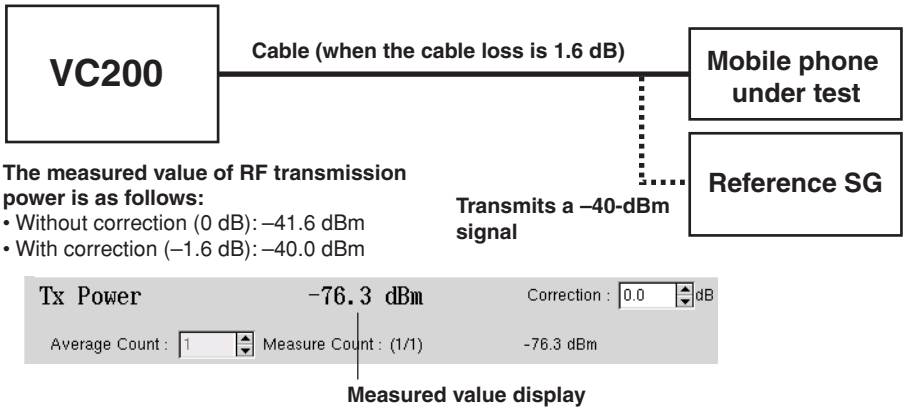
Press START on the front panel or Start on the screen to start transmission/reception.
Press STOP on the front panel or Stop on the screen to stop transmission/reception.

Measuring the Uplink Signal (Transmitter Characteristics)

The following parameters of the received uplink signal are measured.

- Phase error
- Frequency error
- Tx power (displays the value with the specified correction added as the measured value)
- Burst timing

Correction Value Example of Transmission Power



Measurement Mode

Select either single or repeat.

Rx Mode

Set the format of the signal to be applied to the VC200 to Burst or CW.
If CW is selected, only the Tx power is measured.

RF Reception Power

You can turn RF reception power input ON/OFF.
When using the instrument for output only, you can improve the power accuracy when the level of the RF output power is low by turning RF reception power input OFF. Note that measurement cannot be performed when this setting is OFF.

Average

You can set an average count for the phase error/frequency error and transmission power, separately. If you do not wish to average, set the average count to 1. To disable the measurement of each item (phase error/frequency error and transmission power), set the average count to 0.
Selectable range: 0 to 1000

Burst Timing

- **Result display**
  The VC200 measures the burst timing the specified number of counts, determines whether the burst is within the criteria range (power burst template), and displays the result. If the test fails in the middle of the repeated measurements, the measurement ends at that point.
  To not measure the burst timing, set the count to 0.
  Selectable range: 0 to 1000

Result over the Specified Number of Counts	Result of Each Measurement	Description
Pass	Pass	All burst signals are within the criteria.
Fail	TSC Fail	Training sequence error
Fail	Fail	Power measurement timeout
Fail_|	Fail_|	The signal rising section is outside the template.
Fail~	Fail~	The center section of the signal is outside the template
Fail|_	Fail|_	The signal falling section is outside the template.

- **Graph display**
  The uplink signal and power burst template can be displayed on a graph. You can check the burst waveform at the point the test failed. For details on how to display the graph, see section 4.6.

Precautions during Transmission/Reception

When the operation is started, only the following parameters can be changed.

- **Downlink Settings**
  Frequency channel number
  Modulation
  RF Power
- **System > Frequency Adjustment**

Procedure

Starting Transmission/Reception

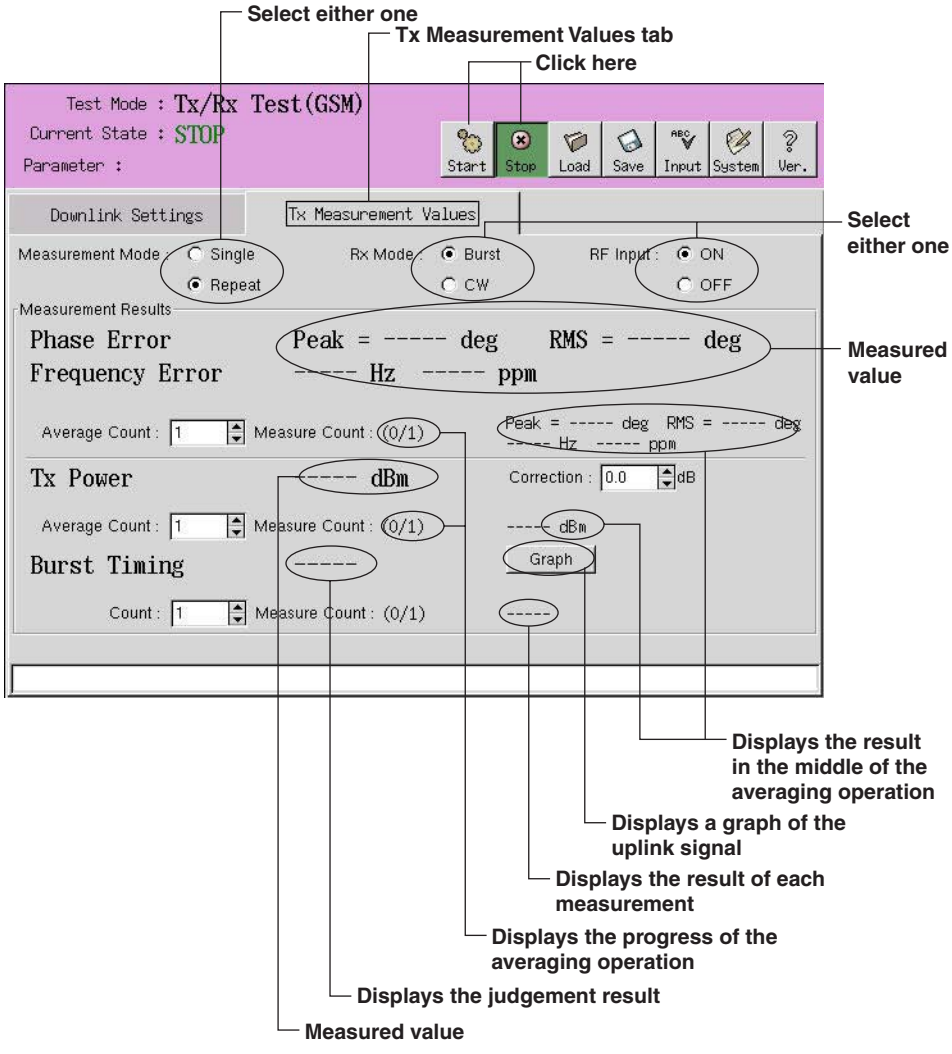
1. Press **START** on the front panel or **Start** on the screen to start signal transmission/reception.

Stopping Transmission/Reception

2. Press **STOP** on the front panel or **Stop** on the screen to stop signal transmission/reception.

Displaying the Measurement Results

3. Click the **Tx Measurement Values** tab to display the following screen.



6.4 Saving and Loading Downlink/Uplink Settings

Function

For a description of this function, see section 5.5.

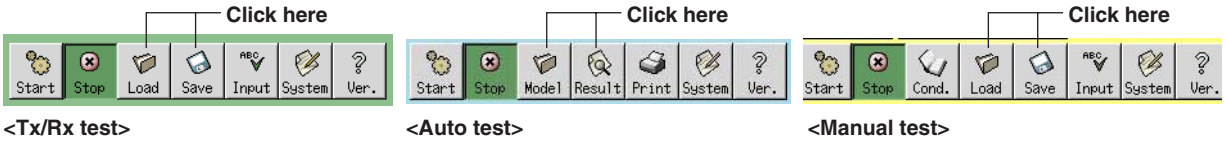
Procedure

For the operating procedure, see section 5.5.

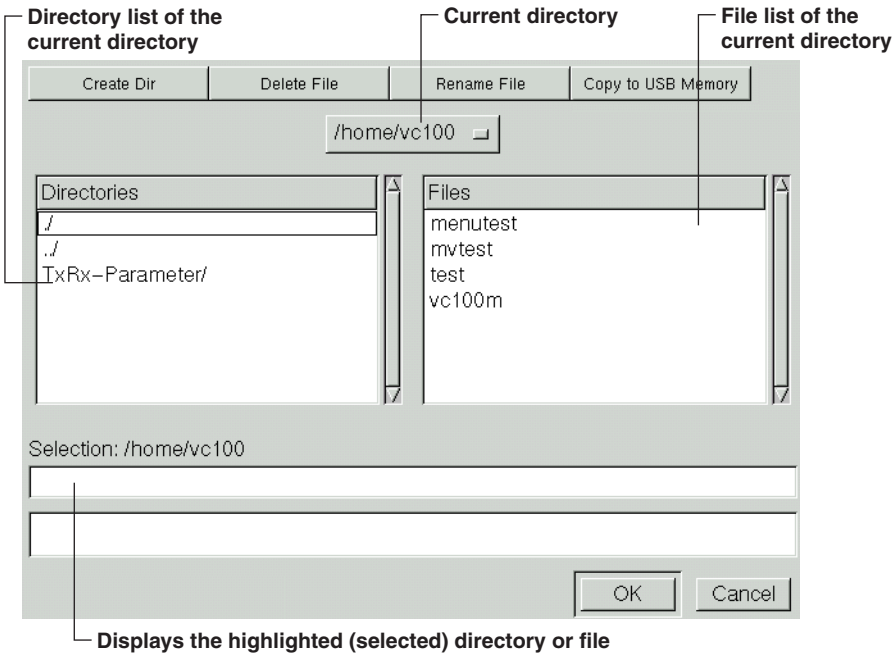
7.1 Selecting Directories and Files

Procedure

1. The following dialog box appears when you click **Save** or **Load** or select **Model** > **Load** or **Result** > **Ref**.



<Tx/Rx test> <Auto test> <Manual test>



Selecting the Current Directory

2. On the directory list, select the directory you wish to make current and double-click it.
   The current directory changes to the selected directory.

Selecting a File

3. Select the file on the file list.
   The name of the selected file appears in the selection box.

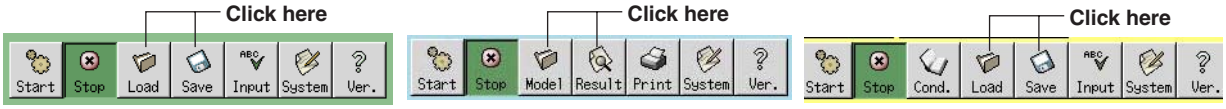
7.2 Creating Directories

Function

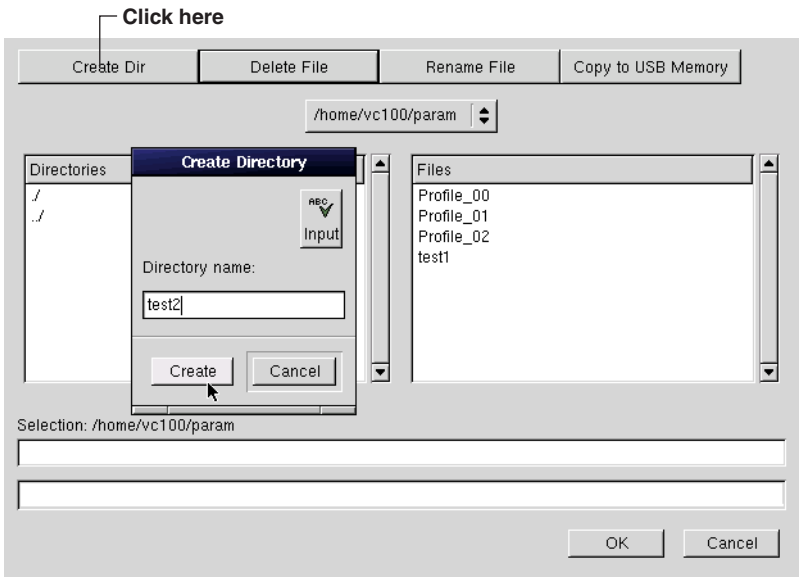
Directories are created under the current directory.

Procedure

1. The following dialog box appears when you click **Save** or **Load** or select **Model** > **Load** or **Result** > **Ref**.



<Tx/Rx test> <Auto test> <Manual test>



2. Select the current directory according to the procedure given in section 7.1.
3. Click **Create Dir** to display the Create Directory dialog box.
4. Click **Input** to display the keyboard, enter the directory name, and click **Create**.
   The directory is created under the current directory.
   Click **Cancel** to abort creating the directory.

Note

- The following five file names cannot be used.
  AUX, CON, PRN, NUL, and CLOCK
- The number of characters and the characters that can be used in file names and directory names are indicated below.
  Number of characters: 1 to 35 characters
  Characters: 0 to 9, A to Z, a to z, %, _, (,), -

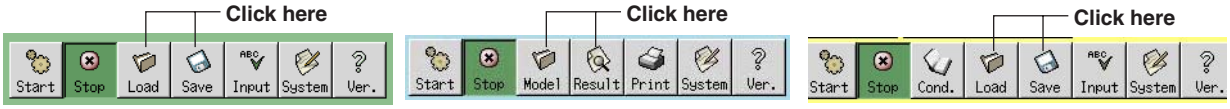
7.3 Deleting Directories and Files

Function

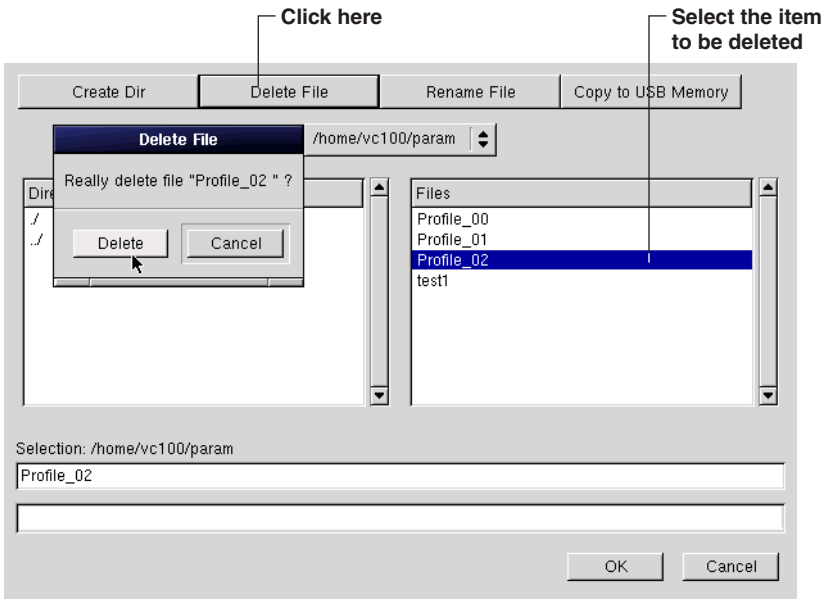
You can delete directories or files. You cannot delete a directory that contains files.

Procedure

1. The following dialog box appears when you click **Save** or **Load** or select **Model** > **Load** or **Result** > **Ref**.



<Tx/Rx test> <Auto test> <Manual test>



2. Set the directory to be deleted or the directory containing the file to be deleted the current directory according to the procedure given in section 7.1.
3. Highlight the directory or file to be deleted.
4. Click **Delete File** to display the Delete File dialog box.
5. Click **Delete** to delete the selected file or directory.
   Click **Cancel** to abort deleting the file or directory.

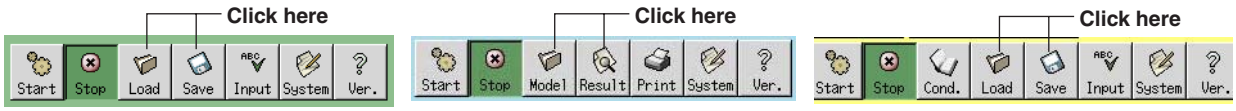
7.4 Renaming Files

Function

You can rename directories and files.

Procedure

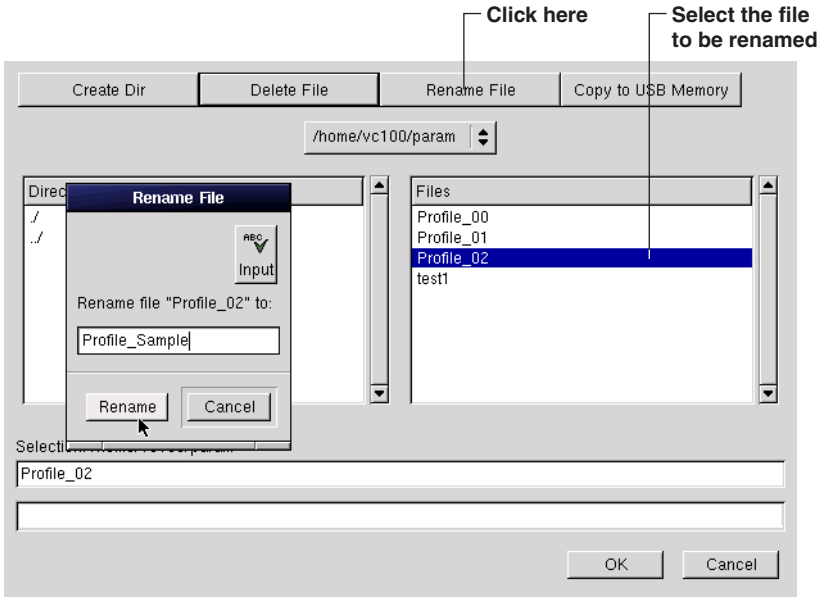
1. The following dialog box appears when you click **Save** or **Load** or select **Model** > **Load** or **Result** > **Ref**.



<Tx/Rx test>

<Auto test>

<Manual test>



2. Set the directory to be renamed or the diredH ry containing the file to be renamed the current directory according to the procedure given in section 7.1.
3. Highlight the directory or file to be renamed.
4. Click **Rename File** to display the Rename File dialog box.
5. Click **Input** to display a keyboard and enter the new directory or file name. Click **Rename** to rename the directory or file name.
   Click **Cancel** to abort changing the name.

Note

- The selection box shows the selected directory name or file name. You can change the character string that appears in the selection box using the keyboard.
- The following five file names cannot be used.
  AUX, CON, PRN, NUL, and CLOCK
- The number of characters and the characters that can be used in file names and directory names are indicated below.
  Number of characters: 1 to 35 characters
  Characters: 0 to 9, A to Z, a to z, %, _, (,), -

7.5 Copying Files

Function

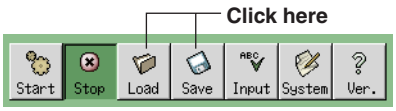
Files can be copied to a USB memory. If multiple files are copied collectively, the copy operation is aborted when there is no more free space left on the USB memory.

Note

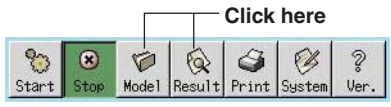
- The contents of the USB memory cannot be viewed from the VC200.
- Only one type of USB memory can be inserted/removed while the VC200 is turned ON. If you are using a different type of USB memory, be sure to turn OFF the VC200 when inserting or removing the USB memory.
- The USB memories below have been tested for compatibility.
  - **USB memories**
    - EDM-128M (by IO Data Device, Inc.)
    - RUF-128M (by BUFFALO INC.)
    - JDS064 (by Lexar Media, Inc.)
    - Flash D-Mini 128 (by Imation Corporation)

Procedure

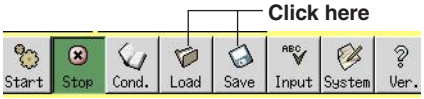
1. The following dialog box appears when you click **Save** or **Load** or select **Model** > **Load** or **Result** > **Ref**.



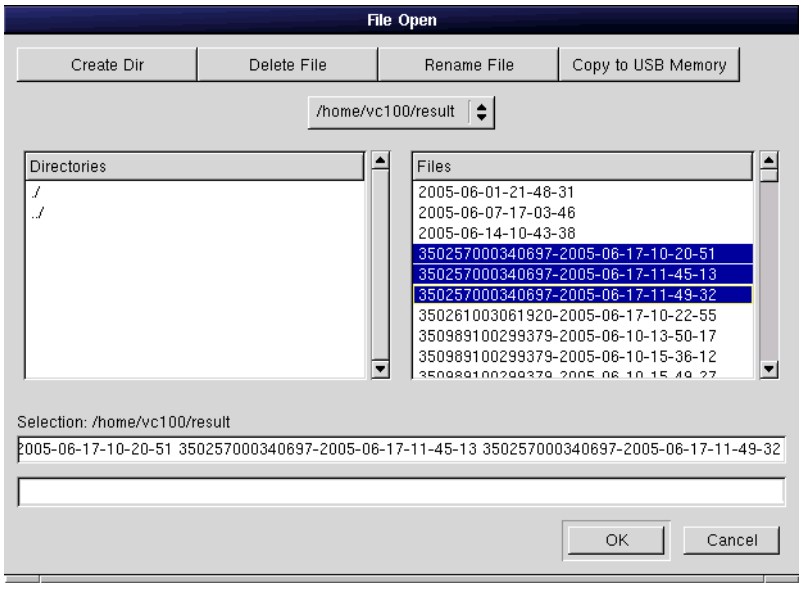
<Tx/Rx test>



<Auto test>



<Manual test>



2. Set the directory containing the file to be copied the current directory according to the procedure given in section 7.1.
3. Highlight the files to be copied.
   Multiple files can be highlighted.
4. Click **Copy to USB Memory** to copy all the selected files to the USB memory.

Displays a message concerning the copy operation

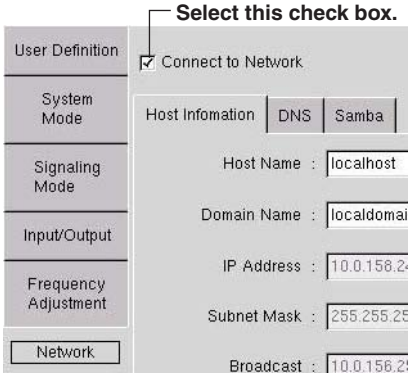
8.1 Connecting to the Ethernet Interface

When connecting to the Ethernet interface, make sure to use a category 5 UTP (Unshielded Twisted Pair) cable or an STP (Shielded Twisted-Pair) cable.

Setting the VC200

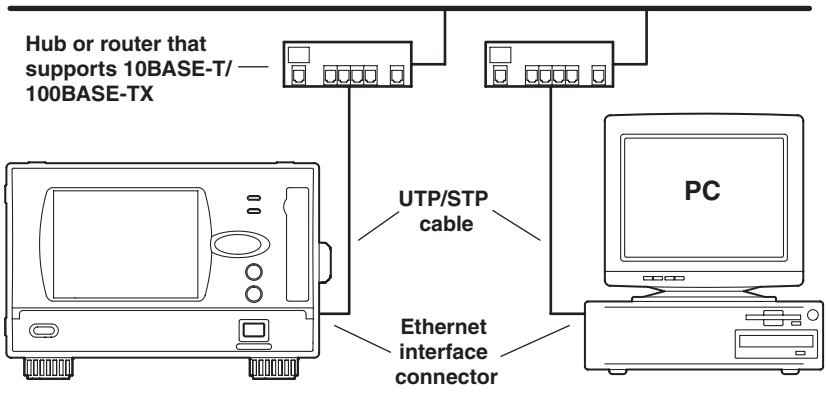
Carry out the following procedures before connecting the VC200 to the network.

1. Click **System**.
2. Select the **Network** tab.
3. Select the **Connect to Network** check box.
   If you are not connecting the VC200 to a network, clear the Connect to Network check box.



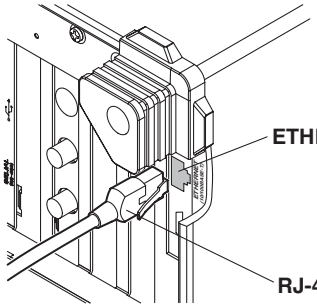
Connecting to the Network

The Ethernet connector on the VC200 is a 10BASE-T/100BASE-TX connector. As shown below, connect a UTP cable or an STP cable that is connected to a network switch such as a hub to the 10BASE-T/100BASE-TX port on the rear panel of the VC200.
If the connector type is different, use an adapter or other similar devices.
For details, consult your system or network administrator.



Note

If the Connect to the Network check box is selected when the VC200 is powered up without connecting to the network, the VC200 attempts to establish a connection to the network. Consequently, the VC200 boots up correctly in about 10 seconds. However, “FAILED” is displayed.



Note

- The VC200 supports up to 3 clients.
- In some cases, not all the transmitted data may be retrieved by the PC depending on the network conditions such as when there is excessive amount of traffic or when external noise affects the network.

8.2 Setting the TCP/IP

Function

To use the Ethernet communication functions of the VC200, the following settings are required:

- Host name
- Domain name
- DHCP setting
- IP address
- Subnet mask
- Broadcast
- Default gateway

Consult your system or network administrator in setting these parameters.

Host Name

Set the host name of the VC200 using up to 40 characters.

Domain Name

Set the network domain name that the VC200 belongs to.

DHCP (Dynamic Host Configuration Protocol)

If you use DHCP, the following items are automatically configured:

- IP address
- Subnet mask
- Broadcast
- Default gateway

To use DHCP, the network must have a DHCP server.
Consult your network administrator to see if DHCP can be used.
If you use DHCP, a different IP address may be assigned each time the VC200 is powered up.

IP Address (Internet Protocol Address)

Set the IP address to assign to the VC200. The default setting is [127.0.0.1].
The IP address is used to uniquely identify a device on the Internet when using TCP/IP. The address is a 32-bit value expressed in four octets (each 0 to 255), each separated by a period as in [192.168.111.24]. A unique ID must be acquired from the network administrator.
If DHCP can be used, the gateway is automatically assigned.

Subnet Mask (Net Mask)

Set the mask value used when determining the subnet network address from the IP address. The default setting is [255.0.0.0]. Consult your network administrator for the appropriate value.
If DHCP can be used, the gateway is automatically assigned.

Broadcast

The broadcast address is used to transmit the same packet to all hosts on the network to which the VC200 is connected.
The IP address with the host section set to all 1s in binary notation is called a broadcast address.
Since the broadcast address can be specified on the VC200, you can specify a local broadcast address or a direct broadcast address.

Default Gateway

Specify the IP address of the default gateway that is used when communicating with other devices on a different segment (network unit). The default setting is [0.0.0.0]. Consult your network administrator for the appropriate value.
If DHCP can be used, the gateway is automatically assigned.
The gateway may not be required (set the address to [0.0.0.0] when connecting the PC and the VC200 in a one-to-one configuration).

DNS (Domain Name System)

DNS is a system used to associate names used on the Internet called host names and domain names to IP addresses. (Given AAA.BBBBB.com, AAA is the host name and BBBBB.com is the domain name.) Instead of using the IP address, which is a sequence of numbers, host name and domain name can be used to access the network.
You set the domain name, the DNS server address ("0.0.0.0" by default), and the domain suffix. For details, consult your network administrator.

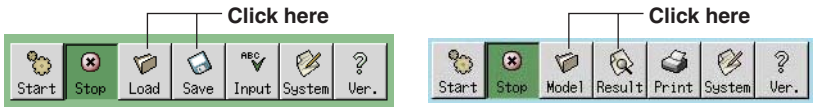
- **DNS Server**
  You can set up to three DNS server addresses: "Name Server1" (primary), "Name Server2" (secondary), and "Name server3" (tertiary). If the primary DNS server is down, the secondary DNS server is automatically looked up for the mapping of the host name/domain name and IP address.
- **Domain Suffix**
  When the IP address corresponding to the server name with the aforementioned domain name is not found, the system may be set up to search using a different domain name. Enter this alternate domain name as the domain suffix. You can set up to three domain suffixes: "Search Domain1" (primary), "Search Domain2" (secondary), and "Search Domain3) (tertiary).

Note

- If you change any of the settings related to the Ethernet network, the VC200 must be power cycled.
- If the VC200 is turned ON with the DHCP function enabled without an Ethernet cable connected, communications and file functions may not operate properly. In this case, turn DHCP OFF and power cycle the VC200.
- The method for setting TCP/IP varies depending on the PC. Set the IP address, subnet mask, DNS, and other parameters accordingly.
- When changing the TCP/IP settings, first connect the VC200 to the network.
- When using DHCP, set the host name and domain name to localhost and localdomain, respectively. To use other host names or domain names, contact your network administrator.

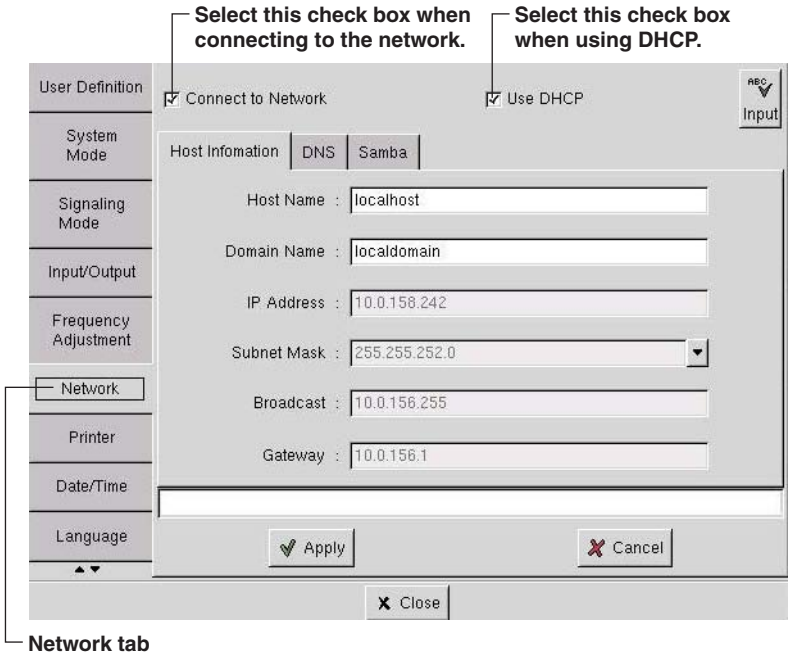
Procedure

1. Click **System**.



<Tx/Rx test> **<Signaling test>**

2. Click the **Network** tab to display the following screen.



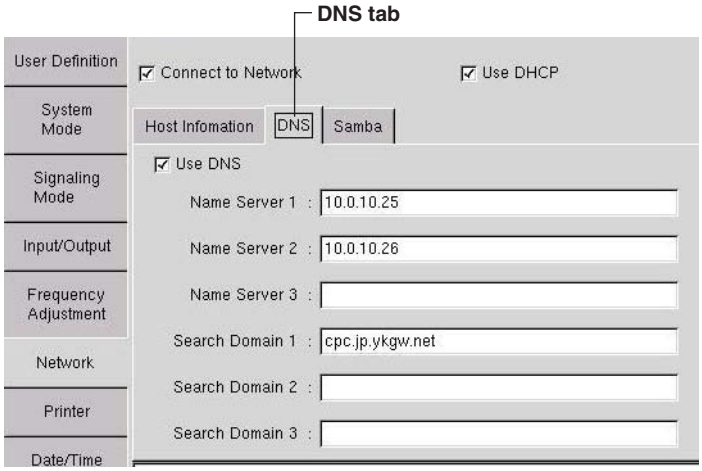
3. Select the **Connect to Network** check box.

Setting the DHCP

4. If you are using DHCP, select the Use DHCP check box. If you are not using the DHCP, clear the Use DHCP check box and set the following items.
   Set the IP address, subnet mask, broadcast, and default gateway.

Setting the DNS

5. If you are using DNS, select the Use DNS check box. Set Name Server1 to 3 and Search Domain1 to 3.
6. Click **Apply** to confirm the settings.
7. Click **Close** to close the dialog box.



8.3 Setting SAMBA

Function

You can view the model parameters and test results on a Windows PC.
You can set the name of the VC200 that is displayed on the Windows PC.

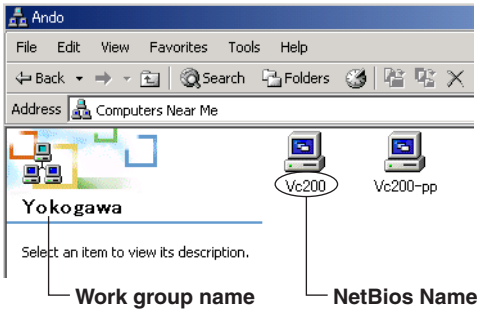
NetBios Name

Specify the computer name used when viewing the VC200 from a Windows PC. The default name is VC200.
The number of characters and the characters that can be used are as follows:

- Number of characters: 1 to 15 characters
- Characters that can be used: 0 to 9, A to Z, %, _, (,), -

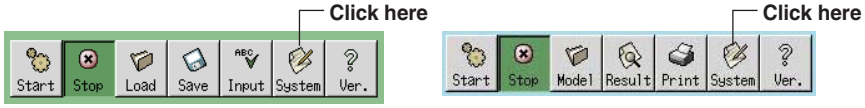
Note

The work group name is Ando (fixed).
For a description of the operating procedure of Windows, see the manual that came with the Windows package.



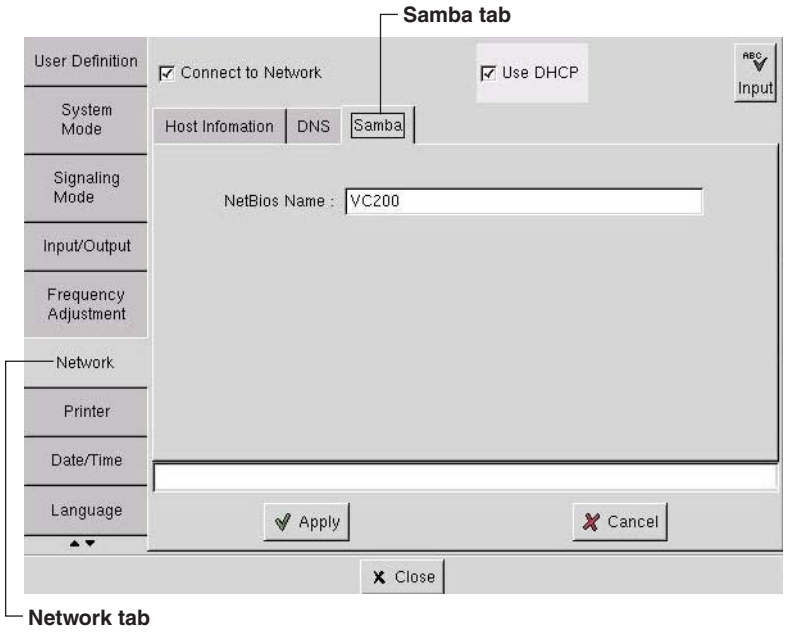
Procedure

1. Click **System**.



<Tx/Rx test> **<Signaling test>**

2. Click the **Network** tab to display the following screen.
3. Click the **Samba** tab.



4. Enter the computer name in the NetBios Name box.
5. Click **Apply** to confirm the settings.
6. Click **Close** to close the dialog box.

Note

The following directories are present under VC200.

- param: The model parameter files are stored.
- result: The test result files are stored.

9.1 Printing the Test Results

Function

The results of the auto signaling test (auto test mode) can be printed on a printer connected via the USB or network.
A dedicated printer driver is necessary for the respective printer. For details on how to install the printer driver, see section 9.11. For details on printers that can be connected, contact your nearest YOKOGAWA dealer.

Printed Items

The most recent test results or a selected result log file (see the functional explanation in section 4.4) saved on the built-in hard disk is printed.

Setting the Printer

- **Maker/Driver**
  Select the manufacturer or the protocol of the printer to be used, and then select the printer driver.
- **Printer server or IP address**
  Set the IP address of the printer server to be used. In environments in which DNS can be used, a name can be specified in place of the IP address. This setting is required only when printing on a network printer.

Page Layout

Select the number of pages to be printed on a sheet of paper, 1 or 2.

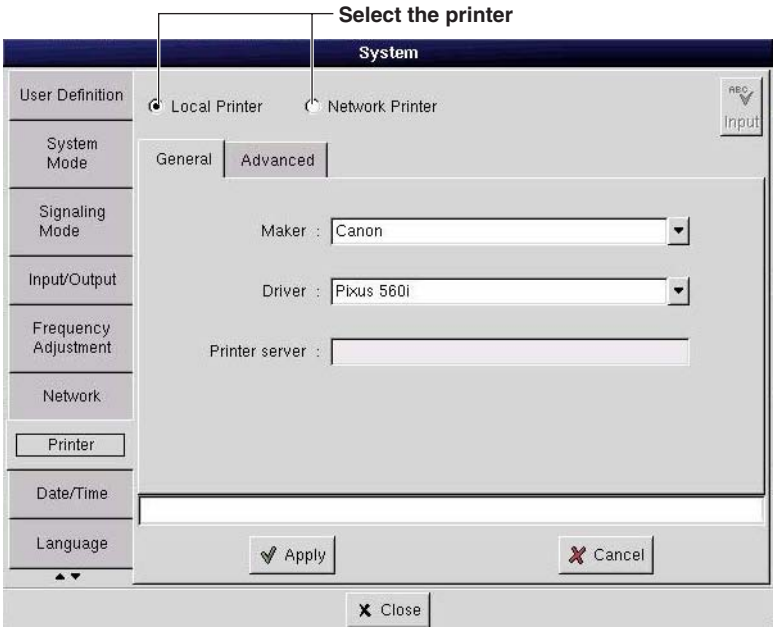
Printers That Can Be Connected

- USB printer: PIXUS 560i (by Canon) (the printer driver is preinstalled before factory shipment)
- Network Printer: For details on supported models, contact your nearest YOKOGAWA dealer.

Procedure

1. Click **System**.

2. Click the **Printer** tab to display the following screen.



3. Select Local Printer (USB printer output) or Network Printer.

Setting the Printer

4. Click the **General** tab.
5. Select the maker or driver.
   For a network printer, proceed to step 6. For a local printer, proceed to step 7.
6. Enter the printer server name or IP address.

Page Layout

7. Click the **Advanced** tab.
8. Select Page Layout.
9. Click **Apply** to apply the settings, and then click **Close**.

Connecting the Printer (Local Printer Only)

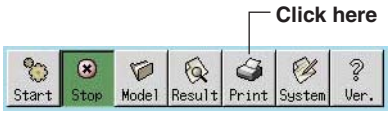
10. Connect the USB port on the rear panel of the VC200 to a printer with a USB cable.

Executing the Auto Test

11. Follow the procedures in sections 4.6 and 4.7 to execute the auto test.

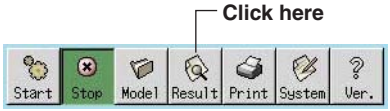
Printing the Most Recent Test Results

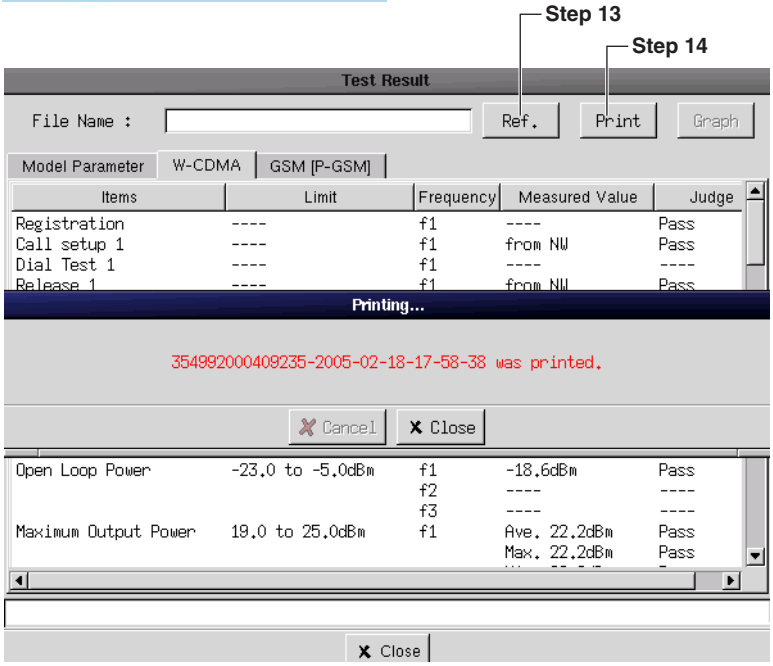
12. Click **Print**.
    The "Now printing" message is displayed, and the results are printed. To stop printing, click Cancel.



Selecting Test Results to Print

12. Click **Result**. The following dialog box opens. If the file name is empty, the most recent result is displayed.





13. To change the results to be printed, click **Browse**. The File Open dialog box appears. Select the file you wish to print and click **OK**. The description of the selected file is displayed in the Test Result dialog box.
14. Click **Print**. A message "Now printing" is displayed, and printing starts. To cancel the printing, click **Cancel**.

Note

When entering the printer server name in step 5, be sure to insert the characters "//" in front of the name.

9.2 Reference Input

Function

You can select whether to use the internal reference or an external reference for the PLL frequency reference. To use an external reference signal, apply a signal that meets the following specifications to the REF IN connector on the rear panel.

CAUTION

Do not apply a voltage exceeding the following maximum input voltage to the reference input connector. This may cause damage to the VC200.

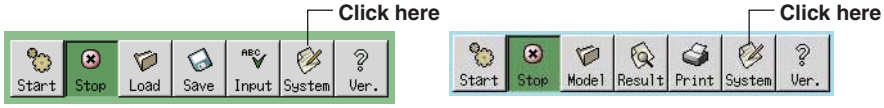
Specifications

Input frequency range:	10 MHz to 20 MHz (resolution: 1 MHz), except within ±3 ppm of the input frequency specified on the VC200
Input level:	1 to 5 Vpp
Input impedance:	1 kΩ (typical*)
Maximum input voltage:	10 Vpp, ±15 VDC
Connector type:	BNC

* The typical value is a representative or standard value. It is not a warranted value.

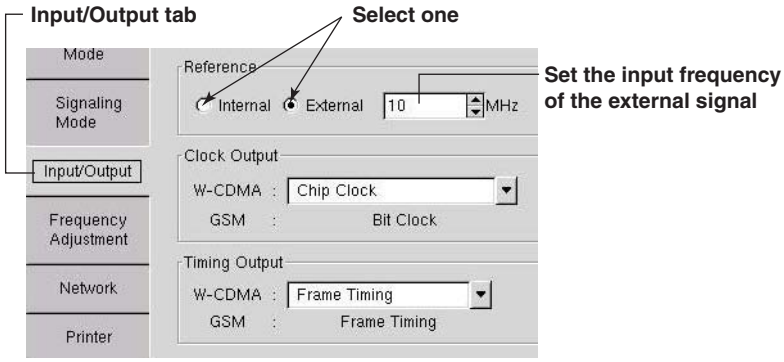
Procedure

1. Click **System**.



<Tx/Rx test> **<Signaling test>**

2. Click the **Input/Output** tab to display the following screen.



3. Click the option button to select **Internal** or **External**.
4. If you select External, set the input frequency in the range of 10 MHz to 20 MHz.

9.3 Clock Output

Function

W-CDMA

Select the clock signal to be output from the CLOCK OUT connector on the rear panel from the following:

- Chip Clock: Outputs the chip clock (3.84 MHz) that is synchronized to the downlink signal.
- Chip×4 Clock: Outputs a clock (15.36 MHz) that is 4 times the chip clock (3.84 MHz) that is synchronized to the downlink signal.
- PCCPCH Symbol Clock: Outputs the symbol clock (15 kHz) that is synchronized to PCCPCH.
- DPCH Symbol Clock: Outputs the symbol clock that is synchronized to DPCH with a symbol rate specified on the menu.

GSM

Outputs the bit clock signal (270.833 kHz)

Clock Output Terminal Specifications

Output level: +3.3 V CMOS level
Output impedance: 50 Ω (typical*)
Connector type: BNC

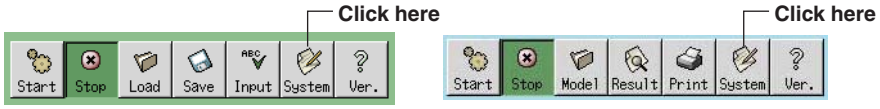
* The typical value is a representative or standard value. It is not a warranted value.

CAUTION

Do not apply external voltage to the CLOCK OUT connector. This may cause damage to the VC200.

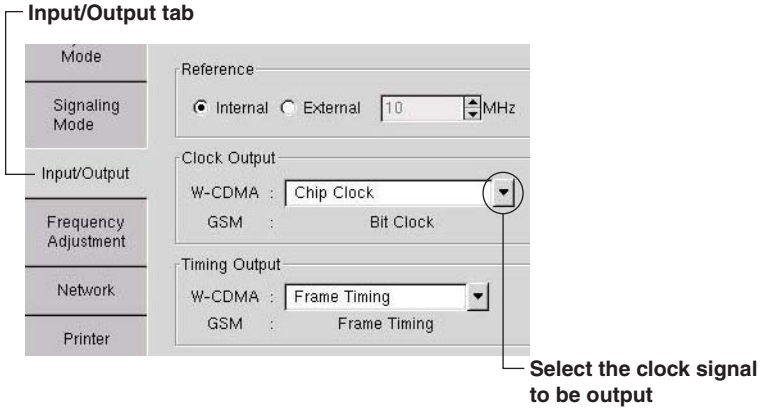
Procedure

1. Click **System**.



<Tx/Rx test> **<Signaling test>**

2. Click the **Input/Output** tab to display the following screen.



3. Select the clock signal to be output from the Clock Output list box.

Note

The frequency may be unstable immediately after starting.

9.4 Timing Signal Output

Function

W-CDMA

Select the timing signal to be output from the TIMING OUT connector on the rear panel from the following:

- Frame Timing: Outputs a timing signal (10 ms cycle, positive pulse with a width of approx. 66.7 μs) of a frame synchronized to PCCPCH.
- Time Slot Timing: Outputs a timing signal (approx. 667 μs cycle, positive pulse with a width of approx. 66.7 μs) of a time slot synchronized to PCCPCH.

GSM

Frame Timing: Outputs the timing signal (positive pulse with a period of 4.615 ms and width of 3.7 μs) of the downlink frame.

Timing Signal Output Terminal Specifications

Output level: +3.3 V CMOS level
Output impedance: 50 Ω (typical*)
Connector type: BNC

* The typical value is a representative or standard value. It is not a warranted value.

CAUTION

Do not apply external voltage to the TIMING OUT connector. This may cause damage to the VC200.

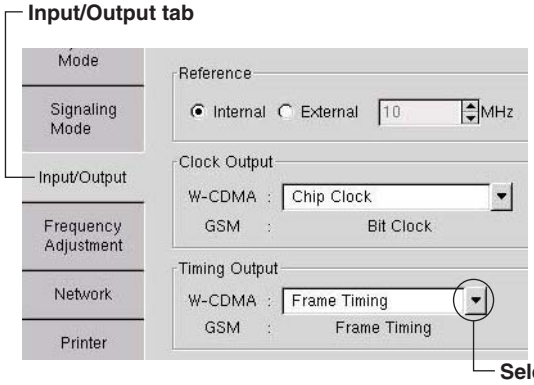
Procedure

1. Click **System**.

<Tx/Rx test>

<Signaling test>

2. Click the **Input/Output** tab to display the following screen.



3. Select the timing signal to be output from the Timing Output list box.

Note

The frequency may be unstable immediately after starting.

9.5 Selecting the Language

Function

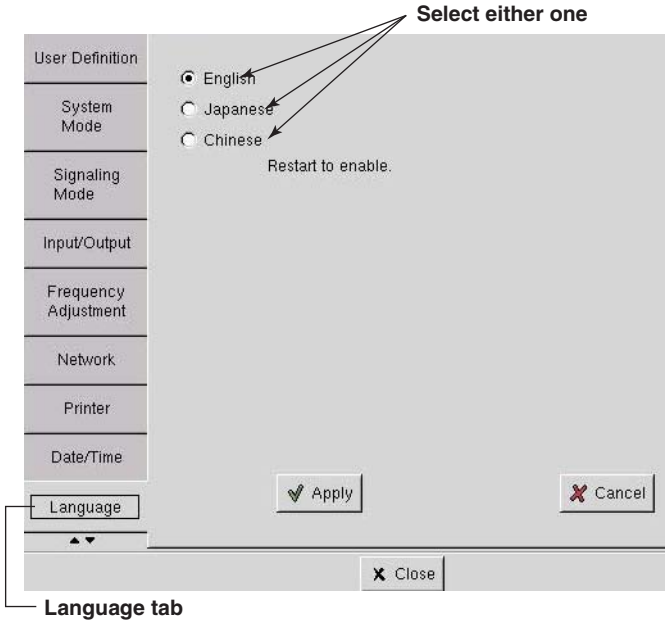
You can select the language used on the display from English or Japanese.

Procedure

1. Click **System**.

<Tx/Rx test> **<Signaling test>**

2. Click the **Language** tab to display the following screen.



3. Click the option button to select **English**, **Japanese** or **Chinese**.

Note

The new setting takes effect after rebooting the VC200.

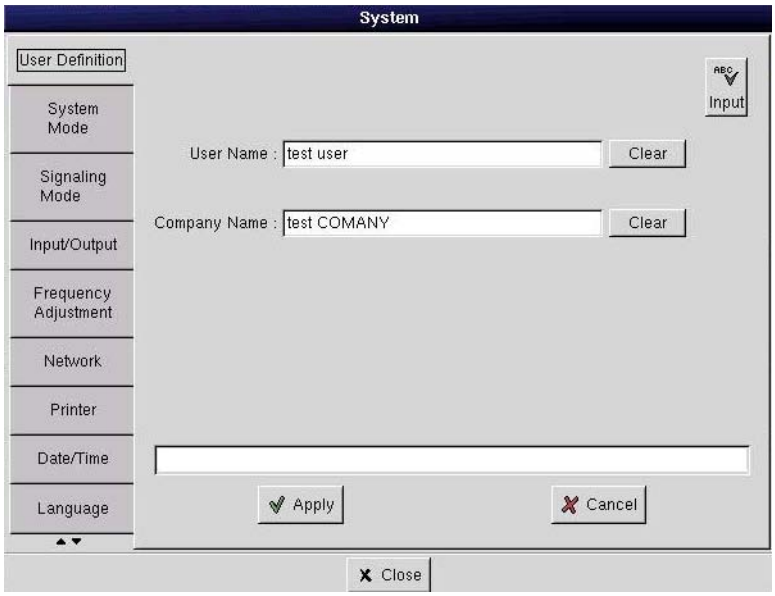
9.6 Setting the User Definition

Function

You can set a user name and company name. The user name and company name are displayed in the auto test results (Model Parameter tab on page 4-13).
They are also printed along with the measurement conditions and values when the test results are printed.

Procedure

1. Click **System**.
2. Click the **User Definition** tab to display the following screen.



3. Move the cursor to the User Name or Company Name box and click **Input**.
4. Enter the user name or company name according to the procedure given in section 3.6.

9.7 VGA Output

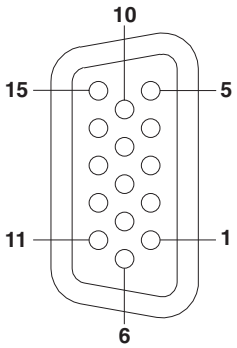
CAUTION

- Connect the cable after turning OFF the VC200 and the monitor.
- Do not short the VIDEO OUT connector or apply external voltage to it. This may cause damage to the VC200.

VGA Video Output Connector

The VC200 display can be output to a monitor through VGA output. Connectable monitors are VGA monitors or multi-sync monitors capable of displaying VGA.

Specifications



D-Sub 15-pin receptacle

Pin No.	Signal Name
1	Red
2	Green
3	Blue
4	–
5	GND
6	Analog GND
7	Analog GND
8	Analog GND
9	–
10	GND
11	–
12	DDC DAT
13	Horizontal sync signal
14	Vertical sync signal
15	DDC CLK

Connecting the Monitor

1. Turn OFF the VC200 and the monitor.
2. Connect the VC200 and the monitor using an analog RGB cable.
3. The screen of the VC200 appears on the monitor when both the VC200 and the monitor are turned ON.

Note

- The RGB video signal is constantly output from the VIDEO OUTPUT connector.
- The monitor screen may flicker if the VC200 or another instrument is brought close to the monitor.
- The edge of the screen may drop out depending on the monitor type.

9.8 Turning OFF the LCD Backlight

Function

You can turn OFF the LCD backlight. The backlight turns ON when you operate the mouse.

Note

Pressing the START or STOP key while the backlight is OFF turns ON the backlight. However, the operation assigned to the START or STOP key is executed at the same time.

Procedure

Press **DISPLAY OFF** on the front panel.

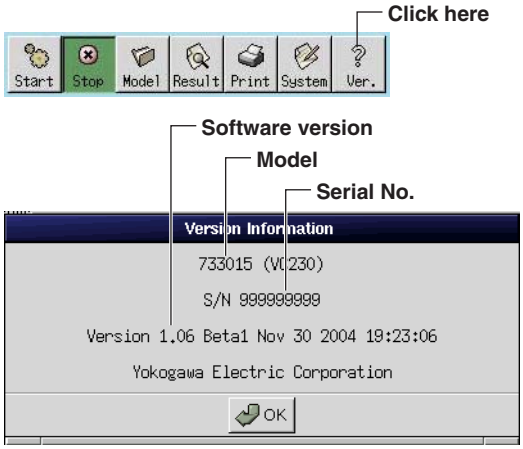
9.9 Checking the System Configuration and Version of the VC200

Function

You can check the software version of the VC200.

Procedure

1. Click **Ver.** to display the software version.



9.10 Initializing Settings

Function

The VC200 retains setup conditions even when the power is turned OFF. You can execute initialization to reset the settings to factory default.

List of Factory Default Values

Tx/Rx tester mode (W-CDMA)

- **Downlink settings**

Frequency channel number	10550 (2110.0 MHz)	
RF Power	Value	–40.0 dBm
	Correction	0.0 dB
	ON/OFF	ON
Modulation	ON/OFF	ON
DPCH symbol rate		30 ksps
Scrambling code number	0	
Channelization code number	S-CPICH	2
	PICH	6
	DPCH (7.5 k)	15
	DPCH (15 k)	3
	DPCH (30 k)	10
	DPCH (60 k)	4
	DPCH (120 k)	3
	DPCH (240 k)	12
	DPCH (480 k)	7
	DPCH (960 k)	3
Timing offset	PICH	0 chips
	DPCH	0 chips
Code power	SCH+PCCPCH	–12.0 dB
	P-CPICH	–10.0 dB
	S-CPICH	–10.0 dB
	PICH	–15.0 dB
	DPCH	–10.0 dB
	OCNS	–2.2 dB

- **Uplink settings**

Frequency channel number	9600 (1920.0 MHz)
Scrambling code number	0
DPDCH bit rate	60 kbps
Mode	Asynchronous
Power ratio	8.0
Timing offset	0 chips
When measuring modulation accuracy Original offset cancel	ON

- **Tx measurement values**

Measurement mode		Repeat
Average count of the EVM/frequency error measurement		1
Output power	Average count	1
	Correction	0.0 dB

Tx/Rx Tester Mode (GSM)

- **Downlink settings**

GSM band	GSM850	
Frequency channel number (ARFCN)	128	
Actual frequency	869.2 MHz	
Uplink frequency	824.2 MHz	
Modulation	all0/pn/bcch/OFF	all0
RF power	Value Correction ON/OFF	–40.0 dBm 0.0 dB ON

- **Tx measurement values**

Measurement mode	Single/Repeat	Repeat
Rx mode	Burst/CW	Burst
Measurement results	Average count	1
Tx power	Average count Correction	1 0.0 dB
Burst timing	Count	1

Signaling tester mode (manual test, W-CDMA)

UE Information	Profile Battery Voltage		Profile_01 4.3 V
Frequency	10688		
DL Power	–65.0 dBm		
Compensation Value	Band1		DL 3.0 dB UL 3.0 dB
	Band2		DL 3.0 dB UL 3.0 dB
	Band3		DL 3.0 dB UL 3.0 dB
	Band5/Band6		DL 3.0 dB UL 3.0 dB
	Band9		DL 3.0 dB UL 3.0 dB
Tx Characteristics	UL Power		0.0 dBm
	Measurement Count	Tx Power	1 time
		Freq Error/EVM	1 time
		Inner Loop Power	1 time
	Measurement Time	Current in Idle	5.0 s
		Current in Connected	1.0 s
		Inner Loop Power	Step E
	Authentication key	default/User	default
	Origin offset cancel	On/Off	On
	Measure mode	Repeat/Single	Repeat
Rx Characteristics	DL Power		–80.0 dBm
	Loopback BER		1 s
	Code Domain Power		Minimum Sensitivity
Frequency Handover	10688		
Speech Test	Delay Time		0.5 s

Signaling tester mode (manual test, GSM)

BCCH	Frequency Band		P-GSM
	BCCH		1
TCH	Frequency Band		P-GSM
	BCCH		1
DL Power	–75.0 dBm		
Compensation Value	GSM900		DL 3.0 dB
			UL 3.0 dB
	DCS1800		DL 3.0 dB
			UL 3.0 dB
	PCS1900		DL 3.0 dB
			UL 3.0 dB
Tx Characteristics	UL Power		5
	Measurement Count	Tx Power	1 time
		Burst Timing	1 time
		Phase/Freq Error	1 time
Rx Characteristics	DL Power		–65.0 dBm
	Measure Time		FER 1 s
Frequency Handover	Frequency Band		P-GSM
	TCH		1
Speech Test	Delay Time		0.5 s
Power control mode	Normal/Simple		Normal
Measure mode	Repeat/Single		Repeat

System settings

Signaling tester mode	USB	Unused
Frequency adjustment	0	
RF reference frequency	Internal	
RF reference frequency external frequency	10 MHz	
Clock output	Chip Clock	
Timing signal output	Frame Timing	

Note

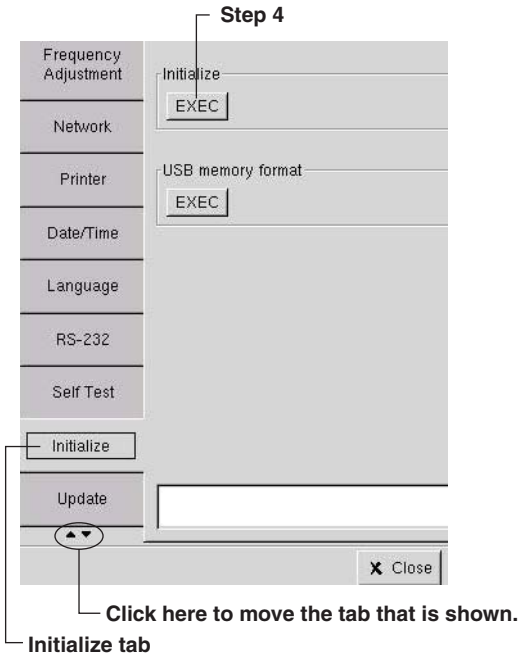
- Setup parameters not in the list of factory default values cannot be initialized. Set those parameters separately as necessary.
- The test mode (manual/auto) setting of the signaling test is not initialized.
- The model parameter file setting is not initialized The model parameter file selected the last time is selected.
- By factory default, the following model parameter file is selected.
  Sample_01

Procedure

1. Click **System**.

<Tx/Rx test> **<Signaling test>**

2. Click ▲▼ to show the Initialize tab.
3. Click the **Initialize** tab to display the following screen.



4. Click Initialize **EXEC** to initialize the settings. Click **Close** to cancel the initialization.

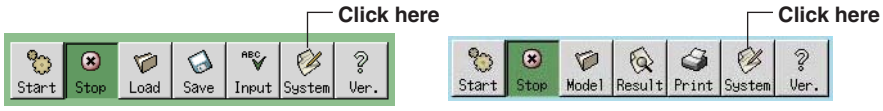
9.11 Formatting the USB Memory

Function

Use the FAT format for USB memory. Perform the formatting if the instrument does not recognize the USB memory. However, note that after formatting the memory, the security lock and some other functions will no longer be available.

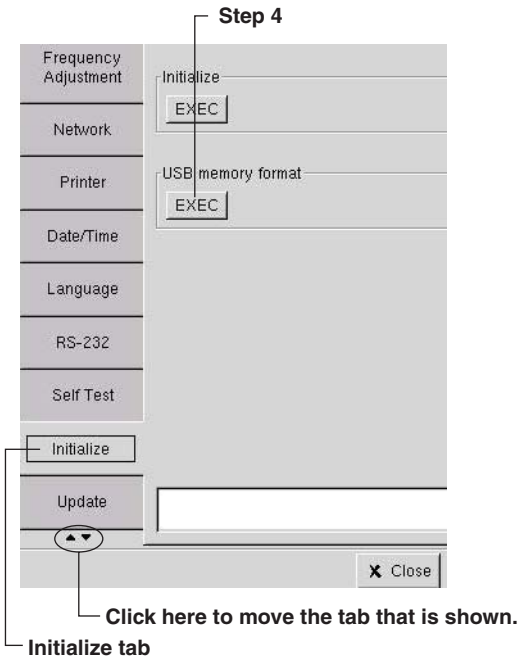
Procedure

1. Click **System**.



<Tx/Rx test> **<Signaling test>**

2. Click ▲▼ to show the Initialize tab.
3. Click the **Initialize** tab to display the following screen.



4. Click USB memory format **EXEC** to format the memory. Click **Close** to cancel the format.

Note

- The USB memory to be formatted is the one first inserted into the USB port after turning ON the instrument.
- Some USB memories may not be able to be recognized even after formatting.

9.12 Updating the Software

Function

The VC200 software (firmware, driver, etc.) can be updated using a USB memory or CD-ROM.

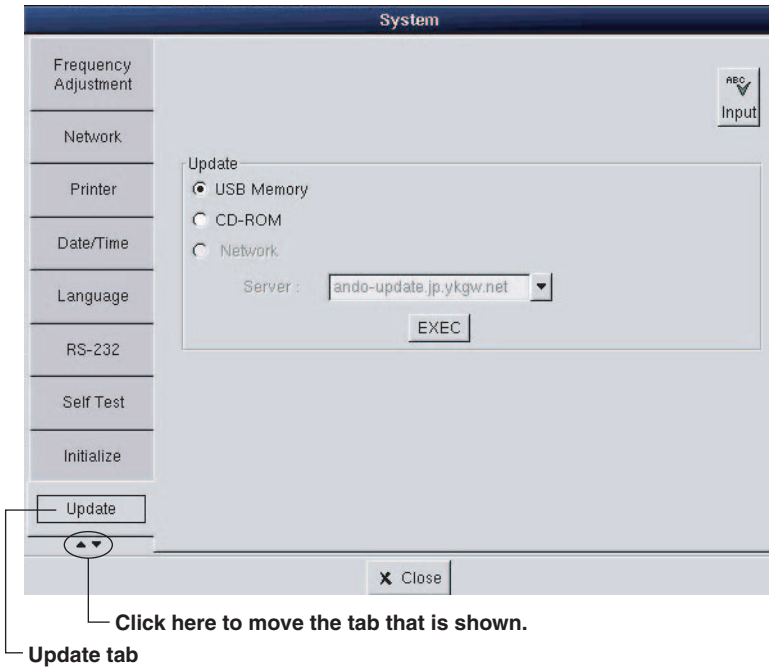
Procedure

Connect a USB memory medium or CD-ROM drive containing the latest version of the software to the instrument's USB port.

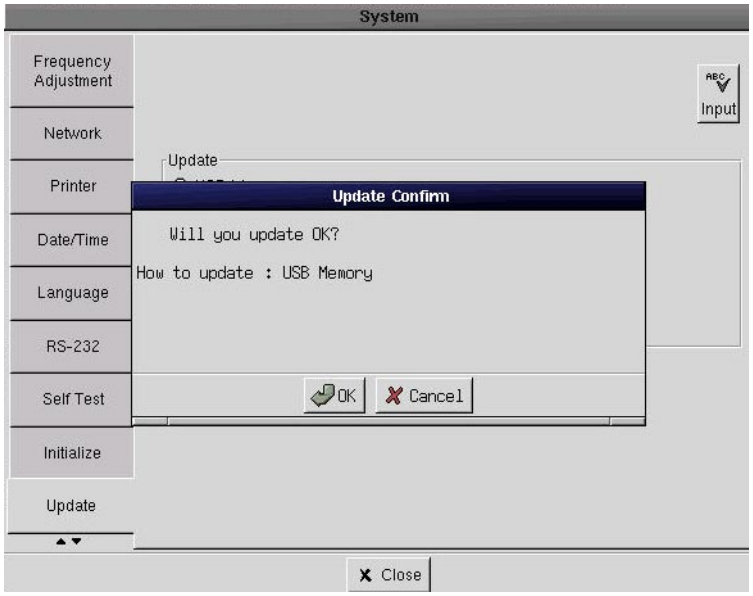
1. Click **System**.

<Tx/Rx test> **<Signaling test>**

2. Click ▲▼ to display the **Update** tab.
3. Click the **Update** tab to display the following screen.



4. Select **USB Memory** or **CD-ROM**.
5. Click **EXEC**. The following confirmation dialog box is displayed. Confirm that the update method is correct, then click **OK**.



6. During the update, a progress dialog box is displayed. When the update is complete, the system is rebooted.

Note

- The latest version of the software can be downloaded from (http://www.yokogawa.com/tm/wireless/vc200/tm-vc200_01.htm).
- The USB memories and CD-ROM drives below have been tested for compatibility.
  - **USB memories**
    - EDM-128M (by IO Data Device, Inc.)
    - RUF-128M (by BUFFALO INC.)
    - JDS064 (by Lexar Media, Inc.)
    - Flash D-Mini 128 (by Imation Corporation)
  - **CD-ROM drives**
    - KXL-RW40AN (by Panasonic Communication Co, Ltd)
    - PX-W4012Tu (by PLEXTOR Co, Ltd)
- Do not turn OFF the VC200 while updating the software, as it may damage the VC200.

10.1 Ethernet Interface

Ethernet Interface Specifications

Number of communication ports:	1
Electrical and mechanical specifications:	Conforms to IEEE802.3
Transmission system:	Ethernet (10BASE-T/100BASE-TX)
Data rate:	10 Mbps/100 Mbps
Communication protocol:	TCP/IP
Connector type:	RJ45 connector
Port number used:	16384/tcp
Number of simultaneous connections:	3

Connection Procedure

Connect a UTP cable or an STP cable to the 10BASE-T/100BASE-TX port on the rear panel.
For details on the connection of the VC200 to a network, the TCP/IP settings, and other related information, see chapter 8.

10.2 Serial Interface

Specifications and Functions of the Serial Interface

Reception Function

You can specify the same settings as those specified by front panel key operations.
Receives output requests for setup information.

Transmission Function

Outputs setup information and measurement results.

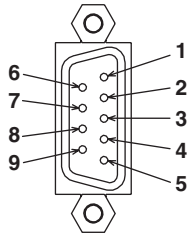
Serial (RS-232) Interface Specifications

Electrical characteristics:	Conforms to EIA-574 (9-pin EIA-232 (RS-232))
Connection:	Point-to-point
Transmission mode:	Full-duplex
Synchronization:	Start-stop synchronization
Baud Rate:	9600, 19200, 38400, 57600, and 115200
Start bit:	Fixed to 1 bit
Data length:	7 or 8 bits
Parity:	Even, odd, or no parity
Stop bit:	1 or 2 bits
Connector:	DELC-J9PAF-13L6 (JAE or equivalent)
Flow control:	Select hardware handshaking using RS/CS or no flow control

Connection Procedure

When you connect the VC200 to a PC, you must set the VC200 so that the handshaking method, baud rate, data format, and other parameters match those on the PC side.
For details on the settings, seepage 10-5. In addition, use an interface cable that meets the specifications of the VC200.

Connector and Signal Names

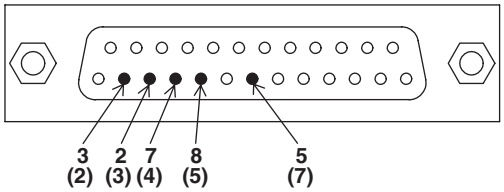


DELC-J9PAF-13L6 or equivalent

2	RD (Received Data):	Received data from the PC. Signal direction ... input
3	SD (Send Data):	Transmitted data to the PC. Signal direction ... output
5	SG (Signal Ground):	Signal ground.
7	RS (Request to Send):	Handshaking used to receive data from the PC. Signal direction ... output
8	CS (Clear to Send):	Handshaking used to send data to the PC. Signal direction ... input

* Pins 1, 4, 6, and 9 are not used.

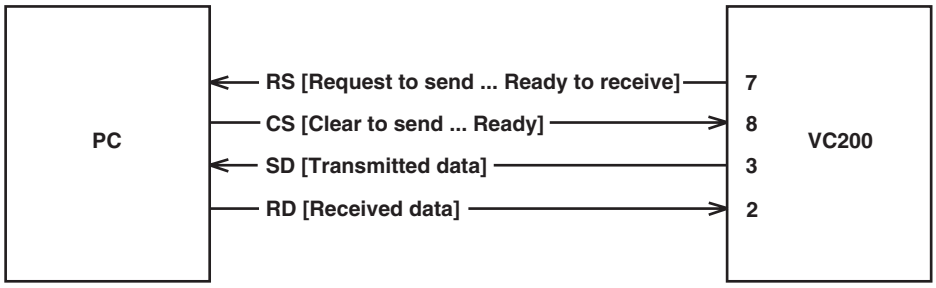
9-pin to 25-pin Adapter and Signal Names



The numbers inside the parentheses are pin numbers for the 25-pin connector.

Signal Direction

The figure below shows the direction of the signals used by the serial interface of the VC200.



RS-232 Standard Signals and Their JIS and CCITT Abbreviations

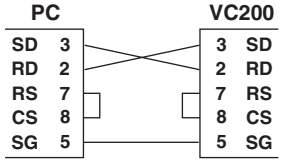
Signal Table

Pin No. (9-pin connector)	Abbreviation			Name
	RS-232	CCITT	JIS	
5	AB (GND)	102	SG	Signal ground
3	BA (TXD)	103	SD	Transmitted data
2	BB (RXD)	104	RD	Received data
7	CA (RTS)	105	RS	Request to send
8	CB (CTS)	106	CS	Clear to send

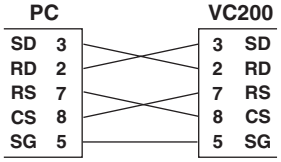
Signal Wiring Example

The pin numbers are for the 9-pin connector.
In general, use a cross cable.

• OFF-OFF/XON-XON



• Hard(CS-RS)



Combination of Handshaking Methods

When using the serial interface for transferring data, it is necessary for equipment on both sides to agree on a set of rules to ensure the proper transfer of data. The set of rules is called handshaking. Because there are various handshaking methods that can be used between the VC200 and the PC, one must make sure that the same method is chosen by both the VC200 and the PC.

You can select the following two methods on the VC200.

- none
- hard (hardware)

When None Is Used

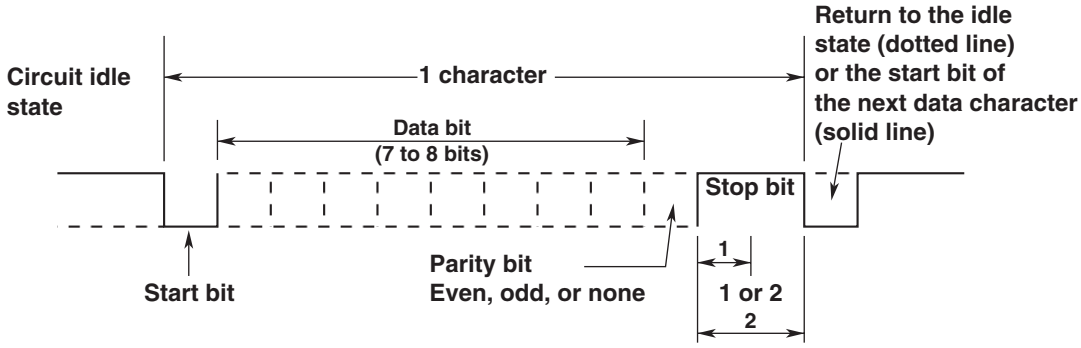
- **Data Transmission Control**
  There is no handshaking between the VC200 and the PC.
- **Data Reception Control**
  There is no handshaking between the VC200 and the PC.
  RS = True (fixed).

When Hard (Hardware) Is Used

- **Data Transmission Control**
  Hardware handshaking is performed between the VC200 and the PC.
- **Data Reception Control**
  Hardware handshaking is performed between the VC200 and the PC.

Combination of Data Formats

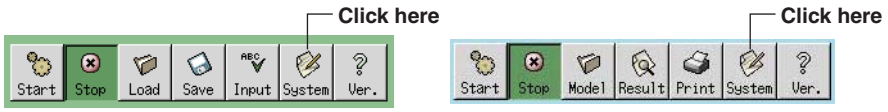
The serial interface of the VC200 performs communications using start-stop synchronization. In start-stop synchronization, characters are transmitted one at a time. Each character consists of a start bit, data bits, a parity bit, and a stop bit (see the figure below).



Setting the VC200

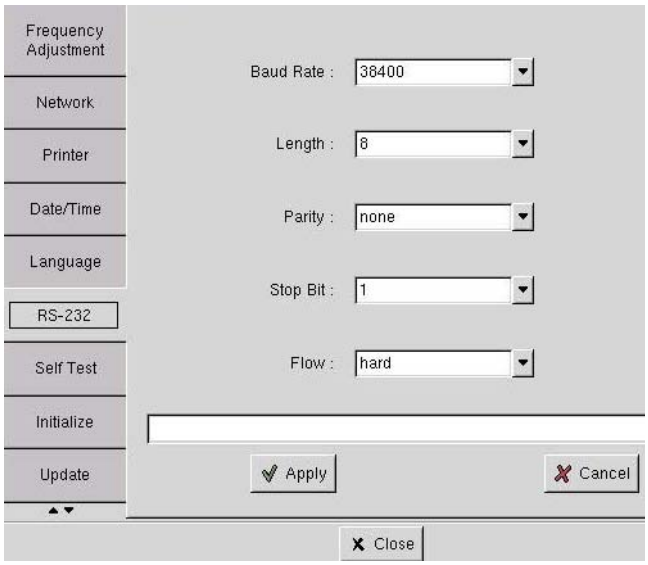
Procedure

1. Click **System**.



<Tx/Rx test> **<Signaling test>**

2. Click the **RS-232** tab to display the following screen.



3. Set **Baud Rate**, **Length**, **Parity**, **Stop Bit**, and **Flow**.
4. Click **Apply** to confirm the settings.

10.3 Before Programming

Messages

Messages are used to exchange information between the client and the VC200. Messages that are sent from the client to the VC200 are called program messages and messages that are sent back from the VC200 to the client are called response messages. In addition, messages that all clients receive asynchronously from the VC200 are called event messages.
When a VC200 receives a program message, it always sends a response message back to the client who sent the message. Event messages* are sent to all clients asynchronously with program messages.
* Clients cannot receive event message via the serial (RS-232) interface.

- **Message Syntax**
  The syntax of all messages is as follows:
  <Message> + <Terminator>

  <Terminator>: NL (New Line). It is a single ASCII code “0AH,” the same as LF (Line Feed).

Connection to the VC200 Port (Only when using the Ethernet interface)

Two connections between the client and the VC200 must be established for the client to control the VC200 using the Ethernet interface.
A: Connection for the client to send program messages to the VC200 and receive response messages.
B: Connection for receiving the event messages from the VC200.

- **Number of Clients That Can Be Connected**
  Up to three clients can connect to the VC200, simultaneously. All connected clients can transmit and receive messages asynchronously.

Connection Procedure to the Port

A guideline is given below. For the actual procedure in connecting the port, see section 10.11, “Sample Programs.”

- **Establishing the A Connection**
  1. Connect to a prescribed port number of the VC200.
- **Establishing the B Connection**
  2. Set the B connection to listen.
  3. Transmit the program message for the establishing the B connection through the A connection.
  4. Upon receiving a response message through the A connection, disconnect the B connection.
  5. The port is now ready to transmit program messages and receive response and event messages.

Message Transmission/Reception

If a client sends a program message to the VC200, the VC200 always returns a response message to that client.
If the client does not receive the response message, the VC200 cannot receive the next program message. Therefore, make sure to receive the response message.
In addition, when event messages are used, make sure to receive them regardless of when the events occur.

- **Program Message Syntax**
  Program messages are not case sensitive except for file/directory names in the data section.

Commands (Program Messages)

There are two types of commands (program messages) that clients send to the VC200.

- **Setup**
  Setup commands sets or controls the VC200.
  Example rxtx_txfreqch 10550: Set the downlink frequency channel to 10550.
  rxtx_start: Start waveform generation and retrieval on the VC200 in Tx/Rx mode.
- **Query**
  Queries the settings of the VC200.
  Example rxtx_txfreqch?: Queries the downlink frequency channel.

Responses (Response Messages)

The VC200 sends three types of messages to clients.
Response messages are sent only to those clients who sent the program message.
Response messages are denoted by the characters -> in this manual.

- **Responses to setup commands**
  Returns from the VC200 to the client a response to a setup command.
  Example rxtx_txfreqch 10550 -> EOK 00000
- **Responses to queries**
  Returns from the VC200 to the client a response to a query command.
  Example rxtx_txfreqch? -> EOK 00000 10550
- **Responses notifying errors**
  Returns from the VC200 to the client a response (error number and message) if the setup command is invalid or if an error occurs.
  Example rxtx_txscramblingcode 100 -> ERR 02007 “Cannot operate when status not idle.”

Events (Event Messages)

The VC200 sends four types of event messages to clients.
Event messages are sent to all clients that are connected to the VC200. However, clients cannot receive event messages through the serial interface.
Event messages are denoted by the characters => in this manual.

- **Events that periodically notifies measurement results**
  Transmits the results of measurement and analysis when they become available.
  Example Notifies the following analysis result when in Tx/Rx mode: 5.00% EVM and 105 Hz frequency error.
  => MOK rxtx_analyze 5.00 105
- **Events that notify setup changes**
  This event is sent when any of the clients connected to the VC200 changes the settings or carries out control.
  This event is sent to all clients when a setup command is received from a client and a response message is sent to it.
  Example rxtx_txfreqch 10550 -> EOK 00000 (response message to the client)
  => MOK rxtx_txfreqch 10550 (event message to all clients)

Note

If the received setup command contains an error, a response message is sent only to the client who sent the message. Event message are not sent in this case.

- **Events that notify status changes of the VC200**
  This event is sent when a status change occurs on the VC200 independent of the client side.
  Example Notifies that the PLL has been unlocked
  => MOK sys_pllunlocked :
- **Events that notify errors on the VC200**
  Example 1 Notifies that the fan has stopped.
  => MER 01027 “Fatal Error : Fan stopped.”
  Example 2 Notifies that the transmission or reception failed.
  => MER 02013 “Stopped : PLL Unlocked.”

Data

Each message can handle the following types of data.

Decimal

Decimal indicates a value expressed as a decimal number, as shown in the table below. Decimal values are given in the NR form as specified in the ANSI X3.42-1975.

Symbol	Meaning	Example
Integer	125	-1 +1000
Fixed-point number	125.0	-.90 +001.
Floating-point number	125.0E+0	-9E-1+.1E4
Any of the forms <NR1> to <NR3> is allowed.		

- The VC200 can receive decimal values that are sent from the client in any of the forms, <NR1> to <NR3>. This is represented by <NRf>.
- For response messages that the VC200 returns to the controller, a specific form <NR1> to <NR3> is defined for each query. The same form is used regardless of the size of the value.
- For the <NR3> format, the “+” sign after the “E” can be omitted. However, the “-” sign cannot be omitted.
- If a value outside the setting range is entered, the value will be changed to the closest value inside the range.
- If a value has more significant digits than the available resolution, the value is rounded.

Character Data

Data consisting of a predefined character string. They are mainly used to indicate options. One of the character strings given in brackets {} is chosen.

- **Syntax** **Example**

  `{int|ext}` `int`

Character String Data

Unlike the predefined character strings of character data, character string data is an arbitrary character string. The character string is enclosed in double quotation marks (").

- **Syntax** **Example**

  `<Character string data>` `"ABC"`

  - If the character string contains a double quotation mark ("), it is represented by ("").
  - A response message is always enclosed in double quotation marks (").
  - Because <Character string data> is an arbitrary character string, if the last double quotation mark (") is missing, the VC200 may assume that the remaining program message units are part of the <Character string data> and may not detect the error.

10.4 A List of Commands

Command	Function	Page
System Group		
sys_mode	Sets the tester mode or queries the current setting.	10-28
Sys_initialize	Sets the tester mode or queries the current setting.	10-28
sys_status?	Queries the system status.	10-28
sys_openevent	Requests connection to the INET domain socket.	10-28
sys_rffreqswitch	Selects internal or external of the RF reference frequency or queries the current setting.	10-28
sys_rfextfreq	Sets the external RF reference frequency or queries the current setting.	10-28
sys_plllock?	Queries the PLL lock status.	10-28
sys_clockout	Selects the clock out to be output.	10-29
sys_timingout	Selects the timing signal to be output.	10-29
sys_adjustfda	Sets the frequency adjustment or queries the current setting.	10-29
sys_initlog?	Queries the initialization error status.	10-29
sys_atgmi?	Issues the AT command (AT+GMI) to the terminal connected via the USB.	10-29
sys_atgmm?	Issues the AT command (AT+GMM) to the terminal connected via the USB.	10-29
sys_atgmr?	Issues the AT command (AT+GMR) to the terminal connected via the USB.	10-29
sys_atcgsn?	Issues the AT command (AT+CGSN) to the terminal connected via the USB.	10-29
sys_idn?	Queries the instrument model.	10-30
sys_atcgmi?	Issues the AT command (AT+CGMI) to the terminal connected via the USB.	10-30
sys_atcgmm?	Issues the AT command (AT+CGMM) to the terminal connected via the USB.	10-30
sys_atcgmr?	Issues the AT command (AT+CGMR) to the terminal connected via the USB.	10-30
sys_username	Sets the user name saved to the result log file or queries the current setting.	10-30
sys_companyname	Sets the company name saved to the result log file or queries the current setting.	10-30
File Group		
file_pwd?	Queries the current directory.	10-31
file_ls?	Queries the directory list.	10-31
file_cp	Copies files.	10-31
file_mv	Renames files.	10-31
file_cd	Changes the current directory.	10-31
file_del	Deletes files.	10-31
file_usbcopy	Copies the specified files to the USB memory.	10-31
file_mkdir	Creates a directory	10-31
file_rmdir	Deletes a directory.	10-32
file_df? <pathname>	Queries the free disk space on the partition.	10-32
file_usbmemformat	Executes formatting of the USB memory.	10-32
Tx/Rx Tester Mode (W-CDMA) Group		
rxtx_start	Starts transmission/reception.	10-33
rxtx_stop	Stops transmission/reception.	10-33
rxtx_paramload	Loads the downlink/uplink setup file.	10-33
rxtx_paramsave	Saves the downlink/uplink settings to a file.	10-33
rxtx_txfreqch	Sets the downlink frequency channel number or queries the current setting.	10-33
rxtx_txpowerrf	Sets the RF transmission power or queries the current setting.	10-33
rxtx_txdpchsymbolrate	Sets the DPCH symbol rate or queries the current setting.	10-33
rxtx_txdpchchannelization	Sets the DPCH channelization code or queries the current setting.	10-33
rxtx_txscramblingcode	Sets the scrambling code number or queries the current setting.	10-34
rxtx_txpichchannelization	Sets the PICH channelization code number or queries the current setting.	10-34
rxtx_txscpichchannelization	Sets the S-CPICH channelization code number or queries the current setting.	10-34
rxtx_txpichtimingoffset	Sets the PICH timing offset or queries the current setting.	10-34
rxtx_txdpchtimingoffset	Sets the DPCH timing offset or queries the current setting.	10-34

Command	Function	Page
rxtx_txschccpchcodepower	Sets the Primary SCH & Secondary SCH & Primary CCPCH code power or queries the current setting.	10-34
rxtx_txcpichcodepower	Sets the CPICH code power or queries the current setting.	10-34
rxtx_txscpichcodepower	Sets the S-CPICH code power or queries the current setting.	10-34
rxtx_txpichcodepower	Sets the PICH code power or queries the current setting.	10-35
rxtx_txdpchcodepower	Sets the DPCH code power or queries the current setting.	10-35
rxtx_txocnscodepower?	Sets the OCNS code power.	10-35
rxtx_txcodepower?	Queries all code powers.	10-35
rxtx_txmodswitch	Turns On/Off the modulation or queries the current setting.	10-35
rxtx_txrfswitch	Turns On/Off the RF power or queries the current setting.	10-35
rxtx_rxfreqch?	Queries the uplink frequency channel number.	10-35
rxtx_rxdpdchsymbolrate	Sets the uplink DPDCH symbol rate or queries the current setting.	10-35
rxtx_rxscramblingcode	Sets the uplink scrambling code number or queries the current setting.	10-35
rxtx_rxanalyzeswitch	Sets whether to perform the analysis synchronously or asynchronously or queries the current setting.	10-35
rxtx_rxpowerratio	Sets the power ratio for the asynchronous modulation analysis or queries the current setting.	10-36
rxtx_rxtimingoffset	Sets the reception timing offset for the synchronous modulation analysis or queries the current setting.	10-36
rxtx_rxoriginoffsetcancel?	Sets whether to enable origin offset cancel when measuring the modulation accuracy or queries the current setting.	10-36
rxtx_rxrfswitch	Turns ON/OFF RF input or queries the current setting.	10-36
rxtx_txadjustrfpower	Sets the RF transmission power adjustment or queries the current setting.	10-36
rxtx_rxadjustrfpower	Sets the RF reception power adjustment or queries the current setting.	10-36
rxtx_resultanalyze?	Queries the measured value of the EVM/frequency error.	10-36
rxtx_resultevm?	Queries the measurement result of the EVM.	10-36
rxtx_resultferr?	Queries the measurement result of the frequency error.	10-36
rxtx_resultpower?	Queries the measurement result of the transmission power.	10-37
rxtx_resultnoadjustpower?	Queries the measurement result of the transmission power excluding the adjustment.	10-37
rxtx_evmaverage	Queries the average count of the EVM/frequency error measurement or queries the current setting.	10-37
rxtx_poweraverage	Sets the average count of the power measurement or queries the current setting.	10-37
rxtx_measmode	Sets the measurement mode (single or repeat) or queries the current setting.	10-37
rxtx_evmcounter?	Queries the measurement count of the EVM/frequency error measurement.	10-37
rxtx_powercounter?	Queries the measurement count of the transmission power measurement.	10-37
Tx/Rx Tester Mode (GSM) Group		
rxtx_start	Starts transmission/reception.	10-38
rxtx_stop	Stops transmission/reception.	10-38
rxtxgsm_paramload	Loads the setup file for Tx/Rx tester mode (GSM).	10-38
rxtxgsm_paramsave	Saves the setup file for Tx/Rx tester mode (GSM).	10-38
rxtxgsm_freqband	Sets the GSM band or queries the current setting.	10-38
rxtxgsm_txfreqch	Sets the downlink frequency channel number or queries the current setting.	10-38
rxtxgsm_txfreqoffset	Sets the frequency offset during non-modulated signal output or queries the current setting.	10-38
rxtxgsm_txpowerrf	Sets the RF Tx power or queries the current setting.	10-38
rxtxgsm_txmodswitch	Turns On/Off the modulation or queries the current setting.	10-38
rxtxgsm_txrfswitch	Turns On/Off the RF power or queries the current setting.	10-39
rxtxgsm_txadjustrfpower	Sets the RF Tx power adjustment or queries the current setting.	10-39
rxtxgsm_rxadjustrfpower	Sets the RF reception power adjustment or queries the current setting.	10-39
rxtxgsm_resultanalyze?	Queries the measured value of the phase/frequency error.	10-39
rxtxgsm_resultperr?	Queries the measurement result of the phase error.	10-39
rxtxgsm_resultferr?	Queries the measurement result of the frequency error.	10-39
rxtxgsm_resultpower?	Queries the measurement result of the Tx power.	10-39

Command	Function	Page
rxtxgsm_resultnoadjustpower?	Queries the measurement result of the Tx power excluding the adjustment.	10-39
rxtxgsm_bursttiming?	Queries the judgement result of the burst timing.	10-39
rxtxgsm_perraverage	Sets the average count of the phase/frequency error measurement or queries the current setting.	10-40
rxtxgsm_poweraverage	Sets the average count of the power measurement or queries the current setting.	10-40
rxtxgsm_burstaverage	Sets the average count of the burst timing or queries the current setting.	10-40
rxtxgsm_measmode	Sets the measurement mode (single or repeat) or queries the current setting.	10-40
rxtxgsm_rxmode	Sets the Rx mode (burst or CW) or queries the current setting.	10-40
rxtxgsm_rxrfswitch	Turns ON/OFF RF input or queries the current setting.	10-40
rxtxgsm_modanalyzecounter?	Queries the measurement count of the phase/frequency error.	10-40
rxtxgsm_powercounter?	Queries the measurement count of the Tx power measurement.	10-40
rxtxgsm_burstcounter?	Queries the measurement count of the burst timing measurement.	10-40
rxtxgsm_txadjusted_rfpower?	Queries the RF Tx power after correction.	10-40
Signaling Tester Mode Group		
• Common		
signal_mode	Sets the test mode or queries the current setting.	10-41
signal_action	Sets whether to execute the test item or queries the current setting.	10-41
signal_meascount	Queries the number of measurements made on the test item for auto test.	10-44
signal_timeout?	Sets the measurement time of the test item or queries the current setting.	10-44
signal_effectsequence?	Queries the test sequence.	10-44
signal_start	Starts the signaling test.	10-44
signal_stop	Stops the signaling test.	10-44
signal_resitem?	Queries the most recent result of the test item.	10-45
signal_poweroff	Turns OFF the voltage output.	10-46
• Auto test (Common)		
signal_parammode?	Queries the test mode (single/continuous).	10-46
signal_param	Sets the model parameters or queries the current setting.	10-46
signal_uploadparam	Uploads the model parameters.	10-46
signal_combination_start	Releases the pause setting during the execution of a test in continuous test mode.	10-46
signal_combparamlist?	Queries the model parameter files that are registered in the loaded combination file.	10-46
signal_typeparam?	Queries the terminal type.	10-46
signal_rfconnectparam?	Queries the RF connection method.	10-46
signal_commentparam?	Queries the comment.	10-46
signal_ctrlparam?	Queries the control method.	10-46
signal_usbconnect	Sets whether to use the USB connection function or queries the current setting.	10-47
signal_genparam?	Queries the contents of the general setup parameters of the model parameters.	10-47
signal_result?	Retrieves the result of the most recent test.	10-47
signal_combresultfname?	Queries the name of the model parameter results file	10-47
signal_respevalue?	Queries the power value of the test item whose result is “power err.”	10-47
signal_imei?	Queries the IMEI (International Mobile Equipment Identity) retrieved via the USB.	10-47
signal_usbname?	Queries the model name retrieved via the USB.	10-47
signal_usbversion?	Queries the model version retrieved via the USB.	10-47
signal_printresult	Prints the results.	10-48
signal_printcancel	Cancels the printing.	10-48
signal_printresstatus?	Queries the print result.	10-48
signal_printstatus?	Queries the print status.	10-48
signal_resultusername?	Queries the user name of the most recent result log file.	10-48
signal_resultcompanyname?	Queries the company name of the most recent result log file.	10-48
signal_selectparam	Sets the model parameter selection method or queries the current setting.	10-48
signal_selectconnect	Sets the connection method for model parameter automatic selection or queries the current setting.	10-48
signal_selectprotocol	Sets the IMEI retrieval band for model parameter automatic selection or queries the current setting.	10-48

Command	Function	Page
signal_select_start	Clears the pause after IMEI retrieval during model parameter automatic selection.	10-48
signal_selectimeistatus?	Queries the status from IMEI retrieval until the test actually starts (for model parameter automatic selection).	10-48
• Auto test (W-CDMA)		
signal_wcdmacall_1?	Queries the call setup mode (from NW or from UE) of W-CDMA call setup 1.	10-49
signal_wcdmarel_1?	Queries the call release mode (from NW, from UE, or system handover) of W-CDMA call setup 1.	10-49
signal_wcdmacall_2?	Queries the call setup mode (from NW or from UE) of W-CDMA call setup 2.	10-49
signal_wcdmarel_2?	Queries the call release mode (from NW, from UE, or system handover) of W-CDMA call setup 2.	10-49
signal_speechposition?	Queries whether the speech test in auto mode is carried out when a Call Setup from NW or a Call Setup from UE occurs.	10-49
signal_speechdelaytime?	Queries the delay time of the speech test in auto test mode.	10-49
signal_protocolparam?	Queries the protocol data.	10-49
signal_wcdmapowerclass?	Queries the W-CDMA power class.	10-49
signal_wcdmadladjustpower1?	Queries the W-CDMA downlink power adjustment (F1).	10-49
signal_wcdmauladjustpower1?	Queries the W-CDMA uplink power adjustment (F1).	10-50
signal_wcdmadladjustpower2?	Queries the W-CDMA downlink power adjustment (F2).	10-50
signal_wcdmauladjustpower2?	Queries the W-CDMA uplink power adjustment (F2).	10-50
signal_wcdmadladjustpower3?	Queries the W-CDMA downlink power adjustment (F3).	10-50
signal_wcdmauladjustpower3?	Queries the W-CDMA uplink power adjustment (F3).	10-50
signal_wcdmadownlinkpower?	Queries the W-CDMA downlink power value.	10-50
signal_wcdmadownlinkfreqch1?	Queries the W-CDMA downlink frequency channel (F1).	10-50
signal_wcdmadownlinkfreqch2?	Queries the W-CDMA downlink frequency channel (F2).	10-50
signal_wcdmadownlinkfreqch3?	Queries the W-CDMA downlink frequency channel (F3).	10-50
signal_wcdmaopenlooppowerupper?	Queries the upper limit of the W-CDMA open loop power.	10-50
signal_wcdmaopenlooppowerlower?	Queries the lower limit of the W-CDMA open loop power.	10-50
signal_wcdmamaxtxpowerdlpower?	Queries the downlink power value when measuring the W-CDMA maximum output power.	10-51
signal_wcdmamaxtxpowerupper?	Queries the upper limit of the W-CDMA maximum output power.	10-51
signal_wcdmamaxtxpowerlower?	Queries the lower limit of the W-CDMA maximum output power.	10-51
signal_wcdmamintxpowerdlpower?	Queries the downlink power value when measuring the W-CDMA minimum output power.	10-51
signal_wcdmamintxpowerupper?	Queries the upper limit of the W-CDMA minimum output power.	10-51
signal_wcdmainnerlooppowerdlpower?	Queries the downlink power when measuring the W-CDMA inner loop power.	10-51
signal_wcdmainnerlooppower1upper?	Queries the upper limit of 1-step W-CDMA inner loop power.	10-51
signal_wcdmainnerlooppower1lower?	Queries the lower limit of 1-step W-CDMA inner loop power.	10-51
signal_wcdmainnerlooppower10upper?	Queries the upper limit of 10-step W-CDMA inner loop power.	10-51
signal_wcdmainnerlooppower10lower?	Queries the lower limit of 10-step W-CDMA inner loop power.	10-51
signal_wcdmafreqerrdlpower?	Queries the downlink power when measuring the W-CDMA frequency error.	10-52
signal_wcdmafreqerrupper?	Queries the upper limit of the W-CDMA frequency error.	10-52
signal_wcdmaevm1dlpower?	Queries the downlink power when measuring the W-CDMA modulation accuracy (1).	10-52
signal_wcdmaevm1upper?	Queries the upper limit of the W-CDMA modulation accuracy (1).	10-52

Command	Function	Page
signal_wcdmaevm1originoffsetcancel?	Queries the origin offset cancel when measuring the W-CDMA modulation accuracy (1) in the currently loaded model parameters.	10-52
signal_wcdmaevm2dlpower?	Queries the downlink power when measuring the W-CDMA modulation accuracy (2).	10-52
signal_wcdmaevm2ulpowerupper?	Queries the upper limit of the uplink power when measuring the W-CDMA modulation accuracy (2).	10-52
signal_wcdmaevm2ulpowerlower?	Queries the lower limit of the uplink power when measuring the W-CDMA modulation accuracy (2).	10-52
signal_wcdmaevm2upper?	Queries the upper limit of the W-CDMA modulation accuracy (2).	10-52
signal_wcdmaevm2originoffsetcancel?	Queries the origin offset cancel when measuring the W-CDMA modulation accuracy (2) in the currently loaded model parameters.	10-52
signal_wcdmaminsensitivitydlpower?	Queries the downlink power when measuring the W-CDMA reference sensitivity.	10-53
signal_wcdmaminsensitivityupper?	Queries the upper limit of the W-CDMA reference sensitivity.	10-53
signal_wcdmamaxinvoltagedlpower?	Queries the downlink power when measuring the W-CDMA maximum input.	10-53
signal_wcdmamaxinvoltageupper?	Queries the upper limit of the W-CDMA maximum input.	10-53
signal_wcdmapowersupply?	Queries the supplied voltage.	10-53
signal_wcdmaidlecurrentpeakupper?	Queries the upper limit of the peak current consumption value.	10-53
signal_wcdmaidlecurrentrmsupper?	Queries the upper limit of the rms current consumption value.	10-53
signal_wcdmaauthenticationselect?	Queries the authentication key type in the currently loaded model parameters.	10-53
signal_wcdmaauthenticationkey?	Queries the authentication key of the currently loaded model parameters.	10-53
signal_speechresult	Enters the speech test result in auto test mode.	10-53
• Auto test (GSM)		
signal_gsm_start	Starts the GSM test in signaling mode.	10-53
signal_gsmcall_1?	Queries the connection method of call setup 1.	10-54
signal_gsmdialno?	Queries the dial number for the dial test.	10-54
signal_gsmrel_1?	Queries the disconnection method of call release 1.	10-54
signal_gsmcall_2?	Queries the connection method of call setup 2.	10-54
signal_gsmrel_2?	Queries the disconnection method of call release 2.	10-54
signal_gsm_speechposition?	Queries whether the speech test in auto mode is carried out when a Call Setup from NW or a Call Setup from UE occurs.	10-54
signal_gsm_speechdelaytime?	Queries the delay time of the speech test in auto test mode.	10-54
signal_gsm_speechresult	Enters the speech test result in auto test mode.	10-54
signal_imsi?	Queries the IMSI.	10-54
signal_gsm_b1freqband?	Queries the frequency band setting of GSM frequency band 1.	10-54
signal_gsm_b1freqbcch?	Queries the BCCH setting of GSM frequency band 1.	10-54
signal_gsm_b1freqtch1?	Queries the channel 1 setting of GSM frequency band 1.	10-55
signal_gsm_b1freqtch2?	Queries the channel 2 setting of GSM frequency band 1.	10-55
signal_gsm_b1freqtch3?	Queries the channel 3 setting of GSM frequency band 1.	10-55
signal_gsm_b1dladjustpowerbcch?	Queries the BCCH downlink correction setting of GSM frequency band 1.	10-55
signal_gsm_b1uladjustpowerbcch?	Queries the BCCH uplink correction setting of GSM frequency band 1.	10-55
signal_gsm_b1dladjustpower1?	Queries the channel 1 downlink correction setting of GSM frequency band 1.	10-55
signal_gsm_b1uladjustpower1?	Queries the channel 1 uplink correction setting of GSM frequency band 1.	10-55
signal_gsm_b1dladjustpower2?	Queries the channel 2 downlink correction setting of GSM frequency band 1.	10-55

Command	Function	Page
signal_gsm_b1uladjustpower2?	Queries the channel 2 uplink correction setting of GSM frequency band 1.	10-55
signal_gsm_b1dladjustpower3?	Queries the channel 3 downlink correction setting of GSM frequency band 1.	10-55
signal_gsm_b1uladjustpower3?	Queries the channel 3 uplink correction setting of GSM frequency band 1.	10-55
signal_gsm_b1downlinkpower?	Queries the downlink power setting of GSM frequency band 1.	10-55
signal_gsm_b1phasefreqaccuracy_pclh?	Queries the power control (high) for the phase error and frequency error measurements of GSM frequency band 1.	10-55
signal_gsm_b1phasefreqaccuracy_pclm?	Queries the power control (middle) for the phase error and frequency error measurements of GSM frequency band 1.	10-56
signal_gsm_b1phasefreqaccuracy_pcll?	Queries the power control (low) for the phase error and frequency error measurements of GSM frequency band 1.	10-56
signal_gsm_b1phaseerrpeak_upper?	Queries the upper limit of the phase error (peak) of GSM frequency band 1.	10-56
signal_gsm_b1phaseerrrms_upper?	Queries the upper limit of the phase error (RMS) of GSM frequency band 1.	10-56
signal_gsm_b1freqerr_upper?	Queries the upper limit of the frequency error of GSM frequency band 1.	10-56
signal_gsm_b1txpower_pclh?	Queries the power control (high) for the Tx power measurement of GSM frequency band 1.	10-56
signal_gsm_b1txpower_pclh_upper?	Queries the upper limit of the Tx power measurement [power control (high)] of GSM frequency band 1.	10-56
signal_gsm_b1txpower_pclh_lower?	Queries the lower limit of the Tx power measurement [power control (high)] of GSM frequency band 1.	10-56
signal_gsm_b1txpower_pclm?	Queries the power control (middle) for the Tx power measurement of GSM frequency band 1.	10-56
signal_gsm_b1txpower_pclm_upper?	Queries the upper limit of the Tx power measurement [power control (middle)] of GSM frequency band 1.	10-56
signal_gsm_b1txpower_pclm_lower?	Queries the lower limit of the Tx power measurement [power control (middle)] of GSM frequency band 1.	10-56
signal_gsm_b1txpower_pcll?	Queries the power control (low) for the Tx power measurement of GSM frequency band 1.	10-56
signal_gsm_b1txpower_pcll_upper?	Queries the upper limit of the Tx power measurement [power control (low)] of GSM frequency band 1.	10-57
signal_gsm_b1txpower_pcll_lower?	Queries the lower limit of the Tx power measurement [power control (low)] of GSM frequency band 1.	10-57
signal_gsm_b1bursttiming_pclh?	Queries the power control (high) for the burst timing measurement of GSM frequency band 1.	10-57
signal_gsm_b1bursttiming_pclm?	Queries the power control (middle) for the burst timing measurement of GSM frequency band 1.	10-57
signal_gsm_b1bursttiming_pcll?	Queries the power control (low) for the burst timing measurement of GSM frequency band 1.	10-57
signal_gsm_b1rxquality_dlph?	Queries the downlink power (high) for the Rx quality measurement of GSM frequency band 1.	10-57

Command	Function	Page
signal_gsm_b1rxquality_dlph_upper?	Queries the upper limit for the Rx quality measurement [downlink power (high)] of GSM frequency band 1.	10-57
signal_gsm_b1rxquality_dlpl?	Queries the downlink power (low) for the Rx quality measurement of GSM frequency band 1.	10-57
signal_gsm_b1rxquality_dlpl_upper?	Queries the upper limit for the Rx quality measurement [downlink power (low)] of GSM frequency band 1.	10-57
signal_gsm_b1rxlevel_dlph?	Queries the downlink power (high) for the Rx level measurement of GSM frequency band 1.	10-57
signal_gsm_b1rxlevel_dlph_upper?	Queries the upper limit for the Rx level measurement [downlink power (high)] of GSM frequency band 1.	10-57
signal_gsm_b1rxlevel_dlph_lower?	Queries the lower limit for the Rx level measurement [downlink power (high)] of GSM frequency band 1.	10-57
signal_gsm_b1rxlevel_dlpl?	Queries the downlink power (low) for the Rx level measurement of GSM frequency band 1.	10-58
signal_gsm_b1rxlevel_dlpl_upper?	Queries the upper limit for the Rx level measurement [downlink power (low)] of GSM frequency band 1.	10-58
signal_gsm_b1rxlevel_dlpl_lower?	Queries the lower limit for the Rx level measurement [downlink power (low)] of GSM frequency band 1.	10-58
signal_gsm_b1ber_dlph?	Queries the downlink power (high) for the FER-RBER measurement of GSM frequency band 1.	10-58
signal_gsm_b1ber_dlph_ferupper?	Queries the upper limit for the FER measurement [downlink power (high)] of GSM frequency band 1.	10-58
signal_gsm_b1ber_dlph_rber1upper?	Queries the upper limit for the RBER1 measurement [downlink power (high)] of GSM frequency band 1.	10-58
signal_gsm_b1ber_dlph_rber2upper?	Queries the upper limit for the RBER2 measurement [downlink power (high)] of GSM frequency band 1.	10-58
signal_gsm_b1ber_dlpl?	Queries the downlink power (low) for the FER-RBER measurement of GSM frequency band 1.	10-58
signal_gsm_b1ber_dlpl_ferupper?	Queries the upper limit for the FER measurement [downlink power (low)] of GSM frequency band 1.	10-58
signal_gsm_b1ber_dlpl_rber1upper?	Queries the upper limit for the RBER1 measurement [downlink power (low)] of GSM frequency band 1.	10-58
signal_gsm_b1ber_dlpl_rber2upper?	Queries the upper limit for the RBER2 measurement [downlink power (low)] of GSM frequency band 1.	10-58
signal_gsmpowersupply?	Queries the supply voltage in the currently loaded model parameters.	10-58
signal_gsm_b1currentusepeak_upper?	Queries the upper limit of the measurement of the current consumption in connected mode (peak) of GSM frequency band 1.	10-59
signal_gsm_b1currentuserms_upper?	Queries the upper limit of the measurement of the current consumption in connected mode (RMS) of GSM frequency band 1.	10-59
signal_gsm_b1currentuse_pcl?	Queries the power control for the measurement of the current consumption in connected mode of GSM frequency band 1.	10-59

Command	Function	Page
signal_gsm_b1currentwaitpeak_upper?	Queries the upper limit of the measurement of the current consumption in idle mode (peak) of GSM frequency band 1.	10-59
signal_gsm_b1currentwaitrms_upper?	Queries the upper limit of the measurement of the current consumption in idle mode (RMS) of GSM frequency band 1.	10-59
signal_gsm_b2freqband?	Queries the frequency band setting of GSM frequency band 2.	10-59
signal_gsm_b2freqtch1?	Queries the channel 2 setting of GSM frequency band 1.	10-59
signal_gsm_b2freqtch2?	Queries the channel 2 setting of GSM frequency band 2.	10-59
signal_gsm_b2freqtch3?	Queries the channel 3 setting of GSM frequency band 2.	10-59
signal_gsm_b2dladjustpower1?	Queries the channel 2 downlink correction setting of GSM frequency band 1.	10-59
signal_gsm_b2uladjustpower1?	Queries the channel 2 uplink correction setting of GSM frequency band 1.	10-59
signal_gsm_b2dladjustpower2?	Queries the channel 2 downlink correction setting of GSM frequency band 2.	10-59
signal_gsm_b2uladjustpower2?	Queries the channel 2 uplink correction setting of GSM frequency band 2.	10-59
signal_gsm_b2dladjustpower3?	Queries the channel 3 downlink correction setting of GSM frequency band 2.	10-60
signal_gsm_b2uladjustpower3?	Queries the channel 3 uplink correction setting of GSM frequency band 2.	10-60
signal_gsm_b2phasefreqaccuracy_pclh?	Queries the power control (high) for the phase error and frequency error measurements of GSM frequency band 2.	10-60
signal_gsm_b2phasefreqaccuracy_pclm?	Queries the power control (middle) for the phase error and frequency error measurements of GSM frequency band 2.	10-60
signal_gsm_b2phasefreqaccuracy_pcll?	Queries the power control (low) for the phase error and frequency error measurements of GSM frequency band 2.	10-60
signal_gsm_b2phaseerrpeak_upper?	Queries the upper limit of the phase error (peak) of GSM frequency band 2.	10-60
signal_gsm_b2phaseerrrms_upper?	Queries the upper limit of the phase error (RMS) of GSM frequency band 2.	10-60
signal_gsm_b2freqerr_upper?	Queries the upper limit of the frequency error of GSM frequency band 2.	10-60
signal_gsm_b2txpower_pclh?	Queries the power control (high) for the Tx power measurement of GSM frequency band 2.	10-60
signal_gsm_b2txpower_pclh_upper?	Queries the upper limit of the Tx power measurement [power control (high)] of GSM frequency band 2.	10-60
signal_gsm_b2txpower_pclh_lower?	Queries the lower limit of the Tx power measurement [power control (high)] of GSM frequency band 2.	10-60
signal_gsm_b2txpower_pclm?	Queries the power control (middle) for the Tx power measurement of GSM frequency band 2.	10-61
signal_gsm_b2txpower_pclm_upper?	Queries the upper limit of the Tx power measurement [power control (middle)] of GSM frequency band 2.	10-61
signal_gsm_b2txpower_pclm_lower?	Queries the lower limit of the Tx power measurement [power control (middle)] of GSM frequency band 2.	10-61
signal_gsm_b2txpower_pcll?	Queries the power control (low) for the Tx power measurement of GSM frequency band 2.	10-61
signal_gsm_b2txpower_pcll_upper?	Queries the upper limit of the Tx power measurement [power control (low)] of GSM frequency band 2.	10-61
signal_gsm_b2txpower_pcll_lower?	Queries the lower limit of the Tx power measurement [power control (low)] of GSM frequency band 2.	10-61

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signal_gsm_b2bursttiming_pclh?	Queries the power control (high) for the burst timing measurement of GSM frequency band 2.	10-61
signal_gsm_b2bursttiming_pclm?	Queries the power control (middle) for the burst timing measurement of GSM frequency band 2.	10-61
signal_gsm_b2bursttiming_pcll?	Queries the power control (low) for the burst timing measurement of GSM frequency band 2.	10-61
signal_gsm_b2rxquality_dlph?	Queries the downlink power (high) for the Rx quality measurement of GSM frequency band 2.	10-61
signal_gsm_b2rxquality_dlph_upper?	Queries the upper limit for the Rx quality measurement [downlink power (high)] of GSM frequency band 2.	10-62
signal_gsm_b2rxquality_dlpl?	Queries the downlink power (low) for the Rx quality measurement of GSM frequency band 2.	10-62
signal_gsm_b2rxquality_dlpl_upper?	Queries the upper limit for the Rx quality measurement [downlink power (low)] of] GSM frequency band 2.	10-62
signal_gsm_b2rxlevel_dlph?	Queries the downlink power (high) for the Rx level measurement of GSM frequency band 2.	10-62
signal_gsm_b2rxlevel_dlph_upper?	Queries the upper limit for the Rx level measurement [downlink power (high)] of GSM frequency band 2.	10-62
signal_gsm_b2rxlevel_dlph_lower?	Queries the lower limit for the Rx level measurement [downlink power (high)] of GSM frequency band 2.	10-62
signal_gsm_b2rxlevel_dlpl?	Queries the downlink power (low) for the Rx level measurement of GSM frequency band 2.	10-62
signal_gsm_b2rxlevel_dlpl_upper?	Queries the upper limit for the Rx level measurement [downlink power (low)] of GSM frequency band 2.	10-62
signal_gsm_b2rxlevel_dlpl_lower?	Queries the lower limit for the Rx level measurement [downlink power (low)] of GSM frequency band 2.	10-62
signal_gsm_b2ber_dlph?	Queries the downlink power (high) for the FER-RBER measurement of GSM frequency band 2.	10-62
signal_gsm_b2ber_dlph_ferupper?	Queries the upper limit for the FER measurement [downlink power (high)] of GSM frequency band 2.	10-63
signal_gsm_b2ber_dlph_rber1upper?	Queries the upper limit for the RBER1 measurement [downlink power (high)] of GSM frequency band 2.	10-63
signal_gsm_b2ber_dlph_rber2upper?	Queries the upper limit for the RBER2 measurement [downlink power (high)] of GSM frequency band 2.	10-63
signal_gsm_b2ber_dlpl?	Queries the downlink power (low) for the FER-RBER measurement of GSM frequency band 2.	10-63
signal_gsm_b2ber_dlpl_ferupper?	Queries the upper limit for the FER measurement [downlink power (low)] of GSM frequency band 2.	10-63
signal_gsm_b2ber_dlpl_rber1upper?	Queries the upper limit for the RBER1 measurement [downlink power (low)] of GSM frequency band 2.	10-63

Command	Function	Page
signal_gsm_b2ber_dlpl_rber2upper?	Queries the upper limit for the RBER2 measurement [downlink power (low)] of GSM frequency band 2.	10-63
signal_gsm_b2currentuse_pcl?	Queries the power control for the measurement of the current consumption in connected mode of GSM frequency band 2.	10-63
signal_gsm_b2currentusepeak_upper?	Queries the upper limit of the measurement of the current consumption in connected mode (peak) of GSM frequency band 2.	10-63
signal_gsm_b2currentuserms_upper?	Queries the upper limit of the measurement of the current consumption in connected mode (RMS) of GSM frequency band 2.	10-63
signal_gsm_b3freqband?	Queries the frequency band setting of GSM frequency band 3.	10-63
signal_gsm_b3freqtch1?	Queries the channel 3 setting of GSM frequency band 1.	10-63
signal_gsm_b3freqtch2?	Queries the channel 2 setting of GSM frequency band 3.	10-63
signal_gsm_b3freqtch3?	Queries the channel 3 setting of GSM frequency band 3.	10-63
signal_gsm_b3dladjustpower1?	Queries the channel 3 downlink correction setting of GSM frequency band 1.	10-63
signal_gsm_b3uladjustpower1?	Queries the channel 3 uplink correction setting of GSM frequency band 1.	10-63
signal_gsm_b3dladjustpower2?	Queries the channel 2 downlink correction setting of GSM frequency band 3.	10-64
signal_gsm_b3uladjustpower2?	Queries the channel 2 uplink correction setting of GSM frequency band 3.	10-64
signal_gsm_b3dladjustpower3?	Queries the channel 3 downlink correction setting of GSM frequency band 3.	10-64
signal_gsm_b3uladjustpower3?	Queries the channel 3 uplink correction setting of GSM frequency band 3.	10-64
signal_gsm_b3phasefreqaccuracy_pclh?	Queries the power control (high) for the phase error and frequency error measurements of GSM frequency band 3.	10-64
signal_gsm_b3phasefreqaccuracy_pclm?	Queries the power control (middle) for the phase error and frequency error measurements of GSM frequency band 3.	10-64
signal_gsm_b3phasefreqaccuracy_pcll?	Queries the power control (low) for the phase error and frequency error measurements of GSM frequency band 3.	10-64
signal_gsm_b3phaseerrpeak_upper?	Queries the upper limit of the phase error (peak) of GSM frequency band 3.	10-64
signal_gsm_b3phaseerrrms_upper?	Queries the upper limit of the phase error (RMS) of GSM frequency band 3.	10-64
signal_gsm_b3freqerr_upper?	Queries the upper limit of the frequency error of GSM frequency band 3.	10-64
signal_gsm_b3txpower_pclh?	Queries the power control (high) for the Tx power measurement of GSM frequency band 3.	10-64
signal_gsm_b3txpower_pclh_upper?	Queries the upper limit of the Tx power measurement [power control (high)] of GSM frequency band 3.	10-64
signal_gsm_b3txpower_pclh_lower?	Queries the lower limit of the Tx power measurement [power control (high)] of GSM frequency band 3.	10-65
signal_gsm_b3txpower_pclm?	Queries the power control (middle) for the Tx power measurement of GSM frequency band 3.	10-65
signal_gsm_b3txpower_pclm_upper?	Queries the upper limit of the Tx power measurement [power control (middle)] of GSM frequency band 3.	10-65
signal_gsm_b3txpower_pclm_lower?	Queries the lower limit of the Tx power measurement [power control (middle)] of GSM frequency band 3.	10-65
signal_gsm_b3txpower_pcll?	Queries the power control (low) for the Tx power measurement of GSM frequency band 3.	10-65
signal_gsm_b3txpower_pcll_upper?	Queries the upper limit of the Tx power measurement [power control (low)] of GSM frequency band 3.	10-65

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signal_gsm_b3txpower_pcll_lower?	Queries the lower limit of the Tx power measurement [power control (low)] of GSM frequency band 3.	10-65
signal_gsm_b3bursttiming_pclh?	Queries the power control (high) for the burst timing measurement of GSM frequency band 3.	10-65
signal_gsm_b3bursttiming_pclm?	Queries the power control (middle) for the burst timing measurement of GSM frequency band 3.	10-65
signal_gsm_b3bursttiming_pcll?	Queries the power control (low) for the burst timing measurement of GSM frequency band 3.	10-65
signal_gsm_b3rxquality_dlph?	Queries the downlink power (high) for the Rx quality measurement of GSM frequency band 3.	10-65
signal_gsm_b3rxquality_dlph_upper?	Queries the upper limit for the Rx quality measurement [downlink power (high)] of GSM frequency band 3.	10-65
signal_gsm_b3rxquality_dlpl?	Queries the downlink power (low) for the Rx quality measurement of GSM frequency band 3.	10-66
signal_gsm_b3rxquality_dlpl_upper?	Queries the upper limit for the Rx quality measurement [downlink power (low)] of GSM frequency band 3.	10-66
signal_gsm_b3rxlevel_dlph?	Queries the downlink power (high) for the Rx level measurement of GSM frequency band 3.	10-66
signal_gsm_b3rxlevel_dlph_upper?	Queries the upper limit for the Rx level measurement [downlink power (high)] of GSM frequency band 3.	10-66
signal_gsm_b3rxlevel_dlph_lower?	Queries the lower limit for the Rx level measurement [downlink power (high)] of GSM frequency band 3.	10-66
signal_gsm_b3rxlevel_dlpl?	Queries the downlink power (low) for the Rx level measurement of GSM frequency band 3.	10-66
signal_gsm_b3rxlevel_dlpl_upper?	Queries the upper limit for the Rx level measurement [downlink power (low)] of GSM frequency band 3.	10-66
signal_gsm_b3rxlevel_dlpl_lower?	Queries the lower limit for the Rx level measurement [downlink power (low)] of GSM frequency band 3.	10-66
signal_gsm_b3ber_dlph?	Queries the downlink power (high) for the FER-RBER measurement of GSM frequency band 3.	10-66
signal_gsm_b3ber_dlph_ferupper?	Queries the upper limit for the FER measurement [downlink power (high)] of GSM frequency band 3.	10-66
signal_gsm_b3ber_dlph_rber1upper?	Queries the upper limit for the RBER1 measurement [downlink power (high)] of GSM frequency band 3.	10-66
signal_gsm_b3ber_dlph_rber2upper?	Queries the upper limit for the RBER2 measurement [downlink power (high)] of GSM frequency band 3.	10-66
signal_gsm_b3ber_dlpl?	Queries the downlink power (low) for the FER-RBER measurement of GSM frequency band 3.	10-67
signal_gsm_b3ber_dlpl_ferupper?	Queries the upper limit for the FER measurement [downlink power (low)] of GSM frequency band 3.	10-67

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signal_gsm_b3ber_dlpl_rber1upper?	Queries the upper limit for the RBER1 measurement [downlink power (low)] of GSM frequency band 3.	10-67
signal_gsm_b3ber_dlpl_rber2upper?	Queries the upper limit for the RBER2 measurement [downlink power (low)] of GSM frequency band 3.	10-67
signal_gsm_powerctlmethod?	Queries the GSM power control method in the currently loaded model parameters.	10-67
signal_gsm_powerctlmode?	Sets or queries the power control method for the RF characteristics test set in the model parameter file.	10-67
signal_gsm_b3currentuse_pcl?	Queries the power control for the measurement of the current consumption in connected mode of GSM frequency band 3.	10-67
signal_gsm_b3currentuserms_upper?	Queries the upper limit of the measurement of the current consumption in connected mode (RMS) of GSM frequency band 3.	10-67
signal_gsm_b3currentusepeak_upper?	Queries the upper limit of the measurement of the current consumption in connected mode (peak) of GSM frequency band 3.	10-67
• Manual test (common)		
signal_manualparamload	Loads the test condition setup file of the manual test.	10-67
signal_manualparamsave	Saves the test condition setup file of the manual test.	10-67
• Manual test (W-CDMA)		
signal_manualprofile	Sets the profile or queries the current setting.	10-68
signal_manualpowersupply	Sets the supply voltage or queries the current setting.	10-68
signal_manualfreq	Sets the downlink frequency channel for manual mode or queries the current setting.	10-68
signal_manualtxpower	Sets the downlink power or queries the current setting.	10-68
signal_manualadjustpower_band1dl	Sets the W-CDMA Band 1 downlink adjustment value or queries the current setting.	10-68
signal_manualadjustpower_band1ul	Sets the W-CDMA Band 1 uplink adjustment value or queries the current setting.	10-68
signal_manualadjustpower_band2dl	Sets the W-CDMA Band 2 downlink adjustment value or queries the current setting.	10-69
signal_manualadjustpower_band2ul	Sets the W-CDMA Band 2 uplink adjustment value or queries the current setting.	10-69
signal_manualadjustpower_band3dl	Sets the W-CDMA Band 3 downlink adjustment value or queries the current setting.	10-69
signal_manualadjustpower_band3ul	Sets the W-CDMA Band 3 uplink adjustment value or queries the current setting.	10-69
signal_manualadjustpower_band5dl	Sets the W-CDMA Band 5 and 6 downlink adjustment value or queries the current setting.	10-69
signal_manualadjustpower_band5ul	Sets the W-CDMA Band 5 and 6 uplink adjustment value or queries the current setting.	10-70
signal_manualadjustpower_band6dl	Sets the W-CDMA Band 5 and 6 downlink adjustment value or queries the current setting.	10-70
signal_manualadjustpower_band6ul	Sets the W-CDMA Band 5 and 6 uplink adjustment value or queries the current setting.	10-70

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signal_manualadjustpower_band9dl	Sets the W-CDMA Band9 downlink adjustment value or queries the current setting.	10-70
signal_manualadjustpower_band9ul	Sets the W-CDMA Band9 uplink adjustment value or queries the current setting.	10-71
signal_manualauthenticationselect	Sets the authentication key to be used in the manual test or queries the current setting.	10-71
signal_manualauthenticationkey	Sets the user-defined authentication key to be used in the manual test or queries the current setting.	10-71
signal_manualuplinkpower	Sets the uplink power of the Tx characteristics test for the manual test mode or queries the current setting.	10-71
signal_manualinnerposition	Sets the inner loop power test segment or queries the current setting.	10-71
signal_manualevmoriginoffsetcancel	Sets the origin offset cancel during modulation accuracy measurement or queries the current setting.	10-71
signal_manualdownlinkpower	Sets the downlink power of the Rx characteristics test for the manual test mode or queries the current setting.	10-72
signal_manualbercodedomain	Sets the code domain power in the loopback BER measurement.	10-72
signal_manualspeechdelay	Sets the delay time of the speech test in manual test mode or queries the current setting.	10-72
signal_wcdma_manualmeasuremode	Sets or queries the manual test (WCDMA) mode (Repeat or Single).	10-72
signal_manualadjustpower_dl	Sets the current downlink adjustment value or queries the current setting.	10-72
signal_manualadjustpower_ul	Sets the current uplink adjustment value or queries the current setting.	10-72
signal_callnet	Initiates call setup from NW.	10-72
signal_callms	Initiates call setup from UE.	10-72
signal_relnet	Initiates call release from NW.	10-73
signal_relms	Initiates call release from UE.	10-73
signal_closeloop	Executes loopback.	10-73
signal_openloop	Releases loopback.	10-73
signal_manualsystemhandover	Executes inter-RAT handovers from W-CDMA to GSM.	10-73
signal_manualcpich	Queries the CPICH information of the measurement report.	10-73
signal_wcdma_manualdataclear	Clears the manual mode data (WCDMA).	10-73
• Manual test (GSM)		
signal_gsm_bcchfreqband	Sets the BCCH frequency band the manual test (GSM).	10-74
signal_gsm_bcch	Sets the GSM BCCH channel number or queries the current setting.	10-74
signal_gsm_freqband	Sets the GSM type or queries the current setting.	10-74
signal_gsm_tch	Sets the GSM TCH channel number or queries the current setting.	10-74
signal_gsm_manualcurrentdlpower	Sets the current downlink power or queries the current setting.	10-74
signal_gsm_manualadjustpower_gsmdl	Sets the GSM900 band downlink adjustment value or queries the current setting.	10-74
signal_gsm_manualadjustpower_gsmul	Sets the GSM900 band uplink adjustment value or queries the current setting.	10-74
signal_gsm_manualadjustpower_dcsdl	Sets the DCS1800 band downlink adjustment value or queries the current setting.	10-75
signal_gsm_manualadjustpower_dcsul	Sets the DCS1800 band uplink adjustment value or queries the current setting.	10-75
signal_gsm_manualadjustpower_pcsdl	Sets the PCS1900 band downlink adjustment value or queries the current setting.	10-75
signal_gsm_manualadjustpower_pcsul	Sets the PCS1900 band uplink adjustment value or queries the current setting.	10-75
signal_gsm_manualpowerctl	Sets the uplink power of the Tx characteristics test for the GSM manual test mode or queries the current setting.	10-75

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signal_gsm_manualdownlinkpower	Sets the downlink power of the Rx characteristics test for the GSM manual test mode or queries the current setting.	10-75
signal_gsm_manualspeechdelay	Sets the delay time of the speech test in manual test mode or queries the current setting.	10-76
signal_gsm_manualadjustpower_dl	Sets the current downlink adjustment value or queries the current setting.	10-76
signal_gsm_manualadjustpower_ul	Sets the current uplink adjustment value or queries the current setting.	10-76
signal_gsm_changefreqband	Sets the channels frequency band of the frequency handover or queries the current setting.	10-76
signal_gsm_manualpowerctlmethod	Sets the power control method or queries the current setting.	10-76
signal_gsm_manualpowerctlmode	Sets or queries the power control method for the RF characteristics test of the manual test (GSM).	10-76
signal_gsm_manualmeasuremode	Sets or queries the manual test (GSM) mode (Repeat or Single).	10-77
signal_gsm_changetch	Sets the GSM frequency handover channel number or queries the current setting.	10-77
signal_gsm_locupd	Updates the location of the GSM terminal.	10-77
signal_gsm_callnet	Initiates call setup from NW for GSM.	10-77
signal_gsm_callms	Initiates call setup from UE for GSM.	10-77
signal_gsm_gprs	Executes GPRS Attach/Detach.	10-77
signal_gsm_handover	Executes GSM frequency handover.	10-77
signal_gsm_loopback	Executes GSM loopback mode.	10-77
signal_gsm_releaseloopback	Exits from GSM loopback mode to Connected (Speech) mode.	10-77
signal_gsm_relnet	Initiates call release from NW for GSM.	10-77
signal_gsm_relms	Initiates call release from UE GSM.	10-78
signal_gsm_manualdataclear	Clears the manual mode data (GSM).	10-78
Asynchronous Event Group		
MOK sys_mode	Notifies the change in the tester mode.	10-79
MOK sys_initialized	Settings were initialinzed.	10-79
MOK sys_rffreqswitch	Notifies the internal/external switching of the RF reference frequency.	10-79
MOK sys_rfextfreq	Notifies the change in the external RF reference frequency.	10-79
MOK sys_pllnolock	Notifies that the PLL is not locked.	10-79
MOK sys_plllocked	Notifies that the PLL has been locked.	10-79
MOK sys_pllunlocked	Notifies that the PLL has been unlocked.	10-79
MOK sys_pllrefunlocked	Notifies that the PLL reference clock has been unlocked.	10-79
MOK sys_clockout	Notifies the change in the type of clock out to be output.	10-79
MOK sys_timingout	Notifies the change in the type of timing signal to be output.	10-79
MOK rxtx_start	Notifies that the transmission and reception in Rx/Tx mode has started.	10-79
MOK rxtx_stop	Notifies that the transmission and reception in Rx/Tx mode has stopped.	10-79
• Tx/Rx Terster Mode (W-CDMA)		
MOK rxtx_txcodepower	Notifies the change in the code power.	10-79
MOK rxtx_paramloaded	Notifies the loading the downlink/uplink setup file.	10-79
MOK rxtx_txfreqch	Notifies the change in the downlink frequency channel number.	10-80
MOK rxtxgsm_txfreqoffset	The frequency offset of non-modulated signal output was changed.	10-80
MOK rxtx_txpowerrf	Notifies the change in the RF transmission power.	10-80
MOK rxtx_txdpchsymbolrate	Notifies the change in the DPCH symbol rate.	10-80
MOK rxtx_txdpchchannelization	Notifies the change in the DPCH channelization code.	10-80
MOK rxtx_txscramblingcode	Notifies the change in the scrambling code number.	10-80
MOK rxtx_txpichchannelization	Notifies the change in the PICH channelization code number.	10-80
MOK rxtx_txscpichchannelization	Notifies the change in the S-CPICH channelization code number.	10-80
MOK rxtx_txpichtimingoffset	Notifies the change in the PICH timing offset.	10-80
MOK rxtx_txdpchtimingoffset	Notifies the change in the DPCH timing offset.	10-80

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MOK rxtx_txmodswitch	Notifies the change in the On/Off condition of the modulation.	10-80
MOK rxtx_txrfswitch	Notifies the change in the On/Off condition of the RF transmission power.	10-80
MOK rxtx_rxdpdchsymbolrate	Notifies the change in the DPDCH symbol rate.	10-80
MOK rxtx_rxscramblingcode	Notifies the change in the uplink scrambling code.	10-80
MOK rxtx_rxanalyzeswitch	Notifies the change in the uplink setup mode (synchronous/asynchronous).	10-81
MOK rxtx_rxpowerratio	Notifies the change in the power ratio.	10-81
MOK rxtx_rxtimingoffset	Notifies the change in the timing offset.	10-81
MOK rxtx_analyze	Notifies the measurement result of the EVM and frequency error.	10-81
MOK rxtx_powermeasure	Notifies the measurement result of the transmission power.	10-81
MOK rxtx_txadjustrfpower	Notifies the change in the setting of the RF transmission power adjustment.	10-81
MOK rxtx_rxadjustrfpower	Notifies the change in the adjustment setting of the measured transmission power value.	10-81
MOK rxtx_evmaverage	Notifies the change in the average count of the EVM/frequency error measurement.	10-81
MOK rxtx_poweraverage	Notifies the change in the average count of the transmission power measurement.	10-81
MOK rxtx_measmode	Notifies the change in the measurement mode (single/repeat).	10-81
MOK rxtx_evmcounter	Notifies the change in the current number of measurements of the EVM/frequency error measurement.	10-81
MOK rxtx_powercounter	Notifies the change in the current number of measurements of the transmission power measurement.	10-81
MOK rxtx_unfinish_analyze	Notifies the value in the middle of the averaging operation of the EVM/frequency error measurement.	10-82
MOK rxtx_unfinish_powermeasure	Notifies the value in the middle of the averaging operation of the transmission power measurement.	10-82
• Tx/Rx tester mode (GSM)		
MOK rxtxgsm_paramloaded	Notifies the loading of the Tx/Rx setup file.	10-82
MOK rxtxgsm_freqband	Notifies the change in the GSM band setting.	10-82
MOK rxtxgsm_txfreqch	Notifies the change in the downlink frequency channel number setting.	10-82
MOK rxtxgsm_txpowerrf	Notifies the change in the RF Tx power setting.	10-82
MOK rxtxgsm_txmodswitch	Notifies the change of the modulation mode.	10-82
MOK rxtxgsm_txrfswitch	Notifies the change in the On/Off setting of the RF power.	10-82
MOK rxtxgsm_analyze	Notifies the change in the measured results of the phase/frequency error.	10-82
MOK rxtxgsm_powermeasure	Notifies the change in the measured results of Tx power.	10-82
MOK rxtxgsm_burstjudge	Notifies the change in the judgement result of the burst timing.	10-83
MOK rxtxgsm_txadjustrfpower	Notifies the change in the RF Tx power adjustment setting.	10-83
MOK rxtxgsm_rxadjustrfpower	Notifies the change in the RF reception power adjustment setting.	10-83
MOK rxtxgsm_modanalyzeaverage	Notifies the change in the average count of the phase/frequency error measurement.	10-83
MOK rxtxgsm_poweraverage	Notifies the change in the average count of the power measurement.	10-83
MOK rxtxgsm_burstaverage	Notifies the change in the average count of the burst timing.	10-83
MOK rxtxgsm_measmode	Notifies the change in the measurement mode (single/repeat) setting.	10-83
MOK rxtxgsm_rxmode	Notifies the change in the Rx mode (burst/cw) setting.	10-83
MOK rxtxgsm_modanalyzecounter	Notifies the change in the current measurement count of the phase/frequency error measurement.	10-83
MOK rxtxgsm_powercounter	Notifies the change in the current measurement count of the Tx power measurement.	10-83
MOK rxtxgsm_burstcounter	Notifies the change in the current measurement count of the burst timing.	10-83
MOK rxtxgsm_unfinish_analyze	Notifies the value in the middle of the averaging operation of the phase/frequency error measurement.	10-83
MOK rxtxgsm_unfinish_powermeasure	Notifies the value in the middle of the averaging operation of the Tx power measurement.	10-84
MOK rxtxgsm_unfinish_burst	Notifies the judgement result in the middle of the burst timing measurement.	10-84

Command	Function	Page
• Signaling Tester Mode		
MOK signal_start	Starts the test in the signaling tester mode.	10-84
MOK signal_itemstop	The item test under auto test was completed.	10-84
MOK signal_combination_result	Confirmed the individual model parameter test results from the combination test.	10-84
MOK signal_manualitemstop	Test was completed in the manual test mode.	10-85
MOK signal_callnet	Notifies the establishment of the call using the call setup from NW of the manual test.	10-85
MOK signal_callms	Notifies the establishment of the call using the call setup from UE of the manual test.	10-85
MOK signal_relnet	Notifies the release of the call using a call release from NW of the manual test.	10-85
MOK signal_relms	Notifies the release of the call using a call release from UE of the manual test.	10-85
MOK signal_closeloop	Notifies the establishment of the loopback using test loop close of the manual test.	10-85
MOK signal_openloop	Notifies the release of the loopback using test loop open of the manual test.	10-85
MOK signal_manualdownlinkpower	Notifies a change in the downlink power of the manual test.	10-85
MOK signal_manualuplinkpower	Notifies a change in the uplink power of the manual test.	10-85
MOK signal_manualfreq	Notifies the change in the frequency of the manual test.	10-85
MOK signal_action	Notifies a change in the test item to be executed in the manual test.	10-86
MOK signal_timeout	Notifies a change in the measurement time setting of the manual test.	10-86
MOK signal_meascount	Notifies a change in the measurement count of the manual test.	10-86
MOK signal_sequencestop	Notifies the completion of the test in the signaling tester mode.	10-86
MOK signal_mode	Notifies the change in the test mode of the signaling test.	10-86
MOK signal_systemmode	Notifies the change in the system mode setting.	10-86
MOK signal_parammode	The test mode (single/continuous) was changed.	10-86
MOK signal_combination_pause	The test was paused during continuous test mode.	10-86
MOK signal_combination_start	The pause in continuous test mode was released.	10-86
MOK signal_paramrenew	Loaded the model parameter file for the next sequence.	10-86
MOK signal_param	Notifies the change in the model parameter file that is used.	10-86
MOK signal_poweroff	Notifies that the voltage output has been turned OFF.	10-86
MOK signal_autoselect_getimei	Executes model parameter automatic selection and notifies that IMEI was retrieved.	10-87
MOK signal_noparam_imeitable	Notifies that the retrieved IMEI was not found in the IMEI table.	10-87
MOK signal_noparam_file	Notifies that a model parameter file that matches the setting was not found.	10-87
MOK signal_manualspeechdelay	Notifies the delay time of the speech test in manual test mode.	10-87
MOK signal_usbconnect	Notifies a change in the setting of whether the USB connection function is to be used.	10-87
MOK signal_manualhandoff	Notifies the frequency handover in manual mode.	10-87
MOK signal_manualadjustpower_band1dl	Notifies a change in the W-CDMA Band 1 downlink adjustment value.	10-87
MOK signal_manualadjustpower_band1ul	Notifies a change in the W-CDMA Band 1 uplink adjustment value.	10-87
MOK signal_manualadjustpower_band2dl	Notifies a change in the W-CDMA Band 2 downlink adjustment value.	10-87
MOK signal_manualadjustpower_band2ul	Notifies a change in the W-CDMA Band 2 uplink adjustment value.	10-87
MOK signal_manualadjustpower_band3dl	Notifies a change in the W-CDMA Band 3 downlink adjustment value.	10-87
MOK signal_manualadjustpower_band3ul	Notifies a change in the W-CDMA Band 3 uplink adjustment value.	10-88
MOK signal_manualadjustpower_band5dl	Notifies a change in the W-CDMA Band 5 downlink adjustment value.	10-88
MOK signal_manualadjustpower_band5ul	Notifies a change in the W-CDMA Band 5 uplink adjustment value.	10-88

Command	Function	Page
MOK signal_manualadjustpower_band6dl	Notifies a change in the W-CDMA Band 6 downlink adjustment value.	10-88
MOK signal_manualadjustpower_band6ul	Notifies a change in the W-CDMA Band 6 uplink adjustment value.	10-88
MOK signal_manualadjustpower_band9dl	Notifies a change in the W-CDMA Band 9 downlink adjustment value.	10-88
MOK signal_manualadjustpower_band9ul	Notifies a change in the W-CDMA Band 9 uplink adjustment value.	10-88
MOK signal_manualtxpower	Notifies a change in the downlink power of the manual test (W-CDMA).	10-88
MOK signal_manualprofile	Notifies a change in the profile of the manual test (W-CDMA).	10-88
MOK signal_manualpowersupply	Notifies a change in the supply voltage of the manual test (W-CDMA).	10-89
MOK signal_manualinnerposition	Notifies a change in the inner loop power test segment of the manual test (W-CDMA).	10-89
MOK signal_manualbercodedomain	Notifies a change in the downlink code domain power for the loopback BER measurement of the manual test (W-CDMA).	10-89
MOK signal_wcdma_manualmeasuremode	Changed the measurement mode of the manual test (WCDMA).	10-89
MOK signal_manualparamloaded	Notifies that the setup parameter file of the manual test has been loaded.	10-89
MOK signal_manualsystemhandover	Notifies that the inter-RAT handovers of the manual test has been executed.	10-89
MOK signal_wcdma_manualdataclear	The manual test (WCDMA) data was reset.	10-89
MOK signal_gsm_bcch	Notifies the setting of the GSM BCCH channel number.	10-89
MOK signal_gsm_tch	Notifies the setting of the GSM TCH channel number.	10-89
MOK signal_gsm_callnet	Notifies the establishment of a call through call setup from NW in the GSM manual test.	10-89
MOK signal_gsm_callms	Notifies the establishment of a call through call setup from UE in the GSM manual test.	10-89
MOK signal_gsm_relms	Notifies the release of a call through call release from NW in the GSM manual test.	10-89
MOK signal_gsm_relnet	Notifies the release of a call through call release from UE in the GSM manual test.	10-89
MOK signal_gsm_loopback	Notifies the establishment of a call in loopback mode in the GSM manual test.	10-89
MOK signal_gsm_releaseloopback	Notifies the release of the loopback in the GSM manual test.	10-89
MOK signal_gsm_handover	Notifies the establishment of a call through frequency handover in the GSM manual test.	10-89
MOK signal_gsm_changetch	Notifies the change in the frequency handover destination channel number in the GSM manual test.	10-90
MOK signal_gsm_manualdownlinkpower	Notifies the downlink power setting of the Rx characteristics test for the GSM manual test mode.	10-90
MOK signal_gsm_manualpowerctl	Notifies the uplink power setting of the Tx characteristics test for the GSM manual test mode.	10-90
MOK signal_gsm_manualspeechdelay	Notifies the delay time setting of the speech test in the GSM manual test.	10-90
MOK signal_gsm_freqband	The frequency band was changed in the manual test (GSM).	10-90
MOK signal_gsm_changefreqband	The frequency band for the handover was changed in the manual test (GSM).	10-90
MOK signal_gsm_manualadjustpower_gsmdl	Notifies a change in the GSM900 band downlink adjustment value.	10-90
MOK signal_gsm_manualadjustpower_gsmul	Notifies a change in the GSM900 band uplink adjustment value.	10-90
MOK signal_gsm_manualadjustpower_dcsdl	Notifies a change in the DCS1800 band downlink adjustment value.	10-90

Command	Function	Page
MOK signal_gsm_manualadjustpower_dcsul		
	Notifies a change in the DCS1800 band uplink adjustment value.	10-90
MOK signal_gsm_manualadjustpower_pcsdl		
	Notifies a change in the PCS1900 band downlink adjustment value.	10-91
MOK signal_gsm_manualadjustpower_pcsul		
	Notifies a change in the PCS1900 band uplink adjustment value.	10-91
MOK signal_gsm_manualcurrentdlpower		
	Notifies a change in the current downlink power of the manual test (GSM).	10-91
MOK signal_gsm_manualadjustpower_dl		
	Notifies a change in the current downlink adjustment value of the manual test (GSM).	10-91
MOK signal_gsm_manualadjustpower_ul		
	Notifies a change in the current uplink adjustment value of the manual test (GSM).	10-91
MOK signal_gsm_manualdataclear		
	The manual test (GSM) data was reset.	10-91
MOK signal_gsm_manualmeasuremode		
	Changed the measurement mode of the manual test (GSM).	10-91
MOK signal_gsm_manualpowerctlmethod		
	Changed the power control method of the manual test (GSM).	10-91
MOK signal_gsm_manualpowerctlmode		
	Changed the power control method of the RF characteristics test of the manual test (GSM).	10-91
MOK signal_printfinished	Notifies the end of the print operation.	10-91
MER 01027 "Fatal Error : Fan Stopped."		
	Notifies that the VC200's fan has stopped.	10-91
MER 02013 "Stopped : <messaeg1> : <message2> : ... "		
	Tx/Rx mode stopped abnormally.	10-91

10.5 System Group

sys_mode

Function Sets the tester mode or queries the current setting.

Syntax
```
sys_mode?
sys_mode {signaling|rxtx|rxtxgsm}
```
signaling: Signaling tester mode
rxtx: Tx/Rx tester mode (W-CDMA)
rxtxgsm: Tx/Rx tester mode (GSM)

Example
```
sys_mode rxtx
-> EOK 00000
=> MOK sys_mode rxtx
sys_mode?
-> EOK 00000 rxtx
```

sys_initialize

Function Initializes the settings.

Syntax
```
sys_initialize
```

Example
```
sys_initialize
-> EOK 00000
=> MOK sys_initialized
```

sys_status?

Function Queries the system status.

Syntax
```
sys_status?
```

Example
```
sys_status?
-> EOK 00000 rxtxstarted
```

Description Returns the following response. The test item name is entered in (ITEM).
```
{idle|signalingstarted_itemstarted_
(ITEM)|signalingstarted_itemstopped_
(ITEM)|signalingstarted_pause|
rxtxstarted|idle_poweron|
signalingstarted_waiting|
signalingstarted_selectimei|
signalingstarted_selectedimei}
```
- signalingstarted_itemstarted_(ITEM): The test item specified in the signaling tester mode is in execution.
- signalingstarted_itemstopped_(ITEM): The test item specified in the signaling tester mode has been completed.
- idle_poweron: Condition in which the test has been completed but the power supply is ON.
- signalingstarted_waiting: Idle in GSM mode
- signalingstarted_selectimei: Automatic selection in progress status in model parameter automatic selection
- signalingstarted_selectedimei: Status after model parameter file automatic selection and before test starts (pause)

sys_openevent

Function Requests connection to the INET domain socket.

Syntax
```
sys_openevent <hostname> <port
number>
```
<hostname>, <port number>: Host name of the PC client and the port number of receiving events

Example
```
sys_openevent "vc200host" 16385
-> EOK 00000
sys_openevent 16388
-> EOK 00000
```

Description The VC200 connects the event socket to the <port number> of the <hostname> If the host name is omitted, a connection is made to the host with the socket through which the command was received.

sys_rffreqswitch

Function Selects internal or external of the RF reference frequency or queries the current setting.

Syntax
```
sys_rffreqswitch?
sys_rffreqswitch {int|ext}
```

Example
```
sys_rffreqsw int
-> EOK 00000
=> MOK sys_rffreqsw int
sys_rffreqsw?
-> EOK 00000 ext
```

sys_rfextfreq

Function Sets the external RF reference frequency or queries the current setting.

Syntax
```
sys_rfextfreq?
sys_rfextfreq <frequency>
```
<frequency>: External reference frequency (10 to 20)

Example
```
sys_rfextfreq 10
-> EOK 00000
=> MOK sys_rfextfreq 10
sys_rfextfreq?
-> EOK 00000 10
```

sys_plllock?

Function Queries the PLL lock status.

Syntax
```
sys_plllock?
```

Example
```
sys_plllock?
-> EOK 00000 locked
```

Description Returns the following response.
```
{locked|unlocked}
```

sys_clockout

Function Selects the clock out to be output.

Syntax
```
sys_clockout?
sys_clockout <clockout>
```
<clockout>: Select from {4chips|chipclock|pccpchsymbolclock|dpchsymbolclock}.

Example
```
sys_clockout 4chips
-> EOK 00000
=> MOK sys_clockout 4chips
sys_clockout?
-> EOK 00000 4chips
```

Description This command is valid when the type of mobile phone under test is W-CDMA. Clock out is fixed to Bit clock for GSM.

sys_timingout

Function Selects the timing out to be output.

Syntax
```
sys_timingout?
sys_timingout <timingout>
```
<timingout>: Select from {frame|timeslot}.

Example
```
sys_timingout frame
-> EOK 00000
=> MOK sys_timingout frame
sys_timingout?
-> EOK 00000 frame
```

Description This command is valid when the type of mobile phone under test is W-CDMA. Timing out is fixed to frame for GSM.

sys_adjustfda

Function Sets the frequency adjustment or queries the current setting.

Syntax
```
sys_adjustfda?
sys_adjustfda <fda>
```
<fda>: Frequency adjustment value (–500 to +500)

Example
```
sys_adjustfda 0
-> EOK 00000
=> MOK sys_adjustfda 0
sys_adjustfda?
-> EOK 00000 0
```

sys_initlog?

Function Queries the initialization error status.

Syntax
```
sys_initlog?
```

Example
```
sys_initlog?
-> EOK 00000 "Initialize OK" (when there is no error)
-> ERR 01008 "Calibration Data (RF) Initial Error: Invalid or no calibration files" (when there is an error)
```

Description Response when there is no error: EOK 00000 “Initialize OK”
Response when there is an error: ERR 000XX “<error location>:<error details> / <error location>:<error details>”

sys_atgmi?

Function Issues the AT command (AT+GMI) to the terminal connected via the USB.
Parameters: None
Response parameters: Maker name

Syntax
```
sys_atgmi?
```

Example
```
sys_atgmi?
-> EOK 00000 "YOKOGAWA"
```

sys_atgmm?

Function Issues the AT command (AT+GMM) to the terminal connected via the USB.
Parameters: None
Response parameters: Model name

Syntax
```
sys_atgmm?
```

Example
```
sys_atgmm?
-> EOK 00000 "YOKOGAWA XXXX"
```

sys_atgmr?

Function Issues the AT command (AT+GMR) to the terminal connected via the USB.
Parameters: None
Response parameters: Version number

Syntax
```
sys_atgmr?
```

Example
```
sys_atgmr?
-> EOK 00000 "Ver1.00"
```

sys_atcgsn?

Function Issues the AT command (AT+CGSN) to the terminal connected via the USB.
Parameters: None
Response parameters: IMEI

Syntax
```
sys_atcgsn?
```

Example
```
sys_atcgsn?
-> EOK 00000 "123456789012345"
```

sys_idn?

Function Queries the instrument model.

Syntax
```
sys_idn?
```

Example
```
sys_idn?
-> EOK 00000
"YOKOGAWA,733013,999999999,F1.01"
```

Description The information is returned in the following form: <Manufacturer>,<Model>,<Serial No.>,<Firmware version>.

sys_atcgmi?

Function Issues the AT command (AT+CGMI) to the terminal connected via the USB.
Response parameters: Maker name

Syntax
```
sys_atcgmi?
```

Example
```
sys_atcgmi?
-> EOK 00000 "YOKOGAWA"
```

sys_atcgmm?

Function Issues the AT command (AT+CGMM) to the terminal connected via the USB.
Response parameters: Model name

Syntax
```
sys_atcgmm?
```

Example
```
sys_atcgmm?
-> EOK 00000 "YOKOGAWA XXXX"
```

sys_atcgmr?

Function Issues the AT command (AT+CGMR) to the terminal connected via the USB.
Response parameters: Version number

Syntax
```
sys_atcgmr?
```

Example
```
sys_atcgmr?
-> EOK 00000 "Ver1.00"
```

sys_username

Function Sets the user name saved to the result log file or queries the current setting.

Syntax
```
sys_username?
sys_username <name>
```
<name>: User name

Example
```
sys_username "operator0"
-> EOK 00000
sys_username?
-> EOK 00000 "operator0"
```

sys_companyname

Function Sets the company name saved to the result log file or queries the current setting.

Syntax
```
sys_companyname?
sys_companyname(?) <name>
```
<name>: Company name

Example
```
sys_companyname "company0"
-> EOK 00000
sys_companyname?
-> EOK 00000 "company0"
```

10.6 File Group

file_pwd?

Function Queries the current directory.

Syntax `file_pwd?`

Example
```
file_pwd?
-> EOK 00000 "/home/vc200"
```

Description Returns the full path of the current directory.

file_ls?

Function Queries the directory list.

Syntax
```
file_ls?
file_ls? [option] [<pathname>]
```
[option]: Option code
[<pathname>]: Directory name for querying the list

Example
```
file_ls?
-> EOK 00000 "menutest param
result"
file_ls? -l (with option code)
-> EOK 00000 "total 56 -rwx——    1
vc200    users       47942 Aug 29
09:25 menutest drwxr-xr-x    2
vc200    users        4096 Sep  4
09:23 param drwxr-xr-x    2 vc200
users        4096 Sep 10 17:39
result"
```

Description
- Enter the directory using a full path.
- If a query is made with <pathname> omitted, the directory list of the current directory is returned.
- The option code can be omitted.
- A NL (new line), same as the message terminator, may appear within the parenthesis.

file_cp

Function Copies files.

Syntax
```
file_cp <pathname> <pathname>
```
First <pathname>: Copy source file name
Second <pathname>: Copy destination file name

Example
```
file_cp "/home/vc200/param/default"
"/home/vc200/param/cpdef"
-> EOK 00000
```

Description Specify the file name using a full path.

file_mv

Function Changes the file name.

Syntax
```
file_mv <pathname> <pathname>
```
First <pathname>: File name before the change
Second <pathname>: File name after the change

Example
```
file_mv "/home/vc200/param/cpdef"
"/home/vc200/param/mvdef"
-> EOK 00000
```

Description Specify the file name using a full path.

file_cd

Function Changes the current directory.

Syntax
```
file_cd <pathname>
```
<pathname>: Name of the destination directory

Example
```
file_cd "/home/vc200"
-> EOK 00000
```

Description Enter the directory using a full path.

file_del

Function Deletes files.

Syntax
```
file_del <pathname>
```
<pathname>: Name of the file to be deleted

Example
```
file_del "/home/vc200/param/mvdef"
-> EOK 00000
```

Description Specify the file name using a full path.

file_usbcopy

Function Copies the specified files to the USB memory.

Syntax
```
file_usbcopy <path1> <path2>
<path3> <path4>...<pathN>
```

Example
```
file_usbcopy "/home/vc200/result/
2005-05-13-16-36-20"
-> EOK 00000
```

file_mkdir

Function Creates the directory.

Syntax
```
file_mkdir <pathname>
```
<pathname>: Name of the directory to be created

Example
```
file_mkdir "/home/vc200/param/
dirtest"
-> EOK 00000
```

Description Enter the directory using a full path.

file_rmdir

Function Creates the directory.

Syntax
```
file_rmdir <pathname>
```
<pathname>: Name of the directory to be deleted

Example
```
file_rmdir "/home/vc200/param/dirtest"
-> EOK 00000
```

Description Enter the directory using a full path.

file_df? <pathname>

Function Queries the free disk space on the partition.

Syntax
```
file_df? <pathname>
```
<pathname>: Name of the directory contained in the target partition

Example
```
file_df? "/home/vc200"
-> EOK 00000 7682
```

Description
- Enter the directory using a full path.
- Returns the disk size. The unit is MB.

file_usbmemformat

Function Formats the USB memory.

Syntax
```
file_usbmemformat
```

Example
```
file_usbmemformat -> EOK 00000
```

10.7 Tx/Rx Tester Mode (W-CDMA) Group

This manual denotes responses to the client that is controlling the VC200 as -> and responses to other clients as =>.

rxtx_start

Function Starts the transmission/reception.

```
Syntax    rxtx_start
Example   rxtx_start
          -> EOK 00000
          => MOK rxtx_start
```

rxtx_stop

Function Stops the transmission/reception.

```
Syntax    rxtx_stop
Example   rxtx_stop
          -> EOK 00000
          => MOK rxtx_stop
```

rxtx_paramload

Function Loads the downlink/uplink setup file.

```
Syntax    rxtx_paramload <pathname>
```

<pathname>: Specify the file name using a full path

```
Example   rxtx_paramload "/home/vc200/
          txparam"
          -> EOK 00000
          => rxtx_paramloaded "/home/vc200/
          txparam"
```

rxtx_paramsave

Function Saves the downlink/uplink settings to a file.

```
Syntax    rxtx_paramsave <pathname>
```

<pathname>: Specify the file name using a full path

```
Example   rxtx_paramsave "/home/vc200/
          txparam"
          -> EOK 00000
```

rxtx_txfreqch

Function Sets the downlink frequency channel number or queries the current setting.

```
Syntax    rxtx_txfreqch?
          rxtx_txfreqch <freqch>
```

<freqch>: Downlink frequency channel number 10550 to 10850: Band I, 412/437/462/487/512/537/562/587/612/637/662/687 or 9650 to 9950: Band II, 1162 to 1513: Band III, 1007/1012/1032/1037/1062/1087 or 4357 to 4458: Band V, 1037/1062 or 4375 to 4425: Band VI, 9237 to 9387: Band IX

```
Example   rxtx_txfreqch?
          -> EOK 00000 10600
          rxtx_txfreqch 10600
          -> EOK 00000
          => MOK rxtx_txfreqch 10600
```

rxtx_txpowerrf

Function Sets the RF transmission power or queries the current setting.

```
Syntax    rxtx_txpowerrf?
          rxtx_txpowerrf <power>
```

<power>: Power (–110.0 to –20.0 in dBm)

```
Example   rxtx_txpowerrf?
          -> EOK 00000 5
          rxtx_txpowerrf -30
          -> EOK 00000
          => MOK rxtx_txpowerrf -30
```

rxtx_txdpchsymbolrate

Function Sets the DPCH symbol rate or queries the current setting.

```
Syntax    rxtx_txdpchsymbolrate?
          rxtx_txdpchsymbolrate {7.5ksps|
          15ksps|30ksps|60ksps|120ksps|
          240ksps|480ksps|960ksps}
Example   rxtx_txdpchsymbolrate?
          -> EOK 00000 7.5ksps
          rxtx_txdpchsymbolrate 15ksps
          -> EOK 00000
          => MOK rxtx_dpchsymbolrate 15ksps
          50
```

rxtx_txdpchchannelization

Function Sets the DPCH channelization code or queries the current setting.

Syntax
```
rxtx_txdpchchannelization?
rxtx_txdpchchannelization(?) <code>
```
<code>: DPCH channelization code (0 to {511|255|127|63|31|15|7|3})

Example
```
rxtx_txdpchchannelization?
-> EOK 00000 50
rxtx_txdpchchannelization 32
-> EOK 00000
=> MOK rxtx_txdpchchannelization 32
```

Description The selectable range varies depending on the DPCH symbol rate.

rxtx_txscramblingcode

Function Sets the scrambling code number or queries the current setting.

Syntax
```
rxtx_txscramblingcode?
rxtx_txscramblingcode <code>
```
<code>: Scrambling code number (0 to 8191)

Example
```
rxtx_txscramblingcode?
-> EOK 00000 0
rxtx_txscramblingcode 100
-> EOK 00000
=> MOK rxtx_txscramblingcode 100
```

rxtx_txpichchannelization

Function Sets the PICH channelization code number or queries the current setting.

Syntax
```
rxtx_txpichchannelization?
rxtx_txpichchannelization <code>
```
<code>: PICH channelization code number (0 to 255)

Example
```
rxtx_txpichchannelization?
-> EOK 00000 255
rxtx_txpichchannelization 100
-> EOK 00000
=> MOK rxtx_txpichchannelization
100
```

rxtx_txscpichchannelization

Function Sets the S-CPICH channelization code number or queries the current setting.

Syntax
```
rxtx_txscpichchannelization?
rxtx_txscpichchannelization <code>
```
<code>: S-CPICH channelization code number (0 to 255)

Example
```
rxtx_txscpichchannelization?
-> EOK 00000 255
rxtx_txscpichchannelization 100
-> EOK 00000
=> MOK rxtx_txscpichchannelization
100
```

rxtx_txpichtimingoffset

Function Sets the PICH timing offset or queries the current setting.

Syntax
```
rxtx_txpichtimingoffset?
rxtx_txpichtimingoffset <offset>
```
<offset>: PICH timing offset (0 to 30464)

Example
```
rxtx_txpichtimingoffset?
-> EOK 00000 30464
rxtx_txpichtimingoffset 256
-> EOK 00000
=> MOK rxtx_txpichtimingoffset 256
```

rxtx_txdpchtimingoffset

Function Sets the DPCH timing offset or queries the current setting.

Syntax
```
rxtx_txdpchtimingoffset?
rxtx_txdpchtimingoffset <offset>
```
<offset>: DPCH timing offset (0 to 144896)

Example
```
rxtx_txdpchtimingoffset?
-> EOK 00000 38144
rxtx_txdpchtimingoffset 256
-> EOK 00000
=> MOK rxtx_txdpchtimingoffset 256
```

rxtx_txschccpchcodepower

Function Sets the Primary SCH & Secondary SCH & Primary CCPCH code power or queries the current setting.

Syntax
```
rxtx_txschccpchcodepower?
rxtx_txschccpchcodepower <power>
```
<power>: Power (–30.1 to 0 in dBm)

Example
```
rxtx_txschccpchcodepower?
-> EOK 00000 -7.8
rxtx_txschsspchcodepower -7.8
-> EOK 00000
=> MOK rxtx_txcodepower -7.8 -7.8
-7.8 -7.8 -7.8 -7.7
```

rxtx_txcpichcodepower

Function Sets the CPICH code power or queries the current setting.

Syntax
```
rxtx_txcpichcodepower?
rxtx_txcpichcodepower <power>
```
<power>: Power (–30.1 to 0 in dBm)

Example
```
rxtx_txcpichcodepower?
-> EOK 00000 -7.8
rxtx_txcpichcodepower -7.8
-> EOK 00000
=> MOK rxtx_txcodepower -7.8 -7.8
-7.8 -7.8 -7.8 -7.7
```

rxtx_txscpichcodepower

Function Sets the S-CPICH code power or queries the current setting.

```
Syntax    rxtx_txscpichcodepower?
          rxtx_txscpichcodepower <power>
          <power>: Power (–30.1 to 0 in dBm)
Example   rxtx_txscpichcodepower?
          -> EOK 00000 -7.8
          rxtx_txscpichcodepower -7.8
          -> EOK 00000
          => MOK rxtx_txcodepower -7.8 -7.8
          -7.8 -7.8 -7.8 -7.7
```

rxtx_txpichcodepower

Function Sets the PICH code power or queries the current setting.

```
Syntax    rxtx_txpichcodepower?
          rxtx_txpichcodepower <power>
          <power>: Power (–30.1 to 0 in dBm)
Example   rxtx_txpichcodepower?
          -> EOK 00000 -7.8
          rxtx_txpichcodepower -7.8
          -> EOK 00000
          => MOK rxtx_txcodepower -7.8 -7.8
          -7.8 -7.8 -7.8 -7.7
```

rxtx_txdpchcodepower

Function Sets the DPCH code power or queries the current setting.

```
Syntax    rxtx_txdpchcodepower?
          rxtx_txdpchcodepower <power>
          <power>: Power (–30.1 to 0 in dBm)
Example   rxtx_txdpchcodepower?
          -> EOK 00000 -7.8
          rxtx_txdpchcodepower -7.8
          -> EOK 00000
          => MOK rxtx_txcodepower -7.8 -7.8
          -7.8 -7.8 -7.8 -7.7
```

rxtx_txocnscodepower?

Function Sets the OCNS code power.

```
Syntax    rxtx_txocnscodepower?
Example   rxtx_txocnscodepower?
          -> EOK 00000 -7.7
```

Description The unit of the response is dBm.

rxtx_txcodepower?

Function Queries all code powers.

```
Syntax    rxtx_txcodepower?
Example   rxtx_txcodepower?
          -> EOK 00000 -7.8 -7.8 -7.8 -7.8
          -7.8 -7.7
```

Description The response information is as follows:
EOK 00000 <SCH-PCCPCH> <CPICH> <S-CPICH> <PICH> <DPCH> <OCNS>

rxtx_txmodswitch

Function Turns On/Off the modulation or queries the current setting.

```
Syntax    rxtx_txmodswitch?
          rxtx_txmodswitch {on|off}
Example   rxtx_txmodswitch?
          -> EOK 00000 on
          rxtx_txmodswitch off
          -> EOK 00000
          => MOK rxtx_txmodswitch off
```

rxtx_txrfswitch

Function Turns On/Off the RF power or queries the current setting.

```
Syntax    rxtx_txrfswitch?
          rxtx_txrfswitch {on|off}
Example   rxtx_txrfswitch?
          -> EOK 00000 off
          rxtx_txrfswitch on
          -> EOK 00000
          => MOK rxtx_txrfswitch on
```

rxtx_rxfreqch?

Function Queries the uplink frequency channel number.

```
Syntax    rxtx_rxfreqch?
Example   rxtx_rxfreqch?
          -> EOK 00000 9600
```

rxtx_rxdpdchsymbolrate

Function Sets the uplink DPDCH symbol rate or queries the current setting.

```
Syntax    rxtx_rxdpdchsymbolrate?
          rxtx_rxdpdchsymbolrate {15ksps|
          30ksps|60ksps|120ksps}
Example   rxtx_rxdpdchsymbolrate?
          -> EOK 00000 60ksps
          rxtx_rxdpdchsymbolrate 30ksps
          -> EOK 00000
          => MOK rxtx_rxdpdchsymbolrate
          30ksps
```

rxtx_rxscramblingcode

Function Sets the uplink scrambling code number or queries the current setting.

```
Syntax    rxtx_rxscramblingcode?
          rxtx_rxscramblingcode <code>
          <code>: Scrambling code number (0 to
          16777216)
Example   rxtx_rxscramblingcode?
          -> EOK 00000 16777215
          rxtx_rxscramblingcode 100
          -> EOK 00000
          => MOK rxtx_rxscramblingcode 100
```

rxtx_rxanalyzeswitch

Function Sets whether to perform the analysis synchronously or asynchronously or queries the current setting.

Syntax
```
rxtx_rxanalyzeswitch?
rxtx_rxanalyzeswitch{sync|async}
```

Example
```
rxtx_rxanalyzeswitch?
-> EOK 00000 async
rxtx_rxanalyzeswitch sync
-> EOK 00000
=> MOK rxtx_rxanalyzeswitch sync
```

rxtx_rxpowerratio

Function Sets the power ratio for the asynchronous modulation analysis or queries the current setting.

Syntax
```
rxtx_rxpowerratio?
rxtx_rxpowerratio <power>
```
<power>: Power ratio (set the X portion of X/15 in the range of 1.0 to 15.0)

Example
```
rxtx_rxpowerratio?
-> EOK 00000 8.0
rxtx_rxpowerratio 7
-> EOK 00000
=> MOK rxtx_rxpowerratio 7.0
```

rxtx_rxtimingoffset

Function Sets the reception timing offset for the synchronous modulation analysis or queries the current setting.

Syntax
```
rxtx_rxtimingoffset?
rxtx_rxtimingoffset <offset>
```
<offset>: Timing offset value (in unit of chips in the range of 0 to 38399)

Example
```
rxtx_rxtimingoffset?
-> EOK 00000 0
rxtx_rxtimingoffset 10
-> EOK 00000
=> MOK rxtx_timingoffset 10
```

rxtx_rxrfswitch

Function Turns ON/OFF RF input or queries the current setting.

Syntax
```
rxtx_rxrfswitch <on/off>
rxtx_rxrfswtich?
```

Example
```
rxtx_rxrfswitch?
-> EOK 00000 on
rxtx_rxrfswitch off
-> EOK 00000
=> MOK rxtx_rxrfswitch off
```

rxtx_rxoriginoffsetcancel?

Function Sets whether to enable origin offset cancel when measuring the modulation accuracy or queries the current setting.

Syntax
```
rxtx_rxoriginoffsetcancel {on|off}
rxtx_rxoriginoffsetcancel?
```

Example
```
rxtx_rxoriginoffsetcancel on
-> EOK 00000
=> MOK rxtx_rxoriginoffsetcancel on
rxtx_rxoriginoffsetcancel?
-> EOK 00000 on
```

rxtx_txadjustrfpower

Function Sets the RF transmission power adjustment or queries the current setting.

Syntax
```
rxtx_txadjustrfpower?
rxtx_txadjustrfpower <power>
```
<power>: Adjustment (–40.0 to 0.0 in dBm)

Example
```
rxtx_txadjustrfpower?
-> EOK 00000 0.0
rxtx_txadjustrfpower -10.0
-> EOK 00000
=> MOK rxtx_txadjustrfpower -10.0
```

rxtx_rxadjustrfpwoer

Function Sets the RF reception power adjustment or queries the current setting.

Syntax
```
rxtx_rxadjustrfpwoer?
rxtx_rxadjustrfpwoer <power>
```
<power>: Adjustment (0.0 to +40.0 in dB)

Example
```
rxtx_rxadjustrfpower?
-> EOK 00000 0.0
rxtx_rxadjustrfpower 10.0
-> EOK 00000
=> MOK rxtx_rxadjustrfpower 10.0
```

rxtx_resultanalyze?

Function Queries the measured value of the EVM/ frequency error.

Syntax
```
rxtx_resultanalyze?
```

Example
```
rxtx_resultanalyze?
-> EOK 00000 3.4 1021
```

Description Returns the result measured last regardless of whether the signal is being transmitted/received or the measurement is stopped.
The response information is as follows: EOK 00000 <evm> <ferr>

rxtx_resultevm?

Function Queries the measurement result of the EVM.

Syntax
```
rxtx_resultevm?
```

Example
```
rxtx_resultevm?
-> EOK 00000 3.4
```

rxtx_resultferr?

Function Queries the measurement result of the frequency error.

Syntax `rxtx_resultferr?`

Example
```
rxtx_resultferr?
-> EOK 00000 1021
```

rxtx_resultpower?

Function Queries the measurement result of the transmission power.

Syntax `rxtx_resultpower?`

Example
```
rxtx_resultpower?
-> EOK 00000 -68.1
```

Description Returns the measurement result including the adjustment.
Returns the result measured last whether the signal is being transmitted/received or the measurement is stopped.
The response information is as follows: EOK 00000 <power>

rxtx_resultnoadjustpower?

Function Queries the measurement result of the transmission power excluding the adjustment.

Syntax `rxtx_resultnoadjustpower?`

Example
```
rxtx_resultnoadjustpower?
-> EOK 00000 -78.1
```

Description Returns the result measured last whether the signal is being transmitted/received or the measurement is stopped.
The response information is as follows: EOK 00000 <power>

rxtx_evmaverage

Function Queries the average count of the EVM/ frequency error measurement or queries the current setting.

Syntax
```
rxtx_evmaverage?
rxtx_evmaverage <count>
```
<count>: Average count (1 to 1000)

Example
```
rxtx_evmaverage 10
-> EOK 00000
=> MOK rxtx_evmaverage 10
rxtx_evmaverage?
-> EOK 00000 10
```

rxtx_poweraverage

Function Sets the average count of the power measurement or queries the current setting.

Syntax
```
rxtx_poweraverage?
rxtx_poweraverage <count>
```
<count>: Average count (1 to 1000)

Example
```
rxtx_poweraverage 10
-> EOK 00000
=> MOK rxtx_poweraverage 10
rxtx_poweraverage?
-> EOK 00000 10
```

rxtx_measmode

Function Sets the measurement mode (single or repeat) or queries the current setting.

Syntax
```
rxtx_measmode?
rxtx_measmode {single|repeat}
```

Example
```
rxtx_measmode single
-> EOK 00000
=> MOK rxtx_measmode single
rxtx_measmode?
-> EOK 00000 single
```

rxtx_evmcounter?

Function Queries the measurement count of the EVM/ frequency error measurement.

Syntax `rxtx_evmcounter?`

Example
```
rxtx_evmcounter?
-> EOK 00000 10
```

rxtx_powercounter?

Function Queries the measurement count of the transmission power measurement.

Syntax `rxtx_powercounter?`

Example
```
rxtx_powercounter?
-> EOK 00000 10
```

10.8 Tx/Rx Tester Mode (GSM) Group

This manual denotes responses to the client that is controlling the VC200 as -> and responses to other clients as =>.

rxtx_start

Function Starts the transmission/reception.

```
Syntax    rxtx_start
Example   rxtx_start
          -> EOK 00000
          => MOK rxtx_start
```

rxtx_stop

Function Stops the transmission/reception.

```
Syntax    rxtx_stop
Example   rxtx_stop
          -> EOK 00000
          => MOK rxtx_stop
```

rxtxgsm_paramload

Function Loads the setup file for Tx/Rx mode.

```
Syntax    rxtxgsm_paramload <pathname>
```
<pathname>: Specify the file name using a full path
```
Example   rxtxgsm_paramload <pathname>
```

rxtxgsm_paramsave

Function Saves the setup file for Tx/Rx mode.

```
Syntax    rxtxgsm_paramsave <pathname>
```
<pathname>: Specify the file name using a full path
```
Example   rxtxgsm_paramsave
```

rxtxgsm_freqband

Function Sets the GSM band or queries the current setting.

```
Syntax    rxtxgsm_freqband?
          rxtxgsm_freqband {GSM850|P-GSM|
          E-GSM|R-GSM|DCS1800|PCS1900}
Example   rxtxgsm_freqband?
          -> EOK 00000 P-GSM
          rxtxgsm_freqband GSM850
          -> EOK 00000
          => MOK rxtxgsm_freqband GSM850
```

rxtxgsm_txfreqch

Function Sets the downlink frequency channel number or queries the current setting.

```
Syntax    rxtxgsm_txfreqch?
          rxtxgsm_txfreqch <freqch>
```
<freqch>: Channel number. See section 6.2.
```
Example   rxtxgsm_txfreqch?
          -> EOK 00000 1
          rxtxgsm_txfreqch 1000
          -> EOK 00000
          => MOK rxtxgsm_txfreqch 1000
```

rxtxgsm_txfreqoffset

Function Sets the frequency offset during non-modulated signal output or queries the current setting.

```
Syntax    rxtxgsm_txfreqoffset?
          rxtxgsm_txfreqoffset <freqoffset>
```
<freqoffset>: Frequency offset (–75 to 75 in unit of kHz)
```
Example   rxtxgsm_txfreqoffset?
          -> EOK 00000 -41
          rxtxgsm_txfreqoffset -41
          -> EOK 00000
          => MOK rxtxgsm_txfreqoffset -41
```
Description This setting is not backed up when the power is turned OFF.

rxtxgsm_txpowerrf

Function Sets the RF Tx power or queries the current setting.

```
Syntax    rxtxgsm_txpowerrf?
          rxtxgsm_txpowerrf <power>
```
<power>: Power (–110.0 to –10.0 in dBm)
```
Example   rxtxgsm_txpowerrf?
          -> EOK 00000 5
          rxtxgsm_txpowerrf -30
          -> EOK 00000
          => MOK rxtxgsm_txpowerrf -30
```

rxtxgsm_txmodswitch

Function Turns On/Off the modulation or queries the current setting.

```
Syntax    rxtxgsm_txmodswitch?
          rxtxgsm_txmodswitch {all0|pn|bcch|
          off}
Example   rxtxgsm_txmodswitch?
          -> EOK 00000 off
          rxtxgsm_txmodswitch pn
          -> EOK 00000
          => MOK rxtxgsm_txmodswitch pn
```

rxtxgsm_txrfswitch

Function Turns On/Off the RF power or queries the current setting.

Syntax
```
rxtxgsm_txrfswitch?
rxtxgsm_txrfswitch {on|off}
```

Example
```
rxtxgsm_txrfswitch?
-> EOK 00000 off
rxtxgsm_txrfswitch on
-> EOK 00000
=> MOK rxtxgsm_txrfswitch on
```

rxtxgsm_txadjustrfpower

Function Sets the RF Tx power adjustment or queries the current setting.

Syntax
```
rxtxgsm_txadjustrfpower?
rxtxgsm_txadjustrfpower <power>
```
<power>: Adjustment (–40.0 to 0.0 in dB)

Example
```
rxtxgsm_txadjustrfpower?
-> EOK 00000 0.0
rxtxgsm_txadjustrfpower -10.0
-> EOK 00000
=> MOK rxtxgsm_txadjustrfpower -0.1
```

rxtxgsm_rxadjustrfpower

Function Sets the RF reception power adjustment or queries the current setting.

Syntax
```
rxtxgsm_rxadjustrfpower?
rxtxgsm_rxadjustrfpower <power>
```
<power>: Adjustment (0.0 to +40.0 in dB)

Example
```
rxtxgsm_rxadjustrfpower?
-> EOK 00000 0.0
rxtxgsm_rxadjustrfpower 10.0
-> EOK 00000
=> MOK rxtxgsm_rxadjustrfpower 10.0
```

rxtxgsm_resultanalyze?

Function Queries the measured value of the phase/ frequency error.

Syntax
```
rxtxgsm_resultanalyze?
```

Example
```
rxtxgsm_resultanalyze?
-> EOK 00000 10.0 3.0 50 0.06
```

Description Returns the result measured last whether the signal is being transmitted/received or the measurement is stopped.
The response information is as follows:
EOK 00000<perr Peak> <perr Rms> <ferr(Hz)> <ferr(ppm)>

rxtxgsm_resultperr?

Function Queries the measurement result of the phase error.

Syntax
```
rxtxgsm_resultperr?
```

Example
```
rxtxgsm_resultperr?
-> EOK 00000 10.0 3.0
```

Description The response information is as follows:
EOK 00000 <perr Peak> <perr Rms>

rxtxgsm_resultferr?

Function Queries the measurement result of the frequency error.

Syntax
```
rxtxgsm_resultferr?
```

Example
```
rxtxgsm_resultferr?
-> EOK 00000 50 0.06
```

Description The response information is as follows:
EOK 00000 <ferr(Hz)> <ferr(ppm)>

rxtxgsm_resultpower?

Function Queries the measurement result of the Tx power.

Syntax
```
rxtxgsm_resultpower?
```

Example
```
rxtxgsm_resultpower?
-> EOK 00000 -68.1
```

Description Returns the measurement result including the adjustment. Returns the result measured last whether the signal is being transmitted/received or the measurement is stopped.
The response information is as follows:
EOK 00000 <power>

rxtxgsm_resultnoadjustpower?

Function Queries the measurement result of the Tx power excluding the adjustment.

Syntax
```
rxtxgsm_resultnoadjustpower?
```

Example
```
rxtxgsm_resultnoadjustpower?
-> EOK 00000 -68.1
```

Description Returns the measurement result without the adjustment. Returns the result measured last whether the signal is being transmitted/received or the measurement is stopped.
The response information is as follows:
EOK 00000 <power>

rxtxgsm_bursttiming?

Function Queries the judgement result of the burst timing.

Syntax
```
rxtxgsm_bursttiming?
```

Example
```
rxtxgsm_bursttiming?
-> EOK 00000 OK
```

Description The response for each judgement result is as follows:

- All within range
  EOK 00000 OK
- Training sequence error
  EOK 00000 Fail
- Power measurement timeout
  EOK 00000 Fail
- Rising edge is out of range
  EOK 00000 Fail _|
- The center section is out of range
  EOK 00000 Fail ~
- Falling edge is out of range
  EOK 00000 Fail |_

rxtxgsm_perraverage

Function Queries the average count of the phase/ frequency error measurement or queries the current setting.

```
Syntax    rxtxgsm_perraverage?
          rxtxgsm_perraverage <count>
          <count>: Average count (1 to 1000)
Example   rxtxgsm_perraverage 10
          -> EOK 00000
          => MOK rxtxgsm_perraverage 10
          rxtxgsm_perraverage?
          -> EOK 00000 10
```

rxtxgsm_poweraverage

Function Sets the average count of the power measurement or queries the current setting.

```
Syntax    rxtxgsm_poweraverage?
          rxtxgsm_poweraverage <count>
          <count>: Average count (1 to 1000)
Example   rxtxgsm_poweraverage 10
          -> EOK 00000
          => MOK rxtxgsm_poweraverage 10
          rxtxgsm_poweraverage?
          -> EOK 00000 10
```

rxtxgsm_burstaverage

Function Sets the average count of the burst timing or queries the current setting.

```
Syntax    rxtxgsm_burstaverage?
          rxtxgsm_burstaverage <count>
          <count>: Average count (1 to 1000)
Example   rxtxgsm_burstaverage 10
          -> EOK 00000
          => MOK rxtxgsm_burstaverage 10
          rxtxgsm_burstaverage?
          -> EOK 00000 10
```

rxtxgsm_measmode

Function Sets the measurement mode (single or repeat) or queries the current setting.

```
Syntax    rxtxgsm_measmode?
          rxtxgsm_measmode {single|repeat}
Example   rxtxgsm_measmode single
          -> EOK 00000
          => MOK rxtxgsm_measmode single
          rxtxgsm_measmode?
          -> EOK 00000 single
```

rxtxgsm_rxmode

Function Sets the Rx mode (burst or CW) or queries the current setting.

```
Syntax    rxtxgsm_rxmode?
          rxtxgsm_rxmode {burst|cw}
Example   rxtxgsm_rxmode burst
          -> EOK 00000
          => MOK rxtxgsm_measmode burst
          rxtxgsm_rxmode?
          -> EOK 00000 burst
```

rxtxgsm_rxrfswitch

Function Turns ON/OFF RF input or queries the current setting.

```
Syntax    rxtxgsm_rxrfswitch <on/off>
          rxtxgsm_rxrfswitch?
Example   rxtxgsm_rxrfswitch?
          -> EOK 00000 on
          rxtxgsm_rxrfswitch off
          -> EOK 00000
          => MOK rxtxgsm_rxrfswitch off
```

rxtxgsm_modanalyzecounter?

Function Queries the measurement count of the phase/ frequency error.

```
Syntax    rxtxgsm_modanalyzecounter?
Example   rxtxgsm_modanalyzecounter?
          -> EOK 00000 10
```

rxtxgsm_powercounter?

Function Queries the measurement count of the Tx power measurement.

```
Syntax    rxtxgsm_powercounter?
Example   rxtxgsm_powercounter?
          -> EOK 00000 10
```

rxtxgsm_burstcounter?

Function Queries the measurement count of the burst timing measurement.

```
Syntax    rxtxgsm_burstcounter?
Example   rxtxgsm_burstcounter?
          -> EOK 00000 10
```

rxtxgsm_txadjusted_rfpower?

Function Queries the RF Tx power after correction.

```
Syntax    rxtxgsm_txadjusted_rfpower?
Example   rxtxgsm_txadjusted_rfpower?
          -> EOK 00000 -20.0
```

Description The downlink output RF power is returned in units of dBm.

10.9 Signaling Tester Mode Group

This manual denotes responses to the client that is controlling the VC200 as -> and responses to other clients as =>.

Common

signal_mode

Function Sets the test mode or queries the current setting.

Syntax
```
signal_mode?
signal_mode {auto|manual|manual_gsm}
```

Example
```
signal_mode?
-> EOK 00000 auto
signal_mode auto
-> EOK 00000
=> MOK signal_mode auto
```

signal_action

Function Sets whether to execute the test item or queries the current setting.

Syntax
```
signal_action? <testitem>
signal_action <testitem> <action>
```
<testitem>: Test item name
<action>: Execute the test item (on/off)

Example
```
signal_action? wcdma-maxtxpower-f1
-> EOK 00000 off
signal_action wcdma-manual-txpower
on
-> EOK 00000
=> MOK signal_action wcdma-manual-
txpower on
```

Description When set to auto test, only querying is possible.
The test item names are as follows:

- Auto test (W-CDMA)

wcdma-regist	Position registration
wcdma-call-1	Call setup
wcdma-rel-1	Call release 1
wcdma-dial-1	Dial test of call setup 1
wcdma-call-2	Call setup 2
wcdma-rel-2	Call release 2
wcdma-dial-2	Dial test of call setup 2
wcdma-closeloop	Test loop close
wcdma-openloop	Test loop open
wcdma-speech	Speech
wcdma-maxtxpower -f1	Maximum output power (F1)
wcdma-maxtxpower -f2	Maximum output power (F2)
wcdma-maxtxpower -f3	Maximum output power (F3)
wcdma-mintxpower -f1	Minimum output power (F1)
wcdma-mintxpower -f2	Minimum output power (F2)
wcdma-mintxpower -f3	Minimum output power (F3)
wcdma-freqaccuracy -f1	Frequency error (F1)
wcdma-freqaccuracy -f2	Frequency error (F2)
wcdma-freqaccuracy -f3	Frequency error (F3)
wcdma-modaccuracy1 -f1	Modulation accuracy 1 (F1)
wcdma-modaccuracy1 -f2	Modulation accuracy 1 (F2)
wcdma-modaccuracy1 -f3	Modulation accuracy 1 (F3)
wcdma-modaccuracy2 -f1	Modulation accuracy 2 (F1)
wcdma-modaccuracy2 -f2	Modulation accuracy 2 (F2)
wcdma-modaccuracy2 -f3	Modulation accuracy 2 (F3)
wcdma-minsensitivity -f1	Reference sensitivity (F1)
wcdma-minsensitivity -f2	Reference sensitivity (F2)
wcdma-minsensitivity -f3	Reference sensitivity (F3)
wcdma-maxinvoltage -f1	Maximum input reception (F1)
wcdma-maxinvoltage -f2	Maximum input reception (F2)
wcdma-maxinvoltage -f3	Maximum input reception (F3)
wcdma -innerlooppower-f1	Inner loop power measurement (F1)
wcdma -innerlooppower-f2	Inner loop power measurement (F2)
wcdma -innerlooppower-f3	Inner loop power measurement (F3)
wcdma -openlooppower-f1	Open loop power measurement (F1)
wcdma -openlooppower-f2	Open loop power measurement (F2)
wcdma -openlooppower-f3	Open loop power measurement (F3)
wcdma-freq-f1f2	Frequency handover to F2
wcdma-freq-f2f3	Frequency handover to F3
wcdma-current-wait	Current consumption in idle
wcdma-current-use	Current consumption in connected

- Auto test (GSM)

gsm-locupd	Location update
gsm-call-1	Call setup 1
gsm-call-2	Call setup 2
gsm-handover-f2	Frequency handover (F2)
gsm-handover-f3	Frequency handover (F3)
gsm-handover-fxy	Frequency handover (Fxy; x = 2, 3, y = 1 to 3)
gsm-rel-1	Call release 1
gsm-rel-2	Call release 2
gsm-dial-1	Dial test 1
gsm-dial-2	Dial test 2
gsm-speech	Speech
gsm-loopback-f1	Loopback (frequency band 1)
gsm-loopback-f2	Loopback (frequency band 1-f2)
gsm-loopback-f3	Loopback (frequency band 1-f3)
gsm-loopback-f21	Loopback (frequency band 2)
gsm-loopback-f22	Loopback (frequency band 2-f22)
gsm-loopback-f23	Loopback (frequency band 2-f23)
gsm-loopback-f31	Loopback (frequency band 3)
gsm-loopback-f32	Loopback (frequency band 3-f32)
gsm-loopback-f33	Loopback (frequency band 3-f33)
gsm-releaseloopback-f1	Open loop (frequency band 1)
gsm-releaseloopback-f2	Open loop (frequency band 1-f2)
gsm-releaseloopback-f3	Open loop (frequency band 1-f3)
gsm-releaseloopback-f21	Open loop (frequency band 2)
gsm-releaseloopback-f22	Open loop (frequency band 2-f22)
gsm-releaseloopback-f23	Open loop (frequency band 2-f23)
gsm-releaseloopback-f31	Open loop (frequency band 3)
gsm-releaseloopback-f32	Open loop (frequency band 3-f32)
gsm-releaseloopback-f33	Open loop (frequency band 3-f33)
gsm-gprs-f1	GPRS test

Radio characteristics test (frequency band 1)

gsm-txpower-f1-h	Tx power (F1-PCL_H)
gsm-txpower-f1-m	Tx power (F1-PCL_M)
gsm-txpower-f1-l	Tx power (F1-PCL_L)
gsm-txpower-f2-h	Tx power (F2-PCL_H)
gsm-txpower-f2-m	Tx power (F2-PCL_M)
gsm-txpower-f2-l	Tx power (F2-PCL_L)
gsm-txpower-f3-h	Tx power (F3-PCL_H)
gsm-txpower-f3-m	Tx power (F3-PCL_M)
gsm-txpower-f3-l	Tx power (F3-PCL_L)
gsm-bursttiming-f1-h	Burst timing (F1-PCL_H)
gsm-bursttiming-f1-m	Burst timing (F1-PCL_M)
gsm-bursttiming-f1-l	Burst timing (F1-PCL_L)
gsm-bursttiming-f2-h	Burst timing (F2-PCL_H)
gsm-bursttiming-f2-m	Burst timing (F2-PCL_M)
gsm-bursttiming-f2-l	Burst timing (F2-PCL_L)
gsm-bursttiming-f3-h	Burst timing (F3-PCL_H)
gsm-bursttiming-f3-m	Burst timing (F3-PCL_M)
gsm-bursttiming-f3-l	Burst timing (F3-PCL_L)
gsm-phaseaccuracy-f1-h	Phase error (F1-PCL_H)
gsm-phaseaccuracy-f1-m	Phase error (F1-PCL_M)
gsm-phaseaccuracy-f1-l	Phase error (F1-PCL_L)
gsm-phaseaccuracy-f2-h	Phase error (F2-PCL_H)
gsm-phaseaccuracy-f2-m	Phase error (F2-PCL_M)
gsm-phaseaccuracy-f2-l	Phase error (F2-PCL_L)
gsm-phaseaccuracy-f3-h	Phase error (F3-PCL_H)
gsm-phaseaccuracy-f3-m	Phase error (F3-PCL_M)
gsm-phaseaccuracy-f3-l	Phase error (F3-PCL_L)
gsm-freqaccuracy-f1-h	Frequency error (F1-PCL_H)
gsm-freqaccuracy-f1-m	Frequency error (F1-PCL_M)
gsm-freqaccuracy-f1-l	Frequency error (F1-PCL_L)
gsm-freqaccuracy-f2-h	Frequency error (F2-PCL_H)

gsm-freqaccuracy -f2-m	Frequency error (F2-PCL_M)
gsm-freqaccuracy -f2-l	Frequency error (F2-PCL_L)
gsm-freqaccuracy -f3-h	Frequency error (F3-PCL_H)
gsm-freqaccuracy -f3-m	Frequency error (F3-PCL_M)
gsm-freqaccuracy -f3-l	Frequency error (F3-PCL_L)
gsm-rxquality-f1-h	Rx quality (F1-DLP_H)
gsm-rxquality-f1-l	Rx quality (F1-DLP_L)
gsm-rxquality-f2-h	Rx quality (F2-DLP_H)
gsm-rxquality-f2-l	Rx quality (F2-DLP_L)
gsm-rxquality-f3-h	Rx quality (F3-DLP_H)
gsm-rxquality-f3-l	Rx quality (F3-DLP_L)
gsm-rxlevel-f1-h	Rx level (F1-DLP_H)
gsm-rxlevel-f1-l	Rx level (F1-DLP_L)
gsm-rxlevel-f2-h	Rx level (F2-DLP_H)
gsm-rxlevel-f2-l	Rx level (F2-DLP_L)
gsm-rxlevel-f3-h	Rx level (F3-DLP_H)
gsm-rxlevel-f3-l	Rx level (F3-DLP_L)
gsm-ber-f1-h	FER/RBER (DLP_H) (Frequency band 1)
gsm-ber-f1-l	FER/RBER (DLP_L) (Frequency band 1)
gsm-ber-f2-h	FER/RBER(DLP_H) (frequency band 1-f2)
gsm-ber-f2-l	FER/RBER(DLP_L) (frequency band 1-f2)
gsm-ber-f3-h	FER/RBER(DLP_H) (frequency band 1-f3)
gsm-ber-f3-l	FER/RBER(DLP_L) (frequency band 1-f3)

Radio characteristics test (frequency band 2 and 3)

gsm-txpower-fxy-h	Tx power (Fxy-PCL_H)
gsm-txpower-fxy-m	Tx power (FxyPCL_M)
gsm-txpower-fxy-l	Tx power (Fxy-PCL_L)
gsm-bursttiming-fxy-h	Burst timing (Fxy-PCL_H)
gsm-bursttiming-fxy-m	Burst timing (Fxy-PCL_M)
gsm-bursttiming-fxy-l	Burst timing (Fxy-PCL_L)
gsm-phaseaccuracy -fxy-h	Phase error (Fxy-PCL_H)
gsm-phaseaccuracy -fxy-m	Phase error (Fxy-PCL_M)
gsm-phaseaccuracy -fxy-l	Phase error (Fxy-PCL_L)
gsm-freqaccuracy -fxy-h	Frequency error (Fxy-PCL_H)
gsm-freqaccuracy -fxy-m	Frequency error (Fxy-PCL_M)
gsm-freqaccuracy-fxy-l	Frequency error (Fxy-PCL_L)
gsm-rxquality-fxy-h	Rx quality (Fxy-DLP_H)
gsm-rxquality-fxy-l	Rx quality (Fxy-DLP_L)
gsm-rxlevel-fxy-h	Rx level (Fxy-DLP_H)
gsm-rxlevel-fxy-l	Rx level (Fxy-DLP_L)
gsm-ber-fxy-h	FER/RBER (DLP_H) (Frequency band 2)
gsm-ber-fxy-l	FER/RBER (DLP_L) (Frequency band 2) x = 2, 3 y = 1 to 3
gsm-current-wait	Current consumption in idle (gsm)
gsm-current-use	Current consumption in connected (gsm)
gsm_current_use_f1	Current consumption in connected (frequency band 1)
gsm_current_use_f21	Current consumption in connected (frequency band 2)
gsm_current_use_f31	Current consumption in connected (frequency band 3)

- Manual test (W-CDMA)

wcdma-manual-regist	Position registration
wcdma-manual -callsetup	Call setup
wcdma-manual -release	Release
wcdma-manual -speech	Speech
wcdma-manual -waitcurrent	Current consumption in idle
wcdma-manual -usecurrent	Current consumption in connected
wcdma-manual -txpower	output power
wcdma-manual -freqaccuracy	Frequency error
wcdma-manual -modaccuracy	Phase error
wcdma-manual -loopbackber	Loopback BER
wcdma-manual -openloop	Open loop power

wcdma-manual -innerloop	Inner loop power
wcdma-manual -cpichinfo	CPICH

- Manual test (GSM)

gsm-manual-locupd	Location update
gsm-manual-gprs	GPRS manual test
gsm-manual-callsetup	Call setup
gsm-manual-release	Release
gsm-manual-speech	Speech
gsm-manual-loopback	Loopback
gsm-manual-handover	Frequency handover
gsm-manual -waitcurrent	Current consumption in idle
gsm-manual -usecurrent	Current consumption in connected
gsm-manual-txpower	Tx power
gsm-manual -bursttiming	Burst timing
gsm-manual -phaseaccuracy	Phase error
gsm-manual -freqaccuracy	Frequency error
gsm-manual-rxquality	Rx quality
gsm-manual-rxlevel	Rx level
gsm-manual-ber	BER
gsm-manual-flatness	Flatness
gsm-manual-timingerror	Timing Error

signal_meascount?

Function Queries the number of measurements made on the test item for auto test.

Syntax `signal_meascount? <testitem>`
<testitem>: Test item name, see the description in signal_action command.

Example
```
signal_meascount? wcdma-maxtxpower-f1
-> EOK 00000 20
signal_meascount? wcdma-regist
-> EOK 00000 -1
signal_meascount wcdma-manual-txpower 10
-> EOK 00000
=> MOK signal_meascount wcdma-manualtxpower 10
```

Description
- Query can be made only when the test mode is set to auto test. For items with no measurement count settings, "–1" is returned.
- When set to auto test, only querying is possible.

signal_timeout?

Function Sets the measurement time of the test item or queries the current setting.

Syntax `signal_timeout? <testitem>`
<testitem>: Test item name, see the description in signal_action command.

Example
```
signal_timeout? wcdma-minsensitivity-f1
-> EOK 00000 5
signal_timeout? wcdma-maxtxpower-f1
-> EOK 00000 -1
signal_timeout wcdma-manual-loopbackber 10
-> EOK 00000
=> MOK signal_timeout wcdma-manualloopbackber 10
```

Description
- For items with no measurement time settings, "–1" is returned.
- When set to auto test, only querying is possible.

signal_effectsequence?

Function Queries the test sequence.

Syntax `signal_effectsequence?`

Example
```
signal_effectsequence?
-> EOK 00000 wcdma-regist wcdma-callnet wcdma-modaccuracy1-f1 wcdma-relnet
```

Description When the test mode is set to auto test, the sequence specified by the model parameter file is returned. When set to manual test, the test items (sequence) selected on the screen are returned.

signal_start

Function Starts the signaling test.

Syntax `signal_start`

Example
```
signal_start
-> EOK 00000
=> MOK signal_start
```

signal_stop

Function Stops the signaling test.

Syntax `signal_stop`

Example
```
signal_stop
-> EOK 00000
=> MOK signal_sequencestop stop
```

signal_resitem?

Function Queries the most recent result of the test item.

Syntax `signal_resitem? <testitem>`
<testitem>: Test item name, see the description in signal_action command.

Example
```
signal_resitem? wcdma-regist
-> EOK 00000 pass
signal_resitem? wcdma-maxtxpower-f1
-> EOK 00000 fail -30.0 -31.0 -29.0
```

Description The response parameters are as follows.
Result ({pass|fail|abort|no_exec|skip|timeout}) + [measured value]
However, a measured value may not be returned depending on the test mode or test item. The details of the response parameter for each test item are as follows.

- **Auto test (W-CDMA)**
  - Returns only the results
    Registration, call setup from NW, call setup from UE, call release from NW, call release from UE, test loop close, test loop open, speech, and frequency handover (F2, F3)
  - Returns the results + measured values (in the following order: average, minimum, and maximum)
    Maximum output power (F1, F2, F3), Minimum output power (F1, F2, F3), frequency error (F1, F2, F3), modulation accuracy 1 (F1, F2, F3), and modulation accuracy 2 (F1, F2, F3)
  - Returns the results + measured values
    Reference sensitivity (F1, F2, F3), maximum input reception (F1, F2, F3), and open loop power (F1, F2, F3)
  - Returns the results + measured values (in the following order: average, minimum, and maximum of 1 command, average, minimum, and maximum of 10 commands)
    Inner loop power (F1, F2, F3)
  - Returns the results + measured values (in the following order: peak value and rms value)
    Current consumption in idle and current consumption in connected
- **Auto test (GSM)**
  - Returns only the result
    Registration, call setup from NW, call setup from UE, call release from NW, call release from UE, loopback, speech, and GPRS
    Burst timing (F1-PCL_H, F1-PCL_M, (F1-PCL_L, F2-PCL_H, F2-PCL_M, F2-PCL_L, (F3-PCL_H, F3-PCL_M, and F3-PCL_L)
  - Returns the results + measured values (in the following order: average, minimum, and maximum)
    Tx power (F1-PCL_H, F1-PCL_M, F1-PCL_L, F2-PCL_H, F2-PCL_M, F2-PCL_L, F3-PCL_H, F3-PCL_M, and F3-PCL_L),
    Rx quality (F1-PCL_H, F1-PCL_L, F2-PCL_H, F2-PCL_L, F3-PCL_H, and F3-PCL_L),
    Rx level (F1-PCL_H, F1-PCL_L, F2-PCL_H, F2-PCL_L, F3-PCL_H, and F3-PCL_L)
  - Returns the results + measured values (in the following order: peak value and rms value)
    Phase error (F1-PCL_H, F1-PCL_M, F1-PCL_L, F2-PCL_H, F2-PCL_M, F2-PCL_L, F3-PCL_H, F3-PCL_M, and F3-PCL_L)
  - Returns the results + measured values
    Frequency error (F1-PCL_H, F1-PCL_M, F1-PCL_L, F2-PCL_H, F2-PCL_M, F2-PCL_L, F3-PCL_H, F3-PCL_M, and F3-PCL_L)
    BER (DLP_H/DLP_L), FER, RBER(1b), and RBER(II)
- **Manual test (W-CDMA)**
  - Returns only the result
    Registration, call setup, and release
  - Returns only the measured values output power, frequency error, modulation accuracy, loopback BER, and open loop power, and CPICH
  - Measured values only (average/maximum/minimum of 1 command, average/maximum/minimum of 10 commands, total number of slots that failed, position/measurement count/relative power of 1 command/relative power of 10 commands of the slot that failed) Inner loop power
- **Manual test (GSM)**
  - Returns only the result
    Registration, GPRS, call setup, release, frequency handover, and burst timing
  - Returns only the measured values
    Tx power, Rx quality, Rx level, phase error (peak phase error followed by rms phase error), frequency error, BER (in the following order: FER, RBER (I B), RBER (II)), Flatness (in the following order: Minimum vale, Maximum value), and Timingerror.

* If the TSC cannot be detected in the GSM analysis, the response to phase error, frequency error, burst timing flatness, and timingerror is “tsc_fail.”
If power exceeding the specified threshold level cannot be detected in the open loop power measurement of W-CDMA, a timeout occurs after a given time, and “timout” is returned.

The response when the result of the GPRS test fails is as follows:
fail attach: Failed the Attach test
fail detach: Failed the Detach test

signal_poweroff

Function Turns OFF the power supply output from the power supply terminal for the mobile phone.

```
Syntax    signal_poweroff
Example   signal_poweroff
          -> EOK 00000
          => MOK signal_poweroff
```

Auto test (Common)

signal_parammode?

Function Queries the test mode (single/continuous).

```
Syntax    signal_parammode?
```

Response parameter: {single|combination}

```
Example   signal_parammode?
          -> EOK 00000 combination
```

signal_param

Function Sets the model parameter file or queries the current setting.

```
Syntax    signal_param?
          signal_param <pathname>
```

<pathname>: Model parameter file name

```
Example   signal_param?
          -> EOK 00000 "/home/vc200/param/
          test.cdma"
          signal_param "/home/vc200/
          test.cdma"
          -> EOK 00000
          => MOK signal_param "/home/vc200/
          test.cdma"
```

Description Enter using a full path.

signal_uploadparam

Function Uploads the model parameters.

```
Syntax    signal_uploadparam "<parameter>"
          "<filename>"
```

<parameter>: Model parameters
<filename>: Upload destination parameter file name

```
Example   signal_uploadparam
          "TEST_PARAMETER_FILE\nMAKER=
          YOKOGAWA\nMODEL=Y11433\nTYPE=
          W-CDMA\nCTRLSIGNAL=USB\n" "/home/
          vc200/param/modelparam"
          -> EOK 00000
```

signal_combparamlist?

Function Queries the model parameter files that are registered in the loaded combination file.

```
Syntax    signal_combparamlist?
Example   signal_combparamlist?
          -> EOK 00000 "/home/vc200/
          combparam/dcs1800""/home/vc200/
          combparam/dcs1800"
```

Description The registered model parameter files are returned using full path.

signal_combination_start

Function Releases the pause setting during the execution of a test in continuous test mode.

```
Syntax    signal_combination_start
          {cancel|OK}
          -> EOK 00000
```

Description If the OK button is pressed, "signal_combination_start OK" is returned. If the Cancel button is pressed, "signal_combination_start cancel" is returned.

signal_typeparam?

Function Queries the terminal type in the currently loaded model parameters.

```
Syntax    signal_typeparam?
```

Response parameters: {DUALMODE|W-CDMA|GSM}

```
Example   signal_typeparam?
          -> EOK 00000 W-CDMA
```

signal_rfconnectparam?

Function Queries the RF connection method in the currently loaded model parameters.

```
Syntax    signal_rfconnectparam?
```

Response parameters: {COAXIALCABLE|ANTENNACOUPLER|OTHERS}

```
Example   signal_rfconnectparam?
          -> EOK 00000 COAXIALCABLE
```

signal_commentparam?

Function Queries the comment in the currently loaded model parameters.

```
Syntax    signal_commentparam?
Example   signal_commentparam?
          -> EOK 00000 "Parameter comment"
```

signal_ctrlparam?

Function Queries the control method in the currently loaded model parameters.

```
Syntax    signal_ctrlparam?
```

Response parameters: Control number

```
Example   signal_ctrlparam?
          -> EOK 00000 NONE
```

signal_usbconnect

Function Sets whether to use the USB connection function or queries the current setting.

Syntax
```
signal_usbconnect?
signal_usbconnect {use|nouse}
```
use: Use the USB connection function.
nouse: Not use the USB connection function.

Example
```
signal_usbconnect?
-> EOK 00000 use
signal_usbconnect use
-> EOK 00000
=> MOK signal_usbconnect use
```

signal_genparam?

Function Queries the contents of the general setup parameters of the current model parameters.

Syntax
```
signal_genparam?
```

Example
```
signal_genparam?
-> EOK 00000 DUALMODE AUTO
COAXIALCABLE "YOKOGAWA"
```

Description The response parameters are as follows:
<Terminal type>, <Dual mode switch>, <RF connection>, <Comment>
Terminal type: {W-CDMA|GSM|DUALMODE}
Dual mode switch: {AUTO|MANUAL|UNUSE}
RF connection: {COAXIALCABLE|ANTENNACOUPLER|OTHERS}

signal_result?

Function Retrieves the result of the most recent test.

Syntax
```
signal_result?
```

Example
```
signal_result?
-> EOK 00000 pass
signal_result?
-> EOK 00000 abort "Aborted by
other users."
```

Description The response parameters are as follows. However, <message> is returned only when the response parameter is abort.
{pass|fail|stop|abort|testing|no_exe}+<message>

signal_combresultfname?

Function Queries the name of the model parameter results file

Syntax
```
signal_combresultfname? <registered
number of model parameter file>
```
<registered number of model parameter file>:1 to 10

Example
```
signal_combresultfname? 1
-> EOK 00000
"/home/vc200/result/2005-07-01-11-
26-14-comb1.cmbf/2005-07-01-11-26-
17"
```
(if file exists)
```
-> ERR 02078 "No Result file."
```
(if file does not exist)

signal_respevalue?

Function Queries the power value of the test item whose auto test result is “power err.”

Syntax
```
signal_respevalue? <testitem>
```
<testitem>: Test item name. See the signal_action item.

Example
```
signal_respevalue? wcdma-
modaccuracy1-f1
-> EOK 00000 18.0
```

signal_imei?

Function Queries the IMEI (International Mobile Equipment Identity) of the terminal.

Syntax
```
signal_imei?
```

Example
```
signal_imei?
-> EOK 00000 "123456789012345"
```

Description
- Returns a 15-digit IMEI.
- Query can be made only during auto test.

signal_usbname?

Function Queries the model name retrieved via the USB.

Syntax
```
signal_usbname?
```

Example
```
signal_usbname?
-> EOK 00000 "YOKOGAWA XXXX"
```

signal_usbversion?

Function Queries the model version retrieved via the USB.

Syntax
```
signal_usbversion?
```

Example
```
signal_usbversion?
-> EOK 00000 "Ver1.00"
```

signal_printresult

Function Prints the results.

Syntax
```
signal_printresult [<File name>]
```
<File name>: Name of the file to be printed using a full path.

Example
```
signal_printresult
-> EOK 00000
signal_printresult "/home/vc200/
result/2004-10-31-00-00-00"
-> EOK 00000
```

Description If the file name is omitted, the results of the last test that was executed are printed.

signal_printcancel

Function Cancels the printing of the results.

Syntax
```
signal_printcancel
```

Example
```
signal_printcancel
-> EOK 00000
```

signal_printresstatus?

Function Queries the print result.

Syntax
```
signal_printresstatus?
```
Response parameters: Result message

Example
```
signal_printresstatus?
-> EOK 00000 "XXXXXXX was printed."
```

signal_printstatus?

Function Queries the print status.

Syntax
```
signal_printstatus?
```
Response parameters: {ready|printing}

Example
```
signal_printstatus?
-> EOK 00000 printing
```

signal_resultusername?

Function Queries the user name of the most recent result log file.

Syntax
```
signal_resultusername?
```
Response parameters: User name

Example
```
sys_resultusername?
-> EOK 00000 "operator0"
```

signal_resultcompanyname?

Function Queries the company name of the most recent result log file.

Syntax
```
signal_resultcompanyname?
```
Response parameters: Company name

Example
```
sys_resultcompanyname?
-> EOK 00000 "company0"
```

signal_selectparam

Function Sets the model parameter selection method or queries the current setting.

Syntax
```
signal_selectparam?
signal_selectparam {auto|manual}
```

Example
```
signal_selectparam?
-> EOK 00000 auto
signal_selectparam auto
-> EOK 00000
=> MOK signal_selectparam auto
```

signal_selectconnect

Function Sets the connection method for model parameter automatic selection or queries the current setting.

Syntax
```
signal_selectconnect?
signal_selectconnect
{y1|y2|x1|x2|x3|x4|x5|cb}
```

Example
```
signal_selectconnect?
-> EOK 00000 y2
signal_selectconnect y2
-> EOK 00000
=> MOK signal_selectconnect y2
```

signal_selectprotocol

Function Sets the IMEI retrieval band for model parameter automatic selection or queries the current setting.

Syntax
```
signal_selectprotocol?
signal_selectprotocol
{gsm1800|gsm1900|wcdma}
```

Example
```
signal_selectprotocol?
-> EOK 00000 gsm1800
signal_selectprotocol wcdma
-> EOK 00000
=> MOK signal_selectprotocol wcdma
```

signal_select_start

Function Clears the pause after IMEI retrieval during model parameter automatic selection.

Syntax
```
signal_select_start
```

Example
```
signal_select_start
-> EOK 00000
=> MOK signal_select_start
```

signal_selectimeistatus?

Function For model parameter automatic selection, queries the status from IMEI retrieval until the test actually starts.

Syntax `signal_selectimeistatus?`

Example
```
signal_selectimeistatus?
-> EOK 00000 paramselected
```

Description The following response is returned.
`{noimei|aquimei|paramselected}`
noimei: IMEI not retrieved.
aquimei: IMEI was retrieved, but no model parameter file was selected.
paramselected: Model parameter file selected.

Auto test (W-CDMA)

signal_wcdmacall_1?

Function Queries the call setup mode (from NW or from UE) of W-CDMA call setup 1 in the currently loaded model parameters.

Syntax `signal_wcdmacall_1?`
Response parameters: {callnet|callms}

Example
```
signal_wcdmacall_1?
-> EOK 00000 callnet
```

signal_wcdmarel_1?

Function Queries the call release mode (from NW, from UE, or system handover) of W-CDMA call setup 1 in the currently loaded model parameters.

Syntax `signal_wcdmarel_1?`
Response parameters: {relnet|relms|togsm}

Example
```
signal_wcdmarel_1?
-> EOK 00000 relnet
```

signal_wcdmacall_2?

Function Queries the call setup mode (from NW or from UE) of W-CDMA call setup 2 in the currently loaded model parameters.

Syntax `signal_wcdmacall_2?`
Response parameters: {callnet|callms}

Example
```
signal_wcdmacall_2?
-> EOK 00000 callnet
```

signal_wcdmarel_2?

Function Queries the call release mode (from NW, from UE, or system handover) of W-CDMA call setup 2 in the currently loaded model parameters.

Syntax `signal_wcdmarel_2?`
Response parameters: {relnet|relms|togsm}

Example
```
signal_wcdmarel_2?
-> EOK 00000 relnet
```

signal_speechposition?

Function Queries whether the speech test in auto mode in the currently loaded model parameters is carried out when a Call Setup from NW or a Call Setup from UE occurs.

Syntax `signal_speechposition?`

Example
```
signal_speechposition?
-> EOK 00000 wcdma_call1
```

Description The response parameters are as follows:
wcdma_call1: Execute the speech test after call setup 1
wcdma_call2: Execute the speech test after call setup 2

signal_speechdelaytime?

Function Queries the delay time of the speech test in auto test mode in the currently loaded model parameters.

Syntax
```
signal_speechdelaytime?
Response parameters: Delay time (s)
```

Example
```
signal_speechdelaytime?
-> EOK 00000 0.5
```

signal_protocolparam?

Function Queries the protocol data. (Queries the setting of the model parameter file.)

Syntax `signal_protocolparam?`

Example
```
signal_protocolparam?
-> EOK 00000 "Profile_00"
```

Description The response parameters are as follows.
“Protcol data”

signal_wcdmapowerclass?

Function Queries the W-CDMA power class in the currently loaded model parameters.

Syntax `signal_wcdmapowerclass?`
Response parameters: Power class

Example
```
signal_wcdmapowerclass?
-> EOK 00000 CLASS3
```

signal_wcdmadladjustpower1?

Function Queries the W-CDMA downlink power adjustment (F1) in the currently loaded model parameters.

Syntax `signal_wcdmadladjustpower1?`
Response parameters: Downlink power adjustment (dB)

Example
```
signal_wcdmadladjustpower1?
-> EOK 00000 3.0
```

signal_wcdmauladjustpower1?

Function Queries the W-CDMA uplink power adjustment (F1) in the currently loaded model parameters.

Syntax `signal_wcdmauladjustpower1?`
Response parameters: Uplink power adjustment (dB)

Example
```
signal_wcdmauladjustpower1?
-> EOK 00000 3.0
```

signal_wcdmadladjustpower2?

Function Queries the W-CDMA downlink power adjustment (F2) in the currently loaded model parameters.

Syntax `signal_wcdmadladjustpower2?`
Response parameters: Downlink power adjustment (dB)

Example
```
signal_wcdmadladjustpower2?
-> EOK 00000 3.0
```

signal_wcdmauladjustpower2?

Function Queries the W-CDMA uplink power adjustment (F2) in the currently loaded model parameters.

Syntax `signal_wcdmauladjustpower2?`
Response parameters: Uplink power adjustment (dB)

Example
```
signal_wcdmauladjustpower2?
-> EOK 00000 3.0
```

signal_wcdmadladjustpower3?

Function Queries the W-CDMA downlink power adjustment (F3) in the currently loaded model parameters.

Syntax `signal_wcdmadladjustpower3?`
Response parameters: Downlink power adjustment (dB)

Example
```
signal_wcdmadladjustpower3?
-> EOK 00000 3.0
```

signal_wcdmauladjustpower3?

Function Queries the W-CDMA uplink power adjustment (F3) in the currently loaded model parameters.

Syntax `signal_wcdmauladjustpower3?`
Response parameters: Uplink power adjustment (dB)

Example
```
signal_wcdmauladjustpower3?
-> EOK 00000 3.0
```

signal_wcdmadownlinkpower?

Function Queries the W-CDMA downlink power in the currently loaded model parameters.

Syntax signal_wcdmadownlinkpower?
Response parameters: Downlink power (dBm)

Example
```
signal_wcdmadownlinkpower?
-> EOK 00000 -65.0
```

signal_wcdmadownlinkfreqch1?

Function Queries the W-CDMA downlink frequency channel (F1) in the currently loaded model parameters.

Syntax `signal_wcdmadownlinkfreqch1?`
Response parameters: Downlink frequency channel (F1)

Example
```
signal_wcdmadownlinkfreqch1?
-> EOK 00000 10688
```

signal_wcdmadownlinkfreqch2?

Function Queries the W-CDMA downlink frequency channel (F2) in the currently loaded model parameters.

Syntax `signal_wcdmadownlinkfreqch2?`
Response parameters: Downlink frequency channel (F2)

Example
```
signal_wcdmadownlinkfreqch2?
-> EOK 00000 10712
```

signal_wcdmadownlinkfreqch3?

Function Queries the W-CDMA downlink frequency channel (F3) in the currently loaded model parameters.

Syntax `signal_wcdmadownlinkfreqch3?`
Response parameters: Downlink frequency channel (F3)

Example
```
signal_wcdmadownlinkfreqch3?
-> EOK 00000 10737
```

signal_wcdmaopenlooppowerupper?

Function Queries the upper limit of the W-CDMA open loop power in the currently loaded model parameters.

Syntax `signal_wcdmaopenlooppowerupper?`
Response parameters: Upper limit of the open loop power (dBm)

Example
```
signal_wcdmaopenlooppowerupper?
-> EOK 00000 -10.0
```

signal_wcdmaopenlooppowerlower?

Function Queries the lower limit of the W-CDMA open loop power in the currently loaded model parameters.

Syntax `signal_wcdmaopenlooppowerlower?`
Response parameters: Lower limit of the open loop power (dBm)

Example
```
signal_wcdmaopenlooppowerlower?
-> EOK 00000 -15.0
```

signal_wcdmamaxtxpowerdlpower?

Function Queries the downlink power when measuring the W-CDMA maximum output power in the currently loaded model parameters.

Syntax `signal_wcdmamaxtxpowerdlpower?`
Response parameters: Downlink power when measuring the W-CDMA maximum output power (dBm)

Example
```
signal_wcdmamaxtxpowerdlpower?
-> EOK 00000 -65.0
```

signal_wcdmamaxtxpowerupper?

Function Queries the upper limit of the W-CDMA maximum output power in the currently loaded model parameters.

Syntax `signal_wcdmamaxtxpowerupper?`
Response parameters: Upper limit of the maximum output power (dBm)

Example
```
signal_wcdmamaxtxpowerupper?
-> EOK 00000 25.0
```

signal_wcdmamaxtxpowerlower?

Function Queries the lower limit of the W-CDMA maximum output power in the currently loaded model parameters.

Syntax `signal_wcdmamaxtxpowerlower?`
Response parameters: Lower limit of the maximum output power (dBm)

Example
```
signal_wcdmamaxtxpowerlower?
-> EOK 00000 21.0
```

signal_wcdmamintxpowerdlpower?

Function Queries the downlink power when measuring the W-CDMA minimum output power in the currently loaded model parameters.

Syntax `signal_wcdmamintxpowerdlpower?`
Response parameters: Downlink power when measuring the W-CDMA minimum output power (dBm)

Example
```
signal_wcdmamintxpowerdlpower?
-> EOK 00000 -65.0
```

signal_wcdmamintxpowerupper?

Function Queries the upper limit of the W-CDMA minimum output power in the currently loaded model parameters.

Syntax `signal_wcdmamintxpowerupper?`
Response parameters: Upper limit of the minimum output power (dBm)

Example
```
signal_wcdmamintxpowerupper?
-> EOK 00000 49.0
```

signal_wcdmainnerlooppowerdlpower?

Function Queries the downlink power when measuring the W-CDMA inner loop power in the currently loaded model parameters.

Syntax `signal_wcdmainnerlooppowerdlpower?`
Response parameters: Downlink power when measuring the inner loop power (dBm)

Example
```
signal_wcdmainnerlooppowerdlpower?
-> EOK 00000 -65.0
```

signal_wcdmainnerlooppower1upper?

Function Queries the upper limit of the 1-step W-CDMA inner loop power in the currently loaded model parameters.

Syntax `signal_wcdmainnerlooppower1upper?`
Response parameters: Upper limit of the 1-step inner loop power (dB)

Example
```
signal_wcdmainnerlooppower1upper?
-> EOK 00000 -0.5
```

signal_wcdmainnerlooppower1lower?

Function Queries the lower limit of the 1-step W-CDMA inner loop power in the currently loaded model parameters.

Syntax `signal_wcdmainnerlooppower1lower?`
Response parameters: Lower limit of the 1-step inner loop power (dB)

Example
```
signal_wcdmainnerlooppower1lower?
-> EOK 00000 -1.5
```

signal_wcdmainnerlooppower10upper?

Function Queries the upper limit of the 10-step W-CDMA inner loop power in the currently loaded model parameters.

Syntax `signal_wcdmainnerlooppower10upper?`
Response parameters: Upper limit of the 10-step inner loop power (dB)

Example
```
signal_wcdmainnerlooppower10upper?
-> EOK 00000 -8.0
```

signal_wcdmainnerlooppower10lower?

Function Queries the lower limit of the 10-step W-CDMA inner loop power in the currently loaded model parameters.

Syntax `signal_wcdmainnerlooppower10lower?`
Response parameters: Lower limit of the 10-step inner loop power (dB)

Example
```
signal_wcdmainnerlooppower10lower?
-> EOK 00000 -12.0
```

signal_wcdmafreqerrdlpower?

Function Queries the downlink power when measuring the W-CDMA frequency error in the currently loaded model parameters.

Syntax `signal_wcdmafreqerrdlpower?`
Response parameters: Downlink power when measuring the W-CDMA frequency error (dBm)

Example
```
signal_wcdmafreqerrdlpower?
-> EOK 00000 -65.0
```

signal_wcdmafreqerrupper?

Function Queries the upper limit of the W-CDMA frequency error in the currently loaded model parameters.

Syntax `signal_wcdmafreqerrupper?`
Response parameters: Upper limit of the frequency error (ppm)

Example
```
signal_wcdmafreqerrupper?
-> EOK 00000 0.1
```

signal_wcdmaevm1dlpower?

Function Queries the downlink power when measuring the W-CDMA modulation accuracy (1) in the currently loaded model parameters.

Syntax `signal_wcdmaevm1dlpower?`
Response parameters: Downlink power when measuring the W-CDMA modulation accuracy (1) (dBm)

Example
```
signal_wcdmaevm1dlpower?
-> EOK 00000 -65.0
```

signal_wcdmaevm1upper?

Function Queries the upper limit of the W-CDMA modulation accuracy (1) in the currently loaded model parameters.

Syntax `signal_wcdmaevm1upper?`
Response parameters: Upper limit of the modulation accuracy (1)

Example
```
signal_wcdmaevm1upper?
-> EOK 00000 17.5
```

signal_wcdmaevm1originoffsetcancel?

Function Queries the origin offset cancel when measuring the W-CDMA modulation accuracy (1) in the currently loaded model parameters.

Syntax `signal_wcdmaevm1originoffsetcancel?`

Example
```
signal_wcdmaevm1originoffsetcancel?
-> EOK 00000 on
```

signal_wcdmaevm2dlpower?

Function Queries the downlink power when measuring the W-CDMA modulation accuracy (2) in the currently loaded model parameters.

Syntax `signal_wcdmaevm2dlpower?`
Response parameters: Downlink power when measuring the W-CDMA modulation accuracy (2) (dBm)

Example
```
signal_wcdmaevm2dlpower?
-> EOK 00000 -65.0
```

signal_wcdmaevm2ulpowerupper?

Function Queries the upper limit of the uplink power when measuring the W-CDMA modulation accuracy (2) in the currently loaded model parameters.

Syntax `signal_wcdmaevm2ulpowerupper?`
Response parameters: Upper limit of the uplink power when measuring the modulation accuracy (2) (dBm)

Example
```
signal_wcdmaevm2ulpowerupper?
-> EOK 00000 -18.0
```

signal_wcdmaevm2ulpowerlower?

Function Queries the lower limit of the uplink power when measuring the W-CDMA modulation accuracy (2) in the currently loaded model parameters.

Syntax `signal_wcdmaevm2ulpowerlower?`
Response parameters: Lower limit of the uplink power when measuring the modulation accuracy (2) (dBm)

Example
```
signal_wcdmaevm2ulpowerlower?
-> EOK 00000 -22.0
```

signal_wcdmaevm2upper?

Function Queries the upper limit of the W-CDMA modulation accuracy (2) in the currently loaded model parameters.

Syntax `signal_wcdmaevm2upper?`
Response parameters: Upper limit of the modulation accuracy (2)

Example
```
signal_wcdmaevm2upper?
-> EOK 00000 17.5
```

signal_wcdmaevm2originoffsetcancel?

Function Queries the origin offset cancel when measuring the W-CDMA modulation accuracy (2) in the currently loaded model parameters.

Syntax `signal_wcdmaevm2originoffsetcancel?`

Example
```
signal_wcdmaevm2originoffsetcancel?
-> EOK 00000 on
```

signal_wcdmaminsensitivitydlpower?

Function Queries the downlink power when measuring the W-CDMA reference sensitivity in the currently loaded model parameters.

Syntax `signal_wcdmaminsensitivitydlpower?`
Response parameters: Downlink power when measuring the reference sensitivity (dBm)

Example
```
signal_wcdmaminsensitivitydlpower?
-> EOK 00000 -106.7
```

signal_wcdmaminsensitivityupper?

Function Queries the upper limit of the W-CDMA reference sensitivity in the currently loaded model parameters.

Syntax `signal_wcdmaminsensitivityupper?`
Response parameters: Upper limit of the reference sensitivity (%)

Example
```
signal_wcdmaminsensitivityupper?
-> EOK 00000 0.001
```

signal_wcdmamaxinvoltagedlpower?

Function Queries the downlink power when measuring the W-CDMA maximum input reception in the currently loaded model parameters.

Syntax `signal_wcdmamaxinvoltagedlpower?`
Response parameters: Downlink power when measuring the maximum input reception (dBm)

Example
```
signal_wcdmamaxinvoltagedlpower?
-> EOK 00000 -25.0
```

signal_wcdmamaxinvoltageupper?

Function Queries the upper limit of the W-CDMA maximum input reception in the currently loaded model parameters.

Syntax `signal_wcdmamaxinvoltageupper?`
Response parameters: Upper limit of the maximum input reception (%)

Example
```
signal_wcdmamaxinvoltageupper?
-> EOK 00000 0.001
```

signal_wcdmapowersupply?

Function Queries the supply voltage in the currently loaded model parameters.

Syntax `signal_wcdmapowersupply?`
Response parameters: Supply voltage (V)

Example
```
signal_wcdmapowersupply?
-> EOK 00000 4.3
```

signal_wcdmaidlecurrentpeakupper?

Function Queries the peak value of the current consumption in idle in the currently loaded model parameters.

Syntax `signal_wcdmaidlecurrentpeakupper?`
Response parameters: Current (mA)

Example
```
signal_wcdmaidlecurrentpeakupper?
-> EOK 00000 240
```

signal_wcdmaidlecurrentrmsupper?

Function Queries the rms value of the current consumption in idle in the currently loaded model parameters.

Syntax `signal_wcdmaidlecurrentrmsupper?`
Response parameters: Current (mA)

Example
```
signal_wcdmaidlecurrentrmsupper?
-> EOK 00000 80
```

signal_wcdmaauthenticationselect?

Function Queries the authentication key type in the currently loaded model parameters.

Syntax `signal_wcdmaauthenticationselect?`

Example
```
signal_wcdmaauthenticationselect?
-> EOK 00000 default
```

Description Returns default or user.

signal_wcdmaauthenticationkey?

Function Queries the authentication key of the currently loaded model parameters.

Syntax `signal_wcdmaauthenticationkey?`

Example
```
signal_wcdmaauthenticationkey?
-> EOK 00000
"AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA"
```

signal_speechresult

Function Enters the speech test result in auto test mode.

Syntax `signal_speechresult {ok|ng}`

Example
```
signal_speechresult ok
-> EOK 00000
```

Auto test (GSM)

signal_gsm_start

Function Starts the GSM test in signal tester mode.

Syntax `signal_gsm_start {cancel|ok}`
`-> EOK 00000`

Description During dual mode test, if the terminal is not an auto switching model, a dialog box opens prompting to switch the terminal when moving from the wcdma test to the GSM test.
If the OK button is pressed, “signal_gsm_start ok” is returned. If the Cancel button is pressed, “signal_gsm_start cancel” is returned.

signal_gsmcall_1?

Function Queries the connection method of call setup 1.
Syntax `signal_gsmcall_1?`
Example `signal_gsmcall_1?`
`-> EOK 00000 callnet`
Description The response parameters are as follows:
callnet: Call setup from NW
callms: Call setup from UE

signal_gsmdialno?

Function Queries the dial number for the dial test.
Syntax `signal_gsmdialno?`
`Response parameters: Numbers, #, and * up to 15 characters`
Example `signal_gsm_dialno?`
`-> EOK 00000 "1234567890#*"`

signal_gsmrel_1?

Function Queries the disconnection method of call release 1.
Syntax `signal_gsmrel_1?`
Example `signal_gsmrel_1?`
`-> EOK 00000 relnet`
Description The response parameters are as follows:
relnet: Call release from NW
relms: Call release from UE

signal_gsmcall_2?

Function Queries the connection method of call setup 2.
Syntax `signal_gsmcall_2?`
Example `signal_gsmcall_2?`
`-> EOK 00000 callnet`
Description The response parameters are as follows:
callnet: Call setup from NW
callms: Call setup from UE
from wcdma: Inter-RAT handovers

signal_gsmrel_2?

Function Queries the disconnection method of call release 2.
Syntax `signal_gsmrel_2?`
Example `signal_gsmrel_2?`
`-> EOK 00000 relnet`
Description The response parameters are as follows:
relnet: Call release from NW
relms: Call release from UE

signal_gsm_speechposition?

Function Queries whether the speech test in auto mode is carried out when a Call Setup from NW or a Call Setup from UE occurs.
Syntax `signal_gsm_speechposition?`
Example `signal_gsm_speechposition?`
`-> EOK 00000 gsm_call1`
Description The response parameters are as follows:
gsm_call1: Executes the speech test after Call Setup from NW.
gsm_call2: Executes the speech test after Call Setup from UE.

signal_gsm_speechdelaytime?

Function Queries the delay time of the speech test in auto test mode.
Syntax `signal_gsm_speechdelaytime?`
`Response parameters: Delay time (s)`
Example `signal_gsm_speechdelaytime?`
`-> EOK 00000 0.5`

signal_gsm_speechresult

Function Enters the speech test result in auto test mode.
Syntax `signal_gsm_speechresult {ok|ng}`
Example `signal_gsm_speechresult ok`
`-> EOK 00000`

signal_imsi?

Function Queries the IMSI.
Syntax `signal_imsi?`
`-> EOK 00000 <IMSI>`
Description Returns the IMSI retrieved from the terminal. If the IMSI has not be retrieved, "——" is returned.

signal_gsm_b1freqband?

Function Queries the frequency band setting of GSM frequency band 1 in the currently loaded model parameters.
Syntax `signal_gsm_b1freqband?`
Response parameters: {gsm850|p-gsm|e-gsm|r-gsm|dcs1800|pcs1900}
Example `signal_gsm_b1freqband?`
`-> EOK 00000 r-gsm`

signal_gsm_b1freqbcch?

Function Queries the BCCH setting of GSM frequency band 1 in the currently loaded model parameters.
Syntax `signal_gsm_b1freqbcch?`
Example `signal_gsm_b1freqbcch?`
`-> EOK 00000 10`

signal_gsm_b1freqtch1?

Function Queries the channel 1 setting of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1freqtch1?`

Example `signal_gsm_b1freqtch1?`
`-> EOK 00000 10`

signal_gsm_b1freqtch2?

Function Queries the channel 2 setting of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1freqtch2?`

Example `signal_gsm_b1freqtch2?`
`-> EOK 00000 10`

signal_gsm_b1freqtch3?

Function Queries the channel 3 setting of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1freqtch3?`

Example `signal_gsm_b1freqtch3?`
`-> EOK 00000 10`

signal_gsm_b1dladjustpowerbcch?

Function Queries the BCCH downlink correction setting of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1dladjustpowerbcch?`

Example `signal_gsm_b1dladjustpowerbcch?`
`-> EOK 00000 3.0`

signal_gsm_b1uladjustpowerbcch?

Function Queries the BCCH uplink correction setting of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1uladjustpowerbcch?`

Example `signal_gsm_b1uladjustpowerbcch?`
`-> EOK 00000 3.0`

signal_gsm_b1dladjustpower1?

Function Queries the channel 1 downlink correction setting of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1dladjustpower1?`

Example `signal_gsm_b1dladjustpower1?`
`-> EOK 00000 3.0`

signal_gsm_b1uladjustpower1?

Function Queries the channel 1 uplink correction setting of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1uladjustpower1?`

Example `signal_gsm_b1uladjustpower1?`
`-> EOK 00000 3.0`

signal_gsm_b1dladjustpower2?

Function Queries the channel 2 downlink correction setting of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1dladjustpower2?`

Example `signal_gsm_b1dladjustpower2?`
`-> EOK 00000 3.0`

signal_gsm_b1uladjustpower2?

Function Queries the channel 2 uplink correction setting of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1uladjustpower2?`

Example `signal_gsm_b1uladjustpower2?`
`-> EOK 00000 3.0`

signal_gsm_b1dladjustpower3?

Function Queries the channel 3 downlink correction setting of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1dladjustpower3?`

Example `signal_gsm_b1dladjustpower3?`
`-> EOK 00000 3.0`

signal_gsm_b1uladjustpower3?

Function Queries the channel 3 uplink correction setting of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1uladjustpower3?`

Example `signal_gsm_b1uladjustpower3?`
`-> EOK 00000 3.0`

signal_gsm_b1downlinkpower?

Function Queries the downlink power setting of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1downlinkpower?`

Example `signal_gsm_b1downlinkpower?`
`-> EOK 00000 3.0`

signal_gsm_b1phasefreqaccuracy_pclh?

Function Queries the power control (high) for the phase error and frequency error measurements of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1phasefreqaccuracy_pclh?`

Example `signal_gsm_b1phasefreqaccuracy_pclh?`
`-> EOK 00000 5`

signal_gsm_b1phasefreqaccuracy_pclm?

Function Queries the power control (middle) for the phase error and frequency error measurements of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1phasefreqaccuracy_pclm?`

Example
```
signal_gsm_b1phasefreqaccuracy_pclm?
-> EOK 00000 12
```

signal_gsm_b1phasefreqaccuracy_pcll?

Function Queries the power control (low) for the phase error and frequency error measurements of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1phasefreqaccuracy_pcll?`

Example
```
signal_gsm_b1phasefreqaccuracy_pcll?
-> EOK 00000 19
```

signal_gsm_b1phaseerrpeak_upper?

Function Queries the upper limit of the phase error (peak) of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1phaseerrpeakupper?`

Example
```
signal_gsm_b1phaseerrpeakupper?
-> EOK 00000 40.0
```

signal_gsm_b1phaseerrrms_upper?

Function Queries the upper limit of the phase error (RMS) of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1phaseerrrmsupper?`

Example
```
signal_gsm_b1phaseerrrmsupper?
-> EOK 00000 15.0
```

signal_gsm_b1freqerr_upper?

Function Queries the upper limit of the frequency error of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1freqerr_upper?`

Example
```
signal_gsm_b1freqerr_upper?
-> EOK 00000 150
```

signal_gsm_b1txpower_pclh?

Function Queries the power control (high) for the Tx power measurement of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1txpower_pclh?`

Example
```
signal_gsm_b1txpower_pclh?
-> EOK 00000 5
```

signal_gsm_b1txpower_pclh_upper?

Function Queries the upper limit of the Tx power measurement [power control (high)] of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1txpower_pclh_upper?`

Example
```
signal_gsm_b1txpower_pclh_upper?
-> EOK 00000 37.0
```

signal_gsm_b1txpower_pclh_lower?

Function Queries the lower limit of the Tx power measurement [power control (high)] of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1txpower_pclh_lower?`

Example
```
signal_gsm_b1txpower_pclh_lower?
-> EOK 00000 29.0
```

signal_gsm_b1txpower_pclm?

Function Queries the power control (middle) for the Tx power measurement of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1txpower_pclm?`

Example
```
signal_gsm_b1txpower_pclm?
-> EOK 00000 12
```

signal_gsm_b1txpower_pclm_upper?

Function Queries the upper limit of the Tx power measurement [power control (middle)] of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1txpower_pclm_upper?`

Example
```
signal_gsm_b1txpower_pclm_upper?
-> EOK 00000 23.0
```

signal_gsm_b1txpower_pclm_lower?

Function Queries the lower limit of the Tx power measurement [power control (middle)] of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1txpower_pclm_lower?`

Example
```
signal_gsm_b1txpower_pclm_lower?
-> EOK 00000 15.0
```

signal_gsm_b1txpower_pcll?

Function Queries the power control (low) for the Tx power measurement of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1txpower_pcll?`

Example
```
signal_gsm_b1txpower_pcll?
-> EOK 00000 19
```

signal_gsm_b1txpower_pcll_upper?

Function Queries the upper limit of the Tx power measurement [power control (low)] of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1txpower_pcll_upper?`

Example
```
signal_gsm_b1txpower_pcll_upper?
-> EOK 00000 11.0
```

signal_gsm_b1txpower_pcll_lower?

Function Queries the lower limit of the Tx power measurement [power control (low)] of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1txpower_pcll_lower?`

Example
```
signal_gsm_b1txpower_pcll_lower?
-> EOK 00000 -1.0
```

signal_gsm_b1bursttiming_pclh?

Function Queries the power control (high) for the burst timing measurement of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1bursttiming_pclh?`

Example
```
signal_gsm_b1bursttiming_pclh?
-> EOK 00000 5
```

signal_gsm_b1bursttiming_pclm?

Function Queries the power control (middle) for the burst timing measurement of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1bursttiming_pclm?`

Example
```
signal_gsm_b1bursttiming_pclm?
-> EOK 00000 12
```

signal_gsm_b1bursttiming_pcll?

Function Queries the power control (low) for the burst timing measurement of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1bursttiming_pcll?`

Example
```
signal_gsm_b1bursttiming_pcll?
-> EOK 00000 19
```

signal_gsm_b1rxquality_dlph?

Function Queries the downlink power (high) for the Rx quality measurement of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1rxquality_dlph?`

Example
```
signal_gsm_b1rxquality_dlph?
-> EOK 00000 -65.0
```

signal_gsm_b1rxquality_dlph_upper?

Function Queries the upper limit for the Rx quality measurement [downlink power (high)] of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1rxquality_dlph_upper?`

Example
```
signal_gsm_b1rxquality_dlph_upper?
-> EOK 00000 3
```

signal_gsm_b1rxquality_dlpl?

Function Queries the downlink power (low) for the Rx quality measurement of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1rxquality_dlpl?`

Example
```
signal_gsm_b1rxquality_dlpl ?
-> EOK 00000 -90.0
```

signal_gsm_b1rxquality_dlpl_upper?

Function Queries the upper limit for the Rx quality measurement [downlink power (low)] of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1rxquality_dlpl_upper?`

Example
```
signal_gsm_b1rxquality_dlpl_upper ?
-> EOK 00000 3
```

signal_gsm_b1rxlevel_dlph?

Function Queries the downlink power (high) for the Rx level measurement of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1rxlevel_dlph?`

Example
```
signal_gsm_b1rxlevel_dlph?
-> EOK 00000 -65.0
```

signal_gsm_b1rxlevel_dlph_upper?

Function Queries the upper limit for the Rx level measurement [downlink power (high)] of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1rxlevel_dlph_upper?`

Example
```
signal_gsm_b1rxlevel_dlph_upper?
-> EOK 00000 55
```

signal_gsm_b1rxlevel_dlph_lower?

Function Queries the lower limit for the Rx level measurement [downlink power (high)] of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1rxlevel_dlph_lower?`

Example
```
signal_gsm_b1rxlevel_dlph_lower?
-> EOK 00000 55
```

signal_gsm_b1rxlevel_dlpl?

Function Queries the downlink power (low) for the Rx level measurement of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1rxlevel_dlpl?`

Example
```
signal_gsm_b1rxlevel_dlpl?
-> EOK 00000 -100.0
```

signal_gsm_b1rxlevel_dlpl_upper?

Function Queries the upper limit for the Rx level measurement [downlink power (low)] of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1rxlevel_dlpl_upper?`

Example
```
signal_gsm_b1rxlevel_dlpl_upper?
-> EOK 00000 20
```

signal_gsm_b1rxlevel_dlpl_lower?

Function Queries the lower limit for the Rx level measurement [downlink power (low)] of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1rxlevel_dlpl_lower?`

Example
```
signal_gsm_b1rxlevel_dlpl_lower?
-> EOK 00000 0
```

signal_gsm_b1ber_dlph?

Function Queries the downlink power (high) for the FER-RBER measurement of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1ber_dlph?`

Example
```
signal_gsm_b1ber_dlph?
-> EOK 00000 -65.0
```

signal_gsm_b1ber_dlph_ferupper?

Function Queries the upper limit for the FER measurement [downlink power (high)] of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1ber_dlph_ferupper?`

Example
```
signal_gsm_b1ber_dlph_ferupper?
-> EOK 00000 2.4400
```

signal_gsm_b1ber_dlph_rber1upper?

Function Queries the upper limit for the RBER1 measurement [downlink power (high)] of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1ber_dlph_rber1upper?`

Example
```
signal_gsm_b1ber_dlph_rber1upper?
-> EOK 00000 2.4400
```

signal_gsm_b1ber_dlph_rber2upper?

Function Queries the upper limit for the RBER2 measurement [downlink power (high)] of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1ber_dlph_rber2upper?`

Example
```
signal_gsm_b1ber_dlph_rber2upper?
-> EOK 00000 2.4400
```

signal_gsm_b1ber_dlpl?

Function Queries the downlink power (low) for the FER-RBER measurement of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1ber_dlpl?`

Example
```
signal_gsm_b1ber_dlpl?
-> EOK 00000 -90.0
```

signal_gsm_b1ber_dlpl_ferupper?

Function Queries the upper limit for the FER measurement [downlink power (low)] of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1ber_dlpl_ferupper?`

Example
```
signal_gsm_b1ber_dlpl_ferupper?
-> EOK 00000 2.4400
```

signal_gsm_b1ber_dlpl_rber1upper?

Function Queries the upper limit for the RBER1 measurement [downlink power (low)] of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1ber_dlpl_rber1upper?`

Example
```
signal_gsm_b1ber_dlpl_rber1upper?
-> EOK 00000 2.4400
```

signal_gsm_b1ber_dlpl_rber2upper?

Function Queries the upper limit for the RBER2 measurement [downlink power (low)] of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1ber_dlpl_rber2upper?`

Example
```
signal_gsm_b1ber_dlpl_rber2upper?
-> EOK 00000 2.4400
```

signal_gsmpowersupply?

Function Queries the supply voltage in the currently loaded model parameters.

Syntax `signal_ gsmpowersupply?`

Response parameters: Supply voltage (V)

Example
```
signal_ gsmpowersupply?
-> EOK 00000 4.3
```

signal_gsm_b1currentusepeak_upper?

Function Queries the upper limit of the measurement of the current consumption in connected mode (peak) of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1phaseerrpeakupper?`

Example `signal_gsm_b1phaseerrpeakupper?`
`-> EOK 00000 1000.0`

signal_gsm_b1currentuserms_upper?

Function Queries the upper limit of the measurement of the current consumption in connected mode (RMS) of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1phaseerrpeakupper?`

Example `signal_gsm_b1phaseerrpeakupper?`
`-> EOK 00000 200.0`

signal_gsm_b1currentuse_pcl?

Function Queries the power control for the measurement of the current consumption in connected mode of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b1currentuse_pcl?`

Example `signal_gsm_b1currentuse_pcl?`
`-> EOK 00000 0`

signal_gsm_b1currentwaitpeak_upper?

Function Queries the upper limit of the measurement of the current consumption in idle mode (peak) of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm b1currentwaitpeak_upper?`

Example `signal_gsm b1currentwaitpeak_upper?`
`-> EOK 00000 1000.0`

signal_gsm_b1currentwaitrms_upper?

Function Queries the upper limit of the measurement of the current consumption in idle mode (RMS) of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm b1currentwaitrms_upper?`

Example `signal_gsm b1currentwaitrms_upper?`
`-> EOK 00000 200.0`

signal_gsm_b2freqband?

Function Queries the frequency band setting of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2freqband?`
Response parameters: {gsm850|p-gsm|e-gsm|r-gsm|dcs1800|pcs1900}

Example `signal_gsm_b2freqband?`
`-> EOK 00000 r-gsm`

signal_gsm_b2freqtch1?

Function Queries the channel 2 setting of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b2freqtch1?`

Example `signal_gsm_b2freqtch1?`
`-> EOK 00000 10`

signal_gsm_b2freqtch2?

Function Queries the channel 2 setting of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2freqtch2?`

Example `signal_gsm_b2freqtch2?`
`-> EOK 00000 10`

signal_gsm_b2freqtch3?

Function Queries the channel 3 setting of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2freqtch3?`

Example `signal_gsm_b2freqtch3?`
`-> EOK 00000 10`

signal_gsm_b2dladjustpower1?

Function Queries the channel 2 downlink correction setting of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b2dladjustpower1?`

Example `signal_gsm_b2dladjustpower1?`
`-> EOK 00000 3.0`

signal_gsm_b2uladjustpower1?

Function Queries the channel 2 uplink correction setting of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b2uladjustpower1?`

Example `signal_gsm_b2uladjustpower1?`
`-> EOK 00000 3.0`

signal_gsm_b2dladjustpower2?

Function Queries the channel 2 downlink correction setting of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2dladjustpower2?`

Example `signal_gsm_b2dladjustpower2?`
`-> EOK 00000 3.0`

signal_gsm_b2uladjustpower2?

Function Queries the channel 2 uplink correction setting of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2uladjustpower2?`

Example `signal_gsm_b2uladjustpower2?`
`-> EOK 00000 3.0`

signal_gsm_b2dladjustpower3?

Function Queries the channel 3 downlink correction setting of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2dladjustpower3?`

Example
```
signal_gsm_b2dladjustpower3?
-> EOK 00000 3.0
```

signal_gsm_b2uladjustpower3?

Function Queries the channel 3 uplink correction setting of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2uladjustpower3?`

Example
```
signal_gsm_b2uladjustpower3?
-> EOK 00000 3.0
```

signal_gsm_b2phasefreqaccuracy_pclh?

Function Queries the power control (high) for the phase error and frequency error measurements of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2phasefreqaccuracy_pclh?`

Example
```
signal_gsm_b2phasefreqaccuracy_pclh?
-> EOK 00000 5
```

signal_gsm_b2phasefreqaccuracy_pclm?

Function Queries the power control (middle) for the phase error and frequency error measurements of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2phasefreqaccuracy_pclm?`

Example
```
signal_gsm_b2phasefreqaccuracy_pclm?
-> EOK 00000 12
```

signal_gsm_b2phasefreqaccuracy_pcll?

Function Queries the power control (low) for the phase error and frequency error measurements of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2phasefreqaccuracy_pcll?`

Example
```
signal_gsm_b2phasefreqaccuracy_pcll?
-> EOK 00000 19
```

signal_gsm_b2phaseerrpeak_upper?

Function Queries the upper limit of the phase error (peak) of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2phaseerrpeakupper?`

Example
```
signal_gsm_b2phaseerrpeakupper?
-> EOK 00000 40.0
```

signal_gsm_b2phaseerrrms_upper?

Function Queries the upper limit of the phase error (RMS) of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2phaseerrrmsupper?`

Example
```
signal_gsm_b2phaseerrrmsupper?
-> EOK 00000 15.0
```

signal_gsm_b2freqerr_upper?

Function Queries the upper limit of the frequency error of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2freqerr_upper?`

Example
```
signal_gsm_b2freqerr_upper?
-> EOK 00000 150
```

signal_gsm_b2txpower_pclh?

Function Queries the power control (high) for the Tx power measurement of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2txpower_pclh?`

Example
```
signal_gsm_b2txpower_pclh?
-> EOK 00000 5
```

signal_gsm_b2txpower_pclh_upper?

Function Queries the upper limit of the Tx power measurement [power control (high)] of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2txpower_pclh_upper?`

Example
```
signal_gsm_b2txpower_pclh_upper?
-> EOK 00000 37.0
```

signal_gsm_b2txpower_pclh_lower?

Function Queries the lower limit of the Tx power measurement [power control (high)] of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2txpower_pclh_lower?`

Example
```
signal_gsm_b2txpower_pclh_lower?
-> EOK 00000 29.0
```

signal_gsm_b2txpower_pclm?

Function Queries the power control (middle) for the Tx power measurement of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2txpower_pclm?`

Example `signal_gsm_b2txpower_pclm?`
`-> EOK 00000 12`

signal_gsm_b2txpower_pclm_upper?

Function Queries the upper limit of the Tx power measurement [power control (middle)] of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2txpower_pclm_upper?`

Example `signal_gsm_b2txpower_pclm_upper?`
`-> EOK 00000 23.0`

signal_gsm_b2txpower_pclm_lower?

Function Queries the lower limit of the Tx power measurement [power control (middle)] of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2txpower_pclm_lower?`

Example `signal_gsm_b2txpower_pclm_lower?`
`-> EOK 00000 15.0`

signal_gsm_b2txpower_pcll?

Function Queries the power control (low) for the Tx power measurement of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2txpower_pcll?`

Example `signal_gsm_b2txpower_pcll?`
`-> EOK 00000 19`

signal_gsm_b2txpower_pcll_upper?

Function Queries the upper limit of the Tx power measurement [power control (low)] of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2txpower_pcll_upper?`

Example `signal_gsm_b2txpower_pcll_upper?`
`-> EOK 00000 11.0`

signal_gsm_b2txpower_pcll_lower?

Function Queries the lower limit of the Tx power measurement [power control (low)] of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2txpower_pcll_lower?`

Example `signal_gsm_b2txpower_pcll_lower?`
`-> EOK 00000 -1.0`

signal_gsm_b2bursttiming_pclh?

Function Queries the power control (high) for the burst timing measurement of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2bursttiming_pclh?`

Example `signal_gsm_b2bursttiming_pclh?`
`-> EOK 00000 5`

signal_gsm_b2bursttiming_pclm?

Function Queries the power control (middle) for the burst timing measurement of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2bursttiming_pclm?`

Example `signal_gsm_b2bursttiming_pclm?`
`-> EOK 00000 12`

signal_gsm_b2bursttiming_pcll?

Function Queries the power control (low) for the burst timing measurement of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2bursttiming_pcll?`

Example `signal_gsm_b2bursttiming_pcll?`
`-> EOK 00000 19`

signal_gsm_b2rxquality_dlph?

Function Queries the downlink power (high) for the Rx quality measurement of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2rxquality_dlph?`

Example `signal_gsm_b2rxquality_dlph?`
`-> EOK 00000 -65.0`

signal_gsm_b2rxquality_dlph_upper?

Function Queries the upper limit for the Rx quality measurement [downlink power (high)] of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2rxquality_dlph_upper?`

Example `signal_gsm_b2rxquality_dlph_upper?`
`-> EOK 00000 3`

signal_gsm_b2rxquality_dlpl?

Function Queries the downlink power (low) for the Rx quality measurement of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2rxquality_dlpl?`

Example `signal_gsm_b2rxquality_dlpl ?`
`-> EOK 00000 -90.0`

signal_gsm_b2rxquality_dlpl_upper?

Function Queries the upper limit for the Rx quality measurement [downlink power (low)] of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2rxquality_dlpl_upper?`

Example
```
signal_gsm_b2rxquality_dlpl_upper ?
-> EOK 00000 3
```

signal_gsm_b2rxlevel_dlph?

Function Queries the downlink power (high) for the Rx level measurement of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2rxlevel_dlph?`

Example
```
signal_gsm_b2rxlevel_dlph?
-> EOK 00000 -65.0
```

signal_gsm_b2rxlevel_dlph_upper?

Function Queries the upper limit for the Rx level measurement [downlink power (high)] of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2rxlevel_dlph_upper?`

Example
```
signal_gsm_b2rxlevel_dlph_upper?
-> EOK 00000 55
```

signal_gsm_b2rxlevel_dlph_lower?

Function Queries the lower limit for the Rx level measurement [downlink power (high)] of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2rxlevel_dlph_lower?`

Example
```
signal_gsm_b2rxlevel_dlph_lower?
-> EOK 00000 55
```

signal_gsm_b2rxlevel_dlpl?

Function Queries the downlink power (low) for the Rx level measurement of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2rxlevel_dlpl?`

Example
```
signal_gsm_b2rxlevel_dlpl?
-> EOK 00000 -100.0
```

signal_gsm_b2rxlevel_dlpl_upper?

Function Queries the upper limit for the Rx level measurement [downlink power (low)] of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2rxlevel_dlpl_upper?`

Example
```
signal_gsm_b2rxlevel_dlpl_upper?
-> EOK 00000 20
```

signal_gsm_b2rxlevel_dlpl_lower?

Function Queries the lower limit for the Rx level measurement [downlink power (low)] of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2rxlevel_dlpl_lower?`

Example
```
signal_gsm_b2rxlevel_dlpl_lower?
-> EOK 00000 0
```

signal_gsm_b2ber_dlph?

Function Queries the downlink power (high) for the FER-RBER measurement of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2ber_dlph?`

Example
```
signal_gsm_b2ber_dlph?
-> EOK 00000 -65.0
```

signal_gsm_b2ber_dlph_ferupper?

Function Queries the upper limit for the FER measurement [downlink power (high)] of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2ber_dlph_ferupper?`

Example
```
signal_gsm_b2ber_dlph_ferupper?
-> EOK 00000 2.4400
```

signal_gsm_b2ber_dlph_rber1upper?

Function Queries the upper limit for the RBER1 measurement [downlink power (high)] of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2ber_dlph_rber1upper?`

Example
```
signal_gsm_b2ber_dlph_rber1upper?
-> EOK 00000 2.4400
```

signal_gsm_b2ber_dlph_rber2upper?

Function Queries the upper limit for the RBER2 measurement [downlink power (high)] of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2ber_dlph_rber2upper?`

Example
```
signal_gsm_b2ber_dlph_rber2upper?
-> EOK 00000 2.4400
```

signal_gsm_b2ber_dlpl?

Function Queries the downlink power (low) for the FER-RBER measurement of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2ber_dlpl?`

Example
```
signal_gsm_b2ber_dlpl?
-> EOK 00000 -90.0
```

signal_gsm_b2ber_dlpl_ferupper?

Function Queries the upper limit for the FER measurement [downlink power (low)] of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2ber_dlpl_ferupper?`

Example
```
signal_gsm_b2ber_dlpl_ferupper?
-> EOK 00000 2.4400
```

signal_gsm_b2ber_dlpl_rber1upper?

Function Queries the upper limit for the RBER1 measurement [downlink power (low)] of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2ber_dlpl_rber1upper?`

Example
```
signal_gsm_b2ber_dlpl_rber1upper?
-> EOK 00000 2.4400
```

signal_gsm_b2ber_dlpl_rber2upper?

Function Queries the upper limit for the RBER2 measurement [downlink power (low)] of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2ber_dlpl_rber2upper?`

Example
```
signal_gsm_b2ber_dlpl_rber2upper?
-> EOK 00000 2.4400
```

signal_gsm_b2currentuse_pcl?

Function Queries the power control for the measurement of the current consumption in connected mode of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2currentuse_pcl?`

Example
```
signal_gsm_b2currentuse_pcl?
-> EOK 00000 0
```

signal_gsm_b2currentusepeak_upper?

Function Queries the upper limit of the measurement of the current consumption in connected mode (peak) of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2phaseerrpeakupper?`

Example
```
signal_gsm_b2phaseerrpeakupper?
-> EOK 00000 1000.0
```

signal_gsm_b2currentuserms_upper?

Function Queries the upper limit of the measurement of the current consumption in connected mode (RMS) of GSM frequency band 2 in the currently loaded model parameters.

Syntax `signal_gsm_b2phaseerrpeakupper?`

Example
```
signal_gsm_b2phaseerrpeakupper?
-> EOK 00000 200.0
```

signal_gsm_b3freqband?

Function Queries the frequency band setting of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3freqband?`
Response parameters: {gsm850|p-gsm|e-gsm|r-gsm|dcs1800|pcs1900}

Example
```
signal_gsm_b3freqband?
-> EOK 00000 r-gsm
```

signal_gsm_b3freqtch1?

Function Queries the channel 3 setting of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b3freqtch1?`

Example
```
signal_gsm_b3freqtch1?
-> EOK 00000 10
```

signal_gsm_b3freqtch2?

Function Queries the channel 2 setting of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3freqtch2?`

Example
```
signal_gsm_b3freqtch2?
-> EOK 00000 10
```

signal_gsm_b3freqtch3?

Function Queries the channel 3 setting of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3freqtch3?`

Example
```
signal_gsm_b3freqtch3?
-> EOK 00000 10
```

signal_gsm_b3dladjustpower1?

Function Queries the channel 3 downlink correction setting of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b3dladjustpower1?`

Example
```
signal_gsm_b3dladjustpower1?
-> EOK 00000 3.0
```

signal_gsm_b3uladjustpower1?

Function Queries the channel 3 uplink correction setting of GSM frequency band 1 in the currently loaded model parameters.

Syntax `signal_gsm_b3uladjustpower1?`

Example
```
signal_gsm_b3uladjustpower1?
-> EOK 00000 3.0
```

signal_gsm_b3dladjustpower2?

Function Queries the channel 2 downlink correction setting of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3dladjustpower2?`

Example `signal_gsm_b3dladjustpower2?`
`-> EOK 00000 3.0`

signal_gsm_b3uladjustpower2?

Function Queries the channel 2 uplink correction setting of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3uladjustpower2?`

Example `signal_gsm_b3uladjustpower2?`
`-> EOK 00000 3.0`

signal_gsm_b3dladjustpower3?

Function Queries the channel 3 downlink correction setting of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3dladjustpower3?`

Example `signal_gsm_b3dladjustpower3?`
`-> EOK 00000 3.0`

signal_gsm_b3uladjustpower3?

Function Queries the channel 3 uplink correction setting of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3uladjustpower3?`

Example `signal_gsm_b3uladjustpower3?`
`-> EOK 00000 3.0`

signal_gsm_b3phasefreqaccuracy_pclh?

Function Queries the power control (high) for the phase error and frequency error measurements of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3phasefreqaccuracy_pclh?`

Example `signal_gsm_b3phasefreqaccuracy_pclh?`
`-> EOK 00000 5`

signal_gsm_b3phasefreqaccuracy_pclm?

Function Queries the power control (middle) for the phase error and frequency error measurements of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3phasefreqaccuracy_pclm?`

Example `signal_gsm_b3phasefreqaccuracy_pclm?`
`-> EOK 00000 12`

signal_gsm_b3phasefreqaccuracy_pcll?

Function Queries the power control (low) for the phase error and frequency error measurements of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3phasefreqaccuracy_pcll?`

Example `signal_gsm_b3phasefreqaccuracy_pcll?`
`-> EOK 00000 19`

signal_gsm_b3phaseerrpeak_upper?

Function Queries the upper limit of the phase error (peak) of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3phaseerrpeakupper?`

Example `signal_gsm_b3phaseerrpeakupper?`
`-> EOK 00000 40.0`

signal_gsm_b3phaseerrrms_upper?

Function Queries the upper limit of the phase error (RMS) of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3phaseerrrmsupper?`

Example `signal_gsm_b3phaseerrrmsupper?`
`-> EOK 00000 15.0`

signal_gsm_b3freqerr_upper?

Function Queries the upper limit of the frequency error of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3freqerr_upper?`

Example `signal_gsm_b3freqerr_upper?`
`-> EOK 00000 150`

signal_gsm_b3txpower_pclh?

Function Queries the power control (high) for the Tx power measurement of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3txpower_pclh?`

Example `signal_gsm_b3txpower_pclh?`
`-> EOK 00000 5`

signal_gsm_b3txpower_pclh_upper?

Function Queries the upper limit of the Tx power measurement [power control (high)] of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3txpower_pclh_upper?`

Example `signal_gsm_b3txpower_pclh_upper?`
`-> EOK 00000 37.0`

signal_gsm_b3txpower_pclh_lower?

Function Queries the lower limit of the Tx power measurement [power control (high)] of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3txpower_pclh_lower?`

Example
```
signal_gsm_b3txpower_pclh_lower?
-> EOK 00000 29.0
```

signal_gsm_b3txpower_pclm?

Function Queries the power control (middle) for the Tx power measurement of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3txpower_pclm?`

Example
```
signal_gsm_b3txpower_pclm?
-> EOK 00000 12
```

signal_gsm_b3txpower_pclm_upper?

Function Queries the upper limit of the Tx power measurement [power control (middle)] of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3txpower_pclm_upper?`

Example
```
signal_gsm_b3txpower_pclm_upper?
-> EOK 00000 23.0
```

signal_gsm_b3txpower_pclm_lower?

Function Queries the lower limit of the Tx power measurement [power control (middle)] of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3txpower_pclm_lower?`

Example
```
signal_gsm_b3txpower_pclm_lower?
-> EOK 00000 15.0
```

signal_gsm_b3txpower_pcll?

Function Queries the power control (low) for the Tx power measurement of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3txpower_pcll?`

Example
```
signal_gsm_b3txpower_pcll?
-> EOK 00000 19
```

signal_gsm_b3txpower_pcll_upper?

Function Queries the upper limit of the Tx power measurement [power control (low)] of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3txpower_pcll_upper?`

Example
```
signal_gsm_b3txpower_pcll_upper?
-> EOK 00000 11.0
```

signal_gsm_b3txpower_pcll_lower?

Function Queries the lower limit of the Tx power measurement [power control (low)] of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3txpower_pcll_lower?`

Example
```
signal_gsm_b3txpower_pcll_lower?
-> EOK 00000 -1.0
```

signal_gsm_b3bursttiming_pclh?

Function Queries the power control (high) for the burst timing measurement of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3bursttiming_pclh?`

Example
```
signal_gsm_b3bursttiming_pclh?
-> EOK 00000 5
```

signal_gsm_b3bursttiming_pclm?

Function Queries the power control (middle) for the burst timing measurement of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3bursttiming_pclm?`

Example
```
signal_gsm_b3bursttiming_pclm?
-> EOK 00000 12
```

signal_gsm_b3bursttiming_pcll?

Function Queries the power control (low) for the burst timing measurement of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3bursttiming_pcll?`

Example
```
signal_gsm_b3bursttiming_pcll?
-> EOK 00000 19
```

signal_gsm_b3rxquality_dlph?

Function Queries the downlink power (high) for the Rx quality measurement of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3rxquality_dlph?`

Example
```
signal_gsm_b3rxquality_dlph?
-> EOK 00000 -65.0
```

signal_gsm_b3rxquality_dlph_upper?

Function Queries the upper limit for the Rx quality measurement [downlink power (high)] of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3rxquality_dlph_upper?`

Example
```
signal_gsm_b3rxquality_dlph_upper?
-> EOK 00000 3
```

signal_gsm_b3rxquality_dlpl?

Function Queries the downlink power (low) for the Rx quality measurement of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3rxquality_dlpl?`

Example
```
signal_gsm_b3rxquality_dlpl ?
-> EOK 00000 -90.0
```

signal_gsm_b3rxquality_dlpl_upper?

Function Queries the upper limit for the Rx quality measurement [downlink power (low)] of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3rxquality_dlpl_upper?`

Example
```
signal_gsm_b3rxquality_dlpl_upper ?
-> EOK 00000 3
```

signal_gsm_b3rxlevel_dlph?

Function Queries the downlink power (high) for the Rx level measurement of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3rxlevel_dlph?`

Example
```
signal_gsm_b3rxlevel_dlph?
-> EOK 00000 -65.0
```

signal_gsm_b3rxlevel_dlph_upper?

Function Queries the upper limit for the Rx level measurement [downlink power (high)] of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3rxlevel_dlph_upper?`

Example
```
signal_gsm_b3rxlevel_dlph_upper?
-> EOK 00000 55
```

signal_gsm_b3rxlevel_dlph_lower?

Function Queries the lower limit for the Rx level measurement [downlink power (high)] of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3rxlevel_dlph_lower?`

Example
```
signal_gsm_b3rxlevel_dlph_lower?
-> EOK 00000 55
```

signal_gsm_b3rxlevel_dlpl?

Function Queries the downlink power (low) for the Rx level measurement of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3rxlevel_dlpl?`

Example
```
signal_gsm_b3rxlevel_dlpl?
-> EOK 00000 -100.0
```

signal_gsm_b3rxlevel_dlpl_upper?

Function Queries the upper limit for the Rx level measurement [downlink power (low)] of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3rxlevel_dlpl_upper?`

Example
```
signal_gsm_b3rxlevel_dlpl_upper?
-> EOK 00000 20
```

signal_gsm_b3rxlevel_dlpl_lower?

Function Queries the lower limit for the Rx level measurement [downlink power (low)] of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3rxlevel_dlpl_lower?`

Example
```
signal_gsm_b3rxlevel_dlpl_lower?
-> EOK 00000 0
```

signal_gsm_b3ber_dlph?

Function Queries the downlink power (high) for the FER-RBER measurement of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3ber_dlph?`

Example
```
signal_gsm_b3ber_dlph?
-> EOK 00000 -65.0
```

signal_gsm_b3ber_dlph_ferupper?

Function Queries the upper limit for the FER measurement [downlink power (high)] of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3ber_dlph_ferupper?`

Example
```
signal_gsm_b3ber_dlph_ferupper?
-> EOK 00000 2.4400
```

signal_gsm_b3ber_dlph_rber1upper?

Function Queries the upper limit for the RBER1 measurement [downlink power (high)] of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3ber_dlph_rber1upper?`

Example
```
signal_gsm_b3ber_dlph_rber1upper?
-> EOK 00000 2.4400
```

signal_gsm_b3ber_dlph_rber2upper?

Function Queries the upper limit for the RBER2 measurement [downlink power (high)] of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3ber_dlph_rber2upper?`

Example
```
signal_gsm_b3ber_dlph_rber2upper?
-> EOK 00000 2.4400
```

signal_gsm_b3ber_dlpl?

Function Queries the downlink power (low) for the FER-RBER measurement of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3ber_dlpl?`

Example
```
signal_gsm_b3ber_dlpl?
-> EOK 00000 -90.0
```

signal_gsm_b3ber_dlpl_ferupper?

Function Queries the upper limit for the FER measurement [downlink power (low)] of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3ber_dlpl_ferupper?`

Example
```
signal_gsm_b3ber_dlpl_ferupper?
-> EOK 00000 2.4400
```

signal_gsm_b3ber_dlpl_rber1upper?

Function Queries the upper limit for the RBER1 measurement [downlink power (low)] of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3ber_dlpl_rber1upper?`

Example
```
signal_gsm_b3ber_dlpl_rber1upper?
-> EOK 00000 2.4400
```

signal_gsm_b3ber_dlpl_rber2upper?

Function Queries the upper limit for the RBER2 measurement [downlink power (low)] of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3ber_dlpl_rber2upper?`

Example
```
signal_gsm_b3ber_dlpl_rber2upper?
-> EOK 00000 2.4400
```

signal_gsm_powerctlmethod?

Function Queries the GSM power control method in the currently loaded model parameters.

Syntax `signal_gsm_powerctlmethod?`
Response parameter: {sacch|assignment}

Example
```
signal_gsm_powerctlmethod?
-> EOK 00000 assignment
```

signal_gsm_powerctlmode?

Function Sets or queries the power control method for the RF characteristics test set in the model parameter file.

Syntax `signal_gsm_powerctlmode? {normal|simple}`

Example
```
signal_gsm_powerctlmode?
-> EOK 00000 normal
```

signal_gsm_b3currentuse_pcl?

Function Queries the power control for the measurement of the current consumption in connected mode of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3currentuse_pcl?`

Example
```
signal_gsm_b3currentuse_pcl?
-> EOK 00000 0
```

signal_gsm_b3currentuserms_upper?

Function Queries the upper limit of the measurement of the current consumption in connected mode (RMS) of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3phaseerrpeakupper?`

Example
```
signal_gsm_b3phaseerrpeakupper?
-> EOK 00000 200.0
```

signal_gsm_b3currentusepeak_upper?

Function Queries the upper limit of the measurement of the current consumption in connected mode (peak) of GSM frequency band 3 in the currently loaded model parameters.

Syntax `signal_gsm_b3phaseerrpeakupper?`

Example
```
signal_gsm_b3phaseerrpeakupper?
-> EOK 00000 1000.0
```

Manual test (common)

signal_manualparamload

Function Loads the test condition setup file of the manual test.

Syntax `signal_manualparamload <pathname>`
<pathname>: File name

Example
```
signal_manualparamload "/home/
vc200/manualparam/paramfile"
-> EOK 00000
=> MOK signal_manualparamloaded "/
home/vc200/manualparam/paramfile"
```

signal_manualparamsave

Function Saves the test condition setup file of the manual test.

Syntax `signal_manualparamsave <pathname>`
<pathname>: File name

Example
```
signal_manualparamsave "/home/
vc200/manualparam/paramfile"
-> EOK 00000
```

Manual test (W-CDMA)

signal_manualprofile

Function Sets the profile of the manual test (W-CDMA) or queries the current setting.

Syntax
```
signal_manualprofile?
signal_manualprofile <profile>
```
<profile>: Profile name

Example
```
signal_manualprofile?
-> EOK 00000 "Profile_01"
signal_manualprofile "Profile_01"
-> EOK 00000
=> MOK signal_manualprofile
"Profile_01"
```

signal_manualpowersupply

Function Sets the supply voltage of the manual test (W-CDMA) or queries the current setting.

Syntax
```
signal_manualpowersupply?
signal_manualpowersupply <voltage>
```
<voltage>: Supply voltage

Example
```
signal_manualpowersupply?
-> EOK 00000 4.3
signal_manualpowersupply 4.3
-> EOK 00000
=> MOK signal_manualpowersupply 4.3
```

signal_manualfreq

Function Sets the downlink frequency channel for manual mode or queries the current setting.

Syntax
```
signal_manualfreq?
signal_manualfreq <freqch>
```
<freqch>: Downlink frequency channel number
10550 to 10850: Band I, 412/437/462/487/512/537/562/587/612/637/662/687 or 9650 to 9950: Band II, 1162 to 1513: Band III, 1007/1012/1032/1037/1062/1087 or 4357 to 4458: Band V, 1037/1062 or 4375 to 4425: Band VI, 9237 to 9387: Band IX
```
Response parameters: Downlink
frequency channel number
```

Example
```
signal_manualfreq?
-> EOK 00000 10812
signal_manualfreq 412
-> EOK 00000
=> MOK signal_manualfreq 412
```

signal_manualtxpower

Function Sets the downlink power of the manual test (W-CDMA) or queries the current setting.

Syntax
```
signal_manualtxpower?
signal_manualtxpower <power>
```
<power>: Downlink power (dBm)

Example
```
signal_manualtxpower?
-> EOK 00000 -65.0
signal_manualtxpower -65.0
-> EOK 00000
=> MOK signal_manualtxpower -65.0
```

signal_manualadjustpower_band1dl

Function Sets the W-CDMA Band 1 downlink adjustment value or queries the current setting.

Syntax
```
signal_manualadjustpower_band1dl?
signal_manualadjustpower_band1dl
<Compensation>
```
<Compensation>: W-CDMA Band 1 downlink adjustment value (dB)

Example
```
signal_manualadjustpower_band1dl?
-> EOK 00000 3.0
signal_manualadjustpower_band1dl
3.0
-> EOK 00000
=> MOK
signal_manualadjustpower_band1dl
3.0
```

signal_manualadjustpower_band1ul

Function Sets the W-CDMA Band 1 uplink adjustment value or queries the current setting.

Syntax
```
signal_manualadjustpower_band1ul?
signal_manualadjustpower_band1ul
<Compensation>
```
<Compensation>: W-CDMA Band 1 uplink adjustment value (dB)

Example
```
signal_manualadjustpower_band1ul?
-> EOK 00000 3.0
signal_manualadjustpower_band1ul
3.0
-> EOK 00000
=> MOK
signal_manualadjustpower_band1ul
3.0
```

signal_manualadjustpower_band2dl

Function Sets the W-CDMA Band 2 downlink adjustment value or queries the current setting.

Syntax
```
signal_manualadjustpower_band2dl?
signal_manualadjustpower_band2dl
<Compensation>
```
<Compensation>: W-CDMA Band 2 downlink adjustment value (dB)

Example
```
signal_manualadjustpower_band2dl?
-> EOK 00000 3.0
signal_manualadjustpower_band2dl
3.0
-> EOK 00000
=> MOK
signal_manualadjustpower_band2dl
3.0
```

signal_manualadjustpower_band2ul

Function Sets the W-CDMA Band 2 uplink adjustment value or queries the current setting.

Syntax
```
signal_manualadjustpower_band2ul?
signal_manualadjustpower_band2ul
<Compensation>
```
<Compensation>: W-CDMA Band 2 uplink adjustment value (dB)

Example
```
signal_manualadjustpower_band2ul?
-> EOK 00000 3.0
signal_manualadjustpower_band2ul
3.0
-> EOK 00000
=> MOK
signal_manualadjustpower_band2ul
3.0
```

signal_manualadjustpower_band3dl

Function Sets the W-CDMA Band 3 downlink adjustment value or queries the current setting.

Syntax
```
signal_manualadjustpower_band3dl?
signal_manualadjustpower_band3dl
<Compensation>
```
<Compensation>: W-CDMA Band 3 downlink adjustment value (dB)

Example
```
signal_manualadjustpower_band3dl?
-> EOK 00000 3.0
signal_manualadjustpower_band3dl
3.0
-> EOK 00000
=> MOK
signal_manualadjustpower_band3dl
3.0
```

signal_manualadjustpower_band3ul

Function Sets the W-CDMA Band 3 uplink adjustment value or queries the current setting.

Syntax
```
signal_manualadjustpower_band3ul?
signal_manualadjustpower_band3ul
<Compensation>
```
<Compensation>: W-CDMA Band 3 uplink adjustment value (dB)

Example
```
signal_manualadjustpower_band3ul?
-> EOK 00000 3.0
signal_manualadjustpower_band3ul
3.0
-> EOK 00000
=> MOK
signal_manualadjustpower_band3ul
3.0
```

signal_manualadjustpower_band5dl

Function Sets the W-CDMA Band 5 and 6 downlink adjustment value or queries the current setting.

Syntax
```
signal_manualadjustpower_band5dl?
signal_manualadjustpower_band5dl
<Compensation>
```
<Compensation>: W-CDMA Band 5 and 6 downlink adjustment value (dB)

Example
```
signal_manualadjustpower_band5dl?
-> EOK 00000 3.0
signal_manualadjustpower_band5dl
3.0
-> EOK 00000
=> MOK signal_adjustpower_band5dl
3.0
```

Description The downlink adjustment value is shared by bands 5 and 6.
Therefore, if you set another value using the “signal_manualadjustpower_band6dl” command after setting a value with this command, the downlink adjustment value will be overwritten.

signal_manualadjustpower_band5ul

Function Sets the W-CDMA Band 5 and 6 uplink adjustment value or queries the current setting.

Syntax
```
signal_manualadjustpower_band5ul?
signal_manualadjustpower_band5ul
<Compensation>
```
<Compensation>: W-CDMA Band 5 and 6 uplink adjustment value (dB)

Example
```
signal_manualadjustpower_band5ul?
-> EOK 00000 3.0
signal_manualadjustpower_band5ul
3.0
-> EOK 00000
=> MOK signal_adjustpower_band5ul
3.0
```

Description The uplink adjustment value is shared by bands 5 and 6.
Therefore, if you set another value using the "signal_manualadjustpower_band6ul" command after setting a value with this command, the uplink adjustment value will be overwritten.

signal_manualadjustpower_band6dl

Function Sets the W-CDMA Band 5 and 6 downlink adjustment value or queries the current setting.

Syntax
```
signal_manualadjustpower_band6dl?
signal_manualadjustpower_band6dl
<Compensation>
```
<Compensation>: W-CDMA Band 5 and 6 downlink adjustment value (dB)

Example
```
signal_manualadjustpower_band6dl?
-> EOK 00000 3.0
signal_manualadjustpower_band6dl
3.0
-> EOK 00000
=> MOK
signal_manualadjustpower_band6dl
3.0
```

Description The downlink adjustment value is shared by bands 5 and 6.
Therefore, if you set another value using the "signal_manualadjustpower_band5dl" command after setting a value with this command, the downlink adjustment value will be overwritten.

signal_manualadjustpower_band6ul

Function Sets the W-CDMA Band 5 and 6 uplink adjustment value or queries the current setting.

Syntax
```
signal_manualadjustpower_band6ul?
signal_manualadjustpower_band6ul
<Compensation>
```
<Compensation>: W-CDMA Band 5 and 6 uplink adjustment value (dB)

Example
```
signal_manualadjustpower_band6ul?
-> EOK 00000 3.0
signal_manualadjustpower_band6ul
3.0
-> EOK 00000
=> MOK
signal_manualadjustpower_band6ul
3.0
```

Description The uplink adjustment value is shared by bands 5 and 6.
Therefore, if you set another value using the "signal_manualadjustpower_band5ul" command after setting a value with this command, the uplink adjustment value will be overwritten.

signal_manualadjustpower_band9dl

Function Sets the W-CDMA Band9 downlink adjustment value or queries the current setting.

Syntax
```
signal_manualadjustpower_band9dl?
signal_manualadjustpower_band9dl
<compensation>
```
<compensation>: W-CDMA Band9 downlink adjustment value (dB)

Example
```
signal_manualadjustpower_band9dl?
-> EOK 00000 3.0
signal_manualadjustpower_band9dl
3.0
-> EOK 00000
=> MOK
signal_manualadjustpower_band9dl
3.0
```

signal_manualadjustpower_band9ul

Function Sets the W-CDMA Band9 uplink adjustment value or queries the current setting.

Syntax
```
signal_manualadjustpower_band9ul?
signal_manualadjustpower_band9ul
<compensation>
```
<compensation>: W-CDMA Band9 uplink adjustment value (dB)

Example
```
signal_manualadjustpower_band9ul?
-> EOK 00000 3.0
signal_manualadjustpower_band9ul
3.0
-> EOK 00000
=> MOK
signal_manualadjustpower_band9ul
3.0
```

signal_manualauthenticationselect

Function Sets the authentication key to be used in the manual test or queries the current setting.

Syntax
```
signal_manualauthenticationselect
{default|user}
signal_manualauthenticationselect?
```

Example
```
signal_manualauthenticationselect
default
-> EOK 00000
=> MOK
signal_manualauthenticationselect
default
```

signal_manualauthenticationkey

Function Sets the user-defined authentication key to be used in the manual test or queries the current setting.

Syntax
```
signal_manualauthenticationkey
<Authentication key>
signal_manualauthenticationkey?
```

Example
```
signal_manualauthenticationkey
"AAAAAAAAAAAAAAAAAAAAAAAAAAAAAA"
-> EOK 00000
=> MOK
signal_manualahthenticationkey
"AAAAAAAAAAAAAAAAAAAAAAAAAAAAAA"
signal_manualauthenticationkey?
-> EOK 00000
"AAAAAAAAAAAAAAAAAAAAAAAAAAAAAA"
```

signal_manualuplinkpower

Function Sets the uplink power of the Tx characteristics test for the manual test mode or queries the current setting.

Syntax
```
signal_manualuplinkpower?
signal_manualuplinkpower<power>
```
<power>: Uplink power value

Example
```
signal_manualuplinkpower?
-> EOK 00000 12.5
signal_manualuplinkpower 20.0
-> EOK 00000
=> MOK signal_manualuplinkpower
20.0
```

signal_manualinnerposition

Function Sets the inner loop power test segment of the manual test (W-CDMA) or queries the current setting.

Syntax
```
signal_manualinnerposition?
signal_manualinnerposition
<position>
```
<position>: Inner loop power test segment {stepe|stepf}

Example
```
signal_manualinnerposition?
-> EOK 00000 stepe
signal_manualinnerposition stepe
-> EOK 00000
=> MOK signal_manualinnerposition
stepe
```

signal_manualevmoriginoffsetcancel

Function Sets the origin offset cancel during modulation accuracy measurement or queries the current setting.

Syntax
```
signal_manualevmoriginoffsetcancel
{on|off}
signal_manualevmoriginoffsetcancel?
```

Example
```
signal_manualevmoriginoffsetcancel?
-> EOK 00000 on
signal_manualevmoriginoffsetcancel
on
-> EOK 00000
=> MOK
signal_manualevmoriginoffsetcancel
on
```

signal_manualdownlinkpower

Function Sets the downlink power of the Rx characteristics test for the manual test mode or queries the current setting.

Syntax
```
signal_manualdownlinkpower?
signal_manualdownlinkpower <power>
```
<power>: Downlink power value

Example
```
signal_manualdownlinkpower?
-> EOK 00000 -48.2
signal_manualdownlinkpower -50.0
-> EOK 00000
=> MOK manualdownlinkpower -50.0
```

signal_manualbercodedomain

Function Sets the code domain power for the loopback BER measurement of the manual test (W-CDMA) or queries the current setting.

Syntax
```
signal_manualbercodedomain?
signal_manualbercodedomain
<pattern>
```
<pattern>: Code domain power pattern {minsense|maxvolt}

Example
```
signal_manualbercodedomain?
-> EOK 00000 minsense
signal_manualbercodedomain minsense
-> EOK 00000
=> MOK signal_manualbercodedomain
minsense
```

signal_manualspeechdelay

Function Sets the delay time of the speech test in manual test mode or queries the current setting.

Syntax
```
signal_manualspeechdelay?
signal_manualspeechdelay <time>
```
<time>: Delay time (s)

Example
```
signal_manualspeechdelay?
-> EOK 00000 0.5
signal_manualspeechdelay 1.0
-> EOK 00000
=> MOK signal_manualspeechdelay 1.0
```

signal_wcdma_manualmeasuremode

Function Sets or queries the manual test (WCDMA) mode (Repeat or Single).

Syntax
```
signal_wcdma_manualmeasuremode
{repeat|single}
```

Example
```
signal_wcdma_manualmeasuremode?
-> EOK 00000 single
signal_wcdma_manualmeasuremode
single
-> EOK 00000
=> MOK
signal_wcdma_manualmeasuremode
single
```

signal_manualadjustpower_dl

Function Sets the current downlink adjustment value of the manual test (W-CDMA) or queries the current setting.

Syntax
```
signal_manualadjustpower_dl?
signal_manualadjustpower_dl
<Compensation>
```
<Compensation>: Current downlink adjustment value (dB) of the manual test (W-CDMA).

Example
```
signal_manualadjustpower_dl?
-> EOK 00000 3.0
signal_manualadjustpower_dl 3.0
-> EOK 00000
=> MOK
signal_manualadjustpower_band1dl
3.0
```

signal_manualadjustpower_ul

Function Sets the current uplink adjustment value of the manual test (W-CDMA) or queries the current setting.

Syntax
```
signal_manualadjustpower_ul?
signal_manualadjustpower_ul
<Compensation>
```
<Compensation>: Current uplink adjustment value (dB) of the manual test (W-CDMA).

Example
```
signal_manualadjustpower_ul?
-> EOK 00000 3.0
signal_manualadjustpower_ul 3.0
-> EOK 00000
=> MOK
signal_manualadjustpower_band1ul
3.0
```

signal_callnet

Function Initiates call setup from NW.

Syntax
```
signal_callnet
```

Example
```
signal_callnet
-> EOK 00000
=> MOK signal_callnet
```

Description Valid only when the tester mode is set to manual test.

signal_callms

Function Initiates call setup from UE.

Syntax
```
signal_callms
```

Example
```
signal_callms
-> EOK 00000
=> MOK signal_callms
```

Description Valid only when the tester mode is set to manual test.

signal_relnet

Function Initiates call release from NW.
Syntax `signal_relnet`
Example
```
signal_relnet
-> EOK 00000
=> MOK signal_relnet
```
Description Valid only when the tester mode is set to manual test.

signal_relms

Function Initiates call release from UE.
Syntax `signal_relms`
Example
```
signal_relms
-> EOK 00000
=> MOK signal_relms
```
Description Valid only when the tester mode is set to manual test.

signal_closeloop

Function Execute loopback.
Syntax signal_closeloop
Example
```
signal_closeloop
-> EOK 00000
=> MOK signal_closeloop
```
Description Valid only when the tester mode is set to manual test.

signal_openloop

Function Releases loopback.
Syntax `signal_openloop`
Example
```
signal_openloop
-> EOK 00000
=> MOK signal_openloop
```
Description Valid only when the tester mode is set to manual test.

signal_manualsystemhandover

Function Executes inter-RAT handovers from W-CDMA to GSM in the manual test.
Syntax `signal_manualsystemhandover`
Example
```
signal_manualsystemhandover
->EOK 00000
=> MOK singal_manualsystemhandover
```

signal_manualcpich

Function Queries the CPICH information of the measurement report.
Syntax `signal_manualcpich?`
Example
```
signal_manualcpich?
-> EOK 00000 24 40
```
Description The information is returned in the following order: <CPICH-EcN0>, <CPICH-RSCP>

signal_wcdma_manualdataclear

Function Clears the manual mode data (WCDMA).
Syntax `signal_wcdma_manualdataclear`
Example
```
signal_wcdma_manualdataclear
-> EOK 00000
=> MOK signal_wcdma_manualdataclear
```
Description This command is valid only when setting up the call or establishing a test loop in manual mode (WCDMA).
When this command is received, the VC200 clears the measured values of the displayed radio characteristics and starts the measurement from the beginning of the test loop.

Manual test (GSM)

signal_gsm_bcchfreqband

Function Sets the BCCH frequency band the manual test (GSM) or queries the current setting.

Syntax
```
signal_gsm_bcchfreqband?
signal_gsm_bcchfreqband {gsm850|
p-gsm|e-gsm|r-gsm|dcs1800|pcs1900}
```

Example
```
signal_gsm_bcchfreqband?
-> EOK 00000 p-gsm
signal_gsm_bcchfreqband r-gsm
-> EOK 00000 r-gsm
```

Description Valid only when the tester mode is set to manual test.

signal_gsm_bcch

Function Sets the GSM BCCH channel number or queries the current setting.

Syntax
```
signal_gsm_bcch?
signal_gsm_bcch <bcch>
```
<bcch>: BCCH channel number

Example
```
signal_gsm_bcch?
-> EOK 00000 10
signal_gsm_bcch 20
-> EOK 00000
=> MOK signal_gsm_bcch 20
```

Description Valid only when the tester mode is set to manual test.

signal_gsm_freqband

Function Sets the GSM band or queries the current setting.

Syntax
```
signal_gsm_freqband?
signal_gsm_freqband <gsm band>
```
<gsm band>: {gsm850|p-gsm|e-gsm|r-gsm|dcs1800|ps1900}

Example
```
signal_gsm_freqband?
-> EOK 00000 gsm850
signal_gsm_freqband p-gsm
-> EOK 00000 p-gsm
=> MOK signal_gsm_freqband p-gsm
```

signal_gsm_tch

Function Sets the GSM TCH channel number or queries the current setting.

Syntax
```
signal_gsm_tch?
signal_gsm_bcch <tch>
```
<tch>: TCH channel number

Example
```
signal_gsm_tch?
-> EOK 00000 10
signal_gsm_tch 20
-> EOK 00000
=> MOK signal_gsm_tch 20
```

Description Valid only when the tester mode is set to manual test.

signal_gsm_manualcurrentdlpower

Function Sets the current downlink power of the manual test (GSM) or queries the current setting.

Syntax
```
signal_gsm_manualcurrentdlpower?
signal_gsm_manualcurrentdlpower
<power>
```
<power>: Current downlink power (dBm)

Example
```
signal_gsm_manualcurrentdlpower?
-> EOK 00000 -65.0
signal_gsm_manualcurrentdlpower
-> EOK 00000 -65.0
=> MOK
signal_gsm_manualcurrentdlpower -
65.0
```

signal_gsm_manualadjustpower_gsmdl

Function Sets the GSM900 band downlink adjustment value or queries the current setting.

Syntax
```
signal_gsm_manualadjustpower_gsmdl?
signal_gsm_manualadjustpower_gsmdl
<Compensation>
```
<Compensation>: GSM900 band downlink adjustment value (dB)

Example
```
signal_gsm_manualadjustpower_gsmdl?
-> EOK 00000 3.0
signal_gsm_manualadjustpower_gsmdl
-> EOK 00000 3.0
=> MOK
signal_gsm_manualadjustpower_gsmdl
3.0
```

signal_gsm_manualadjustpower_gsmul

Function Sets the GSM900 band uplink adjustment value or queries the current setting.

Syntax
```
signal_gsm_manualadjustpower_gsmul?
signal_gsm_manualadjustpower_gsmul
<Compensation>
```
<Compensation>: GSM900 band uplink adjustment value (dB)

Example
```
signal_gsm_manualadjustpower_gsmul?
-> EOK 00000 3.0
signal_gsm_manualadjustpower_gsmul
-> EOK 00000 3.0
=> MOK
signal_gsm_manualadjustpower_gsmul
3.0
```

signal_gsm_manualadjustpower_dcsdl

Function Sets the DCS1800 band downlink adjustment value or queries the current setting.

Syntax
```
signal_gsm_manualadjustpower_dcsdl?
signal_gsm_manualadjustpower_dcsdl
<Compensation>
```
<Compensation>: DCS1800 band downlink adjustment value (dB)

Example
```
signal_gsm_manualadjustpower_dcsdl?
-> EOK 00000 3.0
signal_gsm_manualadjustpower_dcsdl
-> EOK 00000 3.0
=> MOK
signal_gsm_manualadjustpower_dcsdl
3.0
```

signal_gsm_manualadjustpower_dcsul

Function Sets the DCS1800 band uplink adjustment value or queries the current setting.

Syntax
```
signal_gsm_manualadjustpower_dcsul?
signal_gsm_manualadjustpower_dcsul
<Compensation>
```
<Compensation>: DCS1800 band uplink adjustment value (dB)

Example
```
signal_gsm_manualadjustpower_dcsul?
-> EOK 00000 3.0
signal_gsm_manualadjustpower_dcsul
-> EOK 00000 3.0
=> MOK
signal_gsm_manualadjustpower_dcsul
3.0
```

signal_gsm_manualadjustpower_pcsdl

Function Sets the PCS1900 band downlink adjustment value or queries the current setting.

Syntax
```
signal_gsm_manualadjustpower_pcsdl?
signal_gsm_manualadjustpower_pcsdl
<Compensation>
```
<Compensation>: PCS1900 band downlink adjustment value (dB)

Example
```
signal_gsm_manualadjustpower_pcsdl?
-> EOK 00000 3.0
signal_gsm_manualadjustpower_pcsdl
-> EOK 00000 3.0
=> MOK
signal_gsm_manualadjustpower_pcsdl
3.0
```

signal_gsm_manualadjustpower_pcsul

Function Sets the PCS1900 band uplink adjustment value or queries the current setting.

Syntax
```
signal_gsm_manualadjustpower_pcsul?
signal_gsm_manualadjustpower_pcsul
<Compensation>
```
<Compensation>: PCS1900 band uplink adjustment value (dB)

Example
```
signal_gsm_manualadjustpower_pcsul?
-> EOK 00000 3.0
signal_gsm_manualadjustpower_pcsul
-> EOK 00000 3.0
=> MOK
signal_gsm_manualadjustpower_pcsul
3.0
```

signal_gsm_manualpowerctl

Function Sets the uplink power of the Tx characteristics test for the manual test mode (GSM) or queries the current setting.

Syntax
```
signal_gsm_manualpowerctl?
signal_gsm_manualpowerctl <power
Control>
```
<power Control>: Power control value

Example
```
signal_gsm_manualpowerctl?
-> EOK 00000 10
signal_gsm_manualpowerctl 15
-> EOK 00000
=> MOK signal_gsm_manualpowerctl 15
```

signal_gsm_manualdownlinkpower

Function Sets the downlink power of the Rx characteristics test for the manual test mode (GSM) or queries the current setting.

Syntax
```
signal_gsm_manualdownlinkpower?
signal_gsm_manualdownlinkpower
<power>
```
<power>: Downlink power

Example
```
signal_gsm_manualdownlinkpower?
-> EOK 00000 -48.2
signal_gsm_manualdownlinkpower
-50.0
-> EOK 00000
=> MOK
signal_gsm_manualdownlinkpower
-50.0
```

signal_gsm_manualspeechdelay

Function Sets the delay time of the speech test in manual test mode or queries the current setting.

Syntax
```
signal_gsm_manualspeechdelay?
signal_gsm_manualspeechdelay <time>
```
<time>: Delay time (s)

Example
```
signal_gsm_manualspeechdelay?
-> EOK 00000 0.5
signal_gsm_manualspeechdelay 1.0
-> EOK 00000
=> MOK signal_gsm_manualspeechdelay
1.0
```

signal_gsm_manualadjustpower_dl

Function Sets the current downlink adjustment value of the manual test (GSM) or queries the current setting.

Syntax
```
signal_gsm_manualadjustpower_dl?
signal_gsm_manualadjustpower_dl
<Compensation>
```
<Compensation>: Current downlink adjustment value (dB)

Example
```
signal_gsm_manualadjustpower_dl?
-> EOK 00000 3.0
signal_gsm_manualadjustpower_dl
-> EOK 00000 3.0
=> MOK
signal_gsm_manualadjustpower_dl 3.0
```

signal_gsm_manualadjustpower_ul

Function Sets the current uplink adjustment value of the manual test (GSM) or queries the current setting.

Syntax
```
signal_gsm_manualadjustpower_ul?
signal_gsm_manualadjustpower_ul
<Compensation>
```
<Compensation>: Current uplink adjustment value (dB)

Example
```
signal_gsm_manualadjustpower_ul?
-> EOK 00000 3.0
signal_gsm_manualadjustpower_ul
-> EOK 00000 3.0
=> MOK
signal_gsm_manualadjustpower_ul 3.0
```

signal_gsm_changefreqband

Function Sets the channels frequency band of the frequency handover or queries the current setting.

Syntax
```
signal_gsm_changefreqband?
signal_gsm_changefreqband <gsm
band>
```
<gsm band>: {gsm850|p-gsm|e-gsm|r-gsm|dcs1800|ps1900}

Example
```
signal_gsm_changefreqband?
-> EOK 00000 gsm850
signal_gsm_changefreqband
-> EOK 00000 p-gsm
=> MOK signal_gsm_changefreqband
p-gsm
```

signal_gsm_manualpowerctlmethod

Function Sets the power control method or queries the current setting.

Syntax
```
signal_gsm_manualpowerctlmethod
{sacch|assignment}
signal_gsm_manualpowerctlmethod?
```

Example
```
signal_gsm_manualpowerctlmethod?
-> EOK 00000 assignment
signal_gsm_manualpowerctlmethod
assignment
-> EOK 00000
=> MOK
signal_gsm_manualpowerctlmethod
assignment
```

signal_gsm_manualpowerctlmode

Function Sets or queries the power control method for the RF characteristics test of the manual test (GSM).

Syntax
```
signal_gsm_manualpowerctlmode
{normal|simple}
```

Example
```
signal_gsm_manualpowerctlmode?
-> EOK 00000 simple
signal_gsm_manualpowerctlmode
simple
-> EOK 00000
=> MOK
signal_gsm_manualpowerctlmode
simple
```

signal_gsm_manualmeasuremode

Function Sets or queries the manual test (GSM) mode (Repeat or Single).

Syntax
```
signal_gsm_manualmeasuremode
{repeat|single}
```

Example
```
signal_gsm_manualmeasuremode?
-> EOK 00000 single
signal_gsm_manualmeasuremode single
-> EOK 00000
=> MOK signal_gsm_manualmeasuremode
single
```

signal_gsm_changetch

Function Sets the frequency handover channel number on the GSM terminal or queries the current setting.

Syntax
```
signal_gsm_changetch?
signal_gsm_changetch <tch>
```
<tch>: Frequency handover channel number

Example
```
signal_gsm_changetch
-> EOK 00000 10
signal_gsm_changetch 20
-> EOK 00000
=> MOK signal_gsm_changetch 20
```

signal_gsm_locupd

Function Updates the location of the GSM terminal.

Syntax
```
signal_gsm_locupd
```

Example
```
signal_gsm_locupd
-> EOK 00000
=> MOK signal_gsm_locupd
```

Description Valid only when the tester mode is set to manual test.

signal_gsm_callnet

Function Initiates call setup from NW on the GSM terminal.

Syntax
```
signal_gsm_callnet
```

Example
```
signal_gsm_callnet
-> EOK 00000
=> MOK signal_gsm_callnet
```

Description Valid only when the tester mode is set to manual test.

signal_gsm_callms

Function Initiates call setup from UE on the GSM terminal.

Syntax
```
signal_gsm_callms
```

Example
```
signal_gsm_callms
-> EOK 00000
=> MOK signal_gsm_callms
```

Description Valid only when the tester mode is set to manual test.

signal_gsm_gprs

Function Executes GPRS Attach/Detach.

Syntax
```
signal_gsm_gprs
```

Example
```
signal_gsm_gprs
-> EOK 00000
=> MOK signal_gsm_gprs
```

Description Valid only when the tester mode is set to GSM manual test.

signal_gsm_handover

Function Executes frequency handover on the GSM terminal.

Syntax
```
signal_gsm_handover
```

Example
```
signal_gsm_handover
-> EOK 00000
=> MOK signal_gsm_handover
```

Description Valid only when the tester mode is set to manual test.

signal_gsm_loopback

Function Executes loopback on the GSM terminal.

Syntax
```
signal_gsm_loopback
```

Example
```
signal_gsm_loopback
-> EOK 00000
=> MOK signal_gsm_loopback
```

Description Valid only when the tester mode is set to manual test.

signal_gsm_releaseloopback

Function Exits from GSM loopback mode to Connected (Speech) mode on the GSM terminal.

Syntax
```
signal_gsm_releaseloopback
```

Example
```
signal_gsm_releaseloopback
-> EOK 00000
=> MOK signal_gsm_releaseloopback
```

Description Valid only when the tester mode is set to manual test.

signal_gsm_relnet

Function Initiates call release from NW on the GSM terminal.

Syntax
```
signal_gsm_relnet
```

Example
```
signal_gsm_relnet
-> EOK 00000
=> MOK signal_gsm_relnet
```

Description Valid only when the tester mode is set to manual test.

signal_gsm_relms

Function Initiates call release from UE on the GSM terminal.

Syntax `signal_gsm_relms`

Example
```
signal_gsm_relms
-> EOK 00000
=> MOK signal_gsm_relms
```

Description Valid only when the tester mode is set to manual test.

signal_gsm_manualdataclear

Function Clears the manual mode data (GSM).

Syntax `signal_gsm_manualdataclear`

Example
```
signal_gsm_manualdataclear
-> EOK 00000
=> MOK signal_gsm_manualdataclear
```

Description This command is valid only when setting up the call or establishing a test loop in manual mode (GSM).
When this command is received, the VC200 clears the measured values of the displayed radio characteristics and starts the measurement from the beginning of the test loop.
The measurement returns to the beginning of the Tx characteristics test when a voice call is established and FER during loop-back.

10.10 Asynchronous Event Group

When the VC200 is configured using the Ethernet interface, the VC200 not only returns a response to the client that is controlling the VC200 but also to all clients whose connection is established.
This section explains event messages that are sent to all clients whose connection is established.

MOK sys_mode

Notification The tester mode was changed.
Syntax `MOK sys_mode <mode>`
<mode>: Either of {signaling|rxtx}
Example `MOK sys_mode signaling`

MOK sys_initialized

Notification Settings were initialized.
Syntax `MOK sys_initialized`
Example `MOK sys_initialized`

MOK sys_rffreqswitch

Notification The internal/external setting of the RF reference frequency was switched.
Syntax `MOK sys_rffreqswitch {int|ext}`
Example `MOK sys_rffreqswitch ext`

MOK sys_rfextfreq

Notification The external RF reference frequency was changed.
Syntax `MOK sys_rfextfreq <frequency>`
<frequency>: The unit is MHz
Example `MOK sys_rfextfreq 20`

MOK sys_pllnolock

Notification PLL is not locked.
Syntax `MOK sys_pllnolock`

MOK sys_plllocked

Notification PLL is locked.
Example `MOK sys_plllocked`

MOK sys_pllunlocked

Notification PLL unlocked.
Example `MOK sys_unplllocked`

MOK sys_pllrefunlocked

Notification PLL reference unlocked.
Example `MOK sys_pllrefunlocked`

MOK sys_clockout

Notification The type of clock out to be output was changed.
Syntax `MOK sys_clockout <clock out>`
<clock out>: Any of `{4chips|chipclock|symbolclock}`
Example `MOK sys_clockout 4chips`

MOK sys_timingout

Notification The type of timing signal to be output was changed.
Syntax `MOK sys_timingout <timing out>`
<timing out>: Either of `{frame|timeslot}`
Example `MOK sys_timingout timeslot`

MOK rxtx_start

Notification Started transmission and reception in Rx/Tx mode.
Syntax `MOK rxtx_start`
Example `MOK rxtx_start`

MOK rxtx_stop

Notification Stopped transmission and reception in Rx/Tx mode.
Syntax `MOK rxtx_stop`
Example `MOK rxtx_stop`

When in Tx/Rx tester mode (W-CDMA)

MOK rxtx_txcodepower

Notification The code power was changed.
Syntax `MOK rxtx_txcodepower <sch-p-ccpch> <cpich> <s-cpich> <pich> <dpch> <ocns>`
Example `MOK rxtx_txcodepower -7.8 -7.8 -7.8 -7.8 -7.8 -7.7`
Description Returns the power values in the following order: (P-SCH_S-SCH_P-CCPCH), (CPICH), (S-CPICH), (PICH), (DPCH), and (OCNS).

MOK rxtx_paramloaded

Notification Loaded the downlink/uplink setup file.
Syntax `MOK rxtx_paramloaded <pathname>`
<pathname>: Path name of the file that was loaded (full path)
Example `rxtx_paramloaded "/home/vc200/txparam"`

MOK rxtx_txfreqch

Notification The downlink frequency channel number was changed.

Syntax `MOK rxtx_txfreqch <freqch>`
<freqch>: Downlink frequency channel number 10550 to 10850: Band I, 412/437/462/487/512/537/562/587/612/637/662/687 or 9650 to 9950: Band II, 9025 to 9400: Band III, 1037/1062 or 4375 to 4425: Band VI

Example `MOK rxtx_txfreqch 10600`

MOK rxtxgsm_txfreqoffset

Notification The frequency offset of non-modulated signal output was changed.

Syntax `MOK rxtxgsm_txfreqoffset <freqoffset>`
<freqoffset>: Frequency offset (–75 to 75 in unit of kHz)

Example `MOK rxtxgsm_txfreqoffset -41`

MOK rxtx_txpowerrf

Notification The RF transmission power was changed.

Syntax `MOK rxtx_txpowerrf <power>`
<power>: Power (–110.0 to –10.0 dBm)

Example `MOK rxtx_txpowerrf -30`

MOK rxtx_txdpchsymbolrate

Notification The DPCH symbol rate was changed.

Syntax `MOK rxtx_txdpchsymbolrate <rate> <code>`
<rate>: DPCH symbol rate ({7.5ksps|15ksps|30ksps|60ksps|120ksps|240ksps|480ksps|960ksps})
<code>: DPCH channelization code (0 to {511|255|127|63|31})

Example `MOK rxtx_dpchsymbolrate 15ksps 50`

Description The DPCH channelization code is also changed.

MOK rxtx_txdpchchannelization

Notification The DPCH channelization code was changed.

Syntax `MOK rxtx_txdpchchannelization <code>`
<code>: DPCH channelization code (0 to {511|255|127|63|31|15|7|3})

Example `MOK rxtx_txdpchchannelization 32`

Description The selectable range varies depending on the DPCH symbol rate.

MOK rxtx_txscramblingcode

Notification The scrambling code number was changed.

Syntax `MOK rxtx_txscramblingcode <code>`
<code>: Scrambling code (0 to 8191)

Example `MOK rxtx_txscramblingcode 100`

MOK rxtx_txpichchannelization

Notification The PICH channelization code number was changed.

Syntax `MOK rxtx_txpichchannelization <code>`
<code>: PICH channelization code number (0 to 255)

Example `MOK rxtx_txpichchannelization 100`

MOK rxtx_txscpichchannelization

Notification The S-CPICH channelization code number was changed.

Syntax `MOK rxtx_txscpichchannelization <code>`
<code>: S-CPICH channelization code number (0 to 255)

Example `MOK rxtx_txscpichchannelization 100`

MOK rxtx_txpichtimingoffset

Notification The PICH timing offset was changed.

Syntax `MOK rxtx_txpichtimingoffset <offset>`
<offset>: PICH timing offset (0 to 30464)

Example `MOK rxtx_txpichtimingoffset 256`

MOK rxtx_txdpchtimingoffset

Notification The DPCH timing offset was changed.

Syntax `MOK rxtx_txdpchtimingoffset <offset>`
<offset>: DPCH timing offset (0 to 144896)

Example `MOK rxtx_txdpchtimingoffset 256`

MOK rxtx_txmodswitch

Notification The modulation On/Off setting was changed.

Syntax `MOK rxtx_txmodswitch {on|off}`

Example `MOK rxtx_txmodswitch off`

MOK rxtx_txrfswitch

Notification The RF transmission power On/Off setting was changed.

Syntax `MOK rxtx_txrfswitch {on|off}`

Example `MOK rxtx_txrfswitch on`

MOK rxtx_rxdpdchsymbolrate

Notification The DPDCH symbol rate was changed.

Syntax `MOK rxtx_rxdpdchsymbolrate {15ksps|30ksps|60ksps|120ksps}`

Example `MOK rxtx_rxdpdchsymbolrate 30ksps`

MOK rxtx_rxscramblingcode

Notification The uplink scrambling code was changed.

Syntax `MOK rxtx_rxscramblingcode <code>`
<code>: Scrambling code number (0 to 16777216)

Example `MOK rxtx_rxscramblingcode 100`

MOK rxtx_rxanalyzeswitch

Notification he uplink setup mode (synchronous/ asynchronous) was changed.
Syntax `MOK rxtx_rxanalyzeswitch {sync|async}`
Example `MOK rxtx_rxanalyzeswitch sync`

MOK rxtx_rxpowerratio

Notification The power ratio was changed.
Syntax `MOK rxtx_rxpowerratio <ratio_code>`
<ratio_code>: Power ratio (the X portion of X/15 in the range of 1.0 to 15.0)
Example `MOK rxtx_rxpowerratio 7.0`
Description The power ratio can only be changed when the uplink setup mode is asynchronous.

MOK rxtx_rxtimingoffset

Notification The timing offset was changed.
Syntax `MOK rxtx_rxtimingoffset <offset>`
<offset>: Timing offset (in unit of chips)
Example `MOK rxtx_timingoffset 10`
Description The timing offset can only be changed when the uplink setup mode is synchronous.

MOK rxtx_analyze

Notification The measurement result of the EVM and frequency error was changed.
Syntax `MOK rxtx_analyze <evm> <foff> ["<message>"]`
<evm>: EVM (%)
<foffs>: Frequency (Hz)
<message>: Message
Example `MOK rxtx_analyze 3.5 11 (when there is no message)`
`MOK rxtx_analyze 167.5 115243 "Cannot record good sampling data."`
Description If there is no message, it is omitted.

MOK rxtx_powermeasure

Notification The measurement result of the transmission power was changed.
Syntax `MOK rxtx_powermeasure <power> ["<message>"]`
<power>: Transmission power (dBm)
<message>: Message
Example `MOK rxtx_powermeasure -20.0 (when there is no message)`
`MOK rxtx_powermeasure -75.4 "Level Under"`
Description If there is no message, it is omitted.

MOK rxtx_txadjustrfpower

Notification The setting of the RF transmission power adjustment was changed.
Syntax `MOK rxtx_txadjustrfpower <adjust>`
<adjust>: Adjustment
Example `MOK rxtx_txadjustrfpower -0.1`

MOK rxtx_rxadjustrfpower

Notification The adjustment setting of the measured transmission power value was changed.
Syntax `MOK rxtx_rxadjustrfpower <adjust>`
<adjust>: Adjustment
Example `MOK rxtx_rxadjustrfpower 10.0`

MOK rxtx_evmaverage

Notification The average count of the EVM/frequency error measurement was changed.
Syntax `MOK rxtx_evmaverage <count>`
<count>: Average count
Example `MOK rxtx_evmaverage 10`

MOK rxtx_poweraverage

Notification The average count of the transmission power measurement was changed.
Syntax `MOK rxtx_poweraverage <count>`
<count>: Average count
Example `MOK rxtx_poweraverage 10`

MOK rxtx_measmode

Notification The measurement mode (single/repeat) was changed.
Syntax `MOK rxtx_measmode <mode>`
<mode>: `{single|repeat}`
Example `MOK rxtx_measmode single`

MOK rxtx_evmcounter

Notification The current number of measurements of the EVM/frequency error measurement was changed.
Syntax `MOK rxtx_evmcounter <count>`
<count>: Measurement count
Example `MOK rxtx_evmcounter 2`
Description The maximum value is retrieved using the “rxtx_evmaverage?” command.

MOK rxtx_powercounter

Notification The current number of measurements of the transmission power measurement was changed.
Syntax `MOK rxtx_powercounter <count>`
<count>: Measurement count
Example `MOK rxtx_powercounter 2`
Description The maximum value is retrieved using the “rxtx_poweraverage?” command.

MOK rxtx_unfinish_analyze

Notification The value in the middle of the averaging operation of the EVM/frequency error measurement was changed.

Syntax `MOK rxtx_unfinish_analyze <evm> <ferr>`
<evm>: Measured value of EVM (%)
<ferr>: Measured value of frequency (Hz)

Example `MOK rxtx_unfinish_analyze 3.5 11`

MOK rxtx_unfinish_powermeasure

Notification The value in the middle of the averaging operation of the transmission power measurement was changed.

Syntax `MOK rxtx_unfinish_powermeasure <power>`
<power>: Measured value of transmission power (dBm)

Example `MOK rxtx_unfinish_powermeasure -74.5`

When in Tx/Rx tester mode (GSM)

MOK rxtxgsm_paramloaded

Notification The setup file of the Tx/Rx tester mode was loaded.

MOK rxtxgsm_freqband

Notification The GSM band setting was changed.

Syntax `MOK rxtxgsm_freqband <gsm band.>`
<gsm band>:`{GSM850|P-GSM|E-GSM|R-GSM|DCS1800|PCS1900}`

Example `MOK rxtxgsm_freqband GSM850`

MOK rxtxgsm_txfreqch

Notification The downlink frequency channel number was changed.

Syntax `MOK rxtxgsm_txfreqch <freqch>`
<freqch>: Channel number

Example `MOK rxtxgsm_txfreqch 1000`

MOK rxtxgsm_txpowerrf

Notification The RF Tx power was changed.

Syntax `MOK rxtxgsm_txpowerrf <power>`
<power>: Power (–120.0 to –10.0 in dBm)

Example `MOK rxtxgsm_txpowerrf -30`

MOK rxtxgsm_txmodswitch

Notification The modulation mode setting was changed.

Syntax `MOK rxtxgsm_txmodswitch {all0|pn|off}`

Example `MOK rxtxgsm_txmodswitch all0`

MOK rxtxgsm_txrfswitch

Notification The RF power On/Off setting was changed.

Syntax `MOK rxtxgsm_txrfswitch {all0|pn|off}`

Example `MOK rxtxgsm_txrfswitch all0`

MOK rxtxgsm_analyze

Notification The measurement result of the phase/frequency error was changed.

Syntax `MOK rxtxgsm_analyze <phase Peak> <phase RMS> <ferrHZ> <ferrPPM><message>`
<Phase Peak>: Phase error (peak)
<Phase RMS>: Phase error (rms)
<ferrHz>: Frequency error (Hz)
<ferrPPM>: Frequency error (ppm)
<message>: Message

Example `MOK rxtxgsm_analyze 10.0 3.0 50 0.06`
`MOK rxtxgsm_analyze 20.0 20.0 1000 1000 "Cannot record good sampling data."`
`MOK rxtxgsm_analyze – – – – "Cannot find Traning Sequence Code."`

Description If there is no message, the message section is omitted.

MOK rxtxgsm_powermeasure

Notification The measurement result of the Tx power was changed.

Syntax `MOK rxtxgsm_powermeasure <power> <message>`
<power>: Tx power
<message>: Message

Example `MOK rxtxgsm_powermeasure -20.0`
`MOK rxtxgsm_powermeasure -45.0 "Level Under"`

Description If there is no message, the message section is omitted.

MOK rxtxgsm_burstjudge

Notification The judgement result of the burst timing was changed.

Syntax `MOK rxtxgsm_burstjudge <burst> <message>`
<burst>: Burst judgement result ({pass|fail|fail_|| fail~|fail|_})
fail_|: The rising section is out of range.
fail~: The center section is out of range.
fail|_: The falling section is out of range.
<message>: Message

Example
```
MOK rxtxgsm_burstjudge pass
MOK rxtxgsm_burstjudge fail "Level Under"
MOK rxtxgsm_burstjudge fail "Cannot find Traning Sequence Code."
```

Description If there is no message, the message section is omitted.

MOK rxtxgsm_txadjustrfpower

Notification The RF Tx power adjustment was changed.

Syntax `MOK rxtxgsm_txadjustrfpower <power>`
<power>: Adjustment (–40.0 to 0.0 in dB)

Example `MOK rxtxgsm_txadjustrfpower -0.1`

MOK rxtxgsm_rxadjustrfpower

Notification The RF reception power adjustment was changed.

Syntax `MOK rxtxgsm_rxadjustrfpower <power>`
<power>: Adjustment (0.0 to +40.0 in dB)

Example `MOK rxtxgsm_rxadjustrfpower 10.0`

MOK rxtxgsm_modanalyzeaverage

Notification The average count of the phase/frequency error measurement was changed.

Syntax `MOK rxtxgsm_modanalyzeaverage <count>`
<count>: Average count (1 to 1000)

Example `MOK rxtxgsm_modanalyzeaverage 10`

MOK rxtxgsm_poweraverage

Notification The average count of the power measurement was changed.

Syntax `MOK rxtxgsm_poweraverage <count>`
<count>: Average count (1 to 1000)

Example `MOK rxtxgsm_brstaverage 10`

MOK rxtxgsm_burstaverage

Notification The average count of the burst timing was changed.

Syntax `MOK rxtxgsm_burstaverage <count>`
<count>: Average count (1 to 1000)

Example `MOK rxtxgsm_burstaverage 10`

MOK rxtxgsm_measmode

Notification The measurement mode (single/repeat) was changed.

Syntax `MOK rxtxgsm_measmode {single|repeat}`

Example `MOK rxtxgsm_measmode single`

MOK rxtxgsm_rxmode

Notification The Rx mode (burst/cw) was changed.

Syntax `MOK rxtxgsm_rxmode {burst|cw}`

Example `MOK rxtxgsm_rxmode burst`

MOK rxtxgsm_modanalyzecounter

Notification Notifies the change in the current measurement count of the phase/frequency error measurement.

Syntax `MOK rxtxgsm_modanalyzecounter <count>`
<count>: Measurement count

Example `MOK rxtxgsm_modanalyzecounter 2`

MOK rxtxgsm_powercounter

Notification Notifies the change in the current measurement count of the Tx power measurement.

Syntax `MOK rxtxgsm_powercounter <count>`
<count>: Measurement count

Example `MOK rxtxgsm_powercounter 2`

MOK rxtxgsm_burstcounter

Notification Notifies the change in the current measurement count of the burst timing.

Syntax `MOK rxtxgsm_burstcounter <count>`
<count>: Measurement count

Example `MOK rxtxgsm_burstcounter 2`

MOK rxtxgsm_unfinish_analyze

Notification Notifies the value in the middle of the averaging operation of the phase/frequency error measurement.

Syntax `MOK rxtxgsm_unfinish_analyze <phase Peak> <phase RMS> <ferrHZ> <ferrPPM>`
<phase Peak>: Peak phase error
<phase RMS>: Rms phase error
<ferrHZ>: Frequency error (Hz)
<ferrPPM>: Frequency error (ppm)

Example `MOK rxtxgsm_unfinish_analyze 10.0 3.0 50 0.06`

MOK rxtxgsm_unfinish_powermeasure

Notification Notifies the value in the middle of the averaging operation of the Tx power measurement.

Syntax `MOK rxtxgsm_unfinish_powermeasure <power>`
<power>: Tx power

Example `MOK rxtxgsm_unfinish_powermeasure -20.0`

MOK rxtxgsm_unfinish_burst

Notification Notifies the judgement result in the middle of the burst timing measurement.

Syntax `MOK rxtxgsm_unfinish_burst <burst>`
<burst>: Burst judgement result {pass|fail}

Example `MOK rxtxgsm_unfinish_burst pass`

When in Signaling Tester Mode

MOK signal_start

Notification Started the test in signaling tester mode.

Syntax `MOK signal_start`

Example `MOK signal_start`

MOK signal_itemstop

Notification The test was completed for the auto test in signaling tester mode.

Syntax `MOK signal_itemstop <testitem> <result> <condition> [<value>]`
<testitem>: Name of the item that was tested, see the description in signal_action command.
<result>: Result of the item that was tested ({pass|fail|tsc_fail|abort|skip})
<condition>: Sequence condition when the test of the item is completed ({cont|stop} cont: sequence continued, stop: sequence stop)
<value>: Measured result of the test item (only when there is a result)

Example
```
MOK signal_itemstop wcdma-regist pass cont
MOK signal_itemstop wcdma-maxtxpower-f1 pass cont 21.6 21.6 21.7
MOK signal_itemstop wcdma-regist fail stop
```

Description
- Sent each time a test in the sequence is completed.
- The measured value is returned only when the test item is radio characteristics. The measured values of the transmitter characteristics are returned in the order average, minimum, and maximum.
- If the result of the burst timing test is Fail, <value> is set to the following character string.
  When the rising section is out of range.
  _|
  When the center section is out of range.
  ~
  When the falling section is out of range.
  |_
- If the result of the GPRS test is Fail, <value> is set to the following character string.
  When Attach test fails attach
  When Detach test fails detach

MOK signal_combination_result

Notification Confirmed the individual model parameter test results from the combination test.

Syntax `MOK signal_combination_result {pass|fail|abort}`

Example `MOK signal_combination_result pass`

MOK signal_manualitemstop

Notification The test was completed for the manual test in signaling tester mode.

Syntax `MOK signal_manualitemstop <testitem> {<result>|<value0> [<value1>]}`
<testitem>: Name of the item that was tested, see the description in signal_action command.
<result>: Result of the item that was tested ({pass|fail|tsc_fail|abort})
<value>: Measured result of the test item

Description
- The contents of the response parameter vary depending on the test item.
  Registration, Call Setup from NW, Call Setup from UE, and Test Loop Close: Result only
  Call Release from NW, Call Release from UE, Test Loop Open: Result only
  Current consumption: Measured results only (in the order mA, Peak (value 0), RMS (value 1))
  Transmitter power: Measured result only (power level: dBm)
  Frequency error: Measured result only (frequency accuracy: Hz)
  Modulation accuracy: Measured result only (EVM: %)
  Loopback BER: Measured result only (BER: %)
  CPICH: Measured result only (CPICH-EcNO, CPICH-RSCP)
- If the result of the burst timing test is Fail, <value> is set to the following character string.
  When the rising section is out of range. _|
  When the center section is out of range. ~
  When the falling section is out of range. |_
- If the result of the GPRS test is Fail, <value> is set to the following character string.
  When Attach test fails attach
  When Detach test fails detach

MOK signal_callnet

Notification Call setup from NW of the manual test was started.

Syntax `MOK signal_callnet`

Example `MOK signal_callnet`

MOK signal_callms

Notification Call setup from UE of the manual test was started.

Syntax `MOK signal_callms`

Example `MOK signal_callms`

MOK signal_relnet

Notification Call release from NW of the manual test was started.

Syntax `MOK signal_relnet`

Example `MOK signal_relnet`

MOK signal_relms

Notification Call release from UE of the manual test was started.

Syntax `MOK signal_relms`

Example `MOK signal_relms`

MOK signal_closeloop

Notification Loopback was started using test loop close of the manual test.

Syntax `MOK signal_closeloop`

Example `MOK signal_closeloop`

MOK signal_openloop

Notification Loopback release was started using test loop open of the manual test.

Syntax `MOK signal_openloop`

Example `MOK signal_openloop`

MOK signal_manualdownlinkpower

Notification The downlink power of the manual test was changed.

Syntax `MOK signal_manualdownlinkpower <power>`
<power>: Downlink power (dBm)

Example `MOK signal_manualdownlinkpower -70.0`

MOK signal_manualuplinkpower

Notification The uplink power of the manual test was changed.

Syntax `MOK signal_manualuplinkpower <power>`
<power>: Uplink power (dBm)

Example `MOK signal_manualuplinkpower 10.0`

MOK signal_manualfreq

Notification The frequency of the manual test was changed.

Syntax `MOK signal_manualfreq <frequency channel number>`

Example `MOK signal_manualfreq 10550`

MOK signal_action

Notification The test item to be executed in the manual test was changed.
Syntax `MOK signal_action <testitem> {on|off}`
<testitem>: Test item name indicating whether the test is to be executed
{on|off}: on (execute)/off (not execute)
Example `MOK signal_action wcdma-manual-freqaccuracy on`

MOK signal_timeout

Notification The measurement time setting of the manual test was changed.
Syntax `MOK signal_timeout <testitem> <timeout>`
<testitem>: Test item name specifying the measurement time
<timeout>: Measurement time (s)
Example `MOK signal_timeout wcdma-manual-loopbackber 8.0`

MOK signal_meascount

Notification The measurement count of the manual test was changed.
Syntax `MOK signal_meascount <testitem> <times>`
<testitem>: Test item name specifying the measurement count
<times>: Measurement count
Example `MOK signal_meascount wcdma-manual-txpower 5`

MOK signal_sequencestop

Notification The signaling test was stopped.
Syntax `MOK signal_sequencestop <result>`
<result>: Test result (`{pass|fail|abort|stop}`)
Example `MOK signal_sequencestop pass`
Description Sent when the signaling test is stopped such as when the test sequence is completed, when the test is aborted due to an error, when the test is stopped using the STOP key or STOP button, and when the test is stopped externally.

MOK signal_mode

Notification Test mode of the signaling test was changed.
Syntax `MOK signal_mode <mode>`
`<mode>:{auto|manual}`
Example `MOK signal_mode auto`
`MOK signal_param "/home/vc200/param/test.cdma"`

MOK signal_systemmode

Notification The system mode was changed.
Syntax `MOK signal_systemmode {WCDMA|GSM}`
Example `MOK signal_systemmode WCDMA`

MOK signal_parammode

Notification The test mode (single/continuous) was changed.
Syntax `MOK signal_parammode {single|combination}`
Example `MOK signal_parammode combination`

MOK signal_combination_pause

Notification The test was paused during continuous test mode.
Syntax `MOK signal_combination_pause`
Example `MOK signal_combination_pause`

MOK signal_combination_start

Notification The pause in continuous test mode was released.
Syntax `MOK signal_combination_start <sel>`
<sel>: {ok|cancel}
Example `MOK signal_combination_start ok`

MOK signal_paramrenew

Notification Loaded the model parameter file for the next sequence.
Syntax `MOK signal_paramrenew <file>`
<file>: Displays the model parameter file using full path.
Example `MOK signal_paramrenew /home/vc200/param/paramfile`
Description This command is issued only when tests are executed during continuous test mode.

MOK signal_param

Notification Model parameter file of the signaling test was changed.
Syntax `MOK signal_param <pathname>`
<pathname>: Model parameter file name (full path)

MOK signal_poweroff

Notification The power supply output from the power supply terminal for the mobile phone was turned OFF.
Syntax `MOK signal_poweroff`
Example `MOK signal_poweroff`

MOK signal_autoselect_getimei

Notification Executed model parameter automatic selection and retrieved the IMEI in the radio interval.

Syntax `MOK signal_autoselect_getimei <IMEI>`

Example `MOK signal_autoselect_getimei "35098010"`

MOK signal_noparam_imeitable

Notification The IMEI retrieved by model parameter automatic selection was not found in the IMEI table.

Syntax `MOK signal_noparam_imeitable`

Example `MOK signal_noparam_imeitable`

MOK signal_noparam_file

Notification The directory corresponding to the IMEI was searched by model parameter automatic selection, but a model parameter file matching the setting was not found.

Syntax `MOK signal_noparam_file`

Example `MOK signal_noparam_file`

MOK signal_manualspeechdelay

Notification The delay time of the speech test in the manual test was changed.

Syntax `MOK signal_manualspeechdelay <delay>`
<delay>: Delay time (0.1 to 1.5 s, 0.1 steps)

Example `MOK signal_manualspeechdelay 1.0`

MOK signal_usbconnect

Notification The setting of whether the USB connection function is to be used was changed.

Syntax `MOK signal_usbconnect {use|nouse}`

Example `MOK signal_usbconnect use`

MOK signal_manualhandoff

Notification Frequency handover in manual test mode was executed.

Syntax `MOK signal_manualhandoff`

Example `MOK signal_manualhandoff`

MOK signal_manualadjustpower_band1dl

Notification The W-CDMA Band 1 downlink adjustment value was changed.

Syntax `MOK signal_manualadjustpower_band1dl <Compensation>`
<Compensation>: W-CDMA Band 1 downlink adjustment value (dB)

Example `MOK signal_manualadjustpower_band1dl 3.0`

MOK signal_manualadjustpower_band1ul

Notification The W-CDMA Band 1 uplink adjustment value was changed.

Syntax `MOK signal_manualadjustpower_band1ul <Compensation>`
<Compensation>: W-CDMA Band 1 uplink adjustment value (dB)

Example `MOK signal_manualadjustpower_band1ul 3.0`

MOK signal_manualadjustpower_band2dl

Notification The W-CDMA Band 2 downlink adjustment value was changed.

Syntax `MOK signal_manualadjustpower_band2dl <Compensation>`
<Compensation>: W-CDMA Band 2 downlink adjustment value (dB)

Example `MOK signal_manualadjustpower_band2dl 3.0`

MOK signal_manualadjustpower_band2ul

Notification The W-CDMA Band 2 uplink adjustment value was changed.

Syntax `MOK signal_manualadjustpower_band2ul <Compensation>`
<Compensation>: W-CDMA Band 2 uplink adjustment value (dB)

Example `MOK signal_manualadjustpower_band2ul 3.0`

MOK signal_manualadjustpower_band3dl

Notification The W-CDMA Band 3 downlink adjustment value was changed.

Syntax `MOK signal_manualadjustpower_band3dl <Compensation>`
<Compensation>: W-CDMA Band 3 downlink adjustment value (dB)

Example `MOK signal_manualadjustpower_band3dl 3.0`

MOK signal_manualadjustpower_band3ul

Notification The W-CDMA Band 3 uplink adjustment value was changed.

Syntax
```
MOK
signal_manualadjustpower_band3ul
<Compensation>
```
<Compensation>: W-CDMA Band 3 uplink adjustment value (dB)

Example
```
MOK
signal_manualadjustpower_band3ul
3.0
```

MOK signal_manualadjustpower_band5dl

Notification The W-CDMA Band 5 downlink adjustment value was changed.

Syntax
```
MOK
signal_manualadjustpower_band5dl
<Compensation>
```
<Compensation>: W-CDMA Band 5 downlink adjustment value (dB)

Example
```
MOK
signal_manualadjustpower_band5dl
3.0
```

MOK signal_manualadjustpower_band5ul

Notification The W-CDMA Band 5 uplink adjustment value was changed.

Syntax
```
MOK
signal_manualadjustpower_band5ul
<Compensation>
```
<Compensation>: W-CDMA Band 5 uplink adjustment value (dB)

Example
```
MOK
signal_manualadjustpower_band5ul
3.0
```

MOK signal_manualadjustpower_band6dl

Notification The W-CDMA Band 6 downlink adjustment value was changed.

Syntax
```
MOK
signal_manualadjustpower_band6dl
<Compensation>
```
<Compensation>: W-CDMA Band 6 downlink adjustment value (dB)

Example
```
MOK
signal_manualadjustpower_band6dl
3.0
```

MOK signal_manualadjustpower_band6ul

Notification The W-CDMA Band 6 uplink adjustment value was changed.

Syntax
```
MOK
signal_manualadjustpower_band6ul
<Compensation>
```
<Compensation>: W-CDMA Band 6 uplink adjustment value (dB)

Example
```
MOK
signal_manualadjustpower_band6ul
3.0
```

MOK signal_manualadjustpower_band9dl

Notification The W-CDMA Band 9 downlink adjustment value was changed.

Syntax
```
MOK
signal_manualadjustpower_band9dl
<Compensation>
```
<Compensation>: W-CDMA Band 9 downlink adjustment value (dB)

Example
```
MOK
signal_manualadjustpower_band9dl
3.0
```

MOK signal_manualadjustpower_band9ul

Notification The W-CDMA Band 9 uplink adjustment value was changed.

Syntax
```
MOK
signal_manualadjustpower_band9ul
<Compensation>
```
<Compensation>: W-CDMA Band 9 uplink adjustment value (dB)

Example
```
MOK
signal_manualadjustpower_band9ul
3.0
```

MOK signal_manualtxpower

Notification The downlink power of the manual test (W-CDMA) was changed.

Syntax `MOK signal_manualtxpower <power>`
<power>: Downlink power (dBm)

Example `MOK signal_manualtxpower -65.0`

MOK signal_manualprofile

Notification The profile of the manual test (W-CDMA) was changed.

Syntax `MOK signal_manualprofile <profile>`
<profile>: Profile name

Example `MOK signal_manualprofile "Profile_01"`

MOK signal_manualpowersupply

Notification The supply voltage of the manual test (W-CDMA) was changed.
Syntax `MOK signal_manualpowersupply <voltage>`
<voltage>: Supply voltage (V)
Example `MOK signal_manualpowersupply 4.3`

MOK signal_manualinnerposition

Notification The inner loop power test segment of the manual test (W-CDMA) was changed.
Syntax `MOK signal_manualinnerposition <position>`
<position>: Inner loop power test segment
Example `MOK signal_manualinnerposition stepe`

MOK signal_manualbercodedomain

Notification The downlink code domain power for the loopback BER measurement of the manual test (W-CDMA) was changed.
Syntax `MOK signal_manualbercodedomain <pattern>`
<pattern>: Code domain power pattern
Example `MOK signal_manualbercodedomain minsense`

MOK signal_wcdma_manualmeasuremode

Notification Changed the measurement mode of the manual test (WCDMA).
Syntax `MOK signal_wcdma_manualmeasuremode {repeat|single}`
Example `MOK signal_wcdma_manualmeasuremode repeat`

MOK signal_manualparamloaded

Notification The setup parameter file of the manual test was loaded.
Syntax `MOK signal_manualparamloaded <pathname>`
<pathname>: Specified file path name
Example `MOK signal_manualparamloaded "/home/vc200/manualparam"`

MOK signal_manualsystemhandover

Notification The inter-RAT handovers of the manual test was executed.
Syntax `MOK signal_manualsystemhandover`
Example `MOK signal_manualsystemhandover`

MOK signal_wcdma_manualdataclear

Notification The manual test (WCDMA) data was reset.
Syntax `MOK signal_wcdma_manualdataclear`
Example `MOK signal_wcdma_manualdataclear`

MOK signal_gsm_bcch

Notification The GSM BCCH channel number was changed.
Syntax `MOK signal_gsm_bcch <bcch>`
<bcch>: BCCH channel number
Example `MOK signal_gsm_bcch 20`

MOK signal_gsm_tch

Notification The GSM TCH channel number was changed.
Syntax `MOK signal_gsm_bcch <tch>`
<tch>: TCH channel number
Example `MOK signal_gsm_tch 20`

MOK signal_gsm_callnet

Notification Call setup from NW of the manual test (GSM) was started.
Syntax `MOK signal_gsm_callnet`
Example `MOK signal_gsm_callnet`

MOK signal_gsm_callms

Notification Call setup from UE of the manual test (GSM) was started.
Syntax `MOK signal_gsm_callms`
Example `MOK signal_gsm_callms`

MOK signal_gsm_relms

Notification Call release from UE of the manual test (GSM) was started.
Syntax `MOK signal_gsm_relms`
Example `MOK signal_gsm_relms`

MOK signal_gsm_relnet

Notification Call release from NW of the manual test (GSM) was started.
Syntax `MOK signal_gsm_relnet`
Example `MOK signal_gsm_relnet`

MOK signal_gsm_loopback

Notification Loopback mode of the manual test (GSM) was started.
Syntax `MOK signal_gsm_loopback`
Example `MOK signal_gsm_loopback`

MOK signal_gsm_releaseloopback

Notification Loopback open of the manual test (GSM) was started.
Syntax `MOK signal_gsm_releaseloopback`
Example `MOK signal_gsm_releaseloopback`

MOK signal_gsm_handover

Notification Frequency handover of the manual test (GSM) was started.
Syntax `MOK signal_gsm_handover`
Example `MOK signal_gsm_handover`

MOK signal_gsm_changetch

Notification The frequency handover destination channel number in the GSM manual test was changed.

Syntax `MOK signal_gsm_changetch <tch>`
<tch>: Frequency handover destination channel number

Example `MOK signal_gsm_changetch 20`

MOK signal_gsm_manualdownlinkpower

Notification The downlink power setting of the Rx characteristics test for the GSM manual test mode was changed.

Syntax `MOK signal_gsm_manualdownlinkpower <power>`
<power>: Downlink power value

Example `MOK signal_gsm_manualdownlinkpower -50`

MOK signal_gsm_manualpowerctl

Notification The uplink power setting of the Tx characteristics test for the GSM manual test mode was changed.

Syntax `MOK signal_gsm_manualpowerctl <power Control>`
<power Control>: Power control value

Example `MOK signal_gsm_manualpowerctl 15`

MOK signal_gsm_manualspeechdelay

Notification The delay time setting of the speech test in the manual test (GSM) was changed.

Syntax `MOK signal_gsm_manualspeechdelay <time>`
<time>: Delay time (s)

Example `MOK signal_gsm_manualspeechdelay 1.0`

MOK signal_gsm_freqband

Notification The frequency band was changed in the manual test (GSM).

Syntax `MOK signal_gsm_freqband <gsm band.>`
<gsm band>: {GSM850|P-GSM|E-GSM|R-GSM|DCS1800|PCS1900 }

Example `MOKsignal_gsm_freqband P-GSM`

MOK signal_gsm_changefreqband

Notification The frequency band for the handover was changed in the manual test (GSM).

Syntax `MOK signal_gsm_changefreqband <gsm band.>`
<gsm band>: {GSM850|P-GSM|E-GSM|R-GSM|DCS1800|PCS1900 }

Example `MOKsignal_gsm_changefreqband P-GSM`

MOK signal_gsm_manualadjustpower_gsmdl

Notification The GSM900 band downlink adjustment value was changed.

Syntax `MOK signal_gsm_manualadjustpower_gsmdl <Compensation>`
<Compensation>: GSM900 band downlink adjustment value (dB)

Example `MOK signal_gsm_manualadjustpower_gsmdl 3.0`

MOK signal_gsm_manualadjustpower_gsmul

Notification The GSM900 band uplink adjustment value was changed.

Syntax `MOK signal_gsm_manualadjustpower_gsmul <Compensation>`
<Compensation>: GSM900 band uplink adjustment value (dB)

Example `MOK signal_gsm_manualadjustpower_gsmul 3.0`

MOK signal_gsm_manualadjustpower_dcsdl

Notification The DCS1800 band downlink adjustment value was changed.

Syntax `MOK signal_gsm_manualadjustpower_dcsdl <Compensation>`
<Compensation>: DCS1800 band downlink adjustment value (dB)

Example `MOK signal_gsm_manualadjustpower_dcsdl 3.0`

MOK signal_gsm_manualadjustpower_dcsul

Notification The DCS1800 band uplink adjustment value was changed.

Syntax `MOK signal_gsm_manualadjustpower_dcsul <Compensation>`
<Compensation>: DCS1800 band uplink adjustment value (dB)

Example `MOK signal_gsm_manualadjustpower_dcsul 3.0`

MOK signal_gsm_manualadjustpower_pcsdl

Notification The PCS1900 band downlink adjustment value was changed.

Syntax `MOK signal_gsm_manualadjustpower_pcsdl <Compensation>`
<Compensation>: PCS1900 band downlink adjustment value (dB)

Example `MOK signal_gsm_manualadjustpower_pcsdl 3.0`

MOK signal_gsm_manualadjustpower_pcsul

Notification The PCS1900 band uplink adjustment value was changed.

Syntax `MOK signal_gsm_manualadjustpower_pcsul <Compensation>`
<Compensation>: PCS1900 band uplink adjustment value (dB)

Example `MOK signal_gsm_manualadjustpower_pcsul 3.0`

MOK signal_gsm_manualcurrentdlpower

Notification The current down link power of the manual test (GSM) was changed.

Syntax `MOK signal_gsm_manualcurrentdlpower <power>`
<power>: Current downlink power (dBm)

Example `MOK signal_gsm_manualcurrentdlpower -65.0`

MOK signal_gsm_manualadjustpower_dl

Notification The current downlink adjustment value of the manual test (GSM) was changed.

Syntax `MOK signal_gsm_manualadjustpower_dl <Compensation>`
<Compensation>: Current downlink adjustment value (dB)

Example `MOK signal_gsm_manualadjustpower_dl 3.0`

MOK signal_gsm_manualadjustpower_ul

Notification The current uplink adjustment value of the manual test (GSM) was changed.

Syntax `MOK signal_gsm_manualadjustpower_ul <Compensation>`
<Compensation>: Current uplink adjustment value (dB)

Example `MOK signal_gsm_manualadjustpower_ul 3.0`

MOK signal_gsm_manualdataclear

Notification The manual test (GSM) data was reset.

Syntax `MOK signal_gsm_manualdataclear`

Example `MOK signal_gsm_manualdataclear`

MOK signal_gsm_manualmeasuremode

Notification Changed the measurement mode of the manual test (GSM).

Syntax `MOK signal_gsm_manualmeasuremode {repeat|single}`

Example `MOK signal_gsm_manualmeasuremode repeat`

MOK signal_gsm_manualpowerctlmethod

Notification Changed the power control method of the manual test (GSM).

Syntax `MOK signal_gsm_manualpowerctlmethod {sacch|assignment}`

Example `MOK signal_gsm_manualpowerctlmethod sacch`

MOK signal_gsm_manualpowerctlmode

Notification Changed the power control method of the RF characteristics test of the manual test (GSM).

Syntax `MOK signal_gsm_manualpowerctlmode {normal|simple}`

Example `MOK signal_gsm_manualpowerctlmode normal`

MOK signal_printfinished

Notification Printing is finished.

Syntax `MOK signal_printfinished <End message>`

Example `MOK signal_printfinished "2004-10-31-00-00-00 was printed"`

MER 01027 "Fatal Error : Fan Stopped."

Notification The fan in the VC200 has stopped.

Description This is an event message that notifies a status change in the VC200

MER 02013 "Stopped : <messaeg1> : <message2> : ... "

Notification Tx/Rx mode stopped abnormally.
<message>: The following message may be output.
"Aborted by other users", "PLL Unlocked.", "Error in test item.", "DPCH FIFO full.", "DPCH FIFO empty.", "PICH FIFO full.", "PICH FIFO empty.", "S-CCPCH FIFO full.", "S-CCPCH FIFO empty.", "P-CCPCH FIFO full.", and "P-CCPCH FIFO empty."

Description This is an event message that notifies a status change in the VC200.

10.11 Sample Program

Notes on Use of the Sample Program

Yokogawa shall accept no responsibility whatsoever for any problems occurring as a result of use of the sample program.

```
/* ————————————————————————————————————————————————————————
+
+  VC200 Sample Program for TCP/IP ( sample_linux.c )
+
+ ————————————————————————————————————————————————————————
+
+  Transmit the character string entered from the standard input as commands
+  to the VC200; Outputs the character string received from the VC200 to the
+  standard output.
+
+  This program that runs on linux
+
+ ———————————————————————————————————————————————————————— */

#include <stdio.h>
#include <unistd.h>
#include <netdb.h>
#include <netinet/in.h>
#include <sys/time.h>

#include <string.h>
#include <stdlib.h>

#define  BUFFER_SIZE    1024

static char sendbuf[ BUFFER_SIZE ];
static char receivebuf[ BUFFER_SIZE ];

static const char end_command[] = "clientend";

/* Read from the socket and write to the standard output */
int readsock( int desc, int* sf ){
  char          c;
  ssize_t act;
  char          *s;
  char          *e;
  int           isf = ( sf == NULL ) ? 0 : *sf;

  s = receivebuf;
  e = receivebuf + sizeof(receivebuf) - 1;
  while( s < e ) {
    if(( act = read( desc, &c, 1 )) < 0 )
      return act;
    else if( act == 0 ) {
      close( desc );
      return 0;
    }
    *s++ = c;

    /* Process strings enclosed in double quotation marks */
    if ( isf == 0 ){                            /* Not processing strings */
      if ( c == '"' )           isf = 1;
      else if ( c == '\n' )     break;
    }
    else if ( isf == 1 ){                       /* Processing strings */
      if ( c == '"' )           isf = 2;
    }
    else if ( isf == 2 ){                       /* Unknown whether strings are being processed */
      if ( c == '"' )           { isf = 1; s—; }
      else if ( c == '\n' )     break;
      else                      isf = 0;
    }

  }
  if ( sf != NULL ) *sf = isf;

  *s = '\0';
  return (ssize_t)strlen( receivebuf );
}
```

```
/* Socket connection using INET domain to the port number of the host (hostname) */
int sock_inet_connect( char* hostname, int port )
{
  int desc;
  struct hostent* hp;
  struct sockaddr_in sa;

  if ( (hp = gethostbyname( hostname )) == NULL ){
    perror( “sample : gethostbyname” );
    return -1;
  }

  if ( (desc = socket( AF_INET, SOCK_STREAM, 0 )) < 0 ){
    perror( “sample : socket “ );
    return -1;
  }
  sa.sin_family = AF_INET;
  sa.sin_port = htons( port );
  bcopy( hp->h_addr, &sa.sin_addr, hp->h_length );
  if ( connect( desc, (struct sockaddr*)&sa, sizeof( sa ) ) < 0 ){
    perror( “sample : connect “ );
    return -1;
  }

  return desc;
}

/* Open the INET domain socket using the port number */
int sock_inet_bind( int port )
{
  int desc;
  int optval = 1;
  struct sockaddr_in sa;
  int backlog = 5;

  if ( (desc = socket( AF_INET, SOCK_STREAM, 0 )) < 0 ){
    perror( “socket” );
    return -1;
  }

  setsockopt( desc, SOL_SOCKET, SO_REUSEADDR, (char*)&optval, sizeof(optval) );

  bzero( (void*)&sa, sizeof( sa ) );
  sa.sin_family = AF_INET;
  sa.sin_port = htons( port );
  sa.sin_addr.s_addr = htonl( INADDR_ANY );

  if ( bind( desc, (struct sockaddr*)&sa, sizeof( sa ) ) < 0 ){
    perror( “bind” );
    return -1;
  }

  if ( listen( desc, backlog ) < 0 ){
    perror( “listen” );
    return -1;
  }

  return desc;
}

/* Connect with the client who has connected to descriptor co_desc */
int sock_inet_accept( int co_desc )
{
  struct sockaddr_in sa;
  int len = sizeof( sa );
  int desc;

  desc = accept( co_desc, (struct sockaddr*)&sa, (socklen_t*)&len );
  if ( desc < 0 ){
    perror( “accept” );
    return -1;
  }

  return desc;
}
```

```
/* Main routine */
int main( int argc, char** argv )
{
  int evc_flag = 0;

  int cmd_desc;
  int port;
  char myhost[64];

  int c_desc = -1;
  int evt_desc = -1;

  int size;
  int nfds;
  fd_set readfds;

  int sf;
  int act;

  /* Parameter check */
  if ( argc != 4 ){
    printf(
            "usage: %s <VC200 hostname> <client hostname> <client port no.>
     <VC200 hostname>   : vc200 host name(IP address).
     <client hostname > : this PC host name(IP address).
     <client port no.>  : this PC port number for event.\n", argv[0] );
    exit( 1 );
  }

  /* Connect the command socket to port 16384 of the VC200 */
  if ( (cmd_desc = sock_inet_connect( argv[1], 16384 )) < 0 ){
    exit( 1 );
  }

  strncpy( myhost, argv[2], 64 );
  port = atoi( argv[3] );

  /* Bind the asynchronous event socket and listen (the port number is specified using the third parameter of
the program) */
  if ( (c_desc = sock_inet_bind( port )) > 0 ){
    /* Send the command "sys_openevent <its own hostname> <its own port number that was bound>" */
    sprintf( sendbuf, "sys_openevent \"%s\" %d\n", myhost, port );
    write( cmd_desc, sendbuf, strlen( sendbuf ) );

    /* Receive the response to the "sys_openevent" command */
    readsock( cmd_desc, NULL );

    if ( strncmp( receivebuf, "ERR", strlen( "ERR" ) ) == 0 ){
      /* If the received result is ERR, the asynchronous event socket cannot be used */
      printf( "Cannot connect to asynchronous event socket.\n" );
      if ( c_desc > 0 ) close( c_desc );
    }
    else{
      /* If the received result is OK, accept the connection because the VC200 is attempting to connect */
      evt_desc = sock_inet_accept( c_desc );
    }
  }
  else{
    /* If binding fails, the asynchronous event socket cannot be used */
    printf( "Cannot connect to asynchronous event socket.\n" );
    if ( c_desc > 0 ) close( c_desc );
  }

  /* Main loop */
  while( 1 ){
    FD_ZERO( &readfds );

    FD_SET( STDIN_FILENO, &readfds );
    if ( cmd_desc > 0 ) FD_SET( cmd_desc, &readfds );
    if ( evt_desc > 0 ) FD_SET( evt_desc, &readfds );

    /* Display prompt */
    write( STDOUT_FILENO, ">> : ", 5 );

    nfds = select( FD_SETSIZE, &readfds, NULL, NULL, NULL );

    if ( nfds < 0 ){
      perror( *argv );
      continue;
    }
    if ( nfds == 0 ) continue;

    /* When there is an entry to the standard input */
    if ( FD_ISSET( STDIN_FILENO, &readfds ) ){
      size = BUFFER_SIZE - 1;
```

```
    /* Read from the standard input and write to the command socket */
    size = read( STDIN_FILENO, sendbuf, size );

    /* If the string “clientend” is read, exit the program */
    if ( strncmp( sendbuf, end_command, strlen( end_command ) ) == 0 ) break;

    write( cmd_desc, sendbuf, size );
   }

   /* If there is an input through the command socket */
   else if ( FD_ISSET( cmd_desc, &readfds ) ){
    /* Read from the socket and write to the standard output */
    sf = 0;
    while( (act = readsock( cmd_desc, &sf )) == (BUFFER_SIZE - 1) ){
          write( STDOUT_FILENO, receivebuf, strlen( receivebuf ) );
    }
    if ( act == 0 ) break;
    write( STDOUT_FILENO, receivebuf, strlen( receivebuf ) );
   }

   /* If there is an input through the asynchronous event socket */
   else if ( FD_ISSET( evt_desc, &readfds ) ){
    /* Read from the socket and write to the standard output */
    readsock( evt_desc, NULL );
    write( STDOUT_FILENO, receivebuf, strlen( receivebuf ) );
   }

  }

  /* Close all sockets when exiting the program */
  if ( evt_desc > 0 ) close( evt_desc );
  if ( cmd_desc > 0 ) close( cmd_desc );
  if ( c_desc > 0 ) close( c_desc );

  return 0;
}
```

11.1 Troubleshooting

Troubleshooting

- If a message is displayed on the screen, read the succeeding pages.
- If servicing is necessary, or if the instrument is not operating correctly after performing the corrective actions below, contact your nearest dealer.

Description	Probable Cause	Corrective Action	Reference Page
The power does not turn ON.	Using a power supply outside the ratings.	Use a correct power supply.	3-5
The power cannot be turned OFF.	The system is not operating properly.	Hold down the power switch for approximately 5 seconds. If the power still does not turn OFF, check that the hard disk access lamp is not illuminated and remove the power connector.	3-6
Nothing appears on the screen.	The LCD backlight is OFF.	Turn ON the LCD backlight.	9-7
Unable to set or control the instrument using communication commands.	Serial interface parameters are not	Set the correct parameters. matched.	10-2
	The electrical specifications are not met.	Use it in a way that conforms to the specifications.	10-1, 10-2
The display is odd.	The system is abnormal.	Reboot the system.	

11.2 Messages

Error Messages

Error messages may appear in the message display area. This section describes the meanings of the messages and their corrective actions. If the corrective action requires servicing, contact your nearest dealer for repairs.

OS Error

The VC200 employs Linux as its operating system. Message with code numbers 1 to 124 are generated by the Linux operating system. If any of these messages appear, servicing is required.

Fatal Error (Application)

Code	Message	Description/Corrective Action
ERR 01001	“Parameter Error.”	Servicing required.
ERR 01002	“Download Error in Downlink FPGA.”	Servicing required.
ERR 01003	“Download Error in Uplink FPGA.”	Servicing required.
ERR 01004	“Download Error in FrontEnd FPGA.”	Servicing required.
ERR 01005	“Download Error in Downlink DSP.”	Servicing required.
ERR 01006	“Download Error in Uplink DSP.”	Servicing required.
ERR 01007	“Download Error in FrontEnd DSP.”	Servicing required.
ERR 01008	“Error occurred with initializing.”	Servicing required.
ERR 01009	“Invalid backup file.”	Servicing required.
ERR 01010	“Invalid device driver.”	Servicing required.
ERR 01011	“Driver object does not exist.”	Servicing required.
ERR 01012	“Cannot record sampling data.”	Servicing required.
ERR 01013	“Protocol error.”	Servicing required.
ERR 01014	“FIFO error.”	Servicing required.
ERR 01015	“Error occured while calibrating modulator.”	Servicing required.
ERR 01016	“Divide by 0 occured while calibrating modulator.”	Servicing required.
ERR 01017	“Invalid length for calibration data.”	Servicing required.
ERR 01018	“External command was not installed.”	Servicing required.
ERR 01019	“Error occurred in external command.”	Servicing required.
ERR 01020	“Invalid flame head position for analysis.”	Servicing required.
ERR 01021	“Data too short for analysis.”	Servicing required.
ERR 01022	“Invalid length of sampling data.”	Servicing required.
ERR 01023	“Invalid length of symbol data.”	Servicing required.
ERR 01024	“Already stopped to measure with single mode.”	Servicing required.
ERR 01025	“File and FPGA have different model names.”	Servicing required.
ERR 01026	“Invalid Model name in FPGA.”	Servicing required.
ERR 01027	“Fan Stopped.”	Servicing required.
ERR 01028	“Error occurred in fan stop monitor program.”	Servicing required.
ERR 01029	“Calibration file missing or invalid.”	Servicing required.
ERR 01030	“Protocol data missing or invalid.”	Servicing required.
ERR 01031	“The UE power connector is not connected.”	The current measurement connector is not connected.
ERR 01033	“The “smb.conf” file does not exist.”	The “smb.conf” file is not present. Servicing required.
ERR 01034	“PLL unlock.”	PLL is not locked. Servicing required.
ERR 01035	“PLL reference unlock.”	Apply an external reference signal.

Application Error

Code	Message	Description/Corrective Action
ERR 02001	“This feaature is not implemented.”	This function is not implemented.
ERR 02002	“Command not found.”	No such command.
ERR 02003	“Cannot execute this command from remote application.”	Cannot be executed from the remote application.
ERR 02004	“Parameter is needed.”	This command requires parameters.
ERR 02005	“Invalid parameter.”	Attempted to set an invalid parameter.
ERR 02006	“Parameter out of range.”	Attempted to set a parameter outside the range.
ERR 02007	“The operation is only allowed on STOP condition.”	Cannot operate during execution.
ERR 02008	“Event socket is already connected.”	The event message socket is already connected.
ERR 02009	“The sum of the multiplexed power can not exceed 0dB.”	Set the total power so that 0 dB is not exceeded.
ERR 02010	“Already started.”	Already started.
ERR 02011	“Already stopped.”	Already stopped.
ERR 02012	“PLL does not lock.”	PLL is not locked. If an external reference is selected, apply a reference signal.
ERR 02013	“Transmission and reception were aborted by exceptional event.”	Transmission/reception stopped due to an exception.
ERR 02014	“Parameter file not set.”	The model parameter file is not set.
ERR 02015	“The system mode is not signaling mode.”	The system mode is not set to Tester.
ERR 02016	“Cannot start the test without completing registration at first.”	Must start from registration.
ERR 02017	“Previous test item is still in progress.”	The previous test item is still in progress.
ERR 02018	“Not a model parameter file.”	This is not a model parameter file.
ERR 02019	“The system mode is not Tx/Rx mode.”	Not in Tx/Rx mode.
ERR 02020	“Not a Tx/Rx (W-CDMA) parameter file.”	Not a Tx/Rx (W-CDMA) parameter file.
ERR 02023	“RF Selftest Error.”	Servicing required.
ERR 02024	“FPGA Memory test timeout error.”	Servicing required.
ERR 02025	“FPGA Memory test verify error.”	Servicing required.
ERR 02026	“Operation not permitted”	Operation is not allowed.
ERR 02027	“No such file or directory”	Specify a file that exists.
ERR 02028	“Permission denied”	Read or write is not permitted.
ERR 02029	“Device or resource busy”	Device or resource is being used.
ERR 02030	“File exists”	The file already exists.
ERR 02031	“Invalid cross-device link”	Linking is not allowed across devices.
ERR 02032	“Not a directory”	Not a directory. Specify a directory.
ERR 02033	“Is a directory”	This is a directory. Specify a file.
ERR 02034	“Invalid argument”	Invalid parameter.
ERR 02035	“Text file busy”	The file is in use.
ERR 02036	“No space left on device”	No more space left on the device.
ERR 02037	“Read-only file system”	This is a read-only file system.
ERR 02038	“Too many links”	Too many links. No more hardware links.
ERR 02039	“File name too long”	The file name is too long.
ERR 02040	“Directory not empty”	The directory is not empty.
ERR 02041	“No RMC Files.”	Servicing required.
ERR 02052	“The command only available in the manual test mode.”	
ERR 02053	“The command only available in the automatic test mode.”	
ERR 02055	“Error in protocol function.”	Servicing required.
ERR 02056	“Registration is not completed.”	
ERR 02057	“Call setup is already finished.”	

Code	Message	Description/Corrective Action
ERR 02058	“Call setup is not completed.”	
ERR 02060	“You can not change the status of this test.”	
ERR 02061	“Number of times to perform measurement is not specified.”	
ERR 02062	“The timeout is not specified for this test.”	
ERR 02063	“No selftest file found.”	Servicing required.
ERR 02064	“Click the ‘Call Release’ while the call connected.”	Click “Call Release” when the call is connected.
ERR 02065	“Click the Test Loop ‘Open’ while in the loopback.”	Click “Open” when in loopback mode.
ERR 02066	“The current measurement board is not installed.”	The current consumption measurement module is not installed.
ERR 02067	“The measurement time can not be specified for this test.”	Measurement time cannot be specified on this test item.
ERR 02068	“The number of measurement times can not be specified for this test.”	Measurement count cannot be specified on this test item.
ERR 02069	“Power is already off.”	The power supply output is already OFF.
ERR 02070	“The operation is not allowed while in update.”	Operation not allowed while updating.
ERR 02071	“The operation is only allowed during the speech test.”	Operation not allowed since the speech test is not in progress.
ERR 02072	“The UE is not connected to the USB.”	The UE is not connected to the USB.
ERR 02073	“The USB is not supported by this UE.”	This UE does not support the USB.
ERR 02074	“The UE does not respond via the USB.”	There is no response via the USB.
ERR 02075	“No Power Error.”	The test result was not “Power Error.”
ERR 02076	“You can only initiate a call in the idle status.”	Call setup is only possible when in idle status.
ERR 02082	“Not a Tx/Rx(GSM) parameter file.”	
ERR 02085	“Invalid file name.”	
ERR 02086	“The operation is not allowed in the stop status.”	
ERR 02087	“The operation is not allowed in the wait status.”	The operation is not allowed in idle mode.
ERR 02088	“The operation is not allowed in the connect status.”	
ERR 02089	“The operation is not allowed in the loopback status.”	
ERR 02090	“The operation is not allowed during the protocol testing.”	
ERR 02091	“The operation is not allowed here.”	The operation is not allowed in the current condition.
ERR 02092	“This is an obsolete test item.”	The specified test item cannot be used.
ERR 02093	“Printer setting error.”	Invalid printer setting.
ERR 02094	"Not a Manual (W-CDMA) parameter file."	
ERR 02095	"You cannot copy to USB memory more than 100 files."	

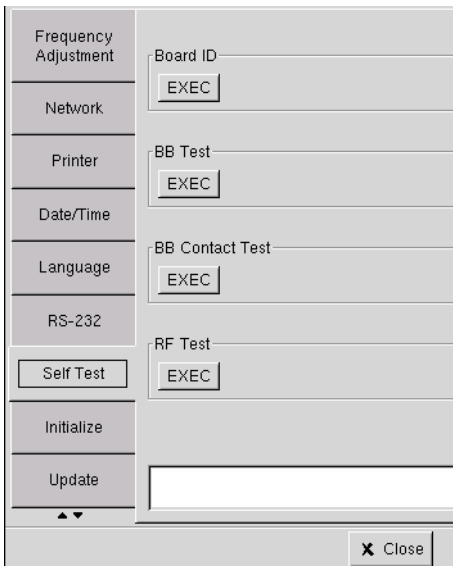
11.3 Self Test

Function

BB test:	Performs a basic function test on the BB board.
BB contact test:	Performs a wiring test on the BB board.
RF test:	Performs a basic function test on the RF board.

Procedure

1. Click the **System** tab to display the following screen.



2. Click the **Self Test** tab.
3. Click **Exec** for each test to start the self test.

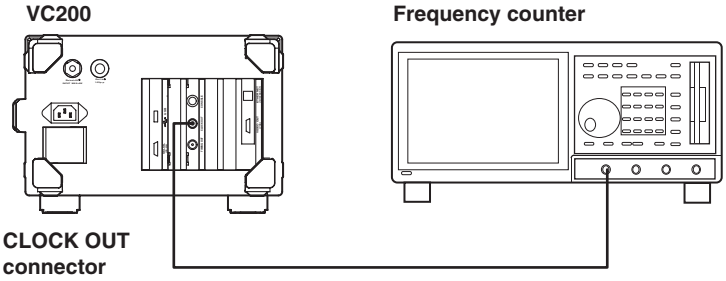
11.4 Frequency Adjustment

The frequency accuracy of the VC200 is calibrated within the specification range before shipment.
You can use instruments such as a frequency counter to fine-adjust the frequency accuracy. You can use this function to make fine adjustments at short intervals.
In addition, if for some reason the calibration is off and the accuracy is not satisfied, the accuracy can be temporarily adjusted within the range.

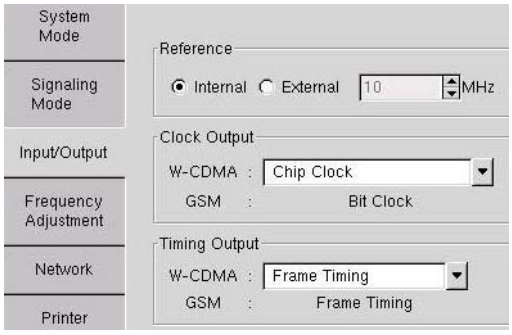
Selectable range
–500 to 500

Example in which the frequency accuracy is adjusted within ±0.1 ppm

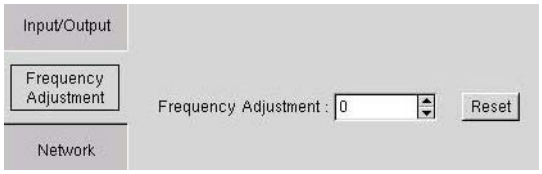
1. Prepare a frequency counter with a resolution and accuracy better than 0.1 ppm.
2. Connect the CLOCK OUT connector of the VC200 and the measurement input of the frequency counter.



3. Click the **System** tab to display the following screen.



4. Click the **Input/Output** tab.
5. Set Clock Output to **Chip Clock**.
6. Press **START** or click **Start**.
7. Click the **Frequency Adjustment** tab.
8. Change the frequency adjustment value of the VC200 so that the measured value on the frequency counter is within 3.84 MHz ± 0.384 Hz (±0.1 ppm).



Note

- The frequency adjustment value is a value indicating the change. It has no units, and the value itself has no meaning.
- Click Reset to reset the value to factory default.

11.5 Recommended Replacement Parts

The one-year warranty applies only to the main unit of the instrument (starting from the day of delivery) and does not cover any other items nor expendable items (items which wear out). The replacement period for expendable items varies depending on the conditions of use. Refer to the table below as a general guideline. Contact your nearest dealer for replacement parts.

Parts Name	Recommended Replacement Period
LCD backlight	Approx. 25,000 h
Backup battery (lithium battery)	3 years

Parts Name	Warranty Period
Built-in hard disk	One year after the day of delivery (data are excluded)

12.1 Downlink Transmission Section (W-CDMA)

Item	Specifications
Transmission frequency	

Band	UARFCN[*1] (resolution: 1)	Actual frequency
I	10550 to 10850	2110.0 MHz to 2170.0 MHz
II	9650 to 9950	1930.0 MHz to 1990.0 MHz
	412, 437, 462, 487,	1932.5, 1937.5, 1942.5, 1947.5,
	512, 537, 562, 587,	1952.5, 1957.5, 1962.5, 1967.5,
	612, 637, 662, 687	1972.5, 1977.5, 1982.5, 1987.5 MHz
III	1162 to 1513	1805.0 MHz to 1880.0 MHz
V	4357 to 4458	871.4 MHz to 891.6 MHz
	1007, 1012, 1032, 1037,	871.5, 872.5, 876.5, 877.5,
	1062, 1087	882.5, 887.5 MHz
VI	4375 to 4425	875.0 MHz to 885.0 MHz
	1037, 1062	877.5, 882.5 MHz
IX	9237 to 9387	1847.4 MHz to 1877.4 MHz

Output power	–10.0 to –110.0 dBm (resolution: 0.1 dBm) Absolute accuracy: ±1.5 dB (≥ –60 dBm) ±2.0 dB (< –60 dBm)
Type of physical transmission channel	• P-SCH/S-SCH • P-CCPCH • P-CPICH • S-CPICH • PICH • DPCH 7.5 ksps, 15 ksps, 30 ksps, 60 ksps, 120 ksps, 240 ksps, 480 ksps, 960 ksps[*2] • OCNS (16ch)[*3]
Scrambling code number	0 to 8191 (resolution: 1)
Channelization code number	P-CCPCH: Fixed to 1 P-CPICH: Fixed to 0 S-CPICH: 0 to 255 (resolution: 1) PICH: 0 to 255 (resolution: 1) DPCH: 0 to spread factor – 1 (resolution: 1)
Timing offset	PICH: 0 to 30464 chips (resolution: 256 chips) DPCH: 0 to 144896 chips (resolution: 256 chips)
Code channel power	PSCH/SSCH/PCCPCH: 0 to –30.0 dB, –∞ (resolution: 0.1 dB) * Equal powers of PSCH and SSCH at 1/2 power level each are time division multiplexed. P-CPICH: 0 to –30.0 dB, –∞ (resolution: 0.1 dB) S-CPICH: 0 to –30.0 dB, –∞ (resolution: 0.1 dB) PICH: 0 to –30.0 dB, –∞ (resolution: 0.1 dB) DPCH: 0 to –30.0 dB, –∞ (resolution: 0.1 dB) OCNS: The remaining value of the power of each code channel with respect to the total power is set automatically.
Modulation accuracy	5% or less (when transmitting DPCH 1CH)

*1 UARFCN = UTRA Absolute Radio Frequency Channel Number

*2 At 30 k, 120 k, 240 k, and 480 ksps, the transport channel consists of a symbol sequence that has been encoded and mapped using RMC (Reference Measurement Channel) as defined by 3GPP TS25.101 V3.8.0 (2001-09) Annex A.3.
At 7.5 k, 15 k, 60 k, and 960 ksps, the transport channel consists of a symbol sequence that has been encoded using a representative encoding parameter for the symbol rate. For a description of the encoding process, see the appendix 1.

*3 Conforms to 3GPP TS25.101 V3.8.0 (2001-09) Annex C, Table C.6

12.2 Uplink Reception Section (W-CDMA)

Item	Specifications

Reception frequency

Band	UARFCN	Actual frequency
I	9600 to 9900	1920.0 MHz to 1980.0 MHz
II	9250 to 9550	1850.0 MHz to 1910.0 MHz
	12, 37, 62, 87, 112, 137, 162, 187, 212, 237, 262, 287	1852.5, 1857.5, 1862.5, 1867.5, 1872.5, 1877.5, 1882.5, 1887.5, 1892.5, 1897.5, 1902.5, 1907.5 MHz
III	937 to 1288	1712.4 MHz to 1782.6 MHz
V	4132 to 4233	826.4 MHz to 846.6 MHz
	782, 787, 807, 812, 837, 862	826.5, 827.5, 831.5, 832.5, 837.5, 842.5 MHz
VI	4150 to 4200	830.0 MHz to 840.0 MHz
	812, 837	832.5, 837.5 MHz
IX	8762 to 8912	1752.4 MHz to 1782.4 MHz

* The reception frequency is set automatically to the value obtained by subtracting following value from the transmission frequency setting of the downlink.

Band	UARFCN	Actual frequency
I	950	190 MHz
II	400	80 MHz
III	225	95 MHz
V	225	45 MHz
VI	225	45 MHz
IX	475	95 MHz

Reception power	Maximum input level: +35 dBm Reference sensitivity: –70 dBm
Physical reception channel	• DPCCH: 15 kbps • DPDCH: 15 kbps, 30 kbps, 60 kbps, 120 kbps
Scrambling code number	0 to 16777215 (resolution: 1)
Power measurement	Measurement range: –70.0 to +35.0 dBm Absolute accuracy: ±1.5 dB
EVM	Measures the rms value of the EVM, residual EVM is approx. 4%
Frequency error measurement	Measurement range: ±10 kHz (EVM method with the frequency on the VC200 as a reference) Accuracy: ±0.01 ppm
Internal reference frequency	Aging ±0.5 ppm/year and temperature fluctuation ±0.5 ppm

12.3 Downlink Transmission Section (GSM)

Item	Specifications		
Transmission frequency	**GSM type**	**Selectable range: ARFCN (Resolution: 1)**	**Actual frequency (Resolution: 0.2 MHz)**
	GSM850	128 to 251	869.2 to 893.8 MHz
	P-GSM	1 to 124	935.2 to 959.8 MHz
	E-GSM	0 to 124	935.0 to 959.8 MHz
		975 to 1023	925.2 to 934.8 MHz
	R-GSM	0 to 124	935.0 to 959.8 MHz
		955 to 1023	921.2 to 934.8 MHz
	DCS1800	512 to 885	1805.2 to 1879.8 MHz
	PCS1900	512 to 810	1930.2 to 1989.8 MHz
Tx power	–110.0 to –10.0 dBm (resolution: 0.1 dBm) Absolute accuracy: ±1.5 dB (≥ –60 dBm) ±2.0 dB (< –60 dBm)		
Phase error	2 deg rms or less		

12.4 Uplink Reception Section (GSM)

Item	Specifications		
Reception frequency	**GSM type**	**Selectable range: ARFCN (Resolution: 1)**	**Actual frequency (Resolution: 0.2 MHz)**
	GSM850	128 to 251	824.2 to 848.8 MHz
	P-GSM	1 to 124	890.2 to 914.8 MHz
	E-GSM	0 to 124	890.0 to 914.8 MHz
		975 to 1023	880.2 to 889.8 MHz
	R-GSM	0 to 124	890.0 to 914.8 MHz
		955 to 1023	876.2 to 889.8 MHz
	DCS1800	512 to 885	1710.2 to 1784.8 MHz
	PCS1900	512 to 810	1850.2 to 1909.8 MHz
Reception power	Maximum input level: +35 dBm (CW), +40 dBm (GSM Burst) Reference sensitivity: –40 dBm		
Power measurement	Measurement range: –40.0 to +35.0 dBm Absolute accuracy: ±1.5 dB		
Phase error measurement	Measurement range: peak 0.5 to 45.0 deg, rms 0.5 to 20.0 deg Residual error: rms approximately 1.4 deg		
Frequency error measurement	Measurement range: ±10 kHz Residual error: ±0.03 ppm (EVM method with the frequency on the VC200 as a reference)		

12.5 Signaling Test Section

* The specifications of the physical layer conforms to the specifications of the Tx/Rx mode (sections 12.1 to 12.4).

Auto Test Mode

Item	Specifications
Call setup function W-CDMA/GSM	Position registration Call setup from NW Call setup from UE Call release from NW Call release from UE Loopback Frequency handover
Speech test	Voice loopback, delay time setting: 0.2 to 1.5 s
Radio characteristics test W-CDMA	• Tx characteristics test Maximum output power: –70.0 to +35.0 dBm, absolute accuracy ±1.5 dB Minimum output power: –70.0 to +35.0 dBm, absolute accuracy ±1.5 dB Open loop power control: –70.0 to +35.0 dBm, absolute accuracy ±1.5 dB Inner loop power control: 1 dB step, 10 dB step Frequency error: ±10 kHz Residual error: ±0.01 ppm (EVM method with the frequency on the VC200 as a reference) Modulation accuracy 1: Measures the rms value of the EVM, residual EVM is approx. 4% (at maximum output power) Modulation accuracy 2: Measures the rms value of the EVM, residual EVM is approx. 4% (at arbitrary output power) • Rx characteristics test Reference sensitivity (BER) Maximum input reception (BER)
GSM	• Tx characteristics test Phase error measurement: peak 0.5 to 45.0 deg rms 0.5 to 20.0 deg Residual error: rms 1.4 deg Frequency error: ±10 kHz Residual error: ±0.03 ppm (EVM method with the frequency on the VC200 as a reference) Tx power: –40.0 to +35.0 dBm, absolute accuracy ±1.5 dB Burst timing • Rx characteristics test Rx quality (UE report) Rx level (UE report) FER (loopback) RBER (loopback)

W-CDMA Manual Test Mode

Item	Specifications
Call setup function	Position registration Call setup from NW Call setup from UE Call release from NW Call release from UE Loopback Frequency handover
Speech test	Voice loopback, delay time setting: 0.2 to 1.5 s
Radio Characteristics Test	• Tx characteristics test Output power: –70.0 to +35.0 dBm, absolute accuracy ±1.5 dB EVM: Measures the rms EVM. Residual EVM: Approx. 4% Frequency error: ±10 kHz Residual error: ±0.01 ppm (EVM method with the frequency on the VC200 as a reference) • Rx characteristics test Loopback BER

GSM Manual Test Mode

Item	Specifications
Call setup function	Position registration Call setup from NW Call setup from UE Call release from NW Call release from UE Loopback Frequency handover
Speech test	Voice loopback, delay time setting: 0.2 to 1.5 s
Radio Characteristics Test	• Tx characteristics test Tx power: –40.0 to +35.0 dBm, absolute accuracy ±1.5 dB Burst timing Phase error: peak 0.5 to 45.0 deg, rms 0.5 to 20.0 deg Residual error: rms 1.4 deg Frequency error: ±10 kHz Residual error: ±0.03 ppm (EVM method with the frequency on the VC200 as a reference) • Rx characteristics test Rx quality (UE report) Rx level (UE report) FER (loopback) RBER (loopback)

12.6 Input/Output

Item	Specifications	
RF input/output	Input/output impedance:	50 Ω
	Maximum input power:	4 W
	Connector type:	N or TNC (depending on the suffix code)
External reference frequency input (REF IN)	Input frequency range:	10 MHz to 20 MHz (resolution: 1 MHz), except within ±3 ppm of the input frequency specified on the VC200
	Input impedance:	1 kΩ (typical*)
	Input voltage:	1 to 5 Vpp
	Maximum input voltage:	10 Vpp, ±15 VDC
	Connector type:	BNC
Clock output	Output level:	+3.3 V CMOS level
	Output impedance:	50 Ω (typical*)
	Connector type:	BNC
Timing signal output	Output level:	+3.3 V CMOS level
	Output impedance:	50 Ω (typical*)
	Connector type:	BNC

* The typical value is a representative or standard value. It is not a warranted value.

12.7 Display

Item	Specifications
Display	6.4" color TFT LCD
Display screen size	130.6 (W) × 97.0 (H) [mm]
Total number of pixels	640×480

* The LCD screen may contain 0.02% of defect with respect to the total number of pixels.

12.8 Video Signal Output

Item	Specifications
Signal format	VGA video output
Connector type	9-pin D-sub

12.9 Interface

Item	Specifications
USB interface	Conforms to USB Spec. Rev.1.1
RS-232 Interface	Conforms to EIA-574
Ethernet interface	Conforms to IEEE802.3 10BASE-T/100BASE-TX

12.10 General Specifications

Item	Specifications	
Standard operating conditions	Ambient temperature Ambient humidity Error in supply voltage and frequency	23±5°C 55 ± 10% RH Within 1% of rating
Warm-up time	At least 30 minutes	
Storage conditions	Temperature Humidity	–20 to 60°C 20 to 80% RH (no condensation)
Operating conditions	Temperature Humidity	5 to 35°C 20 to 80% RH (no condensation)
Storage altitude	3000 m or less	
Operating altitude	2000 m or less	
Rated supply voltage	100 to 120 VAC/200 to 240 VAC (automatic switching between 100-V/200-V systems)	
Permitted supply voltage range	90 to 132 VAC/180 to 264 VAC	
Rated supply voltage frequency	50/60 Hz	
Allowable supply voltage frequency range	48 to 63 Hz	
Maximum power consumption	150 VA or less	
Withstanding voltage (between power supply and case)	1.5 kVAC for one minute	
Insulation resistance (between power supply and case)	10 MΩ or more at 500 VDC	
External dimensions	283 (W) × 176 (H) × 303 (D), excluding the handle and projections	
Weight	Approx. 6.5 kg	
Installation position	Horizontal	
Standard accessories	• Power cord • Clamp filter for the power cord • Rubber Feet • TNC-SMA adapter • USB mouse • CD-ROM • User's manual for checking the contents of the package and using the CD-ROM	1 piece 1 piece 1 set (4 pieces) 1 piece (included only when the suffix code is -T) 1 piece 1 piece, electronic data of the user's manual 1 sheet (IM733015-71E)

Item	Specifications	
Safety Standards*3	Complying standards	EN61010-1 Overvoltage category II*1 Pollution degree 2*2
EMC Standard*3	Complying standards	EN55011, EN61326, EN61000-3-2, EN61000-3-3 This product is a Class A (for industrial environment) product. Operation of this product in a residential area may cause radio interference in which case the user is required to correct the interference.
	Cable condition	• **RF IN/OUT** Use coaxial cables of length 3 m or less. • **REF IN, TIMING OUT, CLOCK OUT** Use coaxial cables of length 3 m or less. Attach a ferrite core (RFC-5/ Kitagawa industries Co.,Ltd) on the VC200 end. • **SERIAL (RS232)** Use shielded cables. Use cables of length 3 m or less. Attach a ferrite core (RFC-8/Kitagawa industries Co.,Ltd) on the VC200 end. • **VIDEO OUT (VGA)** Use shielded cables. Use cables of length 3 m or less. Attach a ferrite core (RFC-8/Kitagawa industries Co.,Ltd) on the VC200 end. • **USB** Use shielded cables. Use cables of length 3 m or less. Attach a ferrite core (RFC-3/Kitagawa industries Co.,Ltd) on the VC200 end. Connect a ferrite core (RFC-3/Kitagawa industries Co.,Ltd) to the USB mouse. • **ETHERNET (10/100BASE-T)** Use shielded cables. Use cables of length 30 m or less. Attach a ferrite core (RFC-10/Kitagawa industries Co.,Ltd) on the VC200 end. • **Power supply** Attach a clamp filter that came with the package (ZCAT3035-1330/TDK Co.,Ltd) on the VC200 end. **When using the VC-SHIELD shield box (733061)** • **RF IN/OUT** Use coaxial cables of length 1 m or less. • **USB** Use a shielded cable. Use cables of length 1 m or less. Attach a ferrite core (RFC-3/Kitagawa industries Co.,Ltd) on the VC200 end. • **UE POWER** Use a shielded cable. Use cables of length 1 m or less. Attach a ferrite core (ZCAT2035-0930/ TDK Co.,Ltd) on the VC200 end.

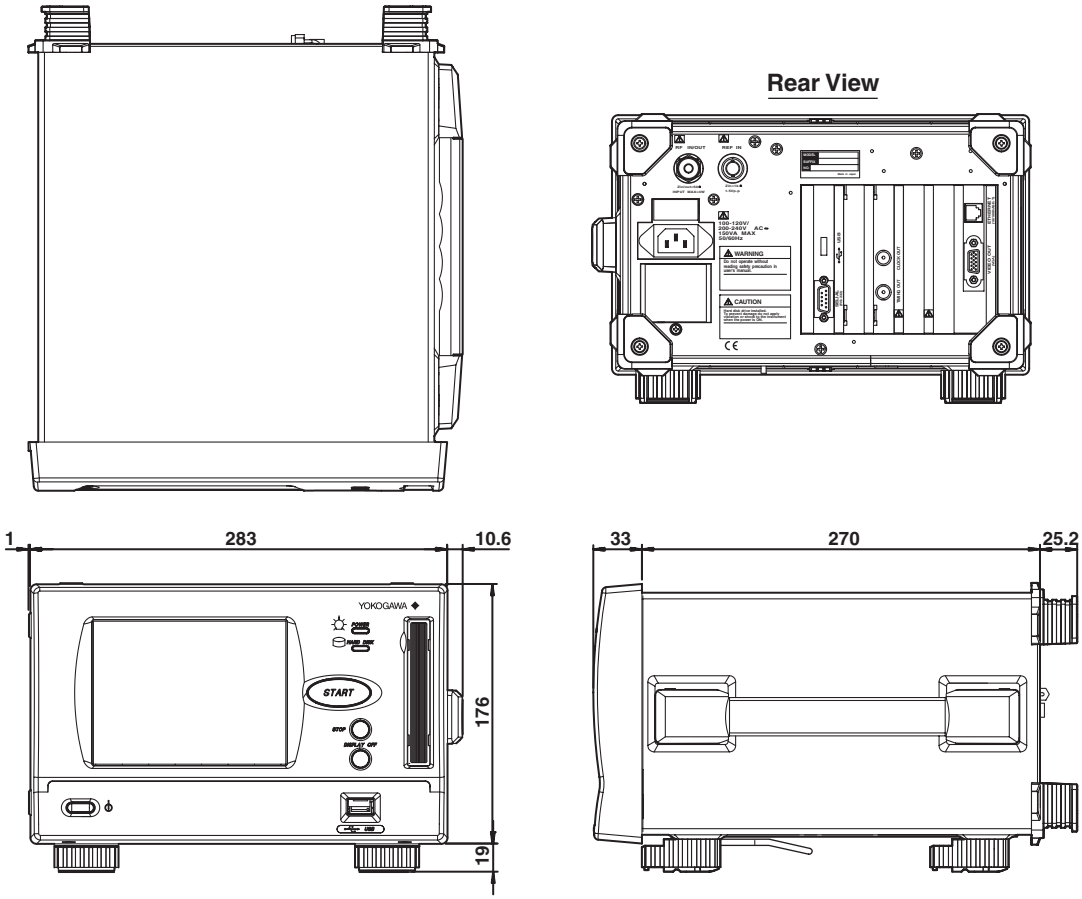
*1 The Overvoltage Category (Installation Category) is a value used to define the transient overvoltage condition and includes the impulse withstand voltage regulation. II applies to electrical equipment that is powered by a fixed installation such as a distribution board.

*2 Pollution Degree applies to the degree of adhesion of a solid, liquid, or gas which deteriorates withstand voltage or surface resistivity. Pollution Degree 2 applies to normal indoor atmospheres (with only non-conductive pollution).

*3 These items apply only to products that were manufactured on December 2002 or later, with CE marks. They do not apply to models with the /CUM (current consumption measurement module) option.

12.11 Dimensional Drawings

Unit: mm



Unless otherwise specified, tolerance is ±3%. (Tolerance is always ±3 mm when the dimension is under 10 mm.)

Appendix 1 Downlink DPCH Coding Rules

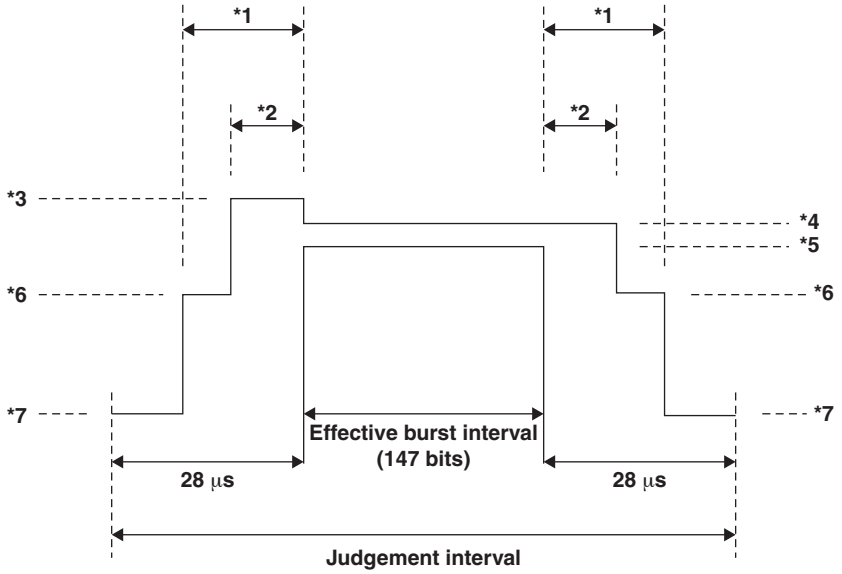
The relationship between the downlink DPCH symbol rate and the encoding process specifications in Tx/Rx tester mode are indicated below.

- 7.5 ksps: Encoding parameter indicated in the table below.
- 15 ksps: Encoding parameter indicated in the table below.
- 30 ksps: RMC 12.2 kbps as defined by 3GPP TS25.101 V3.8.0(2001-09) A.3.1.
- 60 ksps: Encoding parameter indicated in the table below.
- 120 ksps: RMC 64 kbps as defined by 3GPP TS25.101 V3.8.0(2001-09) A.3.2.
- 240ksps: RMC 144 kbps as defined by 3GPP TS25.101 V3.8.0(2001-09) A.3.3.
- 480ksps: RMC 384 kbps as defined by 3GPP TS25.101 V3.8.0(2001-09) A.3.4.
- 960 ksps: Encoding parameter indicated in the table below.

The bit pattern that is inserted into the transport channel is the PN pattern of the generator polynomial X^9+X^4+1.

	7.5 ksps	**15 ksps**	**60 ksps**	**960 ksps**
Transport Block Size	1 x 4	1 x 56	1 x 276	1 x 6216
TTI	10	10	10	10
Coding Type	CC 1/3	CC 1/3	CC 1/3	CC 1/3
CRC	16	16	16	16
RM attribute	1	1	1	1
DPCCH				
Number of TFCI/slot	0	0	8	8
Number of TPC/slot	2	2	4	8
Number of Pilot bits/slot	4	2	8	16
DPDCH				
Number of data bits/slot	4	16	60	1248
Number of data bits/frame	60	240	900	18720

Appendix 2 Criteria for the GSM Burst Timing



The judgement of the burst timing is carried out based on the GSM standards. However, the criteria are slightly relaxed to take into account the measurement accuracy of the instrument, so that normal mobile phones are not judged as "fail."
The criteria for burst timing (GSM specifications + measurement tolerance) are shown below. The reference level (0 dB) is the average value over the effective burst interval.

*1: 18 μs + 0.5 bit
*2: 10 μs + 0.5 bit
*3: +4 dB + 0.5 dB
*4: +1 dB + 0.5 dB
*5: –1 dB – 0.5 dB
***6: GSM850, E-GSM, P-GSM, and R-GSM**

When the uplink power setting is 0 to 15: –86 dB + 0.5 dB
16: –4 dB + 0.5 dB
17: –2 dB + 0.5 dB
18 and 19: –1 dB + 0.5 dB

DCS1800 and PCS1900

When the uplink power setting is 29 to 31 or 0 to 10: –6 dB + 0.5 dB
11: –4 dB + 0.5 dB
12: –2 dB + 0.5 dB
13 and 28: –1 dB + 0.5 dB

***7: GSM850, E-GSM, P-GSM, and R-GSM**

Add 1.5 dB to –30 dB or –17 dBm whichever is higher

DCS1800 and PCS1900

Add 1.5 dB to –30 dB or –20 dBm whichever is higher

Note

In the Tx/Rx test, the power value that is actually measured is converted to the uplink power setting (power control level) as in *6 and *7 above and judged in the same fashion.

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