
ADVANTEST®

ADVANTEST CORPORATION

R3477 Series OPT52

cdma2000 1xEV-DV Analysis Software

User's Guide

MANUAL NUMBER FOE-8440200C00

Applicable Models

R3477

Safety Summary

To ensure thorough understanding of all functions and to ensure efficient use of this instrument, please read the manual carefully before using. Note that Advantest bears absolutely no responsibility for the result of operations caused due to incorrect or inappropriate use of this instrument.

If the equipment is used in a manner not specified by Advantest, the protection provided by the equipment may be impaired.

- **Warning Labels**

Warning labels are applied to Advantest products in locations where specific dangers exist. Pay careful attention to these labels during handling. Do not remove or tear these labels. If you have any questions regarding warning labels, please ask your nearest Advantest dealer. Our address and phone number are listed at the end of this manual.

Symbols of those warning labels are shown below together with their meaning.

DANGER: Indicates an imminently hazardous situation which will result in death or serious personal injury.

WARNING: Indicates a potentially hazardous situation which will result in death or serious personal injury.

CAUTION: Indicates a potentially hazardous situation which will result in personal injury or a damage to property including the product.

- **Basic Precautions**

Please observe the following precautions to prevent fire, burn, electric shock, and personal injury.

- Use a power cable rated for the voltage in question. Be sure however to use a power cable conforming to safety standards of your nation when using a product overseas.
- When inserting the plug into the electrical outlet, first turn the power switch OFF and then insert the plug as far as it will go.
- When removing the plug from the electrical outlet, first turn the power switch OFF and then pull it out by gripping the plug. Do not pull on the power cable itself. Make sure your hands are dry at this time.
- Before turning on the power, be sure to check that the supply voltage matches the voltage requirements of the instrument.
- Connect the power cable to a power outlet that is connected to a protected ground terminal. Grounding will be defeated if you use an extension cord which does not include a protected ground terminal.
- Be sure to use fuses rated for the voltage in question.
- Do not use this instrument with the case open.
- Do not place anything on the product and do not apply excessive pressure to the product. Also, do not place flower pots or other containers containing liquid such as chemicals near this

product.

- When the product has ventilation outlets, do not stick or drop metal or easily flammable objects into the ventilation outlets.
- When using the product on a cart, fix it with belts to avoid its drop.
- When connecting the product to peripheral equipment, turn the power off.

- **Caution Symbols Used Within this Manual**

Symbols indicating items requiring caution which are used in this manual are shown below together with their meaning.

DANGER: Indicates an item where there is a danger of serious personal injury (death or serious injury).

WARNING: Indicates an item relating to personal safety or health.

CAUTION: Indicates an item relating to possible damage to the product or instrument or relating to a restriction on operation.

- **Safety Marks on the Product**

The following safety marks can be found on Advantest products.



: ATTENTION - Refer to manual.



: Protective ground (earth) terminal.



: DANGER - High voltage.



: CAUTION - Risk of electric shock.

- **Replacing Parts with Limited Life**

The following parts used in the instrument are main parts with limited life.

Replace the parts listed below before their expected lifespan has expired to maintain the performance and function of the instrument.

Note that the estimated lifespan for the parts listed below may be shortened by factors such as the environment where the instrument is stored or used, and how often the instrument is used.

The parts inside are not user-replaceable. For a part replacement, please contact the Advantest sales office for servicing.

Each product may use parts with limited life.

For more information, refer to the section in this document where the parts with limited life are described.

Main Parts with Limited Life

Part name	Life
Unit power supply	5 years
Fan motor	5 years
Electrolytic capacitor	5 years
LCD display	6 years
LCD backlight	2.5 years
Floppy disk drive	5 years
Memory backup battery	5 years

- **Hard Disk Mounted Products**

The operational warnings are listed below.

- Do not move, shock and vibrate the product while the power is turned on.
Reading or writing data in the hard disk unit is performed with the memory disk turning at a high speed. It is a very delicate process.
- Store and operate the products under the following environmental conditions.
An area with no sudden temperature changes.
An area away from shock or vibrations.
An area free from moisture, dirt, or dust.
An area away from magnets or an instrument which generates a magnetic field.
- Make back-ups of important data.
The data stored in the disk may become damaged if the product is mishandled. The hard disc has a limited life span which depends on the operational conditions. Note that there is no guarantee for any loss of data.

- **Precautions when Disposing of this Instrument**

When disposing of harmful substances, be sure dispose of them properly with abiding by the state-provided law.

Harmful substances: (1) PCB (polycarbon biphenyl)
(2) Mercury
(3) Ni-Cd (nickel cadmium)
(4) Other
Items possessing cyan, organic phosphorous and hexadic chromium and items which may leak cadmium or arsenic (excluding lead in solder).

Example: fluorescent tubes, batteries

Environmental Conditions

This instrument should be only be used in an area which satisfies the following conditions:

- An area free from corrosive gas
- An area away from direct sunlight
- A dust-free area
- An area free from vibrations
- Altitude of up to 2000 m

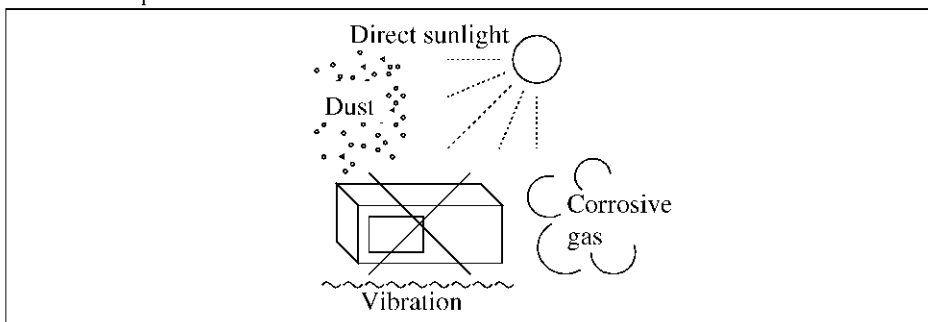


Figure-1 Environmental Conditions

- Operating position

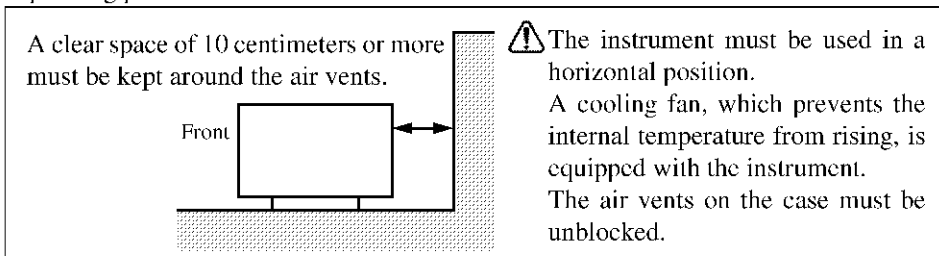


Figure-2 Operating Position

- Storage position

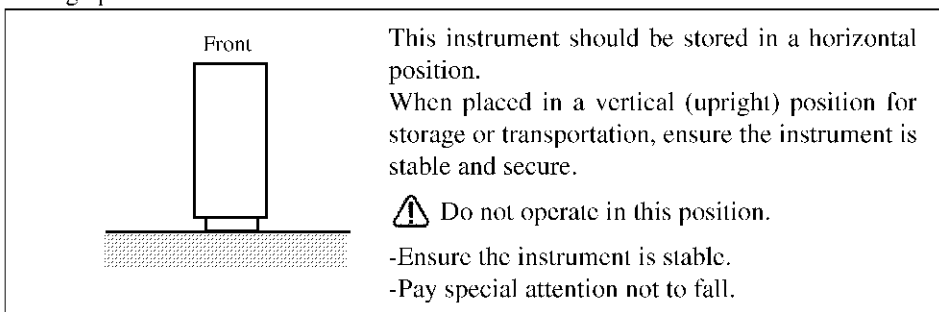


Figure-3 Storage Position

- The classification of the transient over-voltage, which exists typically in the main power supply, and the pollution degree is defined by IEC61010-1 and described below.

Impulse withstand voltage (over-voltage) category II defined by IEC60364-4-443

Pollution Degree 2

Types of Power Cable

Replace any references to the power cable type, according to the following table, with the appropriate power cable type for your country.

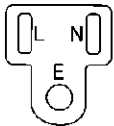
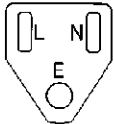
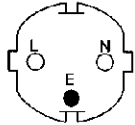
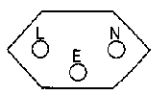
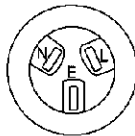
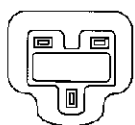
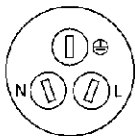
Plug configuration	Standards	Rating, color and length	Model number (Option number)
	PSE: Japan Electrical Appliance and Material Safety Law	125 V at 7 A Black 2 m (6 ft)	Straight: A01402 Angled: A01412
	UL: United States of America CSA: Canada	125 V at 7 A Black 2 m (6 ft)	Straight: A01403 (Option 95) Angled: A01413
	CEE: Europe DEMKO: Denmark NEMKO: Norway VDE: Germany KEMA: The Netherlands CEBEC: Belgium OVE: Austria FIMKO: Finland SEMKO: Sweden	250 V at 6 A Gray 2 m (6 ft)	Straight: A01404 (Option 96) Angled: A01414
	SEV: Switzerland	250 V at 6 A Gray 2 m (6 ft)	Straight: A01405 (Option 97) Angled: A01415
	SAA: Australia, New Zealand	250 V at 6 A Gray 2 m (6 ft)	Straight: A01406 (Option 98) Angled: -----
	BS: United Kingdom	250 V at 6 A Black 2 m (6 ft)	Straight: A01407 (Option 99) Angled: A01417
	CCC: China	250 V at 10 A Black 2 m (6 ft)	Straight: A114009 (Option 94) Angled: A114109

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1. INTRODUCTION

This chapter describes the contents of this manual and the product overview of the R3477 series Signal Analyzer Option 52 (cdma2000 1xEV-DV Analysis) to help you get the most out of this manual.

1.1 Contents of this Manual

The contents of each chapter are as follows.

For more information on the basic operations, functions, and remote programming of the signal analyzer, refer to "1.3 Other Manuals Related to this Instrument."

Chapter 1. INTRODUCTION	This chapter describes the contents of this manual and the product overview.
Chapter 2. PRECAUTIONS WHEN USING THE R3477	This chapter describes precautions when using this instrument. Read this chapter before using this instrument.
Chapter 3. SETUP	This chapter describes how to setup this instrument. After setting up this instrument in an appropriate location, turn on the power and check that this instrument starts correctly.
Chapter 4. MEASUREMENT EXAMPLE	This chapter describes Examples of measurements.
Chapter 5. MENU MAP, FUNCTIONAL EXPLANATION	This chapter describes the menu structure and functions of soft keys.
Chapter 6. SCPI COMMAND REFERENCE	This chapter describes the SCPI commands in order of function, in which the following items are included. <ul style="list-style-type: none"> • Command format • Function description • Parameters • Query reply
Chapter 7. PERFORMANCE VERIFICATION	This chapter describes the performance verification test procedures of the option 52.
Chapter 8. SPECIFICATIONS	This chapter describes the specifications of the option 52.
APPENDIX	This chapter describes the principle of operation and error code table.

1.2 Product Overview

1.2 Product Overview

The cdma2000 analysis option (OPT52) adds the Tx Tester function, which measures the signals of cdma One, cdma2000, and cdma2000 EV-DV, to the R3477 series.

This option includes the following features.

- Modulation accuracy, frequency deviation, and code domain power can be measured.
- OBW and Spurious Emissions, which comply with the standard, can be measured by using simple key operations.

1.3 Other Manuals Related to this Instrument

The following manuals are available for the R3477 series:

- User's Guide (Part Code: {ER3477-U}, English)
This manual describes, in addition to how to use the R3477 series Signal Analyzer, the following information: setup, basic operations, applied measurements, function descriptions, specifications, and maintenance.
- Performance Test Guide (Part Code: {ER3477-T}, English)
This manual describes information, which is required to check the performance of the R3477 series Signal Analyzer, such as performance test procedures and specifications.

1.4 Notation

The notations of the panel key and the button and menu on the screen used in this manual are described below.

Key on the panel

“Hard keys” are hardware keys which are on the panel.

Sample Shows a key on the panel labeled "Sample"
Example: **FREQ**, **LEVEL**

System menu on the screen

[Sample] Shows a menu, tab, button, or dialog box on the screen labeled "Sample" and the function can be selected or executed by pressing it.
Example: **[Normal]** tab, **[Option]** button

Soft menu bar on the screen

Sample Shows a key labeled "Sample" in the soft menu bar on the screen.
Example: **Center** key, **Ref Level** key

Successive key operation

FREQ, **Center** Indicates that the **FREQ** key is pressed and then **Center** key is pressed.

Toggle key operation

AMarker On/Off (On) Indicates that the **AMarker** is set to On by pressing the **AMarker On/Off** key.

1.5 Trademarks

- Microsoft® and Windows® are trademarks or registered trademarks of Microsoft Corporation.
- All other company and product names described in this manual are the trademarks or registered trademarks of their respective owners.

2. PRECAUTIONS WHEN USING THE R3477

This chapter describes precautions when using this instrument. Read this chapter before using this instrument.

2.1 If a Fault Occurs

If any smoke, smell, or noise emanates from this instrument, turn off the MAIN POWER switch, remove the power cable from the AC power connector, and then contact an Advantest sales representative immediately.

2.2 Removing the Case

The case of this instrument should only be opened by Advantest service engineers.

WARNING: *This instrument contains high-voltage and high temperature parts which may cause electrical shocks or burns.*

2.3 Power Fuse

2.3 Power Fuse

This instrument is protected from overcurrent by a power fuse. If the power fuse blows, there may be some problems in this instrument. Contact Advantest and request a sales representative to repair this instrument.

The power fuse is placed in a fuse holder which is located on the rear panel.

The power fuse can be checked or replaced according to the following procedure:

WARNING: Use the same rating and same type power fuse to prevent a fire.

1. Press the **POWER** switch on the front panel to turn off the power supply if the instrument operates.
2. Set the MAIN POWER switch to OFF and remove the power cable from the AC power connector.
3. Remove the fuse holder located on the rear panel by using a flathead screwdriver.
4. Check or replace the power fuse and put the fuse holder back in.

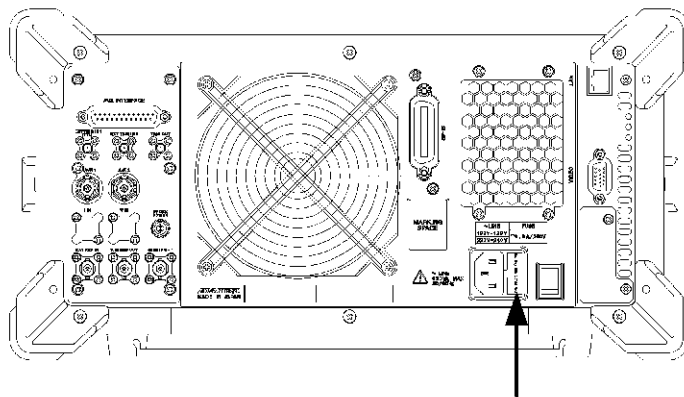


Figure 2-1 Fuse Holder Location

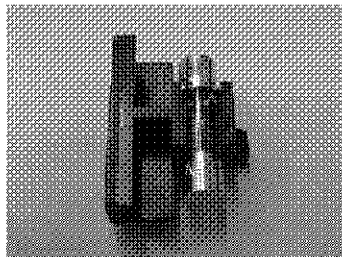


Figure 2-2 Fuse Holder

2.4 Built-in Flash Memory

Because flash memory is included in this instrument, be careful of the following:

- Do not turn off the power when the access lamp lights.
Data which is being accessed may be damaged.

NOTE: *Advantest is not responsible for any consequences if any unusual circumstances cause an abnormality to occur in the built-in flash memory and the stored data is erased or corrupted.*

2.5 Handling the Touch Screen

Because the touch screen is included in this instrument, be careful of the following:

- Avoid giving strong impact or excessive force to the screen.
The glass screen may become damaged.
- Using a hard-pointed material such as a mechanical pencil or a ballpoint may damage the screen.

2.6 To Avoid Disrupting the Software Environment

2.6 To Avoid Disrupting the Software Environment

This instrument includes Microsoft Windows XP Embedded.

Because the functions of this instrument depend on the Windows environment, do not alter the Windows environment in any way other than described in this manual.

This instrument is not a data processor. Only perform the operations which are described in this manual.

1. Non-permitted actions:

- Installing other application programs
- Changing or deleting items in the control panel (except for those procedures described in "A.2 Installing the Printer Driver" and "A.3 Setting up the Network" in R3477 Series User's Guide)
- Opening or changing existing files in C drive
- Starting or operating other application programs during measurement
- Upgrading the Windows operating system
- If this instrument operates incorrectly after an application is installed, the Windows operating system must be reinstalled. Contact Advantest and request a sales representative to reinstall the system.

2. Computer viruses

Depending on how the operating environment is used, the system may become infected by a computer virus.

To prevent any infections, we recommend the following counter measures:

- Checking for viruses before loading a file or inserting any media from an outside source.
- Make sure that all networks have been checked for viruses before connecting.

Steps to take if this instrument becomes infected by a computer virus

- We recommend that the system be reinstalled. Contact Advantest and request a sales representative to reinstall the system.

2.7 Note on Transportation

When carrying this instrument, be careful of the following:

- If using this instrument on a cart, secure both this instrument and the cart with a belt.

2.8 Electromagnetic Interference

This instrument may cause electromagnetic interference and affect television and radio. If this instrument's power is turned off and any electromagnetic interference that may be present is reduced, then this instrument has caused the interference.

Electromagnetic interference from this instrument may be prevented by the following precautions.

- Changing the direction of the antenna of the television or radio.
- Placing this instrument on the other side of the television or radio.
- Placing this instrument away from the television or radio.
- Using a different power source for the television or radio, and this instrument.

2.9 Note when Turning on the Power

When turning on the power, do not connect a DUT to this instrument.

2.10 Restrictions Imposed when Using Windows XP

2.10 Restrictions Imposed when Using Windows XP

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3. SETUP

This chapter describes how to set up this instrument on delivery. Topics covered in this chapter are:

- 3.1 Inspection on Delivery
- 3.2 Installation Environment
- 3.3 Connection of Accessories
- 3.4 Power Supply
- 3.5 Checking Operations

3.1 Inspection on Delivery

After receiving the product, inspect the outside and the accessories according to the following procedure.

1. Check that the shipping container and the cushioning material are not damaged.

IMPORTANT: *If the shipping container or the cushioning material is damaged, keep them until the following inspections are complete.*

2. Check that the outside of the product is not damaged.

WARNING: *If any outside components of the product such as the cover, panel (front or rear), LCD display, power switch, or connector are damaged, do not turn on the power. You may receive an electrical shock.*

3. Check that the standard accessories listed in Table 3-1 are complete and they are not damaged.

If any of the following occur, contact an Advantest sales representative.

- The shipping container or the cushioning material is damaged, or signs of stress are found.
- The outside of the product is damaged.
- The standard accessories are incomplete or are damaged.
- Defects are found in the operation check.

Table 3-1 Standard Accessories

Name	Model	Quantity	Remarks
R3477 Series OPT52 User's Guide	ER3477OPT52-U	1	English version

3.2 Installation Environment

3.2 Installation Environment

This section describes the environment into which this instrument should be installed.

3.2.1 Operating Environment

Install this instrument in an environment in which the following conditions are satisfied.

- Ambient temperature: 0 °C to +50 °C (operating temperature)
-20 °C to +60 °C (storage temperature)
- Relative humidity: 80 percent or less with no condensation
- An area free from corrosive gas
- An area away from direct sunlight
- A dust-free area
- An area free from vibrations
- A low noise area
Although this instrument has been designed to withstand a certain amount of noise from the AC power line, it should be used in a low noise area.
Use a noise cut filter if ambient noise is unavoidable.
- An area in which the airflow is not obstructed
There is an exhaust-cooling fan on the rear panel and exhaust vents on both sides of this instrument. Do not block the fan and these vents. If there is insufficient exhaust, the internal temperature will rise and the instrument may operate incorrectly. Keep a space of 10 centimeters between the rear panel and the wall. Do not use this instrument on its side.

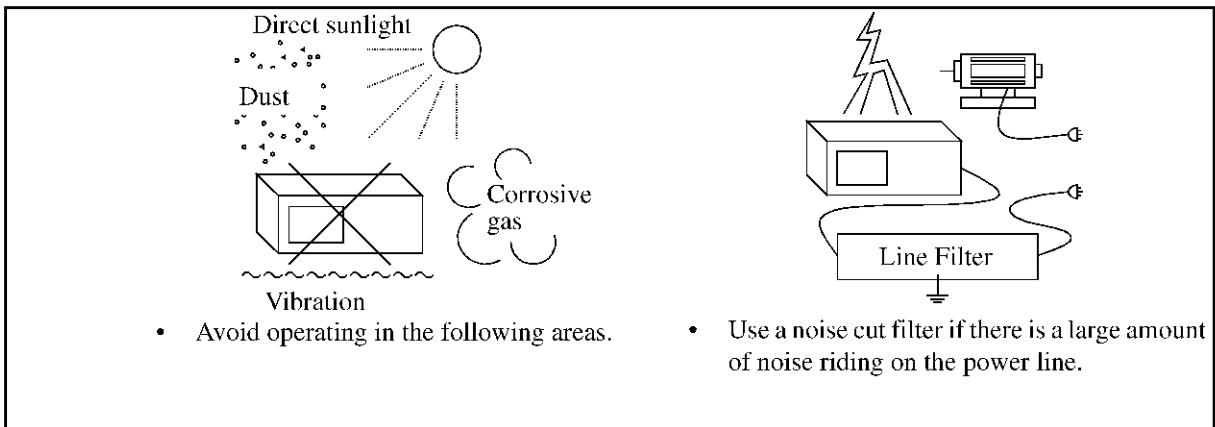


Figure 3-1 Operating Environment

- Operating position

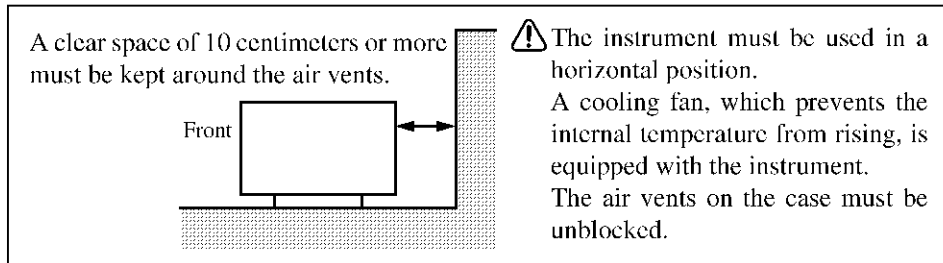


Figure 3-2 Operating Position

- Storage position

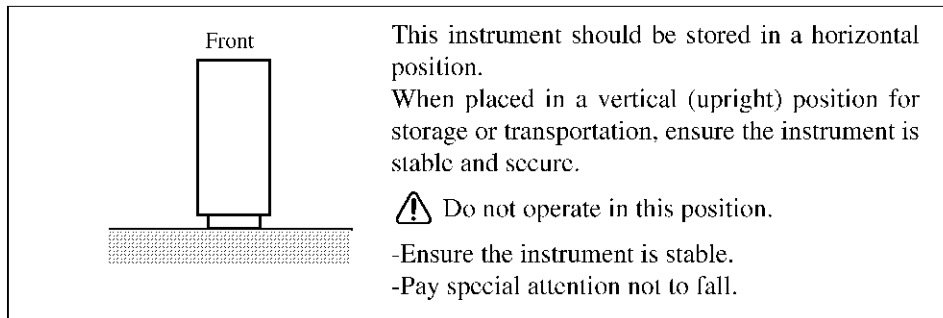


Figure 3-3 Storage Position

3.2.2 Protecting Against Electrostatic Discharge

To prevent semiconductors from being damaged by electrostatic discharge (ESD), the precautions shown below should be taken. We recommend combining two or more countermeasures to prevent damage from ESD.

(Static electricity can be generated easily by the movement of a person or the friction against insulation.)

Table 3-2 ESD Countermeasures

Human Body	Use a wrist strap (See Figure 3-4).
Work floor	Install a conductive mat, use conductive shoes, and connect to earth (See Figure 3-5).
Workbench	Install a conductive mat and connect to earth (See Figure 3-6).

3.2.2 Protecting Against Electrostatic Discharge

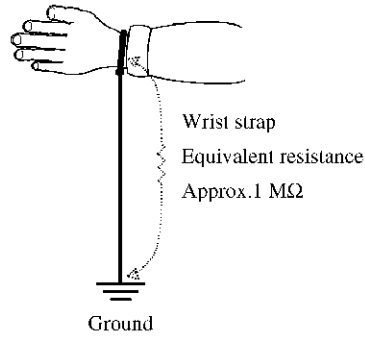


Figure 3-4 Countermeasures for Static Electricity from the Human Body

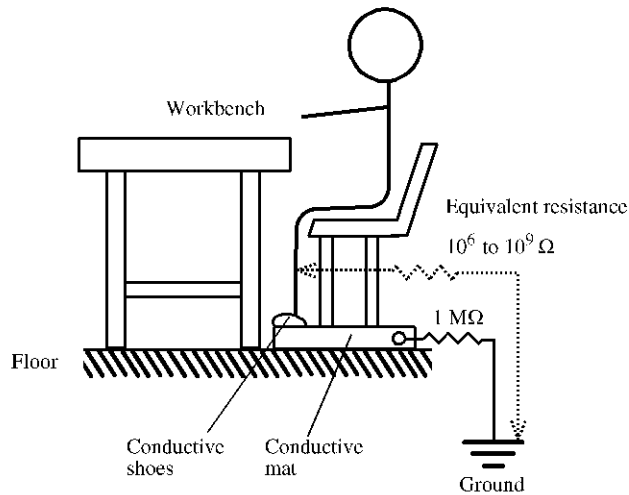


Figure 3-5 Countermeasures for Static Electricity from the Work Floor

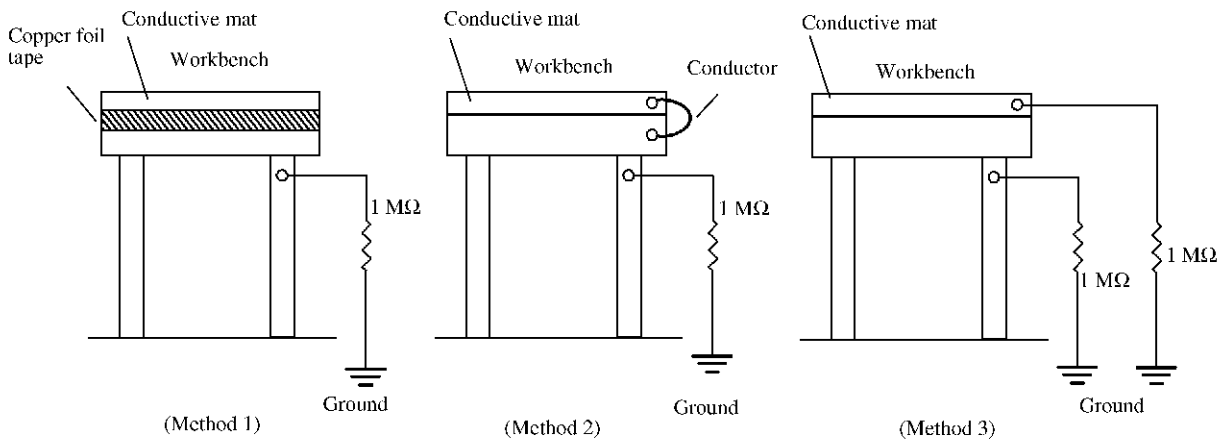


Figure 3-6 Countermeasures for Static Electricity from the Workbench

3.3 Connection of Accessories

This section describes how to connect the accessories required to operate this unit.

3.3.1 Caution when Connecting Peripherals

Use shielded cables when connecting peripherals.

Attach the included ferrite core (MSFC8KEX produced by Okaya Electric Industries Co., Ltd.) to the probe power cable as shown in Figure 3-7.

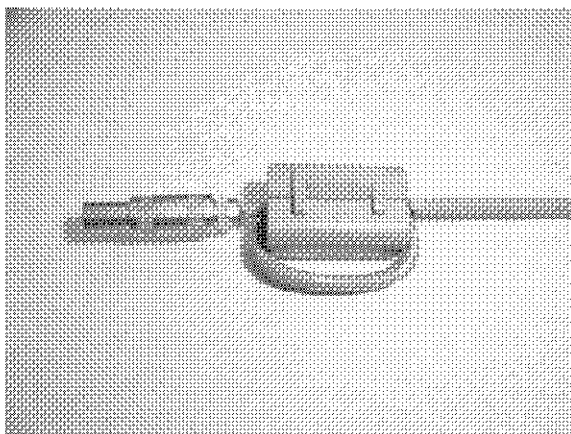


Figure 3-7 A ferrite core

3.4 Power Supply

3.4 Power Supply

This section describes power requirements and how to connect the power cable.

3.4.1 Power Requirements

The power requirements of this instrument are shown in Table 3-3. Check that the power supply, which satisfies the conditions shown in Table 3-3, is supplied to this instrument.

Table 3-3 Power Requirements

	100 V AC	200 V AC	Remarks
Input voltage range	90 V-132 V	198 V-250 V	Automatically switches the input voltage between 100 V AC and 200 V AC.
Frequency range	47 Hz-63 Hz		
Power consumption	360 VA or less		

WARNING: *Make sure the power supply, which satisfies the power requirements, is supplied to this instrument. If the power requirements are not satisfied, this instrument may be damaged.*

3.4.2 Connecting the Power Cable

This instrument includes a three-core power cable with a grounding conductor. To prevent accidents caused by electric shocks, use the included power cable and securely connect to the ground through a three-pin power outlet.

1. Check that the included power cable is not damaged.

WARNING: *Never use a damaged power cable. You may receive an electrical shock.*

2. Connect the AC power connector on the rear panel of this instrument to a three-pin power outlet that has a protected ground terminal by using the included power cable (see Figure 3-8).

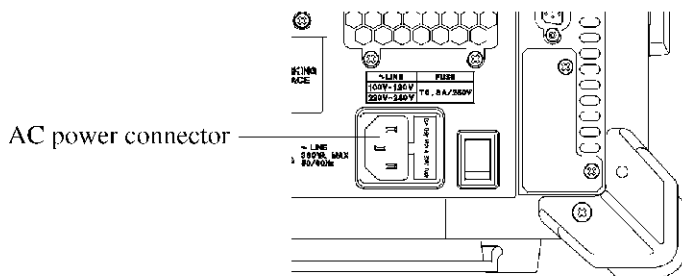


Figure 3-8 Connecting the Power Cable

WARNING:

1. *Use a power cable that is suitable for the power supply voltage. Use a power cable that complies with safety standards of your country (Refer to "Safety Summary").*
 2. *To prevent any danger of electrical shock, connect the power cable to a three-pin power outlet that is connected to a protected ground terminal. The instrument will not be grounded if an extension cord, which does not include a protected ground terminal, is used.*
-

3.5 Checking Operations

3.5 Checking Operations

This section describes how to check operations by using the auto-calibration function of this instrument. Check that this instrument operates correctly by following the procedure below.

Starting this instrument

1. Connect the power cable according to "3.4.2 Connecting the Power Cable."
2. Turn on the MAIN POWER switch on the rear panel.
After turning on the MAIN POWER switch, wait for three seconds or more.
3. Press the **POWER** switch to turn on the instrument.

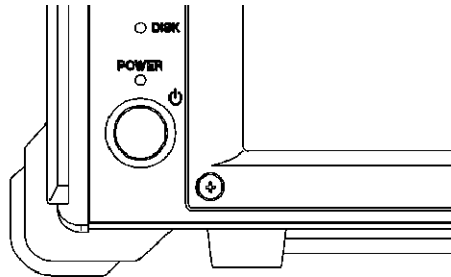


Figure 3-9 POWER switch

NOTE:

1. *If the power supply of this instrument is abruptly disconnected, such as by pulling the power cable out of position, while the instrument is operating, Scandisk launches the next time this instrument starts because the internal flash memory may become damaged.*
2. *Scandisk*
If the power of this instrument is turned off without being shut down, Scandisk launches automatically. Do not abort Scandisk while it is running. If Scandisk detects any faulty clusters, follow the displayed messages and take the appropriate action. The software in this instrument starts automatically after Scandisk is complete.

4. The power-on diagnostic program starts the self-diagnostic.
The self-diagnostic takes approximately one minute to complete.
5. The initial screen shown in Figure 3-10 is displayed if no faults are detected in this instrument during the self-diagnostic.
The initial screen display may differ from Figure 3-10 depending on the status of the settings when the power supply was last turned off.

MEMO: *If any error message is displayed as a result of the self-diagnostic, refer to Chapter 9, "MAINTENANCE" of the R3477 User's Guide.*

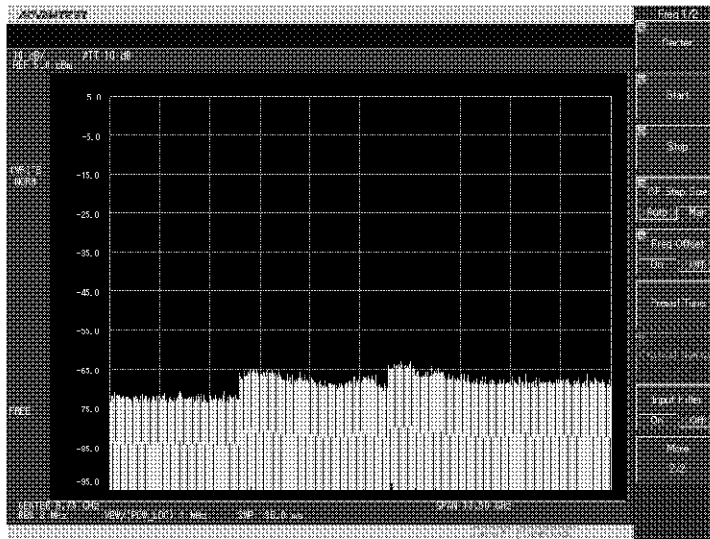


Figure 3-10 Initial Screen

Performing autocalibration

6. Connect as shown in Figure 3-11 by using included N(m)-BNC(f) adapter and input cable (A01037-0300).

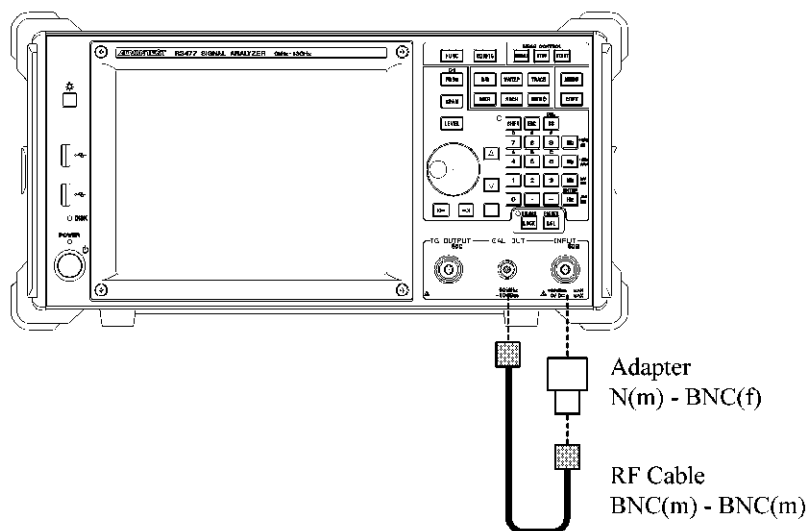


Figure 3-11 Autocalibration

IMPORTANT: Perform autocalibration after allowing a warm up time of at least 30 minutes. For more information on how to perform autocalibration, refer to section 4.3.1, "Autocalibration" of the R3477 User's Guide.

3.5 Checking Operations

7. Press the **MENU** key, select the **Cal** key from the soft menu, and select the **SA Cal** key from the soft menu.
8. Autocalibration starts.
It takes approximately one minute to complete the autocalibration.
9. Check that no error message is displayed as a result of the autocalibration.

MEMO: If any error message is displayed as a result of the autocalibration, refer to Chapter 9, "MAINTENANCE" of the R3477 User's Guide.

Turning off the power supply

10. Press the **POWER** switch.
The system shuts down and the power of the instrument turns off automatically.

4. MEASUREMENT EXAMPLE

This chapter describes how to use this option by using specific measurement examples.

4.1 Code Domain Power Measurement of Base Station Signal

Signal Specifications

The target signal, whose frequency is 870.03 MHz and level is -10 dBm, is compliant with the IS-97 Base Station Test Model, Nominal. The specifications assume that the Even Second Clock, the 10-MHz reference signal, and the signal are output from the base station.

Table 4-1 Signal Specifications

RC1, Walsh Code Length 64, PN Offset 0

Channel	Walsh Code No.
Pilot	0
Paging	1
Traffic	6
Traffic	17
Traffic	20
Sync	32
Traffic	41
Traffic	49
Traffic	58

4.1 Code Domain Power Measurement of Base Station Signal

Connection

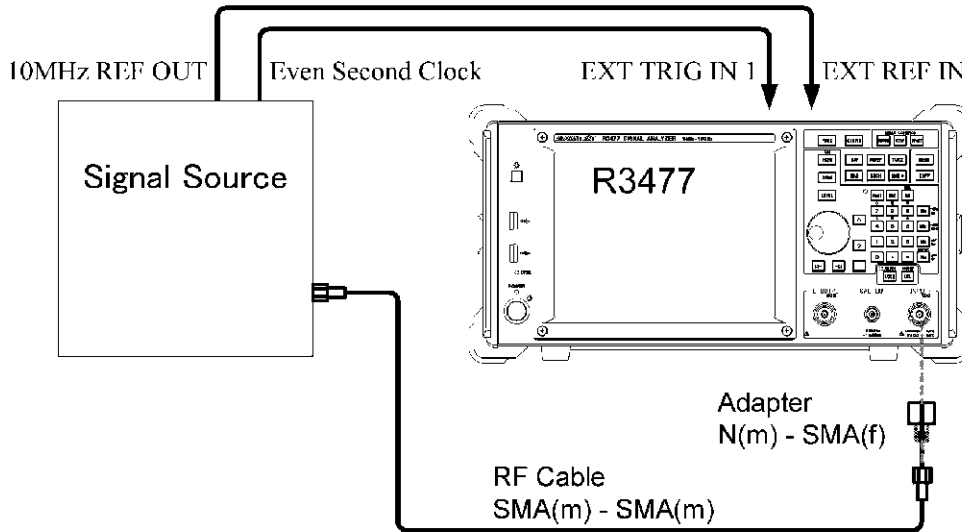


Figure 4-1 Connection Diagram for Measuring Code Domain Power of Base-Station Signal

Measurement condition setting

1. Press the **CONFIG** key.
2. Touch the **STD Setup** on the menu bar and select **[cdma2000 DL]**.
3. Touch the **Apply** key to save the selection.
4. Touch the **Tx Tester** key to select Tx Tester.
5. Press **FREQ**, **Center**, **8**, **7**, **0**, **.**, **0**, **3**, and **MHz**.
The center frequency is set to 870.03 MHz.
6. Press the **FUNC** key to select **Modulation**.
7. Touch the **Auto Level Set** key.
The Ref Level is automatically set to the optimum value.
8. Touch **Trigger**, **Trigger Source**, and **ExtI**.
The trigger source is set to the external trigger.
9. Touch the **Return** key twice to return to the Modulation menu.
10. Touch **Meas Setup** and **Meas Parameters**.
The **[Measurement Parameter Setup]** dialog box is displayed.

4.1 Code Domain Power Measurement of Base Station Signal

11. Set the **[Meas Mode]** option button to **[cdma2000]**.
The measurement mode is set to cdma2000.
12. Set the **[User Table]** option button to **[NOT USE]**.
The user table cannot be used.
13. Touch the **[Meas Length]** text box and press **[2]** and **[Hz]** (ENTER) on the keypad.
The measurement length is set to the length of two power control groups (PCG).
14. Touch the **[τ Offset]** text box and press **[0]** and **[Hz]** (ENTER) on the keypad.
The offset value of the Time Alignment Error is set to 0.
15. Set the **[Phase Equalizing Filter]** option button to **[ON]**.
The phase characteristics of the complimentary filter are set to the inverse characteristics of the phase equalizer.
16. Set the **[PN Offset Search]** option button to **[OFF]**.
The PN Offset search is set to OFF.
17. Touch the **[PN Offset]** text box and press **[0]** and **[Hz]** (ENTER) on the keypad.
The PN Offset is set to 0.
18. Touch the **[Threshold Level]** text box and press **[-]**, **[2]**, **[7]**, and **[GHz]** (dB) on the keypad.
The threshold value that is used for the transmission channel (active channel) judgment is set to -27 dB.

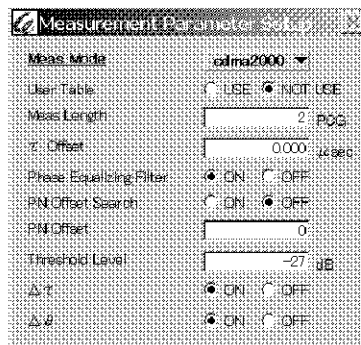


Figure 4-2 [Measurement Parameter Setup] Dialog Box

19. Set the **[$\Delta\tau$]** option button to **[ON]**.
 $\Delta\tau$ is added to the measurement items.
20. Set the **[$\Delta\theta$]** option button to **[ON]**.
 $\Delta\theta$ is added to the measurement items.
21. Touch the **Close** key to close the dialog box.

4.1 Code Domain Power Measurement of Base Station Signal

22. Press the **SINGLE** key on the front panel.

The Single measurement is executed, and the measurement results are displayed.

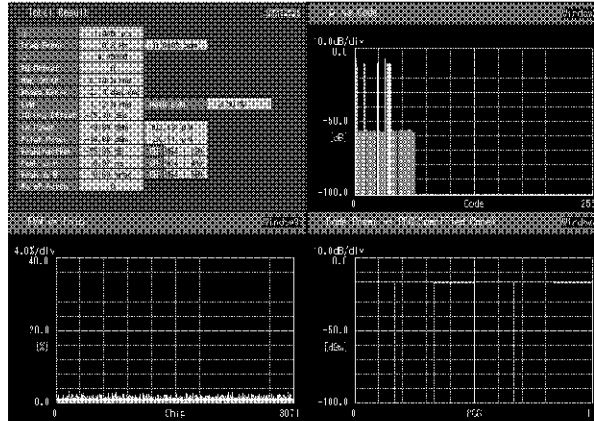


Figure 4-3 Measurement Results of the cdma2000 Base Station Signal

Upper left window

τ		Delay from the trigger (μ s)
Freq Error		Carrier frequency error (Hz, ppm)
ρ		Waveform quality of the multiplexed signal (If the measured signal is the pilot channel signal only, the value of the waveform quality factor, which is defined by the cdma2000 standard, is used.)
PN Offset		PN Offset of the base station signal
Mag Error		Magnitude error of the multiplexed signal (%rms)
Phase Error		Phase error of the multiplexed signal (deg.rms)
EVM		Error Vector Magnitude of the multiplexed signal (%rms)
Peak EVM		Peak Error Vector Magnitude of the multiplex signal (%)
IQ Org Offset		IQ origin offset (dBc)
Tx Power		Transmission power (dBm, W)
Pilot Power		Power of the pilot channel (dBm, W)
Peak Inact Pwr	CH	The maximum logarithmic value of the Code Domain Power coefficient of the inactive channel, the Walsh code length, and the Walsh code number of the inactive channel
Peak $\Delta\tau$	CH	The maximum value of the relative Walsh code domain time offset to the pilot channel, the Walsh code length, and the Walsh code number of the peak $\Delta\tau$ channel
Peak $\Delta\theta$	CH	The maximum value of the relative Walsh code domain phase offset to the pilot channel, the Walsh code length, and the Walsh code number of the peak $\Delta\theta$ channel
No. of ActCh		Number of transmission channels

Upper right window

Horizontal axis:	Code
Vertical axis:	ρ (dB)

Lower left window

Horizontal axis:	Chip
Vertical axis:	Error Vector Magnitude (%)

Lower right window

Horizontal axis:	Power control group
Vertical axis:	Transmission power (dBm)

Marker display

23. Touch [**Window2**] and press the **[MKR]** key.
24. Touch the **Active CH. Marker** key on the soft menu bar.
The marker of the transmission channel (active channel) is displayed.

Walsh Code No.	Walsh Code number
Walsh Code Len	Walsh Code length (number of chips)
Rate	Symbol Rate (ksps)
Mod	Modulation system
ρ	Logarithmic value of the Code Domain Power coefficient (dB)
Power	Code Domain Power (dBm, W)
$\Delta\tau$	Relative Walsh code domain time offset to the pilot channel (ns)
$\Delta\theta$	Relative Walsh code domain phase offset to the pilot channel (mrad)

4.2 Analysis of the Mobile Station Offset QPSK Signal in the cdmaOne MODE

4.2 Analysis of the Mobile Station Offset QPSK Signal in the cdmaOne MODE

Specifications of the signal to be measured

The target mobile station signal, whose frequency is 825.03 MHz and level is -10 dBm, is compliant with IS-2000.

Signal specifications: Offset QPSK signal

Device connection

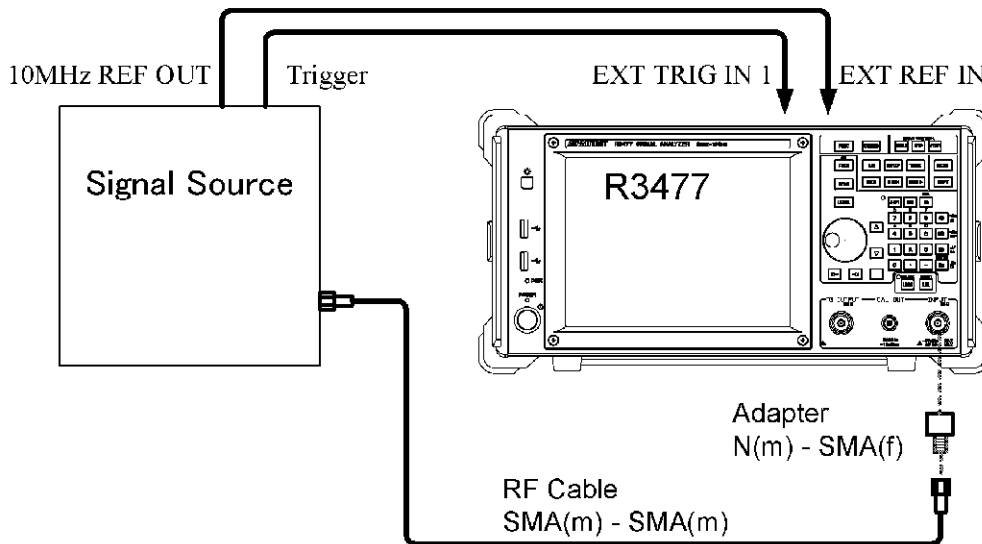


Figure 4-4 Connection Diagram for the Mobile Station Offset QPSK Measurement

Setting the measuring conditions

1. Press the **CONFIG** key.
2. Touch the **STD Setup** key and select [cdma2000 UL].
3. Touch the **Apply** key to apply the setting.
4. Touch the **Tx Tester** key and select Tx Tester.
5. Press **FREQ**, **Center**, **8**, **2**, **5**, **.**, **0**, **3**, and **MHz**.
The center frequency is set to 825.03 MHz.
6. Press the **FUNC** key and select **Modulation**.
7. Touch the **Auto Level Set** key.
The Ref Level is automatically set to the optimum value.

4.2 Analysis of the Mobile Station Offset QPSK Signal in the cdmaOne MODE

8. Touch **Trigger**, **Trigger Source**, and **Ext1**.
The trigger source is set to the external trigger.
9. Touch the **Return** key twice to return to the Modulation menu.
10. Touch **Meas Mode** and **cdmaOne**.
The measurement mode is set to cdmaOne.
11. Touch the **Return** key.
12. Touch **Meas Setup** and **Meas Parameters**.
The [Measurement Parameters Setup] dialog box appears.
13. Touch the [Meas Length] text box and press **6**, **1**, **5**, and **Hz** (ENTER) on the keypad.
The measurement length is set to 615 chips.
14. Set the [Freq Meas Range] option button to [NORMAL].
The frequency error measurement range is set to the NORMAL mode.
15. Set the [IQ Origin Offset] option button to [INCLUDE].
The mode, in which the analysis is performed including the IQ origin offset, is set.

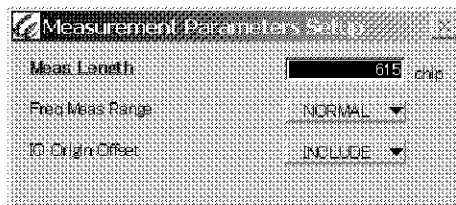


Figure 4-5 [Measurement Parameters Setup] Dialog Box of cdmaOne Mode

16. Touch the **Close** key to close the [Measurement Parameters Setup] dialog box.
17. Press the **SINGLE** key.
The Single measurement is performed and the measurement results are displayed.

4.2 Analysis of the Mobile Station Offset QPSK Signal in the cdmaOne MODE

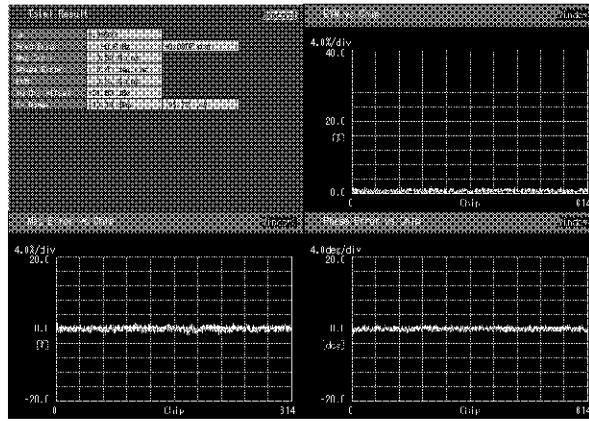


Figure 4-6 Results from the Mobile Station Offset QPSK Signal Measured in the cdmaOne MODE

Upper left window

ρ	Waveform quality
Freq Error	Carrier frequency error (Hz, ppm)
Mag Error	Magnitude error (%rms)
Phase Error	Phase error (deg.rms)
EVM	Error vector magnitude (%rms)
IQ Org Offset	IQ origin offset (dBc)
Tx Power	Transmission power (dBm, W)

Upper right window

Horizontal axis: Chip
 Vertical axis: Error vector magnitude (%)

Lower left window

Horizontal axis: Chip
 Vertical axis: Magnitude error (%)

Lower right window

Horizontal axis: Chip
 Vertical axis: Phase error (deg)

4.3 Code Domain Power Measurement of the Mobile Station Signal in the cdma2000 MODE

The target mobile station signal, whose frequency is 825.03 MHz and level is -10 dBm, is compliant with IS-2000.

Signal specifications

Long Code Mask: ALL 0

Reverse Traffic Channel Operation signal (PICH, DCCH, SCH2, FCH, and SCH1 are multiplexed)

Walsh function of SCH1: W_1^2 (M=1)

Walsh function of SCH2: W_2^4 (M=1)

PICH: Reverse Pilot Channel

DCCH: Reverse Dedicated Control Channel

SCH2: Reverse Supplemental Channel 2

FCH: Reverse Fundamental Channel

SCH1: Reverse Supplemental Channel 1

M: Walsh Function Repetition Factor

Device connection

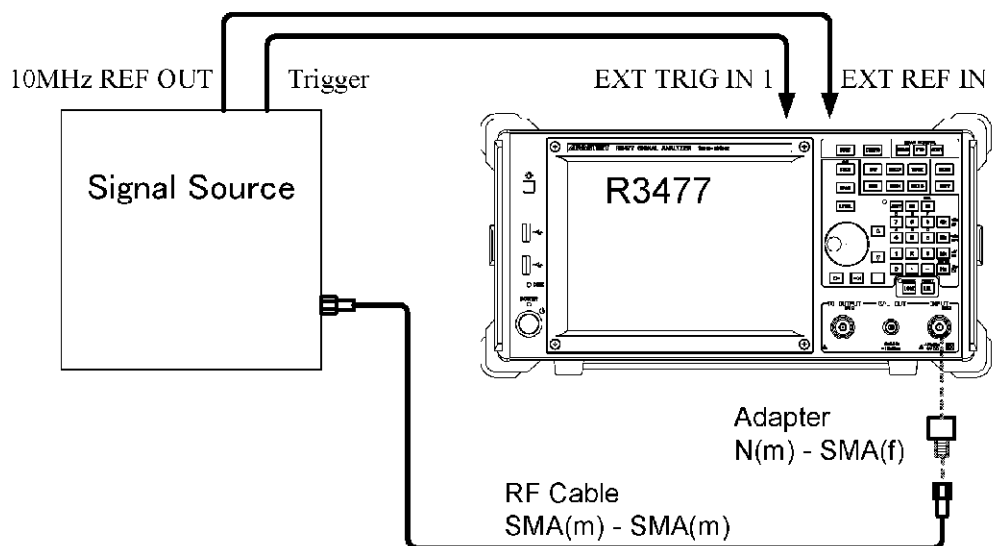


Figure 4-7 Connection Diagram for the Mobile Station Code Domain Power Measurement

4.3 Code Domain Power Measurement of the Mobile Station Signal in the cdma2000 MODE

Setting the measuring conditions

1. Press the **CONFIG** key.
2. Touch the **STD Setup** key and select **[cdma2000 UL]**.
3. Touch the **Apply** key to apply the setting.
4. Touch the **Tx Tester** key and select Tx Tester.
5. Press **FREQ**, **Center**, **8**, **2**, **5**, **.**, **0**, **3**, and **MHz**.
The center frequency is set to 825.03 MHz.
6. Press the **FUNC** key and select **Modulation**.
7. Touch the **Auto Level Set** key.
The Ref Level is automatically set to the optimum value.
8. Touch **Trigger**, **Trigger Source**, and **Ext1**.
The trigger source is set to the external trigger.
9. Touch the **Return** key twice to return to the Modulation menu.
10. Touch **Meas Mode** and **cdma2000**.
The measurement mode is set to cdma2000.
11. Touch the **Return** key.
12. Touch **Meas Setup** and **Meas Parameters**.
The **[Measurement Parameters Setup]** dialog box appears.
13. Set the **[User Table]** option button to **[NOT USE]**.
If this is set, the user table is not used.
14. Touch the **[Meas Length]** text box and press **1**, **5**, **3**, **6**, and **Hz**
(ENTER) on the keypad.
The measurement length is set to 1536 chips.
15. Set the **[PN Delay Search]** option button to **[ON]**.
The PN Delay Search function is set to ON.
16. Set the **[Freq Meas Range]** option button to **[NORMAL]**.
The frequency error measurement range is set to the NORMAL mode.
17. Touch the **[Threshold Level]** text box and press **-**, **2**, **3**, and **GHz** (dB)
on the keypad.
The threshold value that is used for the transmission channel (active channel)
judgment is set to -23 dB.

4.3 Code Domain Power Measurement of the Mobile Station Signal in the cdma2000 MODE

18. Set the **[IQ Origin Offset]** option button to **[INCLUDE]**.
The mode, in which the analysis is performed including the IQ origin offset, is set.
19. Set the **[Peak Inact CH Component]** option button to **[Both Inact]**.
The Peak value of ρ is acquired in channels in which both I and Q signals are inactive.
20. Set the **[$\Delta\tau$]** option button to **[ON]**.
 $\Delta\tau$ is added to the measuring items.
21. Set the **[$\Delta\theta$]** option button to **[ON]**.
 $\Delta\theta$ is added to the measuring items.
22. Set the **[Chip Rate Error]** option button to **[ON]**.
Chip Rate Error is added to the measurement items.
23. Set the **[Quadrature Error]** option button to **[ON]**.
Quadrature Error is added to the measurement items.
24. Set the **[Walsh Code Length]** option button to **[64]**.
The length of the Walsh code to be analyzed is set to 64.

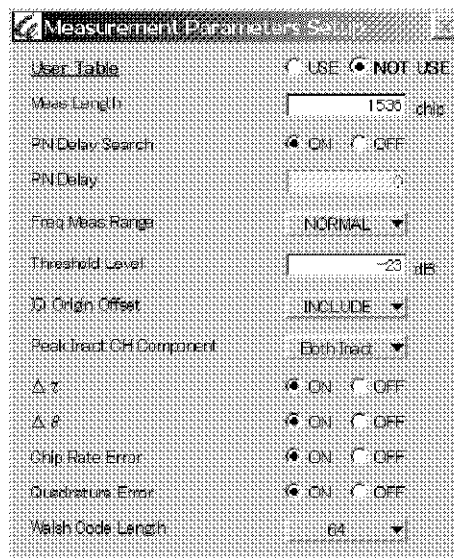


Figure 4-8 **[Measurement Parameters Setup]** Dialog Box of cdma2000 MODE

25. Touch the **Close** key to close the **[Measurement Parameters Setup]** dialog box.
26. Press the **SINGLE** key.
The Single measurement is performed and the measurement results are displayed.

4.3 Code Domain Power Measurement of the Mobile Station Signal in the cdma2000 MODE

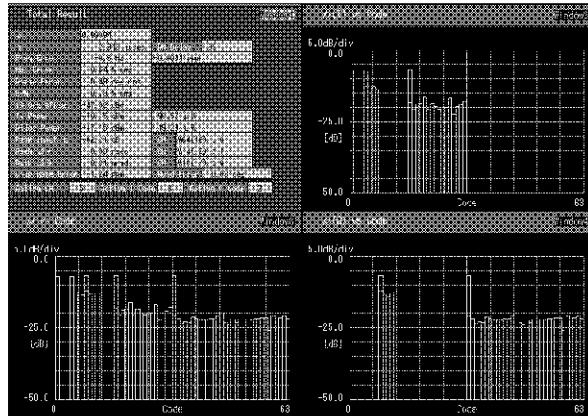


Figure 4-9 Results from the Mobile Station Code Multiplex Signal Measured in the cdma2000 MODE

IMPORTANT: If [User Table] is not used, the transmission channel is automatically detected in this instrument. An error may occur in the detection of the transmission channel depending on the influence of data patterns and noise. In such a case, the transmission channel can be determined by using [User Table].
 For more information on how to use [User Table], refer to A.1, "Technical Data."

Upper left window

ρ		Waveform quality of the multiplex signal
τ		Delay from the trigger (μ s)
PN Delay		Delay time from the head of Pilot PN Sequence and is a multiple of 64 chips from 0 to 511
Freq Error		Carrier frequency error (Hz, ppm)
Mag Error		Magnitude error of the multiplex signal (%rms)
Phase Error		Phase error of the multiplex signal (deg.rms)
EVM		Error Vector Magnitude of the multiplex signal (%rms)
IQ Org Offset		IQ origin offset (dBc)
Tx Power		Transmission power (dBm, W)
Pilot Power		Power of the pilot channel (dBm, W)
Peak Inact ρ	CH	The maximum logarithmic value of the Code Domain Power coefficient of the inactive channel, the Walsh code length, the Walsh code number, and components of the peak inactive ρ channel
Peak $\Delta\tau$	CH	The maximum value of the relative Walsh code domain time offset in relation to the Pilot channel, the Walsh code length, the Walsh code number, and components of the peak $\Delta\tau$ channel

4.3 Code Domain Power Measurement of the Mobile Station Signal in the cdma2000 MODE

Peak $\Delta\theta$	CH	The maximum value of the relative Walsh code domain phase offset in relation to the Pilot channel, the Walsh code length, the Walsh code number, and components of the peak $\Delta\theta$ channel
Chip Rate Error		Chip rate error (ppm) in relation to 1.2288 Mcps
Quad Error		Q-axis quadrature error (deg) in relation to the I-axis
Active CH		Number of transmission channels
Active I Code		Number of active codes in the I-component
Active Q Code		Number of active codes in the Q-component

Upper right window

Horizontal axis: Code
Vertical axis: $p(I)$ (dB)

Lower left window

Horizontal axis: Code
Vertical axis: p (dB)


Lower right window

Horizontal axis: Code
Vertical axis: $p(Q)$ (dB)

5. MENU MAP, FUNCTIONAL EXPLANATION

This chapter describes the configurations and functions of the soft keys displayed on the touch screen of the cdma2000 modulation analysis software.

MEMO:

- [.....] Used to enclose a menu name, key name, item name in the dialog box, button name, or the name of selected items in lists and menus.
-  Shows a soft key on the soft menu bar.

5.1 Menu Index

Operation Key	Pages	Operation Key	Pages
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		[Quadrature Error]	5-27
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5.1 Menu Index

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5.2 Switching Communication Systems

Press the **CONFIG** key and select Tx Tester from the soft menu to select the **Tx Tester** function. Select the communication system, which is used for measuring, from the dialog box that is displayed by pressing **STD Setup**.

5.3 Key Function Descriptions

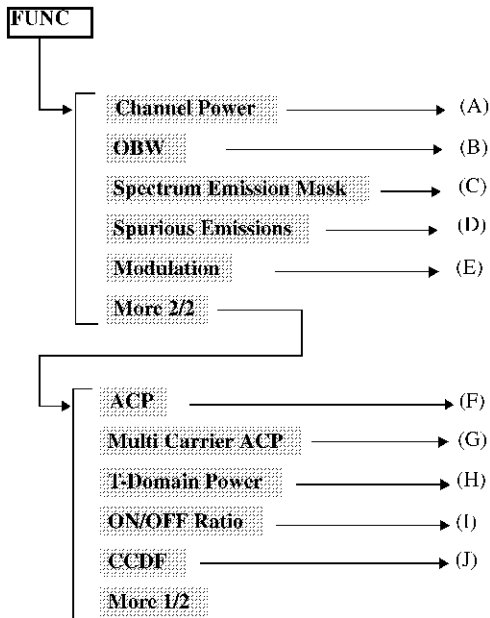
5.3 Key Function Descriptions

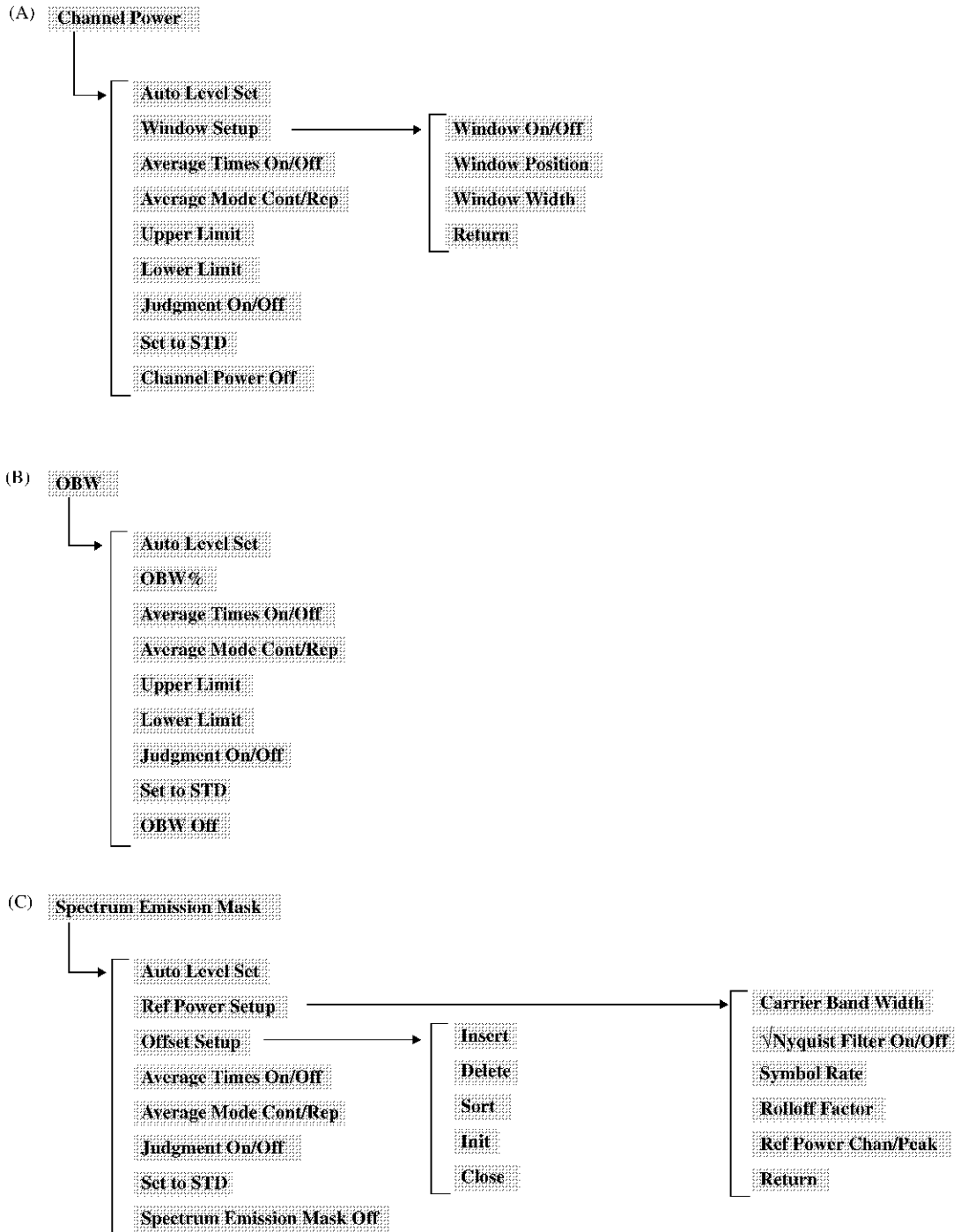
This section describes the function of each key.

5.3.1 [FUNC]

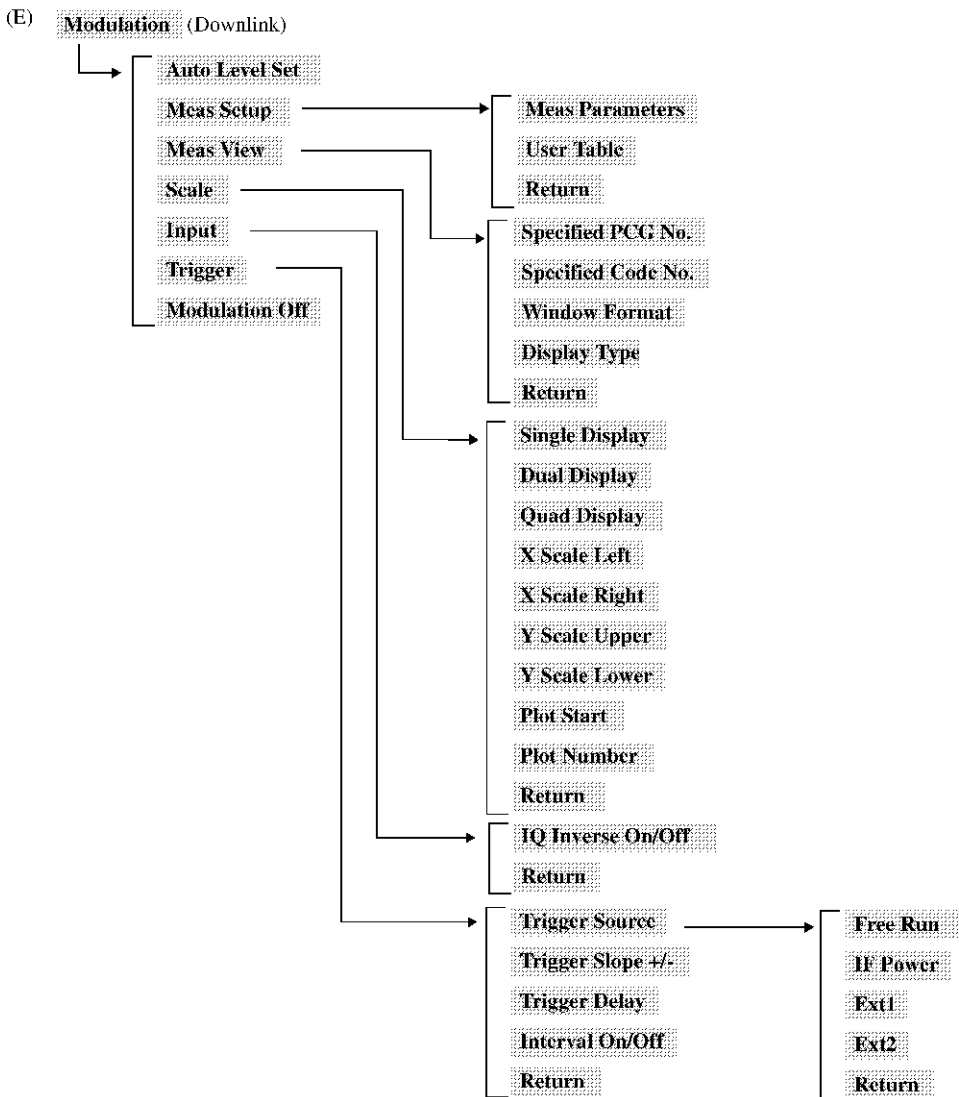
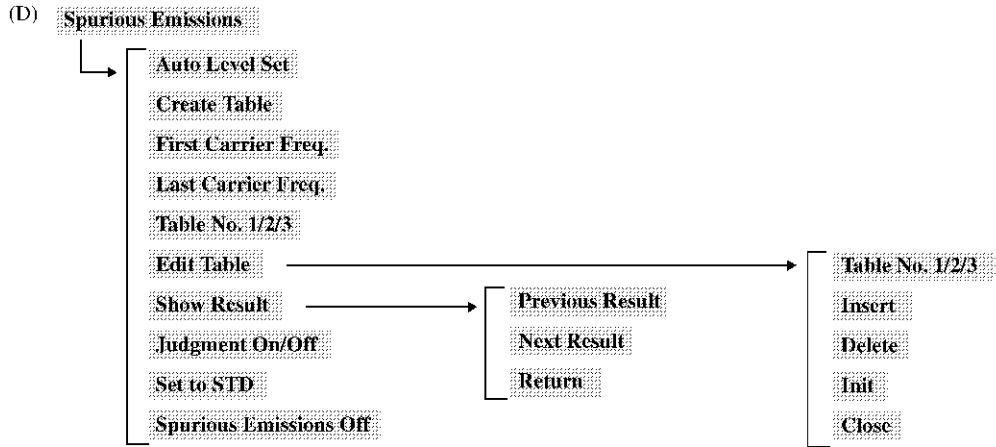
Pressing the **[FUNC]** key displays the Function menu from which measurement functions can be selected.

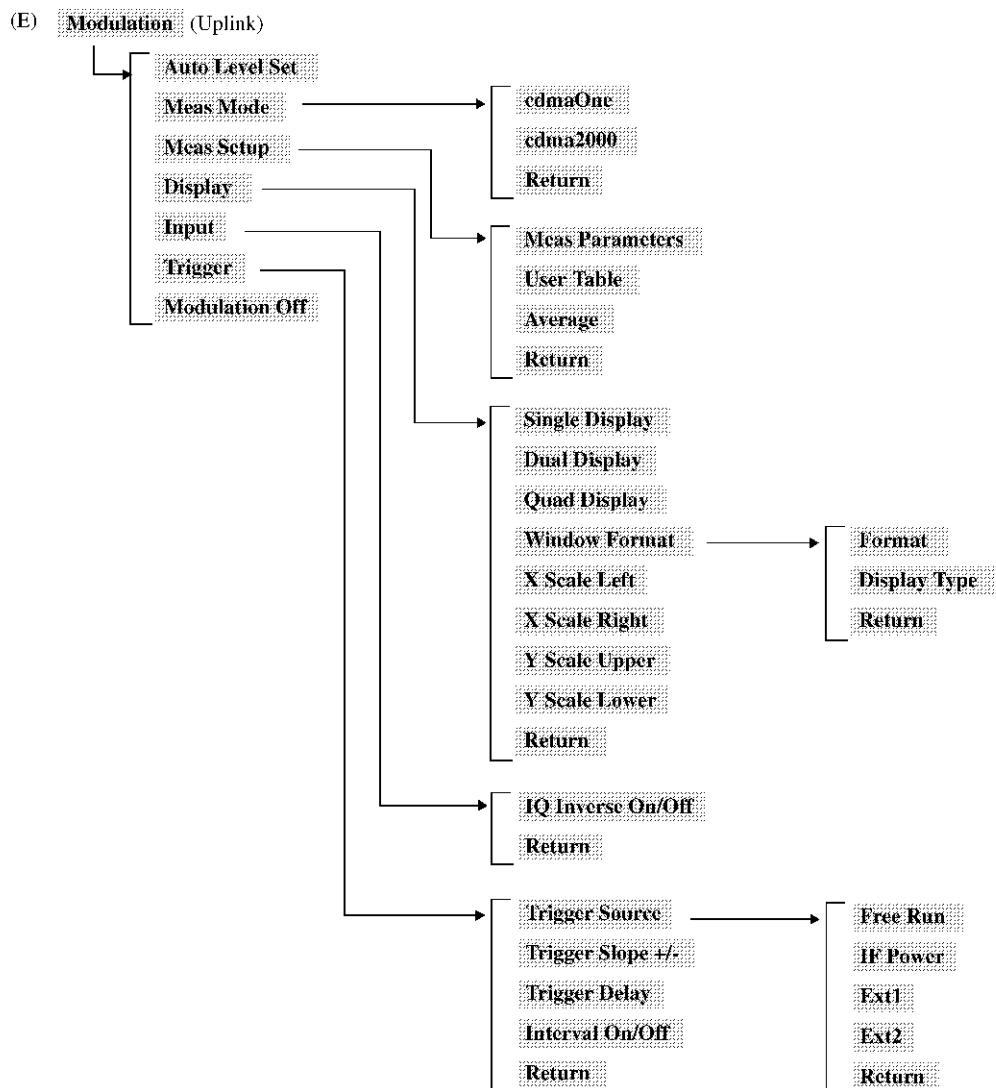
The following shows the Function menu map.



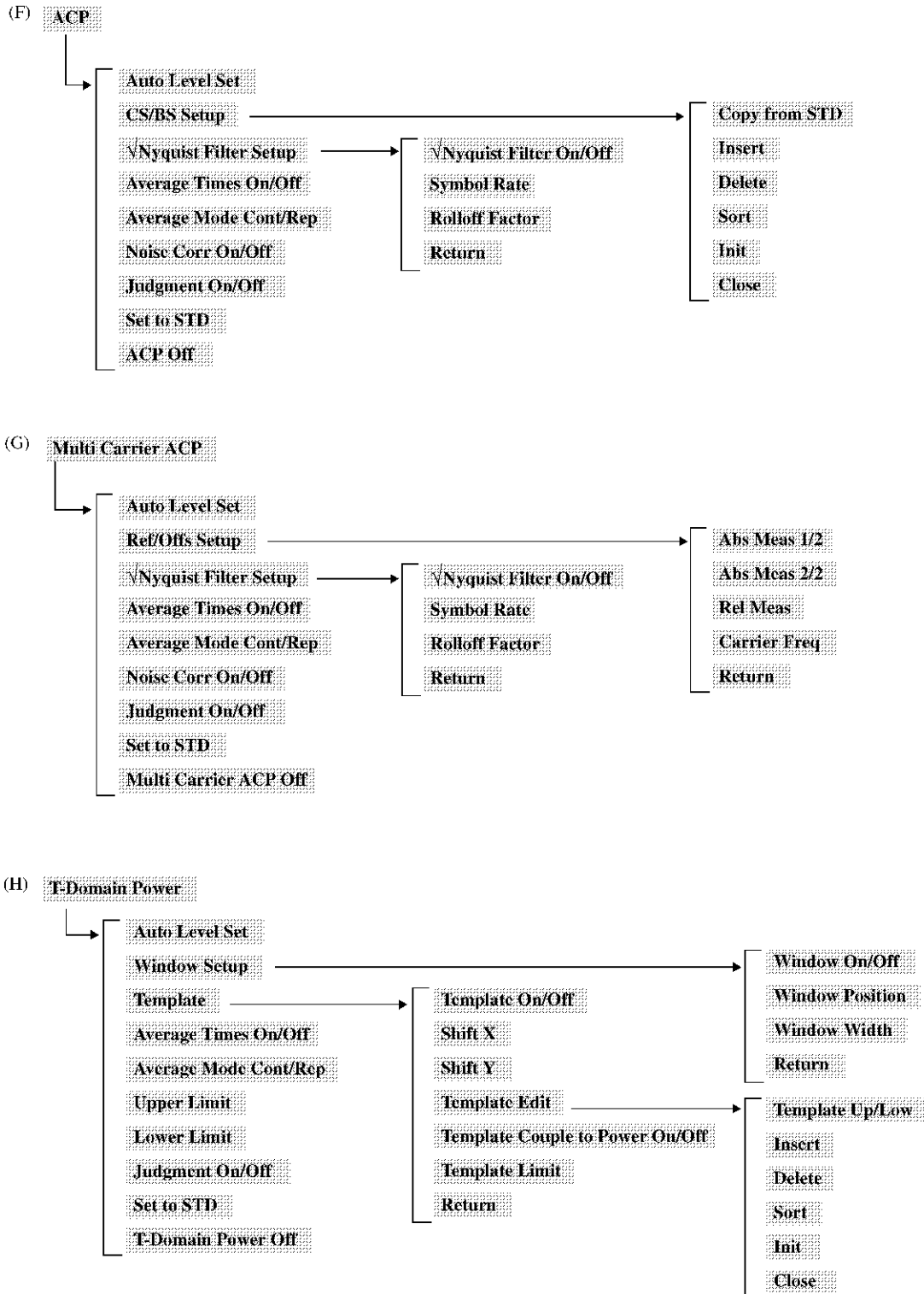


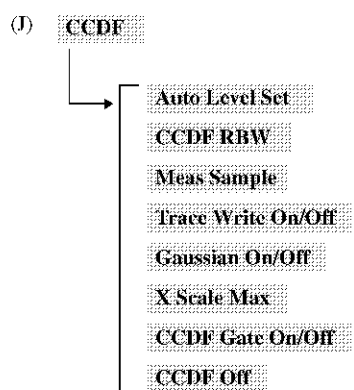
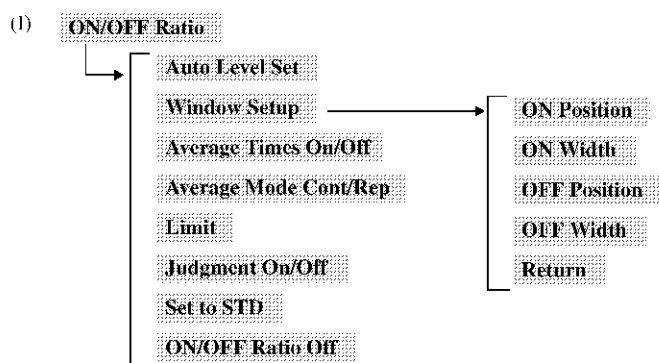
5.3.1 [FUNC]





5.3.1 [FUNC]





5.3.1 [FUNC]

5.3.1.1 Channel Power

Channel Power	Displays the Channel Power menu. This menu is used to measure the power in the window or the power in the whole screen.
Auto Level Set	Sets the reference level and ATT to their optimum values according to the signal to be measured. When the key is pressed, Auto Level Set is executed.
Window Setup	Displays the Window Setup menu.
Window On/Off	Switches the measuring window On and Off. On: Displays the measuring window on the screen. The power in the window is measured. Off: Hides the measuring window. Measures the power in the whole screen.
Window Position	Sets the position of the measuring window.
Window Width	Sets the width of the measuring window.
Return	Returns to the previous menu.
Average Times On/Off	Switches the averaging function On and Off. On: Sets the number of times averaging is performed in the channel power measurement and measures the average channel power. Off: Cancels the averaging function.
Average Mode Cont/Rep	Switches the averaging mode between continuous calculation and repeat calculation. Cont: Sets the continuous calculation mode. In the continuous calculation mode, the moving-average method is used to calculate the average after the set averaging count is reached. Rep: Sets the repeat calculation mode. In the repeat calculation mode, when the set averaging count is reached, the current averaging count is reset to 1 and the averaging process is repeated from the beginning.
Upper Limit	Sets the upper limit that is used to judge whether the result is Pass or Fail.
Lower Limit	Sets the lower limit that is used to judge whether the result is Pass or Fail.
Judgment On/Off	Switches the judgment display On and Off. “Pass” is displayed when [Lower Limit] ≤ measurement result ≤ [Upper Limit]. Otherwise, “Fail” is displayed. On: Displays the judgment. Off: Hides the judgment.
Set to STD	Returns the measurement parameters to values that are compliant with the standard.

Channel Power Off Quits the Channel Power measurement function.

5.3.1.2 OBW

OBW Displays the OBW menu.

Auto Level Set Sets the reference level and ATT to their optimum values according to the signal to be measured. When the key is pressed, Auto Level Set is executed.

OBW% Sets the ratio, in percent, of the occupied bandwidth power to the total power.

Average Times On/Off Switches the averaging function On and Off.

On: Sets the number of times averaging is performed and averages the occupied bandwidth power.

Off: Cancels the averaging function.

Average Mode Cont/Rep Switches the averaging mode between continuous calculation and repeat calculation.

Cont: Sets the continuous calculation mode. In the continuous calculation mode, the moving-average method is used to calculate the average after the set averaging count is reached.

Rep: Sets the repeat calculation mode. In the repeat calculation mode, when the set averaging count is reached, the current averaging count is reset to 1 and the averaging process is repeated from the beginning.

Upper Limit Sets the upper limit that is used to judge whether the result is Pass or Fail.

Lower Limit Sets the lower limit that is used to judge whether the result is Pass or Fail.

Judgment On/Off Switches the judgment display On and Off. "Pass" is displayed when [Lower Limit] \leq measurement result \leq [Upper Limit]. Otherwise, "Fail" is displayed.

On: Displays the judgment.

Off: Hides the judgment.

Set to STD Returns the measurement parameters to values that are compliant with the standard.

OBW Off Quits the OBW measurement function.

5.3.1 [FUNC]

5.3.1.3 Spectrum Emission Mask

Spectrum Emission Mask

Displays the Spectrum Emission Mask menu.

Auto Level Set

Sets the reference level and ATT to their optimum values according to the signal to be measured. When the key is pressed, Auto Level Set is executed.

Ref Power Setup

Displays the Ref Power menu. This menu is used to set the parameters which are used to calculate the reference power.

Carrier Band Width

Sets the power conversion bandwidth for carrier signals.

Nyquist Filter On/Off

Switches the Nyquist filter function ON and OFF.

On: Sets a Nyquist filter.

Off: Cancels the Nyquist filter.

Symbol Rate

Sets the inverse number of the symbol rate (frequency).

Rolloff Factor

Sets the roll-off factor.

Ref Power Chan/Peak

Switches the calculation mode of the reference power between the Channel mode and the Peak Power mode.

Chan: Calculates the carrier power according to the setting in **Ref Power Setup** and sets the result as the reference power for mask measurement.

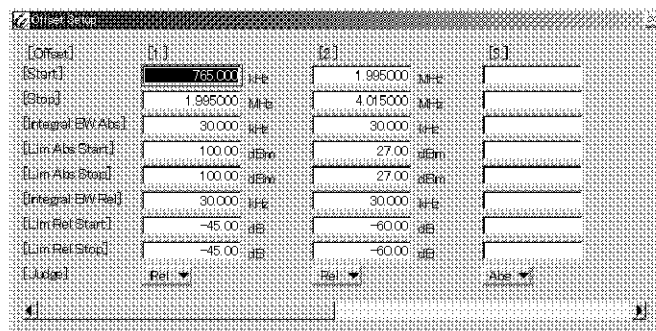
Peak: Sets the Peak power value of the waveform as the reference power for the mask measurement.

Return

Returns to the previous menu.

Offset Setup

Displays the Offset Setup menu and the **[Offset Setup]** dialog box which is used to set Offset data.



[Start]

Used to enter the offset frequency from the center frequency as the start frequency of the emission mask judgment range.

[Stop]

Used to enter the offset frequency from the center frequency as the stop frequency of the emission mask judgment range.

[Integral BW Abs]	Sets the power integral bandwidth at each frequency point in the absolute value measurement.
[Lim Abs Start]	Used to enter the mask value (in absolute values) at the start frequency.
[Lim Abs Stop]	Used to enter the mask value (in absolute values) at the stop frequency. The mask value from the start frequency to the stop frequency is calculated by linearly interpolating between the start mask value and stop mask value.
[Integral BW Rel]	Sets the power integral bandwidth at each frequency point in the relative value measurement.
[Lim Rel Start]	Used to enter the mask value (in relative values) at the start frequency. The offset value from the measured reference power is compared with the mask value.
[Lim Rel Stop]	Used to enter the mask value (in relative values) at the stop frequency. The mask value from the start frequency to the stop frequency is calculated by linearly interpolating between the start mask value and stop mask value.
[Judge]	Specifies how to compare the waveform with the mask values (both absolute and relative) when judging whether the result is Pass or Fail. <ul style="list-style-type: none"> Abs: Compares the waveform with the mask values set in Limit Abs Start and Limit Abs Stop. If the waveform is equal to or less than the mask values, the result is Pass. Rel: Compares the waveform with the mask values set in Limit Rel Start and Limit Rel Stop. If the waveform is equal to or less than the mask values, the result is Pass. A&R: Compares the waveform with both the Limit Abs Start and Stop values and the Limit Rel Start and Stop values. When both conditions are satisfied, Pass is displayed. A R: Compares the waveform with both the Limit Abs Start and Stop values and the Limit Rel Start and Stop values. When either of the conditions is satisfied, Pass is displayed.

Insert

Inserts a column that has the same values as the column at the cursor position.

Delete

Deletes the column at the cursor position.

Sort

Sorts the data in the dialog box in order of frequency.

Init

Deletes all data in the dialog box.

Close

Closes the dialog box and returns to the previous menu.

Average Times On/Off

Switches the averaging function On and Off.

On: Sets the number of times averaging is performed in the spectrum emission mask measurement and performs the averaging measurement.

Off: Cancels the averaging function.

5.3.1 [FUNC]

Average Mode Cont/Rep

Switches the averaging mode between continuous calculation and repeat calculation.

Cont: Sets the continuous calculation mode. In the continuous calculation mode, the moving-average method is used to calculate the average after the set averaging count is reached.

Rep: Sets the repeat calculation mode. In the repeat calculation mode, when the set averaging count is reached, the current averaging count is reset to 1 and the averaging process is repeated from the beginning.

Judgment On/Off

Switches the judgment display On and Off.

On: Displays the judgment.

Off: Hides the judgment.

Set to STD

Returns the measurement parameters to values that are compliant with the standard.

Spectrum Emission Mask Off

Quits the Spectrum Emission Mask measurement function.

5.3.1.4 Spurious Emissions

Spurious Emissions

Displays the Spurious Emissions menu.

Auto Level Set

Measures the carrier power and sets the ATT in the setting sequence table to its optimum value according to the signal to be measured. When the key is pressed, Auto Level Set is executed. First Carrier Freq. and Last Carrier Freq. must be set before setting Auto Level Set.

Create Table

Creates the setting sequence table that is compliant with the standard.

The ATT setting in the table is not changed.

The contents of Table No.1 are created according to Category A. The contents of Table No.2 are created according to Category B. First Carrier Freq. and Last Carrier Freq. must be set before creating the table.

First Carrier Freq.

Sets the carrier frequency. If the signal is a multi-carrier signal, the lowest carrier frequency is set.

Last Carrier Freq.

Sets the carrier frequency. If the signal is a multi-carrier signal, the highest carrier frequency is set.

Table No. 1/2/3

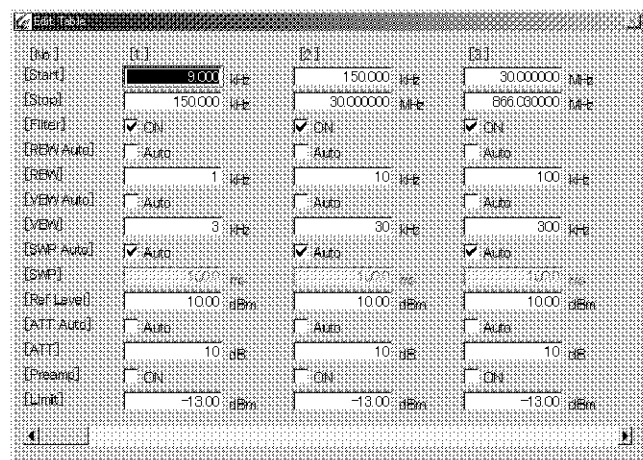
Sets the setting sequence table number for the spurious measurement to 1, 2, or 3.

- 1: Sets table number 1.
- 2: Sets table number 2.
- 3: Sets table number 3.

Edit Table

Displays the Edit Table menu.

The **[Edit Table]** dialog box of the set table number is displayed. Parameters, which are used in the spurious measurement, such as start and stop frequencies, RBW, VBW, sweep time, reference level, attenuator, preamp ON or OFF, and judgment level value can be set in the dialog box.



5.3.1 [FUNC]

Table No. 1/2/3	Sets the setting sequence table number for the spurious measurement to 1, 2, or 3. 1: Sets table number 1. 2: Sets table number 2. 3: Sets table number 3.
Insert	Inserts a column, in which spurious measurement conditions can be set, at the current cursor position. The data contained in the column that existed in the position before the column was inserted is copied to each setting value as new column data.
Delete	Deletes a column of measurement conditions from the current cursor position.
Init	Initializes all data in the table currently being edited.
Close	Closes the dialog box and returns to the previous menu.
Show Result	Displays the Show Result menu. The measurement results are displayed.
Previous Result	Displays the previous screen.
Next Result	Displays the next screen.
Return	Returns to the previous menu.
Judgment On/Off	Switches the judgment display On and Off. On: Displays the judgment. Off: Hides the judgment.
Set to STD	Returns the measurement parameters to values that are compliant with the standard.
Spurious Emissions Off	Quits the Spurious Emissions measurement function.

5.3.1.5 Modulation (Downlink)

Modulation	Displays the Modulation menu.
Auto Level Set	Sets the reference level to its optimum value according to the signal to be measured. When the key is pressed, Auto Level Set is executed.
Meas Setup	Displays the Meas Setup menu.
Meas Parameters	Displays the dialog box to set the measurement conditions.
[Meas Mode]	Sets the measurement mode. <ul style="list-style-type: none"> cdma2000: Select this mode when measuring the cdma2000 signal. The Walsh Code is displayed in the Bit Reversal order. cdmaOne: Select this mode when measuring the cdmaOne signal. The Walsh Code is displayed in the Hadamard order.
[User Table]	Selects whether to refer to the channel set by the user when the analysis is performed in the measurement. The transmission channel determination errors can be reduced by setting the channels, which are difficult to be determined or may be misjudged as transmission channels by using the internal automatic judgment function, in the user table. <ul style="list-style-type: none"> USE: Performs the analysis according to the user table. The channels, which are not defined in the user table, are determined the transmission channels by using the internal automatic judgment function. NOT USE: Automatically determines the transmission channels in all channels.
[Meas Length]	Sets the measurement length in PCGs (power control group). 1 PCG is equivalent to 1536 chips.

MEMO:

1. When the graph, in which the X axis shows PCGs or Chips, is displayed, the displayed area narrows if the measurement length is shortened. However, even if lengthened, the displayed area does not expand further than the set X scale.
2. If the following is set, [Meas Length] can be set to only 4, 8, 12, or 16.
 - [User Table]: USE
 - User Table [Channel]: ACKCH

[τ Offset]	Sets the offset value of the τ (Time Alignment Error).
-----------------------------------	---

5.3.1 [FUNC]

[Phase Equalizing Filter]

Sets the phase equalizing filter to ON or OFF. If the output phase characteristics of the base station pass a phase equalizer that complies with IS-95, set this function to ON.

ON: Sets the phase equalizing filter to ON.

OFF: Sets the phase equalizing filter to OFF.

[PN Offset Search]

Sets the PN Offset search to ON or OFF. If the signal has a maximum of 64 Walsh lengths and the PN Offset value of the base station is unknown, set this function to ON.

ON: Sets the PN Offset search to ON.

OFF: Sets the PN Offset search to OFF. The PN Offset of the measured signal must be set.

[PN Offset]

Sets the PN Offset value of the base station. A value from 0 to 511 can be set.

[Threshold Level]

Sets the threshold level to determine the transmission channel (active channel).

MEMO:

1. *If the set threshold level is too high, the active channel is incorrectly determined as an inactive channel. Therefore the measurement cannot be performed correctly because the value of the modulation accuracy and ρ are less accurate than the actual values.*
 2. *The transmission channel, which cannot be automatically determined as the transmission channel, is determined as an inactive channel even if its level is larger than the threshold level. In this case, use the User Table function.*
-

[$\Delta\tau$]

Measures the delay time of each channel. The delay time for each channel is displayed as positive if the channel is delayed in relation to the pilot channel.

ON: Turns on the $\Delta\tau$ measurement.

OFF: Turn off the $\Delta\tau$ measurement.

[$\Delta\theta$]

Measures the phase difference of each channel to the pilot channel.

ON: Turns on the $\Delta\theta$ measurement.

OFF: Turn off the $\Delta\theta$ measurement.

Close

Closes the dialog box and returns to the previous menu.

User Table

Displays the User Table dialog box. The channels defined here are enabled when [User Table] is set to USE.

[Multi Channel No.]

Sets the number of channels to be defined.

[Channel] Sets a transmission channel name.
The channels that can be set are CPCCH, QPCH, PDCCH, PDCH, GCH, RCCH, and ACKCH.
Abbreviations of channel name are as follows:

CPCCH: Common Power Control Channel
QPCH: Quick Paging Channel
PDCCH: Packet Data Control Channel
PDCH: Packet Data Channel
GCH: Grant Channel
RCCH: Rate Control Channel
ACKCH: Acknowledgement Channel

MEMO: *Because the CPCCH, QPCH, GCH, RCCH, and ACKCH channels are not automatically determined as transmission channels, the User Table function must be used when a signal that includes these channels is measured.*

[Walsh Length] Displays the Walsh Code length that corresponds to the transmission channel.

[Walsh Number] Sets the Walsh Code number.

[Modulation] Sets the modulation format. This function is enabled only when **[Channel]** is set to the PDCH.

MEMO: *If a Walsh Code number that does not satisfy the orthogonality between the different channels is set, a measurement error occurs.*

Close Closes the dialog box and returns to the previous menu.

Return Returns to the previous menu.

Meas View Displays the Meas View menu.

Specified PCG No. Sets the PCG (power control group) number to display a graph.

Specified Code No. Sets the code number to display a graph.

Window Format Displays the dialog box to set the measurement result window.

5.3.1 [FUNC]

[All PCG & Code]

Performs the measurement on all PCGs and all codes.

Total Result: Displays the numerical results which are analyzed as a multiplex signal.

Tx Power vs PCG: Displays the power for each PCG (power control group).

Code Power vs Code: Displays the Code Domain Power of each code on a graph.

ρ vs Code: Displays ρ of each code on a graph.

$\Delta\tau$ vs Code: Displays the delay time of each code on a graph. The delay time for each channel is displayed as positive if the channel is delayed in relation to the pilot channel.

$\Delta\theta$ vs Code: Displays the phase difference of each channel to the pilot channel on a graph.

EVM vs Chip: Displays the EVM of each chip on a graph.

Mag Err vs Chip: Displays the magnitude error of each chip on a graph.

[Specified PCG]

Measures the specified PCG only.

Code Power vs Code: Displays the Code Domain Power of each code on a graph.

ρ vs Code: Displays ρ of each code on a graph.

Constellation: Displays the constellation.

I Eye Diagram: Displays the EYE pattern of the I signal.

Q Eye Diagram: Displays the EYE pattern of the Q signal.

[Specified Code]

Measures the specified code only.

Code Power vs PCG: Displays the power for each PCG (power control group).

[Specified PCG & Code]

Measures the specified PCG and code.

Constellation: Displays the constellation.

Close

Closes the dialog box and returns to the previous menu.

Display Type

Displays the dialog box to set the graph display type.

[vs Code]

Select whether to display each result of Code Power vs Code, ρ vs Code, $\Delta\tau$ vs Code, and $\Delta\theta$ vs Code on graphs or in lists.

Graph: Displays the results on graphs.

Table: Displays the results in lists.

[Constellation]	Selects whether to display the chip positions only or both the chip positions and the transition from one chip position to another, when the [Specified PCG] Constellation on a graph is displayed.
Line & Chip:	Displays both the chip positions and the transition lines.
Chip:	Displays the chip positions only.
Close	Closes the dialog box and returns to the previous menu.
Return	Returns to the previous menu.
Scale	Displays the Scale menu.
Single Display	Zooms into the upper left window when in the four-window display mode.
Dual Display	Zooms into the two upper windows when in the four-window display mode.
Quad Display	Splits the screen into four windows.
X Scale Left	Sets the minimum value on the X axis.
X Scale Right	Sets the maximum value on the X axis.
Y Scale Upper	Sets the maximum value on the Y axis.
Y Scale Lower	Sets the minimum value on the Y axis.
Plot Start	Sets the drawing start point when the Constellation and Eye Diagram are displayed.
Plot Number	Sets the drawing range when the Constellation and Eye Diagram are displayed.
Return	Returns to the previous menu.
Input	Displays the Input menu.
IQ Inverse On/Off	Sets whether to invert the phase of the input signal when the measurement is performed.
On:	Inverts the phase of the input signal.
Off:	Does not invert the phase.
Return	Returns to the previous menu.
Trigger	Displays the Trigger menu.
Trigger Source	Displays the Trigger Source menu.
Free Run	Acquires and analyzes data according to the internal timing of the instrument.
IF Power	Acquires and analyzes data in synchronization with the IF signal.
ExtI	Acquires and analyzes data in synchronization with the external signal entered into the EXT TRIG IN 1 connector. The threshold level for ExtI is fixed to the TTL level.

5.3.1 [FUNC]

Ext2	Acquires and analyzes data in synchronization with the external signal entered into the EXT TRIG IN 2 connector. The threshold level for Ext2 can be set.
Return	Returns to the previous menu.
Trigger Slope +/-	Switches the trigger slope polarity + and -. This function is enabled only for IF Power, Ext1, and Ext2. +: Starts the sweep at the rising edge of a trigger. -: Starts the sweep at the falling edge of a trigger.
Trigger Delay	Sets the delay time from a trigger point. This function is enabled only for IF Power, Ext1, and Ext2. The start position of acquiring A/D data, which is used to analyze, is shifted by the delay time.
Interval On/Off	Sets whether to synchronize the trigger with the built-in counter, whose period is set to 80 ms. On: Synchronizes the trigger. Off: Does not synchronize the trigger.
Return	Returns to the previous menu.
Modulation Off	Quits the Modulation measurement function.

5.3.1.6 Modulation (Uplink)

Modulation	Displays the Modulation menu.
Auto Level Set	Sets the reference level to its optimum value according to the signal to be measured. When the key is pressed, Auto Level Set is executed.
Meas Mode	Displays the Meas Mode menu.
cdmaOne	Select this mode when measuring the cdmaOne signal. In this mode, the Offset QPSK signal, which is compliant with the RC(Radio Configuration)1 and RC2 standards and is not a code multiplex signal, is analyzed.
cdma2000	Select this mode when measuring the cdma2000 signal. In this mode, the code domain analysis of the code multiplex signal, which is compliant with the RC3, RC4, and RC7 standards, is performed.
Return	Returns to the previous menu.
Meas Setup (For cdmaOne)	Displays the Meas Setup menu.
Meas Parameters	Displays the dialog box to set the measurement conditions.
[Meas Length]	Used to enter the measurement range in chips.

[Freq Meas Range]

Sets whether to expand a frequency error measurement range when the measurement is performed.

NORMAL: Does not expand a frequency error measurement range.

MEMO: Use this mode when signals exist in an adjacent channel or measuring a noisy signal.

EXPAND: Expands a frequency error measurement range.

[IQ Origin Offset]

Selects whether to include the IQ origin offset when the analysis is performed.

INCLUDE: Includes the IQ origin offset when the analysis is performed.

EXCLUDE: Excludes the IQ origin offset when the analysis is performed.

Close

Closes the dialog box and returns to the previous menu.

Average

Selects the averaging process.

On: Performs the averaging process a set number of times for the measurement items in **[Total Result]**.

Off: Does not perform the averaging process.

Return

Returns to the previous menu.

Meas Setup (For cdma2000) Displays the Meas Setup menu.

Meas Parameters

Displays the dialog box to set the measurement conditions.

[User Table]

Selects whether to refer to a channel set by the user and to perform the analysis when the measurement is performed. If a transmission channel is known, the transmission channel can be determined by using the user table.

USE: Determines the transmission channel according to the user table.

NOT USE: The transmission channel is automatically determined.

[Meas Length] Sets the measurement length in chips.

[PN Delay Search]

Sets the PN Delay search to ON or OFF.

ON: Searches the acquired signal for PN Delay if the relationship between the external trigger and PN Delay of the input signal is unknown.

OFF: Set to OFF and set PN Delay if the relationship between the external trigger and PN Delay of the input signal is known.

[PN Delay]

Sets the Pilot PN Sequence synchronization position to a multiple of 64 chips from 0 to 511.

5.3.1 [FUNC]

[Freq Meas Range]

Sets whether to expand the frequency error measurement range when the measurement is performed.

NORMAL: Does not expand the frequency error measurement range.

EXPAND: Expands the frequency error measurement range.

[Threshold Level]

Sets the threshold level to determine the transmission channel (active channel). Set the threshold level to a value which is higher than the noise floor and lower than the signal.

MEMO: *If the set threshold level is too high, an active channel is incorrectly determined as an inactive channel. Accordingly, the ρ and modulation accuracy values are less accurate than the actual values, and the measurement cannot be performed correctly.*

[IQ Origin Offset]

Selects whether to include the IQ origin offset when the analysis is performed.

INCLUDE: Includes the IQ origin offset when the analysis is performed.

EXCLUDE: Excludes the IQ origin offset when the analysis is performed.

MEMO: *The IQ origin offset is always excluded when $\Delta\tau$, $\Delta\theta$, Chip Rate Error, and Quad Error are analyzed.*

[Peak Inact CH Component]

Selects the definition of an inactive channel.

Both Inact: A channel, in which both I and Q signals are inactive, is defined as the inactive channel and the maximum ρ in the I and Q signals is defined as Peak Inact ρ .

Either Inact: A channel, in which at least either I or Q signal is inactive, is defined as the inactive channel and the maximum ρ in the I and Q signals is defined as Peak Inact ρ .

[$\Delta\tau$]

Selects whether to measure the delay time for each channel in relation to the pilot channel. The delay time for each channel is displayed as positive if the channel is delayed in relation to the pilot channel.

ON: Measures the delay time.

OFF: Does not measure the delay time.

[$\Delta\theta$]

Selects whether to measure the phase difference for each channel in relation to the pilot channel.

ON: Measures the phase difference.

OFF: Does not measure the phase difference.

[Chip Rate Error]

Selects whether to measure the chip rate error in relation to 1.2288 Mcps.

ON: Measures the chip rate error.

OFF: Does not measure the chip rate error.

[Quadrature Error]

Selects whether to measure the difference of an angle between I-axis and Q-axis in relation to the angle of 90 degrees.

ON: Measures the angle difference from the angle of 90 degrees.

OFF: Does not measure the angle difference from the angle of 90 degrees.

[Walsh Code Length]

Sets the Walsh code length in the code domain analysis.

16: Sets the Walsh code length to 16 and performs the code domain analysis.

32: Sets the Walsh code length to 32 and performs the code domain analysis.

64: Sets the Walsh code length to 64 and performs the code domain analysis.

Close

Closes the dialog box and returns to the previous menu.

User Table

Displays the User Table dialog box. The channels defined here are enabled when **[User Table]** is set to USE.

The abbreviation of each channel name is as follows:

SPICH: Secondary Pilot Channel

EACH: Enhanced Access Channel

CCCH: Common Control Channel

PDCCH: Packet Data Control Channel

REQCH: Request Channel

DCCH: Dedicated Control Channel

ACKCH: Acknowledgment Channel

CQICH: Channel Quality Indicator Channel

FCH: Fundamental Channel

SCH1: Supplemental Channel 1

SCH2: Supplemental Channel 2

PDCH: Packet Data Channel

[SPICH Walsh Func]

Sets SPICH.

OFF: Sets the condition in which no SPICH is transmitted.

W64(32): Sets the Walsh function of SPICH to W_{32}^{64} and sets the condition in which SPICH is transmitted.

5.3.1 [FUNC]

[EACH/CCCH Walsh Func]

Sets EACH or CCCH.

OFF: Sets the condition in which no EACH or CCCH is transmitted.

W8(2): Sets the Walsh function of EACH or CCCH to W_2^8 and sets the condition in which EACH or CCCH is transmitted.

[PDCCH Walsh Func]

Sets PDCCH.

OFF: Sets the condition in which no PDCCH is transmitted.

W64(48): Sets the Walsh function of PDCCH to W_{48}^{64} and sets the condition in which PDCCH is transmitted.

[REQCH Walsh Func]

Sets REQCH.

OFF: Sets the condition in which no REQCH is transmitted.

W16(8): Sets the Walsh function of REQCH to W_8^{16} and sets the condition in which REQCH is transmitted.

[DCCH Walsh Func]

Sets DCCH.

OFF: Sets the condition in which no DCCH is transmitted.

W16(8): Sets the Walsh function of DCCH to W_8^{16} and sets the condition in which DCCH is transmitted.

[ACKCH Walsh Func]

Sets ACKCH.

OFF: Sets the condition in which no ACKCH is transmitted.

W64(16): Sets the Walsh function of ACKCH to W_{16}^{64} and sets the condition in which ACKCH is transmitted.

[CQICH Walsh Func]

Sets CQICH.

OFF: Sets the condition in which no CQICH is transmitted.

W16(12): Sets the Walsh function of CQICH to W_{12}^{16} and sets the condition in which CQICH is transmitted.

[Modulation]

Sets the modulation format of CQICH.

BPSK(I): Allocates the channel to the I-side and sets the modulation format to BPSK.

BPSK(Q): Allocates the channel to the Q-side and sets the modulation format to BPSK.

[FCH Walsh Func]

Sets FCH.

OFF: Sets the condition in which no FCH is transmitted.

W16(4): Sets the Walsh function of FCH to W_4^{16} and sets the condition in which FCH is transmitted.

[SCH1 Walsh Func]

Sets SCH1.

OFF: Sets the condition in which no SCH1 is transmitted.

W2(1): Sets the Walsh function of SCH1 to W_1^2 and sets the condition in which SCH1 is transmitted.

W4(2): Sets the Walsh function of SCH1 to W_2^4 and sets the condition in which SCH1 is transmitted.

[Repetition Factor]

Sets the number of times the Walsh function of SCH1 is repeated.

[SCH2 Walsh Func]

Sets SCH2.

OFF: Sets the condition in which no SCH2 is transmitted.

W4(2): Sets the Walsh function of SCH2 to W_2^4 and sets the condition in which SCH2 is transmitted.

W8(6): Sets the Walsh function of SCH2 to W_6^8 and sets the condition in which SCH2 is transmitted.

[Repetition Factor]

Sets the number of times the Walsh function of SCH2 is repeated.

[PDCH Walsh Func]

Sets PDCH.

OFF: Sets the condition in which no PDCH is transmitted.

W2(1): Sets the Walsh function of PDCH to W_1^2 and sets the condition in which PDCH is transmitted.

W4(2): Sets the Walsh function of PDCH to W_2^4 and sets the condition in which PDCH is transmitted.

W2(1)&W4(2): Sets the Walsh function of PDCH to W_1^2 and W_2^4 and sets the condition in which PDCH is transmitted.

[Modulation]

Sets the modulation format of PDCH.

BPSK(1): Allocates the channel to the I-side and sets the modulation format to BPSK.

QPSK: Sets the modulation format to QPSK.

8PSK: Sets the modulation format to 8PSK.

5.3.1 [FUNC]

MEMO: *The same Walsh function number as the number, which has been already set, cannot be set because the orthogonality of the code is not satisfied.*

Close

Closes the dialog box and returns to the previous menu.

Average

Selects the averaging process.

On: Performs the averaging process a set number of times for the measurement items in **[Total Result]**.

Off: Does not perform the averaging process.

MEMO: *The value displayed in each peak display item is either the maximum value or maximum deviation from zero in each measurement result.*

Return

Returns to the previous menu.

Display

Displays the Display menu.

Single Display

Zooms into the upper left window when in the four-window display mode.

Dual Display

Zooms into the two upper windows when in the four-window display mode.

Quad Display

Splits the screen into four windows.

Window Format (For cdmaOne)

Displays the Window Format menu.

Format

Selects the measurement result window to be displayed.

[Total Result]

Displays the analyzed numerical result.

[Constellation]

Displays the constellation.

[I Eye Diagram]

Displays the EYE pattern of the I signal.

[Q Eye Diagram]

Displays the EYE pattern of the Q signal.

[Null Offset Constellation]

Displays a constellation, in which the filtering process is performed so that the I and Q offsets are canceled and chip positions converge.

[Null Offset I Eye Diagram]

Displays an EYE pattern of the I signal, in which the filtering process is performed so that the I and Q offsets are canceled and chip positions converge.

[Null Offset Q Eye Diagram]

Displays an EYE pattern of the Q signal, in which the filtering process is performed so that the I and Q offsets are canceled and chip positions converge.

[EVM vs Chip]

Displays the EVM for each one-half chip on a graph.

[Mag Error vs Chip]

Displays the magnitude error for each one-half chip on a graph.

[Phase Error vs Chip]

Displays the phase error for each one-half chip on a graph.

Close

Closes the dialog box and returns to the previous menu.

Display Type

Sets the display type of a graph which is selected in **Format**.

[Constellation]

Selects whether to display either one-half chip positions or one-half chip positions and transition lines between one-half chip positions, when the constellation is displayed on a graph.

[Trace & Dot]

Displays both one-half chip positions and transition lines.

[Line]

Displays transition lines that connect between one-half chip positions by a straight line.

[Dot]

Displays one-half chip positions only.

Close

Closes the dialog box and returns to the previous menu.

Return

Returns to the previous menu.

Window Format (For cdma2000)

Displays the Window Format menu.

Format

Selects the measurement result window to be displayed.

[Total Result]

Displays the numerical results that are analyzed as a multiplex signal.

[ρ vs Code]

Displays ρ of each code on a graph.

[Code Power vs Code]

Displays the Code Domain Power of each code on a graph.

[ρ (I) vs Code]

Displays the ρ for each code of the I signal on a graph.

[ρ (Q) vs Code]

Displays the ρ for each code of the Q signal on a graph.

[$\Delta\tau$ (I) vs Code]

Displays the delay time for each code of the I signal on a graph. The delay time for each channel is displayed as positive if the channel is delayed in relation to the pilot channel.

[$\Delta\tau$ (Q) vs Code]

Displays the delay time for each code of the Q signal on a graph. The delay time for each channel is displayed as positive if the channel is delayed in relation to the pilot channel.

5.3.1 [FUNC]

[$\Delta\theta(I)$ vs Code]

Displays the phase difference for each channel of the I signal to the pilot channel on a graph.

[$\Delta\theta(Q)$ vs Code]

Displays the phase difference for each channel of the Q signal to the pilot channel on a graph.

[Constellation]

Displays the constellation.

[I Eye Diagram]

Displays the EYE pattern of the I signal.

[Q Eye Diagram]

Displays the EYE pattern of the Q signal.

[EVM vs Chip]

Displays the EVM for each chip on a graph.

[Mag Error vs Chip]

Displays the magnitude error for each chip on a graph.

[Phase Error vs Chip]

Displays the phase error for each chip on a graph.

Close Closes the dialog box and returns to the previous menu.

Display Type Sets the display type of a graph which is selected in **Format**.

[vs Code]

Selects whether to display the results for each [vs Code] either on graphs or in lists.

[Graph]

Displays the results on graphs.

[Table]

Displays the results in lists.

[Constellation]

Selects whether to display either chip positions or chip positions and the transition lines between the chip positions, when the constellation is displayed on a graph.

[Trace & Dot]

Displays both chip positions and transition lines.

[Line]

Displays transition lines that connect between chip positions by a straight line.

[Dot]

Displays chip positions only.

Close Closes the dialog box and returns to the previous menu.

Return Returns to the previous menu.

X Scale Left Sets the minimum value on the X axis.

X Scale Right Sets the maximum value on the X axis.

Y Scale Upper Sets the maximum value on the Y axis.

Y Scale Lower	Sets the minimum value on the Y axis.
Return	Returns to the previous menu.
Input	Displays the Input menu.
IQ Inverse On/Off	Sets whether to invert the phase of the input signal when the measurement is performed. On: Inverts the phase of the input signal. Off: Does not invert the phase.
Return	Returns to the previous menu.
Trigger	Displays the Trigger menu.
Trigger Source	Displays the Trigger Source menu.
Free Run	Acquires and analyzes data according to the internal timing of the instrument.
IF Power	Acquires and analyzes data in synchronization with the IF signal.
Ext1	Acquires and analyzes data in synchronization with the external signal entered into the EXT TRIG IN 1 connector. The threshold level for Ext1 is fixed to the TTL level.
Ext2	Acquires and analyzes data in synchronization with the external signal entered into the EXT TRIG IN 2 connector. The threshold level for Ext2 can be set.
Return	Returns to the previous menu.
Trigger Slope +/-	Switches the trigger slope polarity + and -. This function is enabled only for IF Power, Ext1, and Ext2. +: Starts the sweep at the rising edge of a trigger. -: Starts the sweep at the falling edge of a trigger.
Trigger Delay	Sets the delay time from a trigger point. This function is enabled only for IF Power, Ext1, and Ext2. The start position of acquiring A/D data, which is used to analyze, is shifted by the delay time.
Interval On/Off	Sets whether to synchronize the trigger with the built-in counter, whose period is set to 80 ms. On: Synchronizes the trigger. Off: Does not synchronize the trigger.
Return	Returns to the previous menu.
Modulation Off	Quits the Modulation measurement function.

5.3.1 [FUNC]

5.3.1.7 ACP

ACP

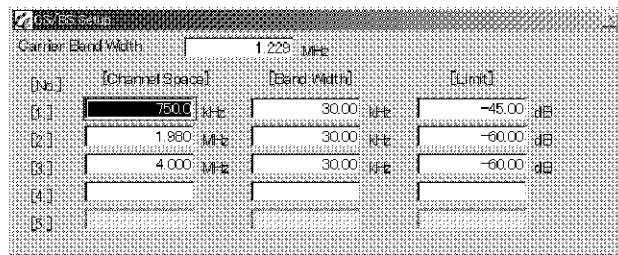
Displays the ACP menu.

Auto Level Set

Sets the reference level and ATT to their optimum values according to the signal to be measured. When the key is pressed, Auto Level Set is executed.

CS/BS Setup

Displays the CS/BS menu and **[CS/BS Setup]** dialog box.



[Carrier Band Width] Sets the measurement bandwidth in the channel power measurement which is used as the reference power.

[Channel Space] Sets the offset frequency, which indicates the position at which the adjacent channel is measured, from the carrier frequency.

[Band Width] Sets the measurement bandwidth in the adjacent channel leakage power measurement.

[Limit] Sets the upper limit that is used to judge in the adjacent channel leakage power measurement.

Copy from STD

Returns the CS/BS Setup settings to values that are compliant with the standard.

Insert

Inserts a row in which the adjacent channel measurement conditions are set. The data on the row that existed in the position before the new row was inserted is copied to the new row.

Delete

Deletes the measurement condition from the current cursor position.

Sort

Sorts the data in the dialog box in order of frequency.

Init

Deletes all data in the table currently being edited.

Close

Closes the dialog box and returns to the previous menu.

√Nyquist Filter Setup

Displays the √Nyquist Filter Setup menu.

√Nyquist Filter On/Off

Switches the Nyquist filter function ON and OFF.

On: Sets a Nyquist filter.

Off: Cancels the Nyquist filter.

Symbol Rate

Sets the inverse number of the symbol rate (frequency).

Rolloff Factor

Sets a roll-off factor.

Return	Returns to the previous menu.
Average Times On/Off	Switches the averaging function On and Off. On: Sets the number of times averaging is performed in the ACP measurement and measures the average adjacent channel leakage power. Off: Cancels the averaging function.
Average Mode Cont/Rep	Switches the averaging mode between continuous calculation and repeat calculation. Cont: Sets the continuous calculation mode. In the continuous calculation mode, the moving-average method is used to calculate the average after the set averaging count is reached. Rep: Sets the repeat calculation mode. In the repeat calculation mode, when the set averaging count is reached, the current averaging count is reset to 1 and the averaging process is repeated from the beginning.
Noise Corr On/Off	Performs the correction equivalent to the internal noise level of this instrument and switches On and Off the expansion function of the measurement dynamic range. On: Turns on the noise correction function. Every time the measurement parameters change, the internal noise level of this instrument is measured and the noise correction value is reflected in the measured value. Off: Turns off the noise correction function.
Judgment On/Off	Switches the judgment display On and Off. On: Displays the judgment. Off: Hides the judgment.
Set to STD	Returns the measurement parameters to values that are compliant with the standard.
ACP Off	Quits the ACP measurement function.

5.3.1 [FUNC]

5.3.1.8 Multi Carrier ACP

Multi Carrier ACP

Displays the Multi Carrier ACP menu.

Auto Level Set

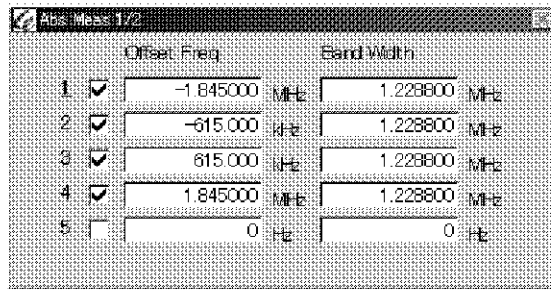
Sets the reference level and ATT to their optimum values according to the signal to be measured. When the key is pressed, Auto Level Set is executed.

Ref/Offs Setup

Displays the Ref/Offs Setup menu.

Abs Meas 1/2

Displays the **[Abs Meas 1/2]** dialog box. Sets the offset frequency and bandwidth of the reference Carrier. Sets the offset frequency from the center frequency that is used before the measurement. Up to ten carriers can be set by also setting **[Abs Meas 2/2]**.

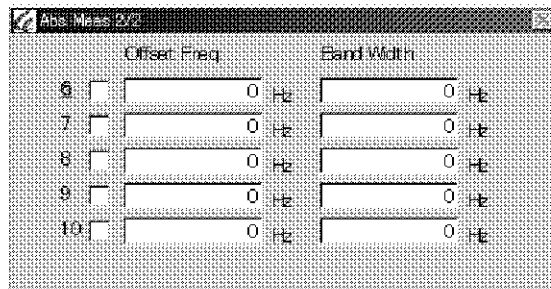


Close

Closes the dialog box and returns to the previous menu.

Abs Meas 2/2

Displays the **[Abs Meas 2/2]** dialog box.

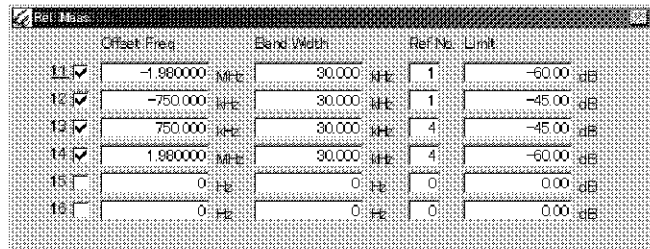


Close

Closes the dialog box and returns to the previous menu.

Rel Meas

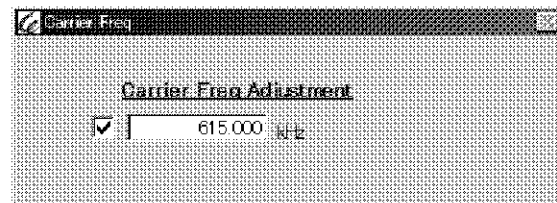
Displays the **[Rel Meas]** dialog box. The frequencies and bandwidths of up to six waves in the frequency range in which ACP is measured can be set. The frequency to be measured is set to the frequency offset from the set reference carrier frequency.

**Close**

Closes the dialog box and returns to the previous menu.

Carrier Freq

Displays the **[Carrier Freq]** dialog box. The center frequency, which is used as the reference in Multi Carrier ACP, can be adjusted.

**Close**

Closes the dialog box and returns to the previous menu.

Return

Returns to the previous menu.

√Nyquist Filter Setup

Displays the $\sqrt{\text{Nyquist}}$ Filter Setup menu.

√Nyquist Filter On/Off

Switches the Nyquist filter function ON and OFF.

On: Sets a Nyquist filter.

Off: Cancels the Nyquist filter.

Symbol Rate

Sets the inverse number of the symbol rate (frequency).

Rolloff Factor

Sets a roll-off factor.

Return

Returns to the previous menu.

Average Times On/Off

Switches the averaging function On and Off.

On: Sets the number of times averaging is performed in the multi-carrier ACP measurement and measures the average adjacent channel leakage power.

Off: Cancels the averaging function.

5.3.1 [FUNC]

Average Mode Cont/Rep	Switches the averaging mode between continuous calculation and repeat calculation. Cont: Sets the continuous calculation mode. In the continuous calculation mode, the moving-average method is used to calculate the average after the set averaging count is reached. Rep: Sets the repeat calculation mode. In the repeat calculation mode, when the set averaging count is reached, the current averaging count is reset to 1 and the averaging process is repeated from the beginning.
Noise Corr On/Off	Performs the correction equivalent to the internal noise level of this instrument and switches On and Off the expansion function of the measurement dynamic range. On: Turns on the noise correction function. Every time the measurement parameters change, the internal noise level of this instrument is measured and the noise correction value is reflected in the measured value. Off: Turns off the noise correction function.
Judgment On/Off	Switches the judgment display On and Off On: Displays the judgment. Off: Hides the judgment.
Set to STD	Returns the measurement parameters to values that are compliant with the standard.
Multi Carrier ACP Off	Quits the Multi Carrier ACP measurement function.

5.3.1.9 T-Domain Power

T-Domain Power	Displays the T-Domain Power menu. In the T-domain Power measurement function, the average power at the zero-span setting is measured. The template and the displayed waveform can be compared and judged.
Auto Level Set	Sets the reference level to its optimum value according to the signal to be measured. When this key is pressed, Auto Level Set is executed.
Window Setup	Displays the Window Setup menu.
Window On/Off	Switches the measuring window display On and Off. On: Displays the measuring window on the screen. Measures the average power in the window. Off: Hides the measuring window. Measures the average power in the whole screen.
Window Position	Sets the position of the measuring window.
Window Width	Sets the width of the measuring window.

Return	Returns to the previous menu.
Template	Displays the Template menu.
Template On/Off	Switches the template display On and Off. On: Displays the template and the result is judged comparing to the template. Off: Hides the template and the result is not judged comparing to the template.
Shift X	Sets the distance by which the template is moved in the X-axis direction.
Shift Y	Sets the distance by which the template is moved in the Y-axis direction.
Template Edit	Displays the Template Edit menu and the Template Edit dialog box.
Template Up/Low	Switches the templates to be edited. Up: Edits the template of the upper limit value. Low: Edits the template of the lower limit value.
Insert	Inserts a row that has the same values as the row at the cursor position.
Delete	Deletes a row.
Sort	Sorts the data in the template in ascending order.
Init	Deletes all data in the template currently being edited.
Close	Closes the dialog box and returns to the previous menu.
Template Couple to Power On/Off	Sets whether to couple the template display to the measured power. On: Couples the template display to the measured power. The template set by the relative level to the measured power is displayed. Off: Does not couple the template display to the measured power. The template set by the absolute level is displayed.
Template Limit	Sets the lower limit value of the template when Template Couple to Power is set to On.
Return	Returns to the previous menu.
Average Times On/Off	Switches the averaging function in the power measurement On and Off. On: Sets the number of times averaging is performed in the power measurement and measures the average power. Off: Cancels the averaging function.

5.3.1 [FUNC]

Average Mode Cont/Rep	Switches the averaging mode between continuous calculation and repeat calculation. Cont: Sets the continuous calculation mode. In the continuous calculation mode, the moving-average method is used to calculate the average after the set averaging count is reached. Rep: Sets the repeat calculation mode. In the repeat calculation mode, when the set averaging count is reached, the current averaging count is reset to 1 and the averaging process is repeated from the beginning.
Upper Limit	Sets the upper limit value that is used to judge whether the result is Pass or Fail.
Lower Limit	Sets the lower limit value that is used to judge whether the result is Pass or Fail.
Judgment On/Off	Switches the judgment display On and Off. "Pass" is displayed when [Lower Limit] ≤ measurement result ≤ [Upper Limit]. Otherwise, "Fail" is displayed. On: Displays the judgment. Off: Hides the judgment.
Set to STD	Returns the measurement parameters to values that are compliant with the standard.
T-Domain Power Off	Quits the T-domain Power measurement function.

5.3.1.10 ON/OFF Ratio

ON/OFF Ratio	Displays the ON/OFF Ratio menu. In the ON/OFF Ratio measurement function, the power ratio of the ON period to the OFF period of the burst signal is measured.
Auto Level Set	Sets the reference level to its optimum value according to the signal to be measured. When this key is pressed, Auto Level Set is executed.
Window Setup	Displays the Window Setup menu.
ON Position	Sets the start position of the ON period in the burst signal.
ON Width	Sets the width of the ON period in the burst signal.
OFF Position	Sets the start position of the OFF period in the burst signal.
OFF Width	Sets the width of the OFF period in the burst signal.
Return	Returns to the previous menu.
Average Times On/Off	Switches the averaging function On and Off. On: Sets the number of times averaging is performed and measures the average power.

	Off:	Cancels the averaging function.
Average Mode Cont/Rep		Switches the averaging mode between continuous calculation and repeat calculation.
	Cont:	Sets the continuous calculation mode. In the continuous calculation mode, the moving-average method is used to calculate the average after the set averaging count is reached.
	Rep:	Sets the repeat calculation mode. In the repeat calculation mode, when the set averaging count is reached, the current averaging count is reset to 1 and the averaging process is repeated from the beginning.
Limit		Sets the limit value that is used to judge whether the result is Pass or Fail.
Judgment On/Off		Switches the judgment display On and Off. "Pass" is displayed when [Limit] ≤ measurement result. Otherwise, "Fail" is displayed.
	On:	Displays the judgment.
	Off:	Hides the judgment.
Set to STD		Returns the measurement parameters to values that are compliant with the standard.
ON/OFF Ratio Off		Quits the ON/OFF Ratio measurement function.

5.3.1 [FUNC]

5.3.1.11 CCDF

CCDF

Displays the CCDF menu.
The screen changes to the CCDF measurement screen.

Auto Level Set

Sets the reference level and ATT to their optimum values according to the signal to be measured. When the key is pressed, Auto Level Set is executed.

CCDF RBW

Sets RBW.
RBW can be set to 100 kHz - 10 MHz (1 and 3 sequence).

Meas Sample

Sets the number of measurement samples.

Trace Write On/Off

Switches the reference waveform display On and Off.

On: Displays the currently-displayed waveform as the reference waveform.

Off: Hides the reference waveform.

Gaussian On/Off

Switches the ideal Gaussian noise waveform display On and Off.

On: Displays the ideal Gaussian noise waveform.

Off: Hides the ideal Gaussian noise waveform.

X Scale Max

Sets the maximum value of the horizontal axis on the waveform display.

CCDF Gate On/Off

Switches the gate function of the CCDF measurement On and Off.

On: Sets a threshold level and performs the CCDF measurement in the period where the input signal is higher than the specified threshold level.

Off: Cancels the gate function of the CCDF measurement.

CCDF Off

Quits the CCDF measurement function.

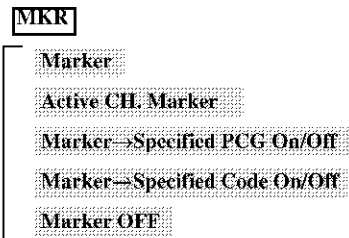
5.3.2 [MKR]

In the Modulation measurement function of the Tx Tester mode, the dedicated Marker menu is displayed by pressing the **[MKR]** key. This section describes the Marker menu in the Modulation measurement and its functions.

The content of the Marker menu in the Modulation function is different depending on whether to select Downlink or Uplink.

The Marker menu is enabled when a graph screen is selected.

5.3.2.1 MKR (Modulation-Downlink)



Marker

Displays a marker and sets the marker position.

Active CH. Marker

Sets the code number of the transmission channel. This setting can be used only when the graph, in which the X-axis is set to the code, is displayed.

Marker->Specified PCG On/Off

Sets whether to couple the PCG, which is indicated by the marker on the Tx Power vs PCG or Code Power vs PCG graph, with the PCG number, which is specified in the Specified PCG when the graph, which is selected by **[Specified PCG]** or **[Specified PCG & Code]**, is displayed.

On: Couples the PCGs.

Off: Does not couple the PCGs.

Marker->Specified Code On/Off

Sets whether to couple the code number, which is indicated by the Active CH. Marker on the Code Power vs Code, ρ vs Code, $\Delta\tau$ vs Code, or $\Delta\theta$ vs Code graph, with the code number, which is specified in the Specified Code when the graph, which is selected by **[Specified Code]** or **[Specified PCG & Code]**, is displayed.

On: Couples the code number.

Off: Does not couple the code number.

MEMO: For more information on how to use Marker->Specified PCG On/Off and Marker->Specified Code On/Off, refer to "How to specify the PCG and Code by using the marker on the graph" in "A.1 Technical Data" of APPENDIX.

Marker OFF

Hides the marker.

5.3.2 [MKR]

5.3.2.2 MKR (Modulation-Uplink)

MKR

- Marker
- Active CH. Marker
- Marker OFF

Marker

Displays a marker and sets the marker position.

Active CH. Marker

Sets the code number of the transmission channel. This setting can be used only when the graph, in which the X-axis is set to the code, is displayed.

Marker OFF

Hides the marker.

6. SCPI COMMAND REFERENCE

This chapter describes the SCPI command reference for this instrument.

6.1 Command Reference Format

This section describes the format and layout used to describe commands in this chapter.

Each description includes the following items:

Function description

SCPI command

Parameter

Query reply

- [Function description]
The usage of commands and operations in this instrument.
- [SCPI command]
The SCPI command displays the syntax of a command sent from the external controller to this instrument. The syntax consists of a command and a number of parameters. The command and the parameters are separated by a space.
If a command has multiple parameters, they are separated by commas (.). The three points (...) displayed between commas represent the parameter(s) omitted at that position.
For example, the description <numeric value 1>, ..., <numeric value 4> shows that four parameters, <numeric value 1>, <numeric value 2>, <numeric value 3>, and <numeric value 4>, are required.
If the parameter is a character string type such as <character string>, <character string 1>, the parameter must be enclosed in double quotation marks (" "). If the parameter is <block>, it shows the block format data.

Text written in lowercase alphabetic characters in the syntax can be omitted.

For example, ":CALibration:CABLe" can be abbreviated to ":CAL:CABL."

The marks used in the syntax are defined as follows:

- < >: Shows a parameter required for sending a command
- []: Shows that the command is optional
It can be omitted
- { }: Shows that only one item is required to be selected from multiple items
- |: Used as a delimiter for multiple items written in curly brackets {..}
- <screen>: Written in the command header and shows the target screen number of the command
The screen number can be omitted. However, when it is written, a value from 1 to 4 can be selected
[{ 1|2|3|4 }]

6.1 Command Reference Format

For example, If the syntax below is specified, :CALC:CORR:EDEL:TIME 0.1 and :CALCULATE1:SELECTED:CORR:EDEL:TIME 25E-3 are valid.

Syntax: CALCulate{[1]|2|3|4}[[:SElECTed]:CORRection:EDELay:TIME <numeric value>

- [Parameter]

Describes a parameter required for sending a command.

If the parameter is numeric type or alphabetic, it is enclosed in angle brackets (<>).

If the parameter is optional, it is enclosed in curly brackets ({ }).

In this manual, parameter types are described in the following formats:

- < int >: A numeric value that can be input in the format NR1, NR2, or NR3 and rounded to an integer in this instrument
- < real >: A numeric value that can be input in the format NR1, NR2, or NR3 and rounded to a valid-digit real number in this instrument
- < bool >: Either OFF or ON can be entered.
- < str >: A character string enclosed in quotation (' ') or double quotation (" ") marks.
- <block>: Block data type
The data content is an 8-bit binary data array
- < type >: Character data selected from multiple types

- [Query reply]

When there is a query reply to the command, the data format used for reading the query is described.

Each parameter to be read is enclosed in curly brackets ({ }). If multiple items, which are delimited by a vertical bar (|), exist in curly brackets ({ }), only one of those items is read out. If parameters are delimited by commas (,) multiple parameters can be read out. The three points (...) displayed between commas represent data omitted from that position. For example, the description { numeric value 1 } , ..., { numeric value 4 } shows that four parameters { numeric value 1 } , { numeric value 2 } , { numeric value 3 } , and { numeric value 4 } are read.

If the parameter to be read is enclosed in square brackets ([]), the parameter may be omitted, depending on the measurement result, etc.

If the parameter to be read is a value in a unit, a description such as "Unit: dBm" is added to display the unit of the parameter value. However, only when the parameter is described in a level unit "dBm", the level unit selected at that time will be applied to the parameter.

6.2 Common Commands

This section describes common IBBE commands.

Function description	SCPI Command	Parameter	Query reply	Remarks
Clears the status byte and related data	*CLS	--	--	
Sets the standard event status enable register	*ESE	<int>	<int>	
Reads the standard event status register	*ESR?	--	<int>	
Device inquiry	*IDN?	--	<str>	*1
Notice of completion of all running operations	*OPC	--	1	
Loads the device settings	*RCL	<int> POFF	--	*2
Resets the device	*RST	--	--	
Saves the device settings	*SAV	<int>	<int>	
Sets the service request enable register	*SRE	<int>	<int>	
Reads the status byte register	*STB?	--	<int>	
Triggers the device	*TRG	--	--	
Executing Self-Test and reading the result	*TST?	--	<int>	*3
Waits for the completion of all running operations	*WAI	--	--	

*1 <str> is output in the following format: maker name, model name, serial number and version number.

*2 POFF indicates the parameter settings at the last power-off

*3 If <int> is 0, it indicates that Self-Test passes. If <int> is any other value, the value indicates an error code.

6.3 Modulation Analysis Commands (Downlink)

6.3 Modulation Analysis Commands (Downlink)

6.3.1 Subsystem-INPut

Function description	SCPI command	Parameter	Query reply	Remarks
ATT setting (Manual)	:INPut:ATTenuation	<real>	<real>	
ATT (Auto/Manual)	:INPut:ATTenuation:AUTO	OFF ON	OFF ON	
Min ATT setting	:INPut:ATTenuation:MINimum	<real>	<real>	
Min ATT ON/OFF	:INPut:ATTenuation:MINimum:STATe	OFF ON	OFF ON	
Preamp ON/OFF	:INPut:GAIN:STATe	OFF ON	OFF ON	
IQ Inverse ON/OFF	:INPut:IQ:INVerse	OFF ON	OFF ON	

6.3.2 Subsystem-CONFigure

Function description	SCPI command	Parameter	Query reply	Remarks
Code Domain mode setting	:CONFigure:CDOMain	--	--	

6.3.3 Subsystem-SENSe

Function description	SCPI command	Parameter	Query reply	Remarks
Center Freq setting	[[:SENSe]:FREQuency:CENTer	<real>	<real>	
Freq Offset setting	[[:SENSe]:FREQuency:OFFSet	<real>	<real>	
Freq Offset ON/OFF	[[:SENSe]:FREQuency:OFFSet:STATe	OFF ON	OFF ON	
Channel Number setting	[[:SENSe]:FREQuency:CHANnel:NUMBer	<int>	<int>	
Auto Level Set execution	[[:SENSe]:POWer:LEVel:AUTO	--	--	
Measurement mode setting	[[:SENSe]:CONDition:MMODE	CDMA2K CDMAONE	CDMA2K CDMAONE	
User Table NOT USE/USE	[[:SENSe]:CONDition:UTABle	NOT USE	NOT USE	
Meas Length setting	[[:SENSe]:CONDition:MLENght	<int>	<int>	
τ (Time Alignment Error) offset setting	[[:SENSe]:CONDition:TOFFset	<real>	<real>	
Phase Equalizing Filter ON/OFF	[[:SENSe]:CONDition:PFILter	OFF ON	OFF ON	
PN Offset Search ON/OFF	[[:SENSe]:CONDition:PNSearch	OFF ON	OFF ON	
PN Offset value setting	[[:SENSe]:CONDition:PNOffset	<int>	<int>	
Threshold Level setting	[[:SENSe]:CONDition:THReshold	<real>	<real>	
$\Delta\tau$ ON/OFF	[[:SENSe]:CONDition:DTAU	OFF ON	OFF ON	
$\Delta\theta$ ON/OFF	[[:SENSe]:CONDition:DTHeta	OFF ON	OFF ON	
Multi Channel Number setting	[[:SENSe]:CONDition:UTABle:MCNumber	<int>	<int>	
Channel setting	[[:SENSe]:CONDition:UTABle:CHANnel <utbl=1 to 48>	CPCCH QPCH PDCCH PDCH GCH RCCH ACKCH	CPCCH QPCH PDCCH PDCH GCH RCCH ACKCH	
Walsh Number setting	[[:SENSe]:CONDition:UTABle:WCNumber <utbl=1 to 48>	<int>	<int>	
Modulation setting	[[:SENSe]:CONDition:UTABle:MODulation <utbl=1 to 48>	QPSK PSK8 QAM16 QPSKPSK8 QPSKQAM16 PSK8QAM16 QPSKPSK8QAM16	QPSK PSK8 QAM16 QPSKPSK8 QPSKQAM16 PSK8QAM16 QPSKPSK8QAM16	

6.3.4 Subsystem-MEASure/READ/FETCH

6.3.4 Subsystem-MEASure/READ/FETCH

MEMO: *The reply formats of the Measure, Read, and Fetch commands are the same. The difference between the Measure and Read commands and Fetch command is that the Measure and Read commands are used to execute measurements and the Fetch command is used to read result data. Both the Measure and Read commands execute measurements. However, the initialization processes for the commands that are made when entering the measurement mode are different. The differences are described in the function description given later. If no descriptions are given, the initialization processes are the same. If the Fetch command is issued without entering the corresponding measurement mode, a Query error occurs.*

Function description	SCPI command	Parameter	Query reply	Remarks
τ (Time Alignment Offset) reading	:MEASure:TRESult:TAU?	--	<real>	
Frequency Error reading	:MEASure:TRESult:FERRor?	--	<real>,<real>	*1
ρ reading	:MEASure:TRESult:RHO?	--	<real>	
PN Offset reading	:MEASure:TRESult:PNOFFset?	--	<int>	
Mag Error reading	:MEASure:TRESult:MERRor?	--	<real>	
Phase Error reading	:MEASure:TRESult:PERRor?	--	<real>	
EVM reading	:MEASure:TRESult:EVM?	--	<real>	
Peak EVM reading	:MEASure:TRESult:PEVM?	--	<real>	
IQ Origin Offset reading	:MEASure:TRESult:IQOFFset?	--	<real>	
Tx Power reading	:MEASure:TRESult:POWer?	--	<real>,<real>	*2
Pilot Power reading	:MEASure:TRESult:PILot?	--	<real>,<real>	*3
Peak CDE reading	:MEASure:TRESult:PCDE?	--	<real>, <int1>,<int2>	*4
Peak Inactive CH Power reading	:MEASure:TRESult:PICPower?	--	<real>,<int>,<int>	*5
Peak $\Delta\tau$ reading	:MEASure:TRESult:PDtau?	--	<real>,<int>,<int>	*6
Peak $\Delta\theta$ reading	:MEASure:TRESult:PDHeta?	--	<real>,<int>,<int>	*7
Active CH Number reading	:MEASure:TRESult:ACHannel?	--	<int>	

- *1: Outputs the frequency error in order of [Hz] and [ppm].
- *2: Outputs the Tx Power in order of [dBm] and [W].
- *3: Outputs the Pilot Power in order of [dBm] and [W].
- *4: Outputs the peak of the Peak CDE and its data point in order of Power[dB], Walsh Code No., and Walsh Code Length.
- *5: Outputs the peak of the Inactive CH Power and its data point in order of Power[dBm], Walsh Code No., and Walsh Code Length.
- *6: Outputs the peak of $\Delta\tau$ and its data point in order of $\Delta\tau$ [sec], Walsh Code No., and Walsh Code Length.
- *7: Outputs the peak of $\Delta\theta$ and its data point in order of $\Delta\theta$ [rad], Walsh Code No., and Walsh Code Length.

6.3.5 Subsystem-INITiate

Function description	SCPI command	Parameter	Query reply	Remarks
Single measurement execution	:INITiate:MEASure:SINGle	--	--	
Repeat measurement execution	:INITiate:MEASure:REPeat	--	--	
Stop execution (measurement stop)	:INITiate:ABORt	--	--	

6.3.6 Subsystem-TRIGger

Function description	SCPI command	Parameter	Query reply	Remarks
Trigger Source	:TRIGger[:SEQuence]:SOURce	IMMediate IF EXT1 EXT2	IMM IF EXT1 EXT2	*8
Trigger Slope	:TRIGger[:SEQuence]:SLOPe	POSitive NEGative	POS NEG	
Ext2 Trigger Level setting	:TRIGger[:SEQuence]:LEVel:EXTernal	<real>	<real>	
IF Power setting	:TRIGger[:SEQuence]:LEVel:IF	<real>	<real>	
Trigger Delay setting	:TRIGger[:SEQuence]:DELay	<real>	<real>	
Interval Trigger setting	:TRIGger[:SEQuence]:INTerval:STATe	OFF ON	OFF ON	

*8: IMMEDIATE: Free-run mode without trigger setting
 IF: IF trigger
 EXT1: EXT1 input signal trigger
 EXT2: EXT2 input signal trigger

6.3.7 Subsystem-DISPlay

6.3.7 Subsystem-DISPlay

Function description	SCPI command	Parameter	Query reply	Remarks
Ref Level setting	:DISPlay:TRACe:Y[:SCALe]:RLEVel	<real>	<real>	
Level Offset setting	:DISPlay:TRACe:Y[:SCALe]:RLEVel:OFFSet	<real>	<real>	
Level Offset ON/OFF	:DISPlay:TRACe:Y[:SCALe]:RLEVel:OFFSet :STATe	OFF ON	OFF ON	
Analysis format selection	:DISPlay:WINDow<scrn=1 2 3 4>:FORMat	TRESult POWer CPOWer RHO DTAU DTHeta EVM MERRor SPCPOWer SPRHO CONStellation IEYE QEYE SCCPOWer SPCCONStellation	TRES POW CPOW RHO DTAU DTH EVM MERR SPCPOW SPRHO CONS IEYE QEYE SCCPOW SPCCONS	
Display format setting: Graph/ Table List	:DISPlay:WINDow<scrn=1 2 3 4>:VSCode:TYPE	GRAPh TABLe	GRAP TABL	
Display setting for the constel- lation	:DISPlay:WINDow<scrn=1 2 3 4> :CONStellation:TYPE	LCHip CHIP	LCH CHIP	
Specified PCG Number setting	:DISPlay:PCG	<int>	<int>	
Specified Code Number set- ting	:DISPlay:CODE	<int>	<int>	
Multi Screen setting	:DISPlay	SINGle DUAL QUAD	SING DUAL QUAD	
X Scale Left setting	:DISPlay[:WINDow<scrn=1 2 3 4>]:TRACe :X[:SCALe]:LEFT	<real>	<real>	
X Scale Right setting	:DISPlay[:WINDow<scrn=1 2 3 4>]:TRACe :X[:SCALe]:RIGHT	<real>	<real>	
Y Scale Upper setting	:DISPlay[:WINDow<scrn=1 2 3 4>]:TRACe :Y[:SCALe]:UPPer	<real>	<real>	
Y Scale Lower setting	:DISPlay[:WINDow<scrn=1 2 3 4>]:TRACe :Y[:SCALe]:LOWer	<real>	<real>	
Constellation Plot Start setting	:DISPlay[:WINDow<scrn=1 2 3 4>]:TRACe :CONStellation:CHIP:STARt :DISPlay[:WINDow<scrn=1 2 3 4>]:TRACe :CONStellation:SYMBol:STARt	<int>	<int>	
Constellation Plot Number set- ting	:DISPlay[:WINDow<scrn=1 2 3 4>]:TRACe :CONStellation:CHIP:NUMBer :DISPlay[:WINDow<scrn=1 2 3 4>]:TRACe :CONStellation:SYMBol:NUMBer	<int>	<int>	
I Eye Diagram Plot Start set- ting	:DISPlay[:WINDow<scrn=1 2 3 4>]:TRACe:IEYE :CHIP:STARt	<int>	<int>	
I Eye Diagram Plot Number setting	:DISPlay[:WINDow<scrn=1 2 3 4>]:TRACe:IEYE :CHIP:NUMBer	<int>	<int>	
Q Eye Diagram Plot Start set- ting	:DISPlay[:WINDow<scrn=1 2 3 4>]:TRACe:QEYE :CHIP:STARt	<int>	<int>	
Q Eye Diagram Plot Number setting	:DISPlay[:WINDow<scrn=1 2 3 4>]:TRACe:QEYE :CHIP:NUMBer	<int>	<int>	

6.3.8 Subsystem-MMEMory

Function description	SCPI command	Parameter	Query reply	Remarks
Specifying the device used when executing the SAVE and LOAD functions.	:MMEMory:DEvice	C D E	C D E	*9
Saving the settings of this instrument	:MMEMory:STORE:STATe	<int>	--	*10
Loading the settings of this instrument	:MMEMory:LOAD:STATe	<int>	--	*10
Measurement condition Save selection	:MMEMory:SElect:ITEM:CDMA2KDL:SETup	OFF ON	OFF ON	

*9 The following devices are specified depending on the parameter:

C CAMyData\SVRCL
D D:\ADVANTEST
E E:\ADVANTEST

*10 A number, which is a maximum of 4-digit and is added to the file name of the data to be saved or loaded, must be specified in <int>.

6.3.9 Subsystem-CALCulate

Function description	SCPI command	Parameter	Query reply	Remarks
Marker ON/OFF	:CALCulate:MARKer<scrn=1 2 3 4>[:STATe]	OFF ON	OFF ON	
Marker X setting	:CALCulate:MARKer<scrn=1 2 3 4>:X	<real>	<real>	
Marker Y reading	:CALCulate:MARKer<scrn=1 2 3 4>:Y?	--	<real>	
Constellation Marker Plot setting	:CALCulate:MARKer<scrn=1 2 3 4>:CHIP :CALCulate:MARKer<scrn=1 2 3 4>:SYMBOL	<int>	<int>	
Constellation I reading	:CALCulate:MARKer<scrn=1 2 3 4>:I?	--	<real>	
Constellation Q reading	:CALCulate:MARKer<scrn=1 2 3 4>:Q?	--	<real>	
Specified PCG coupling ON/OFF	:CALCulate:MARKer:SET:PCG[:STATe]	OFF ON	OFF ON	
Specified Code coupling ON/OFF	:CALCulate:MARKer:SET:CODE[:STATe]	OFF ON	OFF ON	
Active CH Marker ON/OFF	:CALCulate:ACMarker<scrn=1 2 3 4>[:STATe]	OFF ON	OFF ON	
Active CH Marker X setting	:CALCulate:ACMarker<scrn=1 2 3 4>:X	<real>	<real>	
Active CH Marker Y reading	:CALCulate:ACMarker<scrn=1 2 3 4>:Y?	--	<real>	

6.3.10 Subsystem-SYSTEM

6.3.10 Subsystem-SYSTEM

Function description	SCPI command	Parameter	Query reply	Remarks
Measurement system selection	:SYSTEM:SELect	SANalyzer TXTester	SAN TXT	
Modulation analysis system selection	:SYSTEM:SELect:STANdard	<str1>,<str2>	<str1>,<str2>	*11
Each measurement system parameter initialization	:SYSTEM:PRESet	--	--	
All measurement systems initialization	:SYSTEM:PRESet:ALL	--	--	
Inquiring about the error that occurred last	:SYSTEM:ERRor?	--	<int>,<str>	*12
Inquiring about the details of the error log	:SYSTEM:ERRor:ALL?	--	<int>,<str>	*12
Inquiring about the R3477 series options	:SYSTEM:OPTions?	--	<str>[,...]	

- *11 Sets the name of the standard to <str1> and a band class to <str2>.
 - <str1> = "cdma2000_DL"
 - <str2> = {"cdma2000_DL_BC00" | "cdma2000_DL_BC01" | ... }
 - To use user data, set the following:
 - <str1> = "STD_USER"
 - <str2> = "File name"
 - Specify "OFF" instead of <str1> and <str2> when setting the standard to OFF.
 - :SYSTEM:SELect:STANdard OFF
- *12 Returns an error number to <int> and an error message string to <str>.

6.4 Modulation Analysis Commands (Uplink)

6.4.1 Subsystem-INPUT

Function description	SCPI command	Parameter	Query reply	Remarks
ATT setting (Manual)	:INPut:ATTenuation	<real>	<real>	
ATT (Auto/Manual)	:INPut:ATTenuation:AUTO	OFF ON	OFF ON	
Min ATT setting	:INPut:ATTenuation:MINimum	<real>	<real>	
Min ATT ON/OFF	:INPut:ATTenuation:MINimum:STATE	OFF ON	OFF ON	
Preamp ON/OFF	:INPut:GAIN:STATE	OFF ON	OFF ON	
IQ Inverse ON/OFF	:INPut:IQ:INVerse	OFF ON	OFF ON	

6.4.2 Subsystem-CONFigure

Function description	SCPI command	Parameter	Query reply	Remarks
CdmaOne mode setting	:CONFigure:CDMAONE	--	--	
Cdma2000 mode setting	:CONFigure:CDMA2K	--	--	

6.4.3 Subsystem-SENSe

6.4.3 Subsystem-SENSe

Function description	SCPI command	Parameter	Query reply	Remarks
Center Freq setting	[[:SENSe]:FREQuency:CENTer	<real>	<real>	
Freq Offset setting	[[:SENSe]:FREQuency:OFFSet	<real>	<real>	
Freq Offset ON/OFF	[[:SENSe]:FREQuency:OFFSet:STATe	OFF ON	OFF ON	
Channel Number setting	[[:SENSe]:FREQuency:CHANnel:NUMBer	<int>	<int>	
Auto Level Set execution	[[:SENSe]:POWER:LEVel:AUTO	--	--	
Meas Parameters (cdmaOne mode)				
Meas Length setting	[[:SENSe]:CONDition:CDMAONE:MLENgth	<int>	<int>	
Freq Meas Range setting	[[:SENSe]:CONDition:CDMAONE:FMRange	NORMal EXPand	NORM EXP	
IQ Origin Offset setting	[[:SENSe]:CONDition:CDMAONE:IQOffset	INCLude EXCLude	INCL EXCL	
Average (cdmaOne mode)				
Average ON/OFF	[[:SENSe]:CONDition:CDMAONE:AVERage [:STATe]	OFF ON	OFF ON	
Average setting	[[:SENSe]:CONDition:CDMAONE:AVeRage :COUNT	<int>	<int>	
Meas Parameters (cdma2000 mode)				
User Table setting	[[:SENSe]:CONDition:UTABLE	NOT USE	NOT USE	
Meas Length setting	[[:SENSe]:CONDition:MLENgth	<int>	<int>	
PN Delay Search ON/OFF	[[:SENSe]:CONDition:PNDSearch	OFF ON	OFF ON	
PN Delay setting	[[:SENSe]:CONDition:PNDelay	<int>	<int>	
Freq Meas Range setting	[[:SENSe]:CONDition:FMRange	NORMal EXPand	NORM EXP	
Threshold Level setting	[[:SENSe]:CONDition:THReashold	<int>	<int>	
IQ Origin Offset setting	[[:SENSe]:CONDition:IQOffset	INCLude EXCLude	INCL EXCL	
Peak Inact CH Component setting	[[:SENSe]:CONDition:PICComponent	BOTH EITHer	BOTH EITH	
$\Delta\tau$ ON/OFF	[[:SENSe]:CONDition:DTAU	OFF ON	OFF ON	
$\Delta\theta$ ON/OFF	[[:SENSe]:CONDition:DTHeta	OFF ON	OFF ON	
Chip Rate Error ON/OFF	[[:SENSe]:CONDition:CRERRor	OFF ON	OFF ON	
Quadrature Error ON/OFF	[[:SENSe]:CONDition:QERRor	OFF ON	OFF ON	
Walsh Code Length setting	[[:SENSe]:CONDition:WCLength	<int>	<int>	
User Table (cdma2000 mode)				
SPICH Walsh Function setting	[[:SENSe]:CONDition:UTABLE:SPICH :WFUNCTion	OFF W32C64	OFF W32C64	
EACH/CCCH Walsh Function setting	[[:SENSe]:CONDition:UTABLE:EACCCH :WFUNCTion	OFF W2C8	OFF W2C8	
PDCCH Walsh Function setting	[[:SENSe]:CONDition:UTABLE:PDCCH :WFUNCTion	OFF W48C64	OFF W48C64	
REQCH Walsh Function setting	[[:SENSe]:CONDition:UTABLE:REQCH :WFUNCTion	OFF W8C16	OFF W8C16	
DCCH Walsh Function setting	[[:SENSe]:CONDition:UTABLE:DCCH :WFUNCTion	OFF W8C16	OFF W8C16	

Function description	SCPI command	Parameter	Query reply	Remarks
ACKCH Walsh Function setting	[[:SENSE]:CONDition:UTABle:ACKCH:WFUNcIion	OFF W16C64	OFF W16C64	
CQICH Walsh Function setting	[[:SENSE]:CONDition:UTABle:CQICH:WFUNcIion	OFF W12C16	OFF W12C16	
CQICH Modulation setting	[[:SENSE]:CONDition:UTABle:CQICH:MODulation	BPSK BPSKQ	BPSK BPSKQ	
FCH Walsh Function setting	[[:SENSE]:CONDition:UTABle:FCH:WFUNcIion	OFF W4C16	OFF W4C16	
SCH1 Walsh Function setting	[[:SENSE]:CONDition:UTABle:SCH1:WFUNcIion	OFF W1C2 W2C4	OFF W1C2 W2C4	
SCH1 Repetition Factor setting	[[:SENSE]:CONDition:UTABle:SCH1:RFACtor	<int>	<int>	
SCH2 Walsh Function setting	[[:SENSE]:CONDition:UTABle:SCH2:WFUNcIion	OFF W2C4 W6C8	OFF W2C4 W6C8	
SCH2 Repetition Factor setting	[[:SENSE]:CONDition:UTABle:SCH2:RFACtor	<int>	<int>	
PDCH Walsh Function setting	[[:SENSE]:CONDition:UTABle:PDCH:WFUNcIion	OFF W1C2 W2C4 W1C2W2C4	OFF W1C2 W2C4 W1C2W2C4	
PDCH Modulation setting	[[:SENSE]:CONDition:UTABle:PDCH:MODulation	BPSK QPSK PSK8	BPSK QPSK PSK8	
Average (cdma2000 mode)				
Average ON/OFF	[[:SENSE]:CONDition:AVERAge[:STATe]	OFF ON	OFF ON	
Average setting	[[:SENSE]:CONDition:AVERAge:COUnT	<int>	<int>	

6.4.4 Subsystem-MEASure/READ/FETCH

6.4.4 Subsystem-MEASure/READ/FETCH

MEMO: The reply formats of the Measure, Read, and Fetch commands are the same. The difference between the Measure and Read commands and Fetch command is that the Measure and Read commands are used to execute measurements and the Fetch command is used to read result data. Both the Measure and Read commands execute measurements. However, the initialization processes for the commands that are made when entering the measurement mode are different. The differences are described in the function description given later. If no descriptions are given, the initialization processes are the same. If the Fetch command is issued without entering the corresponding measurement mode, a Query error occurs.

Function description	SCPI command	Parameter	Query reply	Remarks
Measure/Read				
ρ reading	:MEASure:TRESult:RHO?	--	<real>	
Frequency Error reading	:MEASure:TRESult:FERRor?	--	<real>,<real>	<Hz>,<ppm>
Magnitude Error reading	:MEASure:TRESult:MERRor?	--	<real>	
Phase Error reading	:MEASure:TRESult:PERRor?	--	<real>	
EVM reading	:MEASure:TRESult:EVM?	--	<real>	
I/Q Origin Offset reading	:MEASure:TRESult:IQOOffset?	--	<real>	
Tx Power reading	:MEASure:TRESult:POWER?	--	<real>,<real>	<dBm>,<W>
Pilot Power reading	:MEASure:TRESult:PPOWER?	--	<real>,<real>	<dBm>,<W>
τ reading	:MEASure:TRESult:TAU?	--	<real>	
PN Delay reading	:MEASure:TRESult:PNDelay?	--	<int>	
Peak Inactive ρ reading	:MEASure:TRESult:PIRHO?	--	<real>, <int>, <int>, <string>	<p>, <Walsh Len>, <Walsh Code>, <"I","Q"or"I& Q">
Peak Δτ reading	:MEASure:TRESult:PDtau?	--	<real>, <int>, <int>, <string>	<Δτ>, <Walsh Len>, <Walsh Code>, <"I","Q"or"I& Q">
Peak Δθ reading	:MEASure:TRESult:PDtheta?	--	<real>, <int>, <int>, <string>	<Δθ>, <Walsh Len>, <Walsh Code>, <"I","Q"or"I& Q">
Chip Rate Error reading	:MEASure:TRESult:CRError?	--	<real>	
Quadrature Error reading	:MEASure:TRESult:QERRor?	--	<real>	
Active Channel reading	:MEASure:TRESult:ACHannel?	--	<int>	
Active I Code reading	:MEASure:TRESult:ACI?	--	<int>	
Active Q Code reading	:MEASure:TRESult:ACQ?	--	<int>	

6.4.5 Subsystem-INITiate

Function description	SCPI command	Parameter	Query reply	Remarks
Single measurement execution	:INITiate:MEASure:SINGle	--	--	
Repeat measurement execution	:INITiate:MEASure:REPeat	--	--	
Stop execution (measurement stop)	:INITiate:ABORt	--	--	

6.4.6 Subsystem-TRIGger

Function description	SCPI command	Parameter	Query reply	Remarks
Trigger Source	:TRIGger[:SEQuence]:SOURce	IMMediate IF EXT1 EXT2	IMM IF EXT1 EXT2	*8
Trigger Slope	:TRIGger[:SEQuence]:SLOPe	POSitive NEGative	POS NEG	
Ext2 Trigger Level setting	:TRIGger[:SEQuence]:LEVel:EXTernal	<real>	<real>	
IF Power setting	:TRIGger[:SEQuence]:LEVel:IF	<real>	<real>	
Trigger Delay setting	:TRIGger[:SEQuence]:DELay	<real>	<real>	
Interval Trigger setting	:TRIGger[:SEQuence]:INTerval:STATe	OFF ON	OFF ON	

*8: IMMEDIATE: Free-run mode without trigger setting
 IF: IF trigger
 EXT1: EXT1 input signal trigger
 EXT2: EXT2 input signal trigger

6.4.7 Subsystem-DISPlay

6.4.7 Subsystem-DISPlay

Function description	SCPI command	Parameter	Query reply	Remarks
Ref Level setting	:DISPlay:TRACe:Y[:SCALE]:RLEVel	<real>	<real>	
Level Offset setting	:DISPlay:TRACe:Y[:SCALE]:RLEVel:OFFSet	<real>	<real>	
Level Offset ON/OFF	:DISPlay:TRACe:Y[:SCALE]:RLEVel:OFFSet :STATe	OFF ON	OFF ON	
Screen division setting	:DISPlay	SINGle DUAL QUAD	SING DUAL QUAD	
Window Format (cdmaOne mode)				
Results display format selection	:DISPlay:CDMAONE:WINDow<scrn=1 2 3 4> :FORMat	TRESult CONStellation IEYE QEYE NOConstellation NOIEye NOQEye EVM MERRor PERRor	TRES CONS IEYE QEYE NOC NOIE NOQ EVM MERR PERR	
Constellation Display Type selection	:DISPlay:CDMAONE:WINDow<scrn=1 2 3 4> :CONStellation:TYPE	TDOT LINE DOT	TDOT LINE DOT	
Window Format (cdma2000 mode)				
Constellation display type selection	:DISPlay:WINDow<scrn=1 2 3 4>:FORMat	TRESult RHO CPOWer IRHO QRHO IDTau QDTau IDTHeta QDTHeta CONStellation IEYE QEYE EVM MERRor PERRor	TRES RHO CPOW IRHO QRHO IDT QDT IDTH QDTH CONS IEYE QEYE EVM MERR PERR	
vs Code Display Type selection	:DISPlay:WINDow<scrn=1 2 3 4>:VSCode:TYPE	GRAPh TABLe	GRAP TABL	
Constellation Display Type selection	:DISPlay:WINDow<scrn=1 2 3 4>:CONStellation :TYPE	TDOT LINE DOT	TDOT LINE DOT	
Scale				
X Scale Left setting	:DISPlay[:WINDow<scrn=1 2 3 4>]:TRACe :X[:SCALE]:LEFT	<real>	<real>	
X Scale Right setting	:DISPlay[:WINDow<scrn=1 2 3 4>]:TRACe :X[:SCALE]:RIGHt	<real>	<real>	
Y Scale Upper setting	:DISPlay[:WINDow<scrn=1 2 3 4>]:TRACe :Y[:SCALE]:UPPer	<real>	<real>	
Y Scale Lower setting	:DISPlay[:WINDow<scrn=1 2 3 4>]:TRACe :Y[:SCALE]:LOWer	<real>	<real>	

6.4.8 Subsystem-MMEMory

Function description	SCPI command	Parameter	Query reply	Remarks
Specifying the device used when executing the SAVE and LOAD functions.	:MMEMory:DEvice	C D E	C D E	*9
Saving the settings of this instrument	:MMEMory:STORE:STATe	<int>	--	*10
Loading the settings of this instrument	:MMEMory:LOAD:STATe	<int>	--	*10
Measurement condition Save selection	:MMEMory:SElect:ITEM:CDMA2KUL:SETup	OFF ON	OFF ON	

*9 The following devices are specified depending on the parameter:

C CAMyData\SVRCL
D D:\ADVANTEST
E E:\ADVANTEST

*10 A number, which is a maximum of 4-digit and is added to the file name of the data to be saved or loaded, must be specified in <int>.

6.4.9 Subsystem-CALCulate

Function description	SCPI command	Parameter	Query reply	Remarks
Marker				
Marker ON/OFF	:CALCulate:MARKer<scrn=1 2 3 4>[:STATe]	OFF ON	OFF ON	
Active CH Marker ON/OFF	:CALCulate:ACMarker<scrn=1 2 3 4>[:STATe]	OFF ON	OFF ON	
Marker position setting Constellation I Eye Diagram Q Eye Diagram Null Offset Constellation Null Offset I Eye Diagram Null Offset Q Eye Diagram	:CALCulate:MARKer<scrn=1 2 3 4>:CHIP	<int>	<int>	<Chip No.>
Marker I reading Constellation I Eye Diagram Null Offset Constellation Null Offset I Eye Diagram	:CALCulate:MARKer<scrn=1 2 3 4>:I?	--	<real>	<I>
Marker Q reading Constellation Q Eye Diagram Null Offset Constellation Null Offset Q Eye Diagram	:CALCulate:MARKer<scrn=1 2 3 4>:Q?	--	<real>	<Q>
Marker X setting EVM vs Chip Mag Error vs Chip Phase Error vs Chip	:CALCulate:MARKer<scrn=1 2 3 4>:X	<real>	<real>	<Chip No.>
Marker Y reading EVM vs Chip	:CALCulate:MARKer<scrn=1 2 3 4>:Y?	--	<real>	<EVM>
Marker Y reading Mag Error vs Chip	:CALCulate:MARKer<scrn=1 2 3 4>:Y?	--	<real>	<Mag Error>
Marker Y reading Phase Error vs Chip	:CALCulate:MARKer<scrn=1 2 3 4>:Y?	--	<real>	<Phase Error>

6.4.9 Subsystem-CALCulate

Function description	SCPI command	Parameter	Query reply	Remarks
Marker X setting ρ(I) vs Code ρ(Q) vs Code ρ vs Code Code Power vs Code	:CALCulate:MARKer<scrn=1 2 3 4>:X	<real>	<real>	<Marker Pos>
Marker Y reading ρ(I) vs Code ρ(Q) vs Code	:CALCulate:MARKer<scrn=1 2 3 4>:Y?	--	<int>, <int>, <real>, <real>	<Walsh Len>, <Walsh Code>, <Rate>, <ρ>
Marker Y reading ρ vs Code Code Power vs Code	:CALCulate:MARKer<scrn=1 2 3 4>:Y?	--	<int>, <int>, <real>, <real>, <real>, <real>	<Walsh Len>, <Walsh Code>, <Rate>, <ρ>, <Power[dB]>, <Power[W]>
Active CH. Marker X setting ρ(I) vs Code ρ(Q) vs Code Δτ(I) vs Code Δτ(Q) vs Code Δθ(I) vs Code Δθ(Q) vs Code ρ vs Code Code Power vs Code	:CALCulate:ACMarker<scrn=1 2 3 4>:X	<real>	<real>	<Marker Pos>
Active CH. Marker Y reading ρ(I) vs Code ρ(Q) vs Code Δτ(I) vs Code Δτ(Q) vs Code Δθ(I) vs Code Δθ(Q) vs Code	:CALCulate:ACMarker<scrn=1 2 3 4>:Y?	--	<int>, <int>, <real>, <real>, <string>, <real>, <real>	<Walsh Len>, <Walsh Code>, <Rate>, <ρ>, <"BPSK" "QPSK" "8PSK">, <Δτ>, <Δθ>
Active CH. Marker Y reading ρ vs Code Code Power vs Code	:CALCulate:ACMarker<scrn=1 2 3 4>:Y?	--	<int>, <int>, <real>, <real>, <real>, <real>, <string>	<Walsh Len>, <Walsh Code>, <Rate>, <ρ>, <Power[dB]>, <Power[W]>, <"BPSK" "QPSK" "8PSK">

6.4.10 Subsystem-SYSTEM

Function description	SCPI command	Parameter	Query reply	Remarks
Measurement system selection	:SYSTEM:SElect	SANalyzer TXTester	SAN TXT	
Modulation analysis system selection	:SYSTEM:SElect:STANdard	<str1>,<str2>	<str1>,<str2>	*11
Each measurement system parameter initialization	:SYSTEM:PRESet	--	--	
All measurement systems initialization	:SYSTEM:PRESet:ALL	--	--	
Inquiring about the error that occurred last	:SYSTEM:ERRor?	--	<int>,<str>	*12
Inquiring about the details of the error log	:SYSTEM:ERRor:ALL?	--	<int>,<str>	*12
Inquiring about the R3477 series options	:SYSTEM:OPTions?	--	<str>[,...]	

- *11 Sets the name of the standard to <str1> and a band class to <str2>.
 <str1> = "cdma2000_UL"
 <str2> = {"cdma2000_UL_BC00" | "cdma2000_UL_BC01" | ...}
 To use user data, set the following:
 <str1> = "STD_USER"
 <str2> = "File name"
 Specify "OFF" instead of <str1> and <str2> when setting the standard to OFF.
 :SYSTEM:SElect:STANdard OFF
- *12 Returns an error number to <int> and an error message string to <str>.

6.5 Other Commands

6.5 Other Commands

6.5.1 Subsystem-INPut

Function description	SCPI command	Parameter	Query reply	Remarks
Setting the ATT (Manual)	:INPut:ATTenuation	<real>	<real>	
ATT(Auto/Manual)	:INPut:ATTenuation:AUTO	OFF ON	OFF ON	
Setting the Min ATT	:INPut:ATTenuation:MINimum	<real>	<real>	
Min ATT ON/OFF	:INPut:ATTenuation:MINimum:STATe	OFF ON	OFF ON	
Preamp ON/OFF	:INPut:GAIN:STATe	OFF ON	OFF ON	

6.5.2 Subsystem-SENSE

Function description	SCPI command	Parameter	Query reply	Remarks
Frequency				
Setting the Center Freq	[:SENSE]:FREQUENCY:CENTer	<real>	<real>	
Setting the Start Freq	[:SENSE]:FREQUENCY:STARt	<real>	<real>	
Setting the Stop Freq	[:SENSE]:FREQUENCY:STOP	<real>	<real>	
Setting the Span	[:SENSE]:FREQUENCY:SPAN	<real>	<real>	
Setting the Center Freq setting resolution	[:SENSE]:FREQUENCY:CENTer:STEP	<real>	<real>	
Setting the Center Freq setting resolution mode	[:SENSE]:FREQUENCY:CENTer:STEP:AUTO	OFF ON	OFF ON	
Setting the Offset Freq	[:SENSE]:FREQUENCY:OFFSet	<real>	<real>	
Setting the Offset Freq condition	[:SENSE]:FREQUENCY:OFFSet:STATe	OFF ON	OFF ON	
Setting the channel number	[:SENSE]:FREQUENCY:CHANnel:NUMBer	<int>	<int>	
Band Width				
Setting the RBW	[:SENSE]:{BANDwidth BWIDth}{ :RESolution }	<real>	<real>	
Setting the RBW mode	[:SENSE]:{BANDwidth BWIDth}{ :RESolution } :AUTO	OFF ON	OFF ON	
Setting the VBW	[:SENSE]:{BANDwidth BWIDth}:VIDeo	<real>	<real>	
Setting the VBW setting mode	[:SENSE]:{BANDwidth BWIDth}:VIDeo:AUTO	OFF ON	OFF ON	
Setting the ratio between the span and the RBW	[:SENSE]:{BANDwidth BWIDth}{ :RESolution } :RATio	<real>	<real>	
Setting the ratio mode between the span and the RBW	[:SENSE]:{BANDwidth BWIDth}{ :RESolution } :RATio:STATe	OFF ON	OFF ON	
Setting the ratio between the RBW and the VBW	[:SENSE]:{BANDwidth BWIDth}:VIDeo:RATio	<real>	<real>	
Setting the ratio mode between the RBW and the VBW	[:SENSE]:{BANDwidth BWIDth}:VIDeo:RATio :STATe	OFF ON	OFF ON	
Couple				
Setting an automatic coupling	[:SENSE]:COUPle:ALL:AUTO	--	--	
ADC				
Setting the ADC Dither	[:SENSE]:ADC:DITHer	OFF ON	OFF ON	
Detector				
Setting the trace detector	[:SENSE]:DETECTOR:TRACe:FUNCTion	NORMal POSitive NEGative SAMPLe AVERAge	NORM POS NEG SAMP AVER	
Selecting the trace detector mode	[:SENSE]:DETECTOR:TRACe:FUNCTion:AUTO	OFF ON	OFF ON	

6.5.2 Subsystem-SENSE

Function description	SCPI command	Parameter	Query reply	Remarks
Average				
Setting the average mode of the average detector	[::SENSE]:AVERAGE:TYPE	RMS VIDeo VOLTage	RMS VID VOLT	
Setting the mode used when selecting the average detection mode of the average detector	[::SENSE]:AVERAGE:TYPE:AUTO	OFF ON	OFF ON	
Preselector				
Manually adjusting the pre-selector	[::SENSE]:PRESelector	<int>	<int>	
Automatically adjusting the pre-selector	[::SENSE]:PRESelector:AUTO	--	--	
Sweep				
Setting the sweep time	[::SENSE]:SWEep:TIME	<real>	<real>	
Selecting the sweep time setting mode	[::SENSE]:SWEep:TIME:AUTO	OFF ON	OFF ON	
Specifying the number of times the sweep averaging is performed and the number of times MAX HOLD is performed.	[::SENSE]:SWEep:COUNT	<int>	<int>	
Setting the gated sweep to ON or OFF	[::SENSE]:SWEep:GATE	OFF ON	OFF ON	
Setting the gate signal position	[::SENSE]:SWEep:GATE:DELAY	<real>	<real>	
Setting the gate signal width	[::SENSE]:SWEep:GATE:WIDTH	<real>	<real>	
Switching the gate signal mode	[::SENSE]:SWEep:GATE:WIDTH:AUTO	OFF ON	OFF ON	
Setting the gated sweep trigger	[::SENSE]:SWEep:GATE:SOURce	IMMEDIATE IF EXT1 EXT2	IMM IF EXT1 EXT2	
Setting the trigger polarity of each trigger source	[::SENSE]:SWEep:GATE:SLOPe	NEGative POSitive	NEG POS	
Setting the trigger level of the EXT2 (external input terminal 2) trigger	[::SENSE]:SWEep:GATE:LEVel:EXTErnal	<real>	<real>	
Setting the trigger level of the IF trigger	[::SENSE]:SWEep:GATE:LEVel:IF	<real>	<real>	
Correction				
Switching the RF input level correction function ON and OFF	[::SENSE]:CORRection:CSET:STATE	OFF ON	OFF ON	
Entering the RF input level correction data	[::SENSE]:CORRection:CSET:DATA	<real1>,<real2>	--	*1
Deleting all the RF input level correction data	[::SENSE]:CORRection:CSET:DELEte	--	--	

*1 <real1> = Frequency data
 <real2> = Correction level data
 Delimited by a comma.

Function description	SCPI command	Parameter	Query reply	Remarks
Channel Power				
Executing the Auto Level Set function	[:SENSe]:CPOWer:POWer:LEVel:AUTO	--	--	
Setting the measurement window display to ON or OFF	[:SENSe]:CPOWer:WINDow	OFF ON	OFF ON	
Specifying the measurement window display position	[:SENSe]:CPOWer:WINDow:POSition	<real>	<real>	
Specifying the measurement window display width	[:SENSe]:CPOWer:WINDow:WIDTh	<real>	<real>	
Setting the averaging calculation mode to ON or OFF	[:SENSe]:CPOWer:AVERage[:STATe]	OFF ON	OFF ON	
Setting the number of times averaging is performed	[:SENSe]:CPOWer:AVERage:COUNt	<int>	<int>	
Specifying the calculation type of the averaging calculation mode	[:SENSe]:CPOWer:AVERage:MODE	CONTinuous REPeat	CONT REP	
Setting the upper limit value	[:SENSe]:CPOWer<screen>:LIMit:UPPer	<real>	<real>	
Setting the lower limit value	[:SENSe]:CPOWer<screen>:LIMit:LOWer	<real>	<real>	
Setting the judgment to ON or OFF	[:SENSe]:CPOWer:JUDGe	OFF ON	OFF ON	
Setting the standard values	[:SENSe]:CPOWer:SET:STANdard	--	--	
OBW				
Executing the Auto Level Set function	[:SENSe]:OBW:POWer:LEVel:AUTO	--	--	
Specifying the OBW% value	[:SENSe]:OBW:PERCent	<real>	<real>	
Setting the number of times averaging	[:SENSe]:OBW:AVERage:COUNt	<int>	<int>	
Setting the averaging calculation mode to ON or OFF	[:SENSe]:OBW:AVERage[:STATe]	OFF ON	OFF ON	
Specifying the calculation type of the averaging calculation mode	[:SENSe]:OBW:AVERage:MODE	CONTinuous REPeat	CONT REP	
Setting the upper limit value	[:SENSe]:OBW:LIMit:UPPer	<real>	<real>	
Setting the lower limit value	[:SENSe]:OBW:LIMit:LOWer	<real>	<real>	
Setting the judgment to ON or OFF	[:SENSe]:OBW:JUDGe	OFF ON	OFF ON	
Setting the standard values	[:SENSe]:OBW:SET:STANdard	--	--	

6.5.2 Subsystem-SENSE

Function description	SCPI command	Parameter	Query reply	Remarks
ACLR/ACP				
Executing the Auto Level Set function	[[:SENSE]:{ACLR ACP}:POWER:LEVEL:AUTO	--	--	
Copying the standard values	[[:SENSE]:{ACLR ACP}:DATA:COPY:STANDARD	--	--	
Setting the adjacent channel position and adjacent channel bandwidth	[[:SENSE]:{ACLR ACP}:CSBW:DATA	<real>,<real>,<real>	--	
Initializing the adjacent channel position and adjacent channel bandwidth data	[[:SENSE]:{ACLR ACP}:CSBW:DATA:DELETE	--	--	
Setting the Root Nyquist band calculation mode to ON or OFF	[[:SENSE]:{ACLR ACP}:RNYQUIST	OFF ON	OFF ON	
Setting the Symbol Rate value, which is used in the Root Nyquist band calculation mode	[[:SENSE]:{ACLR ACP}:RNYQUIST:SRATE	<real>	<real>	
Setting the filter coefficient, which is used in the Root Nyquist band calculation mode	[[:SENSE]:{ACLR ACP}:RNYQUIST:RFACtor	<real>	<real>	
Setting the number of times averaging is performed	[[:SENSE]:{ACLR ACP}:AVERAGE:COUNT	<int>	<int>	
Setting the averaging calculation mode to ON or OFF	[[:SENSE]:{ACLR ACP}:AVERAGE[:STATE]	OFF ON	OFF ON	
Specifying the calculation type of the averaging calculation mode	[[:SENSE]:{ACLR ACP}:AVERAGE:MODE	CONTinuous REPeat	CONT REP	
Setting the noise correction function to ON or OFF	[[:SENSE]:{ACLR ACP}:NCORrection[:STATE]	OFF ON	OFF ON	
Setting the judgment to ON or OFF	[[:SENSE]:{ACLR ACP}:JUDGE	OFF ON	OFF ON	
Setting the standard values	[[:SENSE]:{ACLR ACP}:SET:STANDARD	--	--	

Function description	SCPI command	Parameter	Query reply	Remarks
Multi Carrier ACLR/ACP				
Executing the Auto Level Set function	[:SENSE] : { MCAClr MCACp } : POWER : LEVEL : AUTO	--	--	
Setting the measurement carrier and adjacent channel to ON or OFF	[:SENSE] : { MCAClr MCACp } : PARAMETER { 1 2 ... 16 } : STATE	OFF ON	OFF ON	
Setting the offset frequency of the measurement carrier and adjacent channel	[:SENSE] : { MCAClr MCACp } : PARAMETER { 1 2 ... 16 } : FREQUENCY	<real>	<real>	
Setting the channel bandwidth of the measurement carrier and adjacent channel area	[:SENSE] : { MCAClr MCACp } : PARAMETER { 1 2 ... 16 } : BANDWIDTH	<real>	<real>	
Setting the reference power area of the measurement carrier and adjacent channel	[:SENSE] : { MCAClr MCACp } : PARAMETER { 1 12 ... 16 } : REFERENCE	<int>	<int>	
Setting a limit value, which is used to check measurement results as pass or fail	[:SENSE] : { MCAClr MCACp } : PARAMETER { 1 12 ... 16 } : LIMIT	<real>	<real>	
Setting the Carrier Freq Adjustment function to ON or OFF	[:SENSE] : { MCAClr MCACp } : CARRIER : ADJUST : STATE	OFF ON	OFF ON	
Setting the Carrier Freq Adjustment value	[:SENSE] : { MCAClr MCACp } : CARRIER : ADJUST	<real>	<real>	
Setting the Root Nyquist filter calculation to ON or OFF	[:SENSE] : { MCAClr MCACp } : RNYQUIST	OFF ON	OFF ON	
Setting the Symbol Rate value for Root Nyquist filter calculation	[:SENSE] : { MCAClr MCACp } : RNYQUIST : SRATE	<real>	<real>	
Setting the filter coefficient, which is used in the Root Nyquist band calculation mode	[:SENSE] : { MCAClr MCACp } : RNYQUIST : RFACTOR	<real>	<real>	
Setting the number of times averaging is performed	[:SENSE] : { MCAClr MCACp } : AVERAGE : COUNT	<int>	<int>	
Setting the averaging calculation mode to ON or OFF	[:SENSE] : { MCAClr MCACp } : AVERAGE [: STATE]	OFF ON	OFF ON	
Specifying the calculation type of the averaging calculation mode	[:SENSE] : { MCAClr MCACp } : AVERAGE : MODE	CONTINUOUS REPEAT	CONT REP	
Setting the noise correction function to ON or OFF	[:SENSE] : { MCAClr MCACp } : NCORRECTION [: STATE]	OFF ON	OFF ON	
Setting the judgment to ON or OFF	[:SENSE] : { MCAClr MCACp } : JUDGE	OFF ON	OFF ON	
Setting the standard values	[:SENSE] : { MCAClr MCACp } : SET : STANDARD	--	--	

6.5.2 Subsystem-SENSe

Function description	SCPI command	Parameter	Query reply	Remarks
Spurious Emissions				
Executing the Auto Level Set function	[[:SENSe]:SPURious:POWer:LEVel:AUTO	--	--	
Creating the measurement table	[[:SENSe]:SPURious:DATA:CREate	--	--	
Setting the First Carrier frequency	[[:SENSe]:SPURious:CARRier:FIRST	<real>	<real>	
Setting the Last Carrier frequency	[[:SENSe]:SPURious:CARRier:LAST	<real>	<real>	
Registering the sweep parameters, which are used in the Spurious measurement, in the Spurious table	[[:SENSe]:SPURious:DATA[:NUMBer{1 2 3}]	<real1>,<real2>, <bool3>, <bool4>,<real4>, <bool5>,<real5>, <bool6>,<real6> <real7>, <bool8>,<real8>, <bool9>, <real10>	--	*2
Selecting the Spurious table that is used	[[:SENSe]:SPURious:DATA[:NUMBer{1 2 3}] :ACTive	--	<int>	
Clearing all data registered in the Spurious table that is used	[[:SENSe]:SPURious:DATA[:NUMBer{1 2 3}] :DELete	--	--	
Setting the judgment to ON or OFF	[[:SENSe]:SPURious:JUDGE	OFF ON	OFF ON	
Setting the standard values	[[:SENSe]:SPURious:SET:STANdard	--	--	

*2 <real1> = Sweep start frequency (GHz/MHz/kHz/Hz)
 <real2> = Sweep stop frequency (GHz/MHz/kHz/Hz)
 <bool3> = { OFF | ON } Input Filter ON/OFF
 <bool4> = { OFF | ON } RBW AUTO/MANUAL
 <real4> = RBW (MHz/kHz/Hz)
 <bool5> = { OFF | ON } VBW AUTO/MANUAL
 <real5> = VBW (MHz/kHz/Hz)
 <bool6> = { OFF | ON } Sweep time AUTO/MANUAL
 <real6> = Sweep time (S/MS/US)
 <real7> = Reference level (dBm)
 <bool8> = { OFF | ON } input ATT AUTO/MANUAL
 <real8> = Input attenuator (dB)
 <bool9> = { OFF | ON } Prcamp ON/OFF
 <real10> = Spurious level judgment value (dBm)

Function description	SCPI command	Parameter	Query reply	Remarks
Spectrum Emission Mask				
Executing the Auto Level Set function	[:SENSE]:SEMask:POWER:LHVel:AUTO	--	--	
Setting the reference power calculation bandwidth	[:SENSE]:SEMask:CBWidth	<real>	<real>	
Setting the Root Nyquist filter calculation mode	[:SENSE]:SEMask:RNYQuist	OFF ON	OFF ON	
Setting the symbol rate, which is used for the Root Nyquist filter calculation	[:SENSE]:SEMask:RNYQuist:SRATE	<real>	<real>	
Setting the roll-off factor, which is used for the Root Nyquist filter calculation	[:SENSE]:SEMask:RNYQuist:RFACTOR	<real>	<real>	
Setting the reference power calculation mode	[:SENSE]:SEMask:RPOWER:MODE	CHANnel PEAK	CHAN PEAK	
Setting the number of times averaging is performed	[:SENSE]:SEMask:AVERAge:COUNt	<int>	<int>	
Setting the averaging measurement function to ON or OFF	[:SENSE]:SEMask:AVERAge[:STATE]	OFF ON	OFF ON	
Setting the averaging mode of the averaging measurement function	[:SENSE]:SEMask:AVERAge:MODE	CONTinuous REPeat	CONT REP	
Setting the judgment to ON or OFF	[:SENSE]:SEMask:JUDGc	OFF ON	OFF ON	
Setting the standard values	[:SENSE]:SEMask:SET:STANdard	--	--	
Setting the measurement parameter table	[:SENSE]:SEMask:DATA	<real1>, <real2>,<real3>, <real4>,<real5>, <real6>,<real7>, <real8>,<type>	--	*3
Deleting all the measurement parameter tables	[:SENSE]:SEMask:DATA:DELete	--	--	

*3
 <real1>= Offset Start frequency (GHz/MHz/kHz/Hz)
 <real2>= Offset Stop frequency (GHz/MHz/kHz/Hz)
 <real3>= integral bandwidth (ABS) (GHz/MHz/kHz/Hz)
 <real4>= absolute level judgment Start value (dBm)
 <real5>= absolute level judgment Stop value (dBm)
 <real6>= integral bandwidth (REL) (GHz/MHz/kHz/Hz)
 <real7>= relative level judgment Start value (dB)
 <real8>= relative level judgment Stop value (dB)
 <type>= { ABS | REL | AAR | AOR }

ABS: Judges only by using the absolute level judgment value

REL: Judges only by using the relative level judgment value.

AAR: Judges by using the AND condition of the absolute level value and the relative level judgment value.

AOR: Judges by using the OR condition of the absolute level value and the relative level judgment value.

6.5.2 Subsystem-SENSe

Function description	SCPI command	Parameter	Query reply	Remarks
CCDF				
Executing the Auto Level Set function	[[:SENSe]:CCDF:POWer:LEVel:AUTO	--	--	
Setting the resolution bandwidth (RBW)	[[:SENSe]:CCDF:{BANDwidth BWIDTH} [:RESolution]	<real>	<real>	
Setting the number of measurement samples	[[:SENSe]:CCDF:POINt	<int>	<int>	
Setting the gate function to ON or OFF	[[:SENSe]:CCDF:GATE	OFF ON	OFF ON	
Setting the threshold level of the gate function	[[:SENSe]:CCDF:GATE:THReshold	<real>	<real>	
T-Domain Power				
Setting the averaging count	[[:SENSe]:TDPower:AVERage:COUNT	<int>	<int>	
Setting the averaging calculation mode to ON or OFF	[[:SENSe]:TDPower:AVERage[:STATe]	OFF ON	OFF ON	
Specifying the operation type in the averaging calculation mode	[[:SENSe]:TDPower:AVERage:MODE	CONTInuous REPeat	CONT REP	
Executing the Auto Level Set function	[[:SENSe]:TDPower:POWer:LEVel:AUTO	--	--	
Setting the measurement window display to ON or OFF	[[:SENSe]:TDPower:WINDow	OFF ON	OFF ON	
Specifying the measurement window display position	[[:SENSe]:TDPower:WINDow:POSition	<real>	<real>	Time
Specifying the measurement window display width	[[:SENSe]:TDPower:WINDow:WIDTh	<real>	<real>	Time
Setting the Upper limit	[[:SENSe]:TDPower:LIMit:UPPer	<real>	<real>	Level
Setting the Lower limit	[[:SENSe]:TDPower:LIMit:LOWer	<real>	<real>	Level
Setting the judgment to ON or OFF	[[:SENSe]:TDPower:JUDGe	OFF ON	OFF ON	
Setting the Standard values	[[:SENSe]:TDPower:SET:STANdard	--	--	
ON/OFF Ratio				
Setting the averaging count	[[:SENSe]:OORatio:AVERage:COUNT	<int>	<int>	
Setting the averaging calculation mode to ON or OFF	[[:SENSe]:OORatio:AVERage[:STATe]	OFF ON	OFF ON	
Specifying the operation type in the averaging calculation mode	[[:SENSe]:OORatio:AVERage:MODE	CONTInuous REPeat	CONT REP	
Executing the Auto Level Set function	[[:SENSe]:OORatio:POWer:LEVel:AUTO	--	--	
Setting the display position of the ON window	[[:SENSe]:OORatio:WINDow:ON:POSition	<real>	<real>	Time
Setting the display width of the ON window	[[:SENSe]:OORatio:WINDow:ON:WIDTh	<real>	<real>	Time

Function description	SCPI command	Parameter	Query reply	Remarks
Setting the display position of the OFF window	[:SENSe]:OORatio:WINDow:OFF:POSition	<real>	<real>	Time
Setting the display width of the OFF window	[:SENSe]:OORatio:WINDow:OFF:WIDTh	<real>	<real>	Time
Setting the limit	[:SENSe]:OORatio:LIMit	<real>	<real>	
Setting the judgment to ON or OFF	[:SENSe]:OORatio:JUDGe	OFF ON	OFF ON	
Setting the Standard values	[:SENSe]:OORatio:SET:STANdard	--	--	

6.5.3 Subsystem-CONFigure

Function description	SCPI command	Parameter	Query reply	Remarks
Entering the Channel Power measurement mode	:CONFigure:CPOWer	--	--	
Entering the OBW measurement mode	:CONFigure:OBW	--	--	
Entering the Multi-Carrier ACLR/ACP measurement mode	:CONFigure:{MCAClR MCACp}	--	--	
Entering the ACLR/ACP measurement mode	:CONFigure:{ACLR ACP}	--	--	
Entering the Spurious measurement mode	:CONFigure:SPURious	--	--	
Entering the Spectrum Emission Mask measurement mode	:CONFigure:SEMAsk	--	--	
Entering the CCDF measurement mode	:CONFigure:CCDF	--	--	
Entering the T-Domain Power measurement mode	:CONFigure:TDPower	--	--	
Entering the ON/OFF Ratio measurement mode	:CONFigure:OORatio	--	--	

6.5.4 Subsystem-MEASure/READ/FETCH

6.5.4 Subsystem-MEASure/READ/FETCH

MEMO: *The reply formats of the Measure, Read, and Fetch commands are the same. The difference between the Measure and Read commands and Fetch command is that the Measure and Read commands are used to execute measurements and the Fetch command is used to read result data. Both the Measure and Read commands execute measurements. However, the initialization processes for the commands that are made when entering the measurement mode are different. The differences are described in the function description given later. If no descriptions are given, the initialization processes are the same. If the Fetch command is issued without entering the corresponding measurement mode, a Query error occurs.*

Function description	SCPI command	Parameter	Query reply	Remarks
Channel Power				
Performing the Channel Power measurement and reading the measurement result (Trace)	:MEASure:CPOWer?	--	<real>	
Performing the Channel Power measurement and reading the average power density (Trace)	:MEASure:CPOWer:PDENsity?	--	<real>	
Performing the Channel Power measurement and reading the measurement result (RMS)	:MEASure:CPOWer:RMS?	--	<real>	
Performing the Channel Power measurement and reading the average power density (RMS)	:MEASure:CPOWer:RMS:PDENsity?	--	<real>	
Performing the Channel Power measurement and reading the total Pass/Fail judgment	:MEASure:CPOWer:FAIL?	--	PASS FAIL	
OBW				
Performing the OBW measurement and reading all measurement results	:MEASure:OBW?	--	<real>,<real>	
Performing the OBW measurement and reading the measurement result (only the OBW value)	:MEASure:OBW:OBW?	--	<real>	
Performing the OBW measurement and reading the measurement result (only the OBW center frequency)	:MEASure:OBW:FCENter?	--	<real>	
Performing the OBW measurement and reading the total Pass/Fail judgment	:MEASure:OBW:FAIL?	--	PASS FAIL	

Function description	SCPI command	Parameter	Query reply	Remarks
Performing the ACLR/ACP measurement and reading all measurement results	:MEASure:{ACLR ACP}[:NUMBer{1 2 3 4 5}]?	--	<real1>,<real2>,<real3>[, ...]	*4
Performing the ACLR/ACP measurement and reading the results of reference power measurement	:MEASure:{ACLR ACP}:RPOWer?	--	<real>	
Performing the ACLR/ACP measurement and reading all measurement results of the specified channels on the Upper side	:MEASure:{ACLR ACP}:UPPer[:NUMBer{1 2 3 4 5}]?	--	<real1>[, ...]	*5
Performing the ACLR/ACP measurement and reading all measurement results of the specified channels on the Lower side	:MEASure:{ACLR ACP}:LOWer[:NUMBer{1 2 3 4 5}]?	--	<real1>[, ...]	*5
Performing the ACLR/ACP measurement and reading the total Pass/Fail judgment	:MEASure:{ACLR ACP}:FAIL?	--	PASS FAIL	

*4 When the NUMBer header is omitted:<real1>,<real2>,<real3>[,]
 <real1> = Real value that indicates the reference power. Unit: dBm,
 <real2> = Real value that indicates the lower level(1). Unit: dB,
 <real3> = Real value that indicates the upper level(1). Unit: dB,
 <real4> = Real value that indicates the lower level(2). Unit: dB,
 <real5> = Real value that indicates the upper level(2). Unit: dB,

 <real2n>= Real value that indicates the lower level(n). Unit: dB,
 <real2n+1>= Real value that indicates the upper level(n). Unit: dB

n: Number of channels measured in the ACP measurement (up to 5 groups)

When the NUMBer header is specified:<real1>,<real2>,<real3>
 <real1> = Real value that indicates the reference power. Unit: dBm,
 <real2> = Real value that indicates the lower level(m). Unit: dB,
 <real3> = Real value that indicates the upper level(m). Unit: dB
 m: The number that indicates the specified adjacent channel

*5 When the NUMBer header is omitted:<real1>[, <real2>, ..., <realn>] (Real value that indicates the Upper/Lower channel. Unit: dB)
 <real1> = Real value that indicates the upper/lower level(1). Unit: dB,
 <real2> = Real value that indicates the upper/lower level(2). Unit: dB,

 <realn> = Real value that indicates the upper/lower level(n). Unit: dB

n: Number of channels measured in the ACP measurement (up to 5 groups)

When the NUMBer header is specified:<real> (Real value that indicates the Upper/Lower Channel level{1|2|3|4|5}. Unit: dB)
 <real1> = Real value that indicates the upper/lower level(m). Unit: dB
 m: The number that indicates the specified adjacent channel

6.5.4 Subsystem-MEASure/READ/FETCH

Function description	SCPI command	Parameter	Query reply	Remarks
Multi Carrier ACLR/ACP Performing the Multi-Carrier ACLR/ACP measurement and reading the measurement result	:MEASure:{MCAClr MCACp} [:NUMBer{1 2 3 4 5 6}]?	--	<real1>,<real2>, <int1>[, ...]	*6
Performing the Multi-Carrier ACLR/ACP measurement and reading the carrier power values	:MEASure:{MCAClr MCACp}:CPOWer [:NUMBer{1 2 ... 9 10}]?	--	<real>,<real>...	*7
Performing the Multi-Carrier ACLR/ACP measurement and reading the total Pass/Fail judgment	:MEASure:{MCAClr MCACp}:FAIL?	--	PASS FAIL	

*6 When the NUMBer header is omitted:<real1>,<real2>,<int1>[,<real>,<real>,<int>], ... [<real>,<real>,<int>]
 <real1> = Reference power(1):Unit: dBm,
 <real2> = ACP level(1):Unit: dB,
 <int1> = Pass/Fail(1): 0/1,

[<real> = Reference power(2);
 <real> = ACP level(2) ,
 <int> = Pass/Fail(2)],

 [<real> = Reference power(n),
 <real> = ACP level(n),
 <int> = Pass/Fail:(n)]]

n: Number of channels measured in the multi-carrier power measurement (up to 6 groups)

When the NUMBer header is specified:<real1>,<real2>,<int1>
 <real1> = Reference power(m):Unit: dBm,
 <real2> = ACP level(m):Unit: dB,
 <int1> = Pass/Fail(m): 0/1,

m: Specified adjacent channel number

*7 When specified by the NUMBer header:<real1> [, <real>, <real>, <real>, <real>, ..., <real>]
 (All real values that indicates the Carrier Power. Unit: dBm)

<real1> = Carrier Power(1): Unit: dBm,
 [<real> = Carrier Power(2): Unit: dBm
 :
 <real> = Carrier Power(n): Unit: dBm]

n: Number of carrier signals set before the measurement (up to 10)

When specified by the NUMBer header:<real>(Real value that indicates the Carrier Power value. Unit: dBm)
 <real> = Carrier Power(m): Unit: dBm

m: Specified carrier number

Function description	SCPI command	Parameter	Query reply	Remarks
Spurious Emissions Performing the Spurious measurement and reading all measurement results	:MEASure:SPURious[:NUMBer{1 2... 14 15}]?	--	<real1>,<real2>,<int>[,...]	*8
Performing the Spurious measurement and reading the total Pass/Fail judgment	:MEASure:SPURious:FAIL?	--	PASS/FAIL	

*8 When the NUMBER header is omitted:<real1>,<real2>,<int>[,<real>,<real>,<int>], ..., [<real>,<real>,<int>]]

<real1> = Freq(11): Unit: Hz
 <real2> =Level(11): Unit: dBm,
 <int> = P/F(11):0/1,

[[<real> = Freq(12), <real> = Level(12), <int> = P/F(12)],

 [<real> = Freq(nm), <real> =Level(nm), <int> = P/F(nm)]]

n: Measurement area number in the Spurious table: Highest 15
 m: Number of data items detected as spurious in one measurement area: Up to 10

n depends on the number of measurement areas in the set Spurious table
 m depends on the number of spurious signals detected in the measurement area

When the NUMBER header is specified:<real1>,<real2>,<int>[,<real>,<real>,<int>], ..., [<real>,<real>,<int>]]

<real1> = Freq(n1): Unit: Hz
 <real2> =Level(n1): Unit: dBm,
 <int> = P/F(n1):0/1,

[[<real> = Freq(n2), <real> = Level(n2), <int> = P/F(n2)],

 [<real> = Freq(nm), <real> =Level(nm), <int> = P/F(nm)]]

n: Measurement area number in the Spurious table: Can be set from 1 to 15
 m: Number of data items detected as spurious: Up to 10

6.5.4 Subsystem-MEASure/READ/FETCH

Function description	SCPI command	Parameter	Query reply	Remarks
Performing the Spectrum Emission Mask measurement and reading the results	:MEASure:SEMask[:NUMBer{1 2 3 4 5}]?	--	<real1>,<real2>,<real3>,<int1>,<real4>,<real5>,<real6>,<int4>	*9
Performing the Spectrum Emission Mask measurement and reading the reference power results	:MEASure:SEMask:RPOWer?	--	<real>	
Performing the Spectrum Emission Mask measurement and reading the total Pass/Fail judgment	:MEASure:SEMask:FAIL?	--	PASS FAIL	

*9 When the NUMBer header is omitted:
 <real1>,<real2>,<real3>,<int1>,<real4>,<real5>,<real6>,<int4>,[<real>,<real>,<real>,<int>,<real>,<real>,<real>,<int>],
], [<real>,<real>,<real>,<int>,<real>,<real>,<real>,<int>]]

<real1> = Lower Freq(1): Unit: Hz,
 <real2> = Lower Level Abs(1): Unit: dBm,
 <real3> = Lower Level Rel(1): Unit: dB,
 <int1> = Lower P/F(1): 0/1,
 <real4> = Upper Freq(1): Unit: Hz,
 <real5> = Upper Level Abs(1): Unit: dBm,
 <real6> = Upper Level Rel(1): Unit: dB,
 <int4> = Upper P/F(1) : 0/1,

[<real> = Lower Freq(2), <real> = Lower Level Abs(2), <real> = Lower Level Rel(2), <int> =Lower P/F(2),],

....
 [<real> = Lower Freq(n), <real> = Lower Level Abs(n), <real> = Lower Level Rel(n),
 <int> = Lower P/F(n), <real> = Upper Freq(n), <real> = Upper level Abs(n),
 <real> = Upper Level Rel(n), <int> = Upper P/F(n)]

n: Number of measurement areas that are defined: Up to 5

When the NUMBer header is specified

<real1>,<real2>,<real3>,<int1>,<real4>,<real5>,<real6>,<int4>

<real1> = Lower Freq(n): Unit: Hz,
 <real2> = Lower Level Abs(n): Unit: dBm,
 <real3> = Lower Level Rel(n): Unit: dB,
 <int1> = Lower P/F(n): 0/1,
 <real4> = Upper Freq(n): Unit: Hz,
 <real5> = Upper Level Abs(n): Unit: dBm,
 <real6> = Upper Level Rel(n): Unit: dB,
 <int4> = Upper P/F(n) : 0/1

n: Defined measurement areas 1 to 5

Function description	SCPI command	Parameter	Query reply	Remarks
Performing the CCDF measurement and reading the measurement result	:MEASure:CCDF[:NUMBer{1 2 3 4 5 6}]?	--	<real1>,<real2>,<real3>,<real4>,<real5>,<real6>,<real7>,<real8>	*10
Performing the CCDF measurement and reading Peak Factor	:MEASure:CCDF:PFACtor?	--	<real>	
Performing the CCDF measurement and reading Average Power	:MEASure:CCDF:APOWer?	--	<real>	
Performing the CCDF measurement and reading the power ratio	:MEASure:CCDF:PRATio[:NUMBer{1 2 3 4 5 6}]?	--	<real1>,<real2>,<real3>,<real4>,<real5>,<real6>	*11

*10 When the NUMBer header is omitted:
<real1>, <real2>, <real3>, <real4>, <real5>, <real6>, <real7>, <real8>

<real1> = Peak Factor: Unit: dB,
<real2> = Average Power: Unit: dBm,
<real3> = Power ratio of 10.0%: Unit: dB,
<real4> = Power ratio of 1.0%: Unit: dB,
<real5> = Power ratio of 0.1%: Unit: dB,
<real6> = Power ratio of 0.01%: Unit: dB,
<real7> = Power ratio of 0.001%: Unit: dB,
<real8> = Power ratio of 0.0001%: Unit: dB,

When the NUMBer header is specified:
<real1>, <real2>, <real3>,

<real1> = Peak Factor: Unit: dB,
<real2> = Average Power: Unit: dBm,
<real3> = Power ratio specified: Unit: dB,

*11 When the NUMBer header is omitted:
<real1>, <real2>, <real3>, <real4>, <real5>, <real6>

<real1> = Power ratio of 10.0%: Unit: dB,
<real2> = Power ratio of 1.0%: Unit: dB,
<real3> = Power ratio of 0.1%: Unit: dB,
<real4> = Power ratio of 0.01%: Unit: dB,
<real5> = Power ratio of 0.001%: Unit: dB,
<real6> = Power ratio of 0.0001%: Unit: dB,

When the NUMBer header is specified:
<real> = Power ratio specified: Unit: dB

6.5.4 Subsystem-MEASure/READ/FETCH

Function description	SCPI command	Parameter	Query reply	Remarks
T-Domain Power Executing the T-Domain Power measurement and reading the result	:MEASure:TDPower?	--	<real>,<int>	*12
Executing the T-Domain Power measurement and reading the Pass/Fail judgment to the template	:MEASure:TDPower:TEMPlate:FAIL?	--	PASS FAIL	
Executing the T-Domain Power measurement and reading the total Pass/Fail judgment	:MEASure:TDPower:FAIL?	--	PASS FAIL	
ON/OFF Ratio Executing the ON/OFF Ratio measurement and reading the result	:MEASure:OORatio?	--	<real1>,<real2>,<real3>,<int>	*13
Executing the ON/OFF Ratio measurement and reading the total Pass/Fail judgment	:MEASure:OORatio:FAIL?	--	PASS FAIL	

*12 <real1> = Power: Unit dBm,
<int> = Judgment (Pass=0/Fail=1)

*13 <real1> = Power in the ON period: Unit dBm,
<real2> = Power in the OFF period: Unit dBm,
<real3> = Power ratio of the ON period to the OFF period: Unit dB,
(Power in the ON period / Power in the OFF period)
<int> = Judgment (Pass=0/Fail=1)

6.5.5 Subsystem-INITiate

Function description	SCPI command	Parameter	Query reply	Remarks
Continuous sweep mode to ON or OFF	:INITiate:CONTinuous	OFF ON	OFF ON	
Starting a sweep or measurement	:INITiate[:IMMediate]	--	--	
Resetting and restarting a sweep	:INITiate:REStart	--	--	
Stopping a sweep	:INITiate:ABORt	--	--	
Resetting and restarting a sweep, and suspending after the completion of the sweep	:INITiate:TS	--	--	

6.5.6 Subsystem-TRIGger

Function description	SCPI command	Parameter	Query reply	Remarks
TRIGger				
Setting the trigger	:TRIGger[:SEQuence]:SOURce	IMMediate IF VIDeo EXT1 EXT2	IMM IF EXT1 VID EXT2	*14
Setting the trigger polarity of each trigger source	:TRIGger[:SEQuence]:SLOPe	NEGative POSitive	NEG POS	
Setting the trigger level for video trigger	:TRIGger[:SEQuence]:LEVel:VIDeo	<real>	<real>	
Setting the trigger level for an EXT2 (external input terminal 2) trigger	:TRIGger[:SEQuence]:LEVel:EXTernal	<real>	<real>	
Setting the trigger level for an IF trigger	:TRIGger[:SEQuence]:LEVel:IF	<real>	<real>	
Setting a trigger delay value	:TRIGger[:SEQuence]:DELay	<real>	<real>	
Setting ON or OFF the IF trigger monitor function	:TRIGger[:SEQuence]:IF:MONitor	OFF ON	OFF ON	

- *14 IMMEDIATE: Free-run mode without trigger setting
 IF: IF trigger
 EXT1: EXT1 input signal trigger
 EXT2: EXT2 input signal trigger

6.5.7 Subsystem-DISPlay

6.5.7 Subsystem-DISPlay

Function description	SCPI command	Parameter	Query reply	Remarks
Setting the reference level	:DISPlay:TRACe:Y[:SCALe]:RL:Vcl	<real>	<real>	
Setting the offset value to the reference level value	:DISPlay:TRACe:Y[:SCALe]:RL:Vcl:OFFSet	<real>	<real>	
Setting the offset value to the reference level value to ON or OFF	:DISPlay:TRACe:Y[:SCALe]:RL:Vcl:OFFSet:STATe	OFF ON	OFF ON	
Setting the scale per division on a log display	:DISPlay:TRACe:Y[:SCALe]:PDIVision	<real>	<real>	
Setting the display mode of the specified trace	:DISPlay:TRACe:MODE	WRITe MAXHold AVERAge	WRIT MAXH AVER	
Setting the reference waveform display in the CCDF measurement to ON or OFF	:DISPlay:TRACe:CCDF:STATe	OFF ON	OFF ON	
Setting the ideal Gaussian noise waveform display to ON or OFF	:DISPlay:TRACe:CCDF:GAUSSian:STATe	OFF ON	OFF ON	
Setting the maximum horizontal axis value of the waveform display	:DISPlay:TRACe:X[:SCALe]:CCDF	<real>	<real>	

6.5.8 Subsystem-MMEMory

Function description	SCPI command	Parameter	Query reply	Remarks
Specifying the device used when executing the SAVE and LOAD functions.	:MMEMory:DEVice	C D E	C D E	*15
Saving the settings of this instrument	:MMEMory:STORe:STATe	<int>	–	*16
Loading the settings of this instrument	:MMEMory:LOAD:STATe	<int>	–	*16
Saving the Tx Tester measurement conditions	:MMEMory:SELEct:ITEM:TXTester:SETup	OFF ON	OFF ON	

*15 The following devices are specified depending on the parameter:

- C C:\MyData\SVRCL
- D D:\ADVANTEST
- E E:\ADVANTEST

*16 A number, which is a maximum of 4-digit and is added to the file name of the data to be saved or loaded, must be specified in <int>.

6.5.9 Subsystem-CALCulate

MEMO: The following notations are used only in the Calculate subsystem.

<mkr>: Written in the command header and indicates the active marker number of the command. The marker number ranges from 1 to 10. The number can also be specified by {1|2|3|4|5|6|7|8|9|10}.

<area>: Written in the command header and indicates the active area number of the command. The area number ranges from 1 to 10. The number can also be specified by {1|2|3|4|5|6|7|8|9|10}.

Function description	SCPI command	Parameter	Query reply	Remarks
Specifying an operation target marker (active marker) among the multi-markers	:CALCulate:MARKer[:NUMBer<mkr>]:ACTive	--	<int>	
Setting the marker functions to ON or OFF	:CALCulate:MARKer:FUNCTion[:STATe]	OFF ON	OFF ON	
Setting the specified multi-marker to ON or OFF	:CALCulate:MARKer[:NUMBer<mkr>]:STATe	OFF ON	OFF ON	
Specifying a frequency position and a time position of the specified multi-marker	:CALCulate:MARKer[:NUMBer<mkr>]:X	<real>	<real>	
Reading the absolute values (frequency and time) of the specified multi-marker	:CALCulate:MARKer[:NUMBer<mkr>]:X:ABSolute?	--	<real>	
Reading the absolute level value of the specified multi-marker	:CALCulate:MARKer[:NUMBer<mkr>]:Y:ABSolute?	--	<real>	
Reading the level value of the specified multi-marker	:CALCulate:MARKer[:NUMBer<mkr>]:Y?	--	<real>	
Searching for the maximum peak point by using the specified multi-marker	:CALCulate:MARKer[:NUMBer<mkr>]:MAXimum[:PEAK]	--	--	
Searching for the next peak by using the specified multi-marker	:CALCulate:MARKer[:NUMBer<mkr>]:MAXimum:NEXT	--	--	
Searching for the next peak in the left direction by using the specified multi-marker	:CALCulate:MARKer[:NUMBer<mkr>]:MAXimum:LEFT	--	--	
Searching for the next peak in the right direction by using the specified multi-marker	:CALCulate:MARKer[:NUMBer<mkr>]:MAXimum:RIGHT	--	--	
Searching for the minimum peak by using the specified multi-marker	:CALCulate:MARKer[:NUMBer<mkr>]:MINimum[:PEAK]	--	--	
Searching for the next minimum peak by using the specified multi-marker	:CALCulate:MARKer[:NUMBer<mkr>]:MINimum:NEXT	--	--	
Setting the specified marker to the specified trace	:CALCulate:MARKer[:NUMBer<mkr>]:TRACe	<int>	<int>	

6.5.9 Subsystem-CALCulate

Function description	SCPI command	Parameter	Query reply	Remarks
Setting all markers excluding marker No. 1 to OFF	:CALCulate:MARKer:RESet	--	--	
Displaying the marker list of the displayed markers	:CALCulate:MARKer:LIST[:STATe]	OFF ON	OFF ON	
Specifying a deviation for peak point judgment at the time of peak point search	:CALCulate:MARKer:MAXimum:DELTA	<real>	<real>	
Setting the marker step size	:CALCulate:MARKer:STEP	<real>	<real>	
Setting the marker step size mode	:CALCulate:MARKer:STEP:AUTO	OFF ON	OFF ON	
Setting a peak search range specification mode on the horizontal axis	:CALCulate:MARKer:SEARch:X:MODE	ALL INNER OUTer	ALL INN OUT	
Specifying the reference position of the peak search range on the horizontal axis	:CALCulate:MARKer:SEARch:X:POSition	<real>	<real>	
Specifying a search width from the reference position of the peak search range on the horizontal axis	:CALCulate:MARKer:SEARch:X:WIDTh	<real>	<real>	
Setting an coupling mode of the peak search range on the horizontal axis	:CALCulate:MARKer:SEARch:X:COUPLing	OFF ON	OFF ON	
Setting a peak search range specification mode on the vertical axis	:CALCulate:MARKer:SEARch:Y:MODE	ALL DLINe LLINe	ALL DLIN LLIN	
Specifying the peak search range with Display Line used as the reference	:CALCulate:MARKer:SEARch:Y:DLINe	ABOVe BELow	ABOV BEL	
Specifying the peak search range with Limit Line1 used as the reference	:CALCulate:MARKer:SEARch:Y:LUPPer	ABOVe BELow	ABOV BEL	
Specifying the peak search range with Limit Line2 used as the reference	:CALCulate:MARKer:SEARch:Y:LLOWer	ABOVe BELow	ABOV BEL	
Setting the marker frequency as the center frequency	:CALCulate:MARKer[:NUMBer<mk>]:SET:CENTer	--	--	
Setting the marker level value as the reference level	:CALCulate:MARKer[:NUMBer<mk>]:SET:RLEVel	--	--	
Setting the marker frequency as the center frequency step size	:CALCulate:MARKer[:NUMBer<mk>]:SET:CENTer:STEP	--	--	
Setting the marker frequency as the marker step size	:CALCulate:MARKer[:NUMBer<mk>]:SET:MARKer:STEP	--	--	
Setting the marker frequency as the center frequency after the peak search is performed	:CALCulate:MARKer[:NUMBer<mk>]:MAXimum:SET:CENTer	--	--	

Function description	SCPI command	Parameter	Query reply	Remarks
Setting the marker level value as the reference level after the peak search is performed	:CALCulate:MARKer[:NUMBER<mkr>]:MAXimum:SET:RLEVEL	--	--	
Setting the Δ marker \rightarrow center frequency	:CALCulate:DELTamarker[:NUMBER<mkr>]:SET:CENTer	--	--	
Setting the Δ marker \rightarrow span frequency	:CALCulate:DELTamarker[:NUMBER<mkr>]:SET:SPAN	--	--	
Setting the Δ marker \rightarrow center frequency step size	:CALCulate:DELTamarker[:NUMBER<mkr>]:SET:CENTer:STEP	--	--	
Setting the Δ marker \rightarrow marker step size	:CALCulate:DELTamarker[:NUMBER<mkr>]:SET:MARKer:STEP	--	--	
Setting the Δ marker display to ON or OFF	:CALCulate:DELTamarker[:STATe]	OFF ON	OFF ON	
Setting the fixed Δ marker display to ON or OFF	:CALCulate:DELTamarker:FIXed[:STATe]	OFF ON	OFF ON	
Setting the fixed marker after the peak is searched	:CALCulate:DELTamarker:FIXed:MAXimum[:PEAK]	--	--	
Setting the (1/ Δ) marker display to ON or OFF	:CALCulate:DELTamarker:INVerse[:STATe]	OFF ON	OFF ON	
Reading the Δ marker frequency	:CALCulate:DELTamarker:X?	--	<real>	
Reading the level value of the Δ marker	:CALCulate:DELTamarker:Y?	--	<real>	
Specifying a reference for displaying marker in relative values	:CALCulate:MARKer:ROBject	DELTamarker ANCHor LIM1 LIM2 DLINe RLINe TRA1 TRA2 TRA3 TRA4 OSCRcen NREFerence	DELT ANCH LIM1 LIM2 DLIN RLIN TRA1 TRA2 TRA3 TRA4 OSCR NREF	
T-Domain Power				
Setting the template to ON or OFF	:CALCulate:TDPower:TEMPlate[:STATe]	OFF ON	OFF ON	
Setting the moving distance of the template on the horizontal axis	:CALCulate:TDPower:TEMPlate:SHIFt:X	<real>	<real>	Time
Setting the moving distance of the template on the vertical axis	:CALCulate:TDPower:TEMPlate:SHIFt:Y	<real>	<real>	Level
Adding the upper data of the template	:CALCulate:TDPower:TEMPlate:UPPer:DATA	<real1>,<real2>	--	Time, Level
Adding the lower data of the template	:CALCulate:TDPower:TEMPlate:LOWer:DATA	<real1>,<real2>	--	Time, Level
Deleting the upper data of the template	:CALCulate:TDPower:TEMPlate:UPPer:DELeTe	--	--	
Deleting the lower data of the template	:CALCulate:TDPower:TEMPlate:LOWer:DELeTe	--	--	

6.5.9 Subsystem-CALCulate

Function description	SCPI command	Parameter	Query reply	Remarks
Setting the coupling mode of the template with power to ON or OFF	:CALCulate:TDPower:TEMPlate:COUPle	OFF ON	OFF ON	
Setting the limit of the template	:CALCulate:TDPower:TEMPlate:LIMit	<real>	<real>	Level

6.5.10 Subsystem-SYSTEM

Function description	SCPI command	Parameter	Query reply	Remarks
Initializing each measurement system parameter	:SYSTEM:PRESet	–	–	
Initializing all measurement systems	:SYSTEM:PRESet:ALL	–	–	
Selecting a measurement system	:SYSTEM:SElect	SANalyzer TXTester	SAN TXT	
Inquiring about the most recent error	:SYSTEM:ERRor?	–	<int>,<str>	*17
Inquiring about the error log	:SYSTEM:ERRor:ALL?	–	<int>,<str>	*17
Inquiring about the R3477 series options	:SYSTEM:OPTions?	–	<str>[,...]	

*17 Returns an error number to <int> and an error message string to <str>.

6.5.11 Subsystem-STATUS

6.5.11 Subsystem-STATUS

Function description	SCPI command	Parameter	Query reply	Remarks
Setting the standard operation enable register	:STATUS:OPERation:ENABle	<int>	<int>	
Reading the standard operation event register	:STATUS:OPERation:EVENt?	--	<int>	
Setting the questionable enable register	:STATUS:QUEStionable:ENABle	<int>	<int>	
Reading the questionable event register	:STATUS:QUEStionable:EVENt?	--	<int>	
Setting the measuring enable register	:STATUS:OPERation:MEASure:ENABle	<int>	<int>	
Reading the measuring event register	:STATUS:OPERation:MEASure:EVENt?	--	<int>	

6.6 Status Register

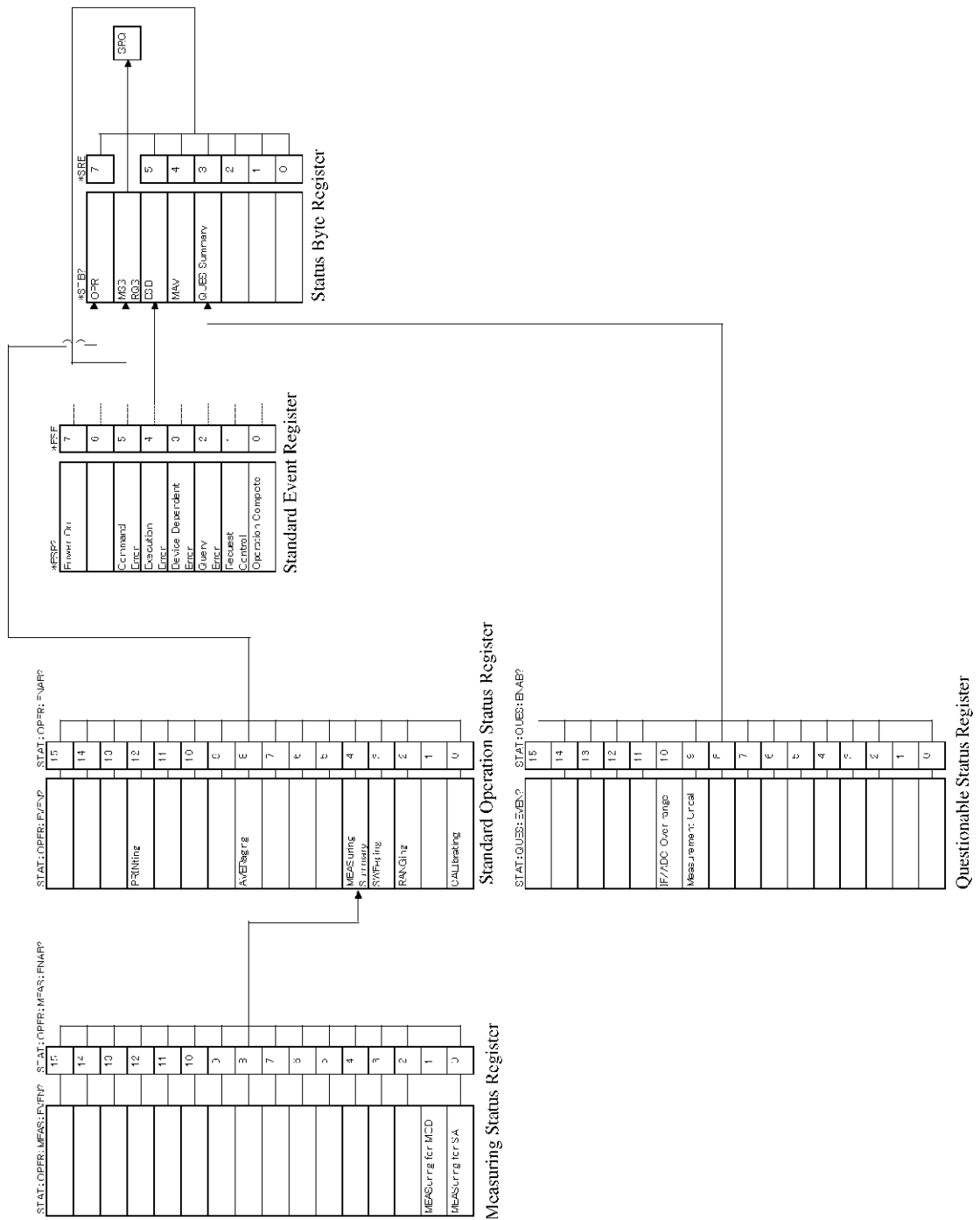


Figure 6-1 Status Registers

7. PERFORMANCE VERIFICATION

This chapter describes how to check whether the performance of this instrument meets the specifications.

It is recommended that you copy the test data record sheet included at the end of this chapter and save it as a record of the performance test.

IMPORTANT: Before verifying the performance, warm-up and completely calibrate the instrument.

7.1 Test Signal Specifications

The test signals used for verifying the performance are shown below:

Table 7-1 List of Test Signal Specifications

No.	Test signal name	Signal specifications		Test item																		
		Channel No.	Amplitude																			
1	Base station signal	0 (Pilot) 1 (Paging) 6 (Traffic) 17 (Traffic) 20 (Traffic) 32 (Sync) 41 (Traffic) 49 (Traffic) 58 (Traffic) (Based on the IS-97 Base Station Test Model, Nominal)	-6.99 dB -7.25 dB -10.26 dB -10.26 dB -10.26 dB -13.27 dB -10.26 dB -10.26 dB -10.26 dB	Downlink measurement																		
2	Offset QPSK signal	Compliant with IS-98. Modulation format: Offset QPSK		Uplink measurement cdmaOne mode																		
3	Code multiplex signal	Compliant with IS-98. Long Code Mask: ALL 0 Reverse Traffic Channel		Uplink measurement cdma2000 mode																		
		<table border="1"> <thead> <tr> <th>Channel</th> <th>Walsh function</th> <th>Amplitude</th> </tr> </thead> <tbody> <tr> <td>PICH</td> <td>W_0^{64}</td> <td>-6.99 dB</td> </tr> <tr> <td>DCCH</td> <td>W_8^{16}</td> <td>-6.99 dB</td> </tr> <tr> <td>SCH2</td> <td>$W_6^8(M=2)$</td> <td>-6.99 dB</td> </tr> <tr> <td>FCH</td> <td>W_4^{16}</td> <td>-6.99 dB</td> </tr> <tr> <td>SCH1</td> <td>$W_2^4(M=4)$</td> <td>-6.99 dB</td> </tr> </tbody> </table>		Channel	Walsh function	Amplitude	PICH	W_0^{64}	-6.99 dB	DCCH	W_8^{16}	-6.99 dB	SCH2	$W_6^8(M=2)$	-6.99 dB	FCH	W_4^{16}	-6.99 dB	SCH1	$W_2^4(M=4)$	-6.99 dB	
Channel	Walsh function	Amplitude																				
PICH	W_0^{64}	-6.99 dB																				
DCCH	W_8^{16}	-6.99 dB																				
SCH2	$W_6^8(M=2)$	-6.99 dB																				
FCH	W_4^{16}	-6.99 dB																				
SCH1	$W_2^4(M=4)$	-6.99 dB																				
		M: Walsh Function Repetition Factor																				

7.2 Test Procedures

7.2 Test Procedures

This section describes each test procedure.

7.2.1 RF Input Base Station Signal Measurement (Downlink)

Connect the signal source as shown below:

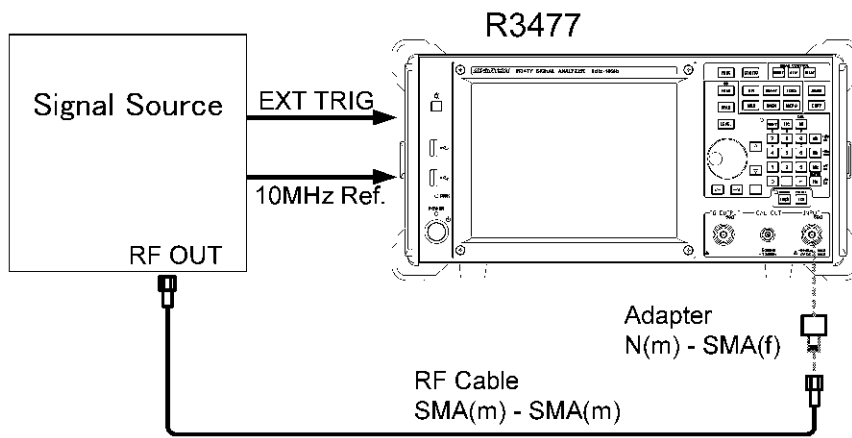


Figure 7-1 Connecting the Test Signal

1. The base station signal, which has a carrier frequency of 870.03 MHz and a level of -10 dBm, is output form the signal source.
2. Set this unit as follows:

{MEAS SETUP}:	Meas Parameters	
	[Meas Mode]:	cdma2000
	[User Table]:	NOT USE
	[Meas Length]:	2 PCG
	[τ Offset]:	0.000 μsec
	[Phase Equalizing Filter]:	ON
	[PN Offset Search]:	OFF
	[PN Offset]:	0
	[Threshold Level]:	-27 dB
	[Δτ]:	ON
	[Δθ]:	ON
Trigger :	Trigger Source	Ext1
FREQ :	Center	870.03 MHz
Execute	Auto Level Set	

3. Press the **SINGLE** key on this unit to perform measurements.
4. Write the measurement results in the test data record sheet.

7.2.2 Offset QPSK Signal Measurement in RF Input

Connect the signal source as shown below:

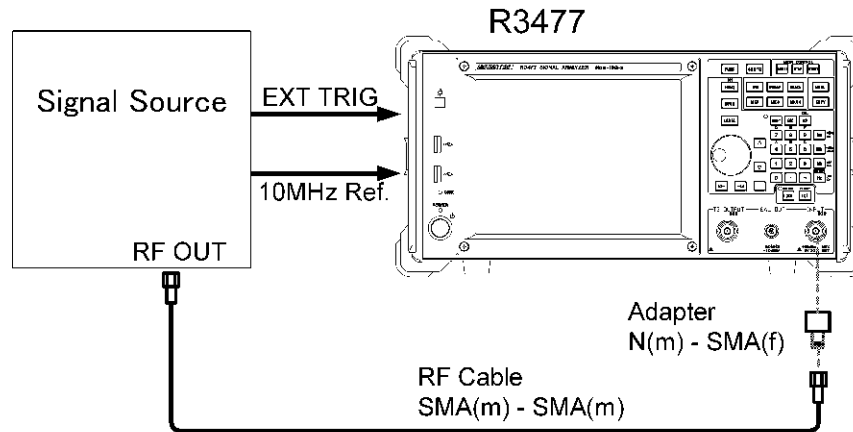


Figure 7-2 Connecting the Test Signal (RF Input)

1. Output the Offset QPSK signal, which has a carrier frequency of 825.03 MHz and a level of -10 dBm, from the signal source.
2. Set this unit as follows:

MEAS MODE : **cdmaOne**

MEAS SETUP : **Meas Parameters**

[Meas Length]: 800 chip

[Freq Meas Range]: EXPAND

[IQ Origin Offset]: INCLUDE

Trigger : **Trigger Source** Ext1

FREQ : **Center** 825.03 MHz

Execute **Auto Level Set**

3. Press the **SINGLE** key on this unit to perform measurements.
4. Write the measurement results in the test data record sheet.

7.2.3 Code Multiplex Signal Measurement in RF Input

7.2.3 Code Multiplex Signal Measurement in RF Input

Connect the signal source as shown below:

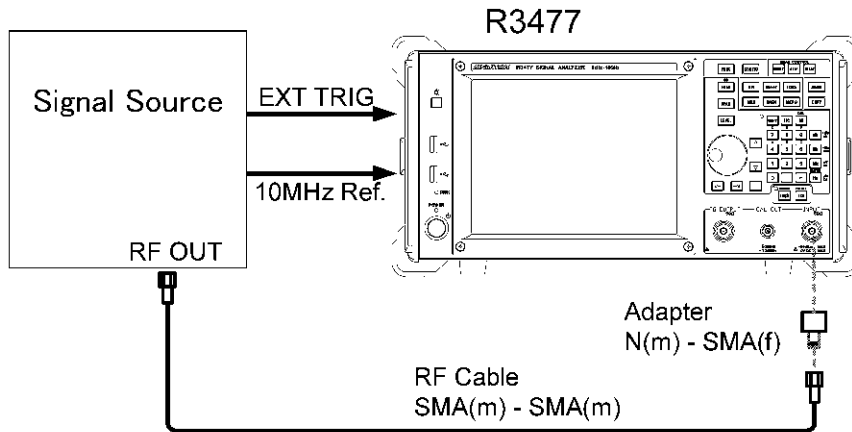


Figure 7-3 Connecting the Test Signal (RF Input)

1. Output the code multiplex signal, which has a carrier frequency of 825.03 MHz and a level of -10 dBm, from the signal source.
2. Set this unit as follows:

MEAS MODE : **cdma2000**

MEAS SETUP : **Meas Parameters**

[User Table]:	USE
[Meas Length]:	1536 chip
[PN Delay Search]:	ON
[Freq Meas Range]:	EXPAND
[Threshold Level]:	-23 dB
[IQ Origin Offset]:	INCLUDE
[Peak Inact CH Component]:	Both Inact
[$\Delta\tau$]:	ON
[$\Delta\theta$]:	ON
[Chip Rate Error]:	ON
[Quadrature Error]:	ON
[Walsh Code Length]:	64

User Table

[SPICH Walsh Func]:	OFF
[EACH/CCCH Walsh Func]:	OFF
[PDCCH Walsh Func]:	OFF
[REQCH Walsh Func]:	OFF
[DCCH Walsh Func]:	W16(8)
[ACKCH Walsh Func]:	OFF

[CQICH Walsh Func]:	OFF
[FCH Walsh Func]:	W16(4)
[SCH1 Walsh Func]:	W4(2)
[Repetition Factor]:	4
[SCH2 Walsh Func]:	W8(6)
[Repetition Factor]:	2
[PDCH Walsh Func]:	OFF

Trigger :	Trigger Source	Ext1
FREQ :	Center	825.03 MHz

Execute **Auto Level Set**

3. Press the **SINGLE** key on this unit to perform measurements.
4. Write the measurement results in the test data record sheet.

7.3 Test Data Record Sheet

7.3 Test Data Record Sheet

Test data record sheet

Model name:

Serial number:

1. RF Input Base Station Signal Measurement (Downlink)

Test item	Specifications			Pass / Fail	
	Minimum value	Measured value	Maximum value		
Carrier frequency error	-10 Hz		+10 Hz		
Code Domain power [dB]	Ch No.				
	0	-7.09 dB		-6.89 dB	
	1	-7.35 dB		-7.15 dB	
	6	-10.36 dB		-10.16 dB	
	17	-10.36 dB		-10.16 dB	
	20	-10.36 dB		-10.16 dB	
	32	-13.37 dB		-13.17 dB	
	41	-10.36 dB		-10.16 dB	
	49	-10.36 dB		-10.16 dB	
	58	-10.36 dB		-10.16 dB	
Transmission power	-10.8 dBm		-9.2 dBm		

2. Offset QPSK Signal Measurement in RF Input

Test item	Specifications			Pass / Fail
	Minimum value	Measured value	Maximum value	
Carrier frequency error	-10 Hz		+10 Hz	
Transmission power	-10.9 dBm		-9.1 dBm	

3. Code Multiplex Signal Measurement in RF Input (Uplink)

Test item		Specifications			Pass / Fail
		Minimum value	Measured value	Maximum value	
Carrier frequency error		-10 Hz		+10 Hz	
ρ_i	Channel				
	PICH: W_0^{64}	-7.09 dB		-6.89 dB	
	DCCH: W_8^{16}	-7.09 dB		-6.89 dB	
	FCH: W_4^{16}	-7.09 dB		-6.89 dB	
	SCH1: W_2^{16}	-7.09 dB		-6.89 dB	
	SCH2: W_6^{16}	-7.09 dB		-6.89 dB	
$\Delta\tau_i$	Channel				
	DCCH: W_8^{16}	-10 ns		+10 ns	
	SCH2: W_6^{16}	-10 ns		+10 ns	
	FCH: W_4^{16}	-10 ns		+10 ns	
	SCH1: W_2^{16}	-10 ns		+10 ns	
$\Delta\theta_i$	Channel				
	DCCH: W_8^{16}	-10 mrad		+10 mrad	
	SCH2: W_6^{16}	-10 mrad		+10 mrad	
	FCH: W_4^{16}	-10 mrad		+10 mrad	
	SCH1: W_2^{16}	-10 mrad		+10 mrad	
Transmission power		-10.9 dBm		-9.1 dBm	

7.3 Test Data Record Sheet

or

Test item		Specifications			Pass / Fail
		Minimum value	Measured value	Maximum value	
Carrier frequency error		-10 Hz		+10 Hz	
P _i	Channel				
	PICH: W ₀ ⁶⁴	-7.09 dB		-6.89 dB	
	DCCH: W ₈ ¹⁶	-7.09 dB		-6.89 dB	
	FCH: W ₄ ¹⁶	-7.09 dB		-6.89 dB	
	SCH1: W ₂ ¹⁶	-7.09 dB		-6.89 dB	
	SCH2: W ₆ ¹⁶	-7.09 dB		-6.89 dB	
Peak Δτ		-10 ns		+10 ns	
Peak Δθ		-10 mrad		+10 mrad	
Transmission power		-10.9 dBm		-9.1 dBm	

8. SPECIFICATIONS

8.1 Specifications (Downlink)

8.1.1 cdma2000 Modulation Analysis Compliance System

Compliance with
 3rd Generation Partnership Project 2 (3GPP2)
 TSG-C Specifications
 C.S0002-D v1.0 (IS-2000.2)

8.1.2 cdma2000 Modulation Analysis Performance

Item	Specifications
Carrier frequency error	
Measurement range	< ± 2 kHz
Measurement accuracy	< \pm (Reference frequency accuracy \times Carrier frequency + 10 Hz)
ρ_1 measurement accuracy	< ± 0.1 dB
$\Delta\tau_1$ measurement accuracy	< ± 10 ns
$\Delta\theta_1$ measurement accuracy	< ± 10 mrad
Transmission power measurement accuracy	< \pm (0.2 + Frequency response + calibration signal level accuracy) dB
	Frequency response
	50 MHz to 2.5 GHz < ± 0.4 dB
	Calibration signal level accuracy < ± 0.2 dB

8.1.2 cdma2000 Modulation Analysis Performance

Measurement conditions

Item	Conditions																				
Temperature range	+20°C to +30°C																				
Base station signal	Walsh Length 64 <table border="1" data-bbox="746 577 1177 1034"> <thead> <tr> <th data-bbox="746 577 963 622">Channel No.</th> <th data-bbox="963 577 1177 622">Amplitude</th> </tr> </thead> <tbody> <tr> <td data-bbox="746 622 963 667">0 (Pilot)</td> <td data-bbox="963 622 1177 667">-6.99 dB</td> </tr> <tr> <td data-bbox="746 667 963 712">1 (Paging)</td> <td data-bbox="963 667 1177 712">-7.25 dB</td> </tr> <tr> <td data-bbox="746 712 963 757">6 (Traffic)</td> <td data-bbox="963 712 1177 757">-10.26 dB</td> </tr> <tr> <td data-bbox="746 757 963 801">17 (Traffic)</td> <td data-bbox="963 757 1177 801">-10.26 dB</td> </tr> <tr> <td data-bbox="746 801 963 846">20 (Traffic)</td> <td data-bbox="963 801 1177 846">-10.26 dB</td> </tr> <tr> <td data-bbox="746 846 963 891">32 (Sync)</td> <td data-bbox="963 846 1177 891">-13.27 dB</td> </tr> <tr> <td data-bbox="746 891 963 936">41 (Traffic)</td> <td data-bbox="963 891 1177 936">-10.26 dB</td> </tr> <tr> <td data-bbox="746 936 963 981">49 (Traffic)</td> <td data-bbox="963 936 1177 981">-10.26 dB</td> </tr> <tr> <td data-bbox="746 981 963 1025">58 (Traffic)</td> <td data-bbox="963 981 1177 1025">-10.26 dB</td> </tr> </tbody> </table> <p data-bbox="611 1057 1212 1088">(Based on the IS-97 Base Station Test Model, Nominal)</p>	Channel No.	Amplitude	0 (Pilot)	-6.99 dB	1 (Paging)	-7.25 dB	6 (Traffic)	-10.26 dB	17 (Traffic)	-10.26 dB	20 (Traffic)	-10.26 dB	32 (Sync)	-13.27 dB	41 (Traffic)	-10.26 dB	49 (Traffic)	-10.26 dB	58 (Traffic)	-10.26 dB
Channel No.	Amplitude																				
0 (Pilot)	-6.99 dB																				
1 (Paging)	-7.25 dB																				
6 (Traffic)	-10.26 dB																				
17 (Traffic)	-10.26 dB																				
20 (Traffic)	-10.26 dB																				
32 (Sync)	-13.27 dB																				
41 (Traffic)	-10.26 dB																				
49 (Traffic)	-10.26 dB																				
58 (Traffic)	-10.26 dB																				
Center frequency	800 MHz/2 GHz																				
Input level	-10 dBm																				
ρ	>0.9999																				
$\Delta\tau_i$	0 ns																				
$\Delta\theta_i$	0 mrad																				
Meas Length	2 PCG																				

8.2 Specifications (Uplink)

8.2.1 cdma2000 Modulation Analysis Compliance System

Compliance with
 3rd Generation Partnership Project 2 (3GPP2)
 TSG-C Specifications
 C.S0002-D v1.0(IS-2000.2)

8.2.2 cdma2000 Modulation Analysis Performance

8.2.2.1 cdmaOne Mode

Item	Specifications
Carrier frequency error	
Measurement range	$<\pm 10$ kHz
Measurement accuracy	$<\pm(\text{Reference frequency accuracy} \times \text{Carrier frequency} + 10 \text{ Hz})$
Transmission power measurement accuracy	$\pm(0.3 + \text{Frequency response} + \text{Calibration signal level accuracy})$ dB
	Frequency response
	50 MHz to 2.5 GHz $<\pm 0.4$ dB
	Calibration signal level accuracy $<\pm 0.2$ dB

Measurement conditions

Item	Conditions
Temperature range	+20°C to +30°C
Signal	Compliant with IS-98.
Modulation format	Offset QPSK
Center frequency	800 MHz/2 GHz
Input level	-10 dBm
ρ	>0.9999
Meas Length	800 chip
Freq Meas Range	EXPAND

8.2.2 cdma2000 Modulation Analysis Performance

8.2.2.2 cdma2000 Mode

Item	Specifications
Carrier frequency error	
Measurement range	<±4 kHz
Measurement accuracy	<±(Reference frequency accuracy × Carrier frequency + 10 Hz)
ρ_i measurement accuracy (ρ vs Code)	< ±0.1 dB
$\Delta\tau_i$ measurement accuracy	<±10 ns
$\Delta\theta_i$ measurement accuracy	<±10 mrad
Transmission power measurement accuracy	±(0.3 + Frequency response + Calibration signal level accuracy) dB Frequency response 50 MHz to 2.5 GHz <±0.4 dB Calibration signal level accuracy <±0.2 dB

Measurement conditions

Item	Conditions																		
Temperature range	+20°C to +30°C																		
Signal	Compliant with IS-98. Long Code Mask: ALL 0 Reverse Traffic Channel <table border="1" style="margin: 10px auto;"> <thead> <tr> <th>Channel</th> <th>Walsh function</th> <th>Amplitude</th> </tr> </thead> <tbody> <tr> <td>PICH</td> <td>W_0^{64}</td> <td>-6.99 dB</td> </tr> <tr> <td>DCCH</td> <td>W_8^{16}</td> <td>-6.99 dB</td> </tr> <tr> <td>SCH2</td> <td>$W_6^8(M=2)$</td> <td>-6.99 dB</td> </tr> <tr> <td>FCH</td> <td>W_4^{16}</td> <td>-6.99 dB</td> </tr> <tr> <td>SCH1</td> <td>$W_2^4(M=4)$</td> <td>-6.99 dB</td> </tr> </tbody> </table> <p style="text-align: center;">M: Walsh Function Repetition Factor</p>	Channel	Walsh function	Amplitude	PICH	W_0^{64}	-6.99 dB	DCCH	W_8^{16}	-6.99 dB	SCH2	$W_6^8(M=2)$	-6.99 dB	FCH	W_4^{16}	-6.99 dB	SCH1	$W_2^4(M=4)$	-6.99 dB
Channel	Walsh function	Amplitude																	
PICH	W_0^{64}	-6.99 dB																	
DCCH	W_8^{16}	-6.99 dB																	
SCH2	$W_6^8(M=2)$	-6.99 dB																	
FCH	W_4^{16}	-6.99 dB																	
SCH1	$W_2^4(M=4)$	-6.99 dB																	
Center frequency	800 MHz/2 GHz																		
Input level	-10 dBm																		
ρ	>0.9999																		
$\Delta\tau_i$	0 ns																		
$\Delta\theta_i$	0 mrad																		
Meas Length	1536 chip																		
Freq Meas Range	EXPAND																		

APPENDIX

This section describes the following supplemental information:

A.1 Technical Data

A.2 Error Message List

A.1 Technical Data

Bit Reversal (Paley) Order

The order of the Walsh Code numbers, which is used in the cdma2000, is called the Hadamard order.

There is also an order called the Bit Reversal (Paley) order, which is different from the Hadamard order.

If the Walsh Codes are placed in the order of the Bit Reversal order, the tree-layered Walsh Code structure can be displayed according to the Walsh Code length.

The following example shows the comparison between the Hadamard order and the Bit Reversal order when the Walsh Code length is 8:

	8 × 8 matrix	Walsh Code number
The Walsh Code Hadamard order of the cdma2000	00000000	0
	01010101	1
	00110011	2
	01100110	3
	00001111	4
	01011010	5
	00111100	6
	01101001	7
Bit Reversal (Paley) Order	00000000	0
	00001111	4
	00110011	2
	00111100	6
	01010101	1
	01011010	5
	01100110	3
	01101001	7

A.1 Technical Data

The following lists show the Walsh Code Numbers which are placed in the order of the Bit Reversal (Paley) order when the Walsh Code Lengths are 4, 8, 16, 32, 64, and 128:

W4	W8	W16	W32	W64	W128
0	0	0	0	0	0
					64
				32	32
			96	96	
			16	16	16
			80	80	
		48	48		
		112	112		
		8	8	8	
		72	72		
		40	40		
		104	104		
	24	24	24		
	88	88			
	56	56			
	120	120			
	4	4	4		
	68	68			
	36	36			
	100	100			
	20	20	20		
	84	84			
	52	52			
	116	116			
12	12	12			
76	76				
44	44				
108	108				
28	28	28			
92	92				
60	60				
124	124				

W4	W8	W16	W32	W64	W128	
2	2	2	2	2	2	
					66	
				34	34	
			98			
			18	18	18	
			82			
		50	50	50		
		114				
		10	10	10	10	
		74				
		42	42	42		
		106				
	26	26	26			
	90					
	58	58	58			
	122					
	6	6	6	6	6	6
	70					
	38				38	
	102					
	22			22	22	
	86					
	54		54	54		
	118					
14	14		14	14		
78						
46	46		46			
110						
30	30	30	30			
94						
62	62	62				
126						

A.1 Technical Data

W4	W8	W16	W32	W64	W128
1	1	1	1	1	1
					65
				33	33
					97
					17
			17	17	
				81	
			49	49	
				113	
				9	9
	73				
	41				
	41	41			
		105			
		25	25		
			89		
	57	57			
		121			
		5	5	5	5
	69				
37	37				
	101				
	21				
21	21				
	85				
53	53				
	117				
	13		13	13	13
77					
45		45			
		109			
		29	29	29	29
93					
61					
61					
125					

W4	W8	W16	W32	W64	W128
3	3	3	3	3	3
					67
				35	35
			99		
			19	19	19
					83
		51		51	
		11	11	11	11
					75
				43	43
			107		
			27	27	27
	91				
	59	59			
	7	7	7	7	7
					71
				39	39
			103		
			23	23	23
					87
		55		55	
		15	15	15	15
					79
				47	47
111					
31			31	31	
	95				
	63	63			
					127

Bibliography

Endo, Yasushi. Walsh kaiseki [Walsh analysis]. Tokyo Denki University Press

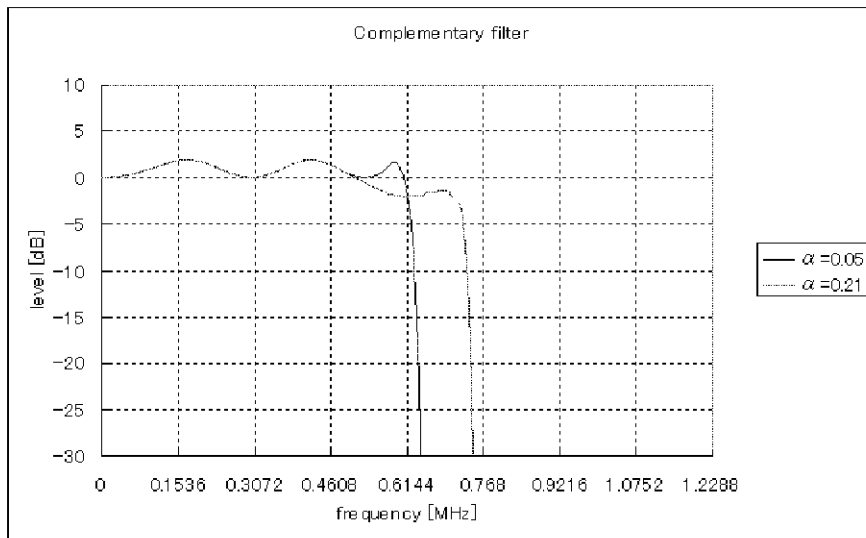
Kiyasu, Zenichi. Hadamard gyouretsusono ouyou [The Hadamard matrix and its application]. The Institute of Electronics, Information and Communication Engineers.

A.1 Technical Data

Complementary Filter

The Complementary Filter is defined by the IS-97 (Waveform Quality Measurement Equipment) and is used to measure the waveform quality and code domain.

The Complementary Filter generates a signal that is equivalent to a signal that passed through the Nyquist filter. The IS-97 and IS-98 contain no regulations concerning the roll-off factor (α) of the Nyquist filter. In this instrument, α is defined as 0.05 in Downlink and 0.21 in Uplink.



Phase Equalizing Filter (Downlink)

The base station equalizes the phase of the signal, which travels down the transmission signal path, according to the IS-95 standard phase characteristics. The equalization filter is defined by the following formula:

$$H(\omega) = k \frac{\omega^2 + j\alpha\omega\omega_0 - \omega_0^2}{\omega^2 - j\alpha\omega\omega_0 - \omega_0^2}$$

k : Arbitrary gain

j : $\sqrt{-1}$

α : 1.36

ω_0 : $2\pi * 3.15 * 10^5$

ω : Angular frequency

If the phase equalizing filter is used in the base station, this instrument analyzes waveforms through a filter that has the inverse characteristics of the equalizing filter.

To analyze the waveforms, set [Phase Equalizing Filter] of **Meas Parameters** to ON.

Also, to analyze signals which have not been through the phase equalizing filter, set [Phase Equalizing Filter] of **Meas Parameters** to OFF.

How to specify the PCG and Code by using the marker on the graph

Four formats are included in the Format tab in the Window Format dialog box as follows:

1. **[All PCG & Code]** This format is used to measure all PCGs and codes
2. **[Specified PCG]** This format is used to measure a PCG selected from all the PCGs in **[All PCG & Code]**.
3. **[Specified Code]** This format is used to measure a code selected from all the codes in **[All PCG & Code]**.
4. **[Specified PCG & Code]** This format is used to measure a specified PCG and code.

A PCG or code, which is specified by **[Specified PCG]**, **[Specified Code]**, or **[Specified PCG & Code]** can also be specified by using the marker on the **[All PCG & Code]**, **[Specified PCG]**, and **[Specified Code]** graphs that are set in the **[Format]** dialog box in Figure A-1.

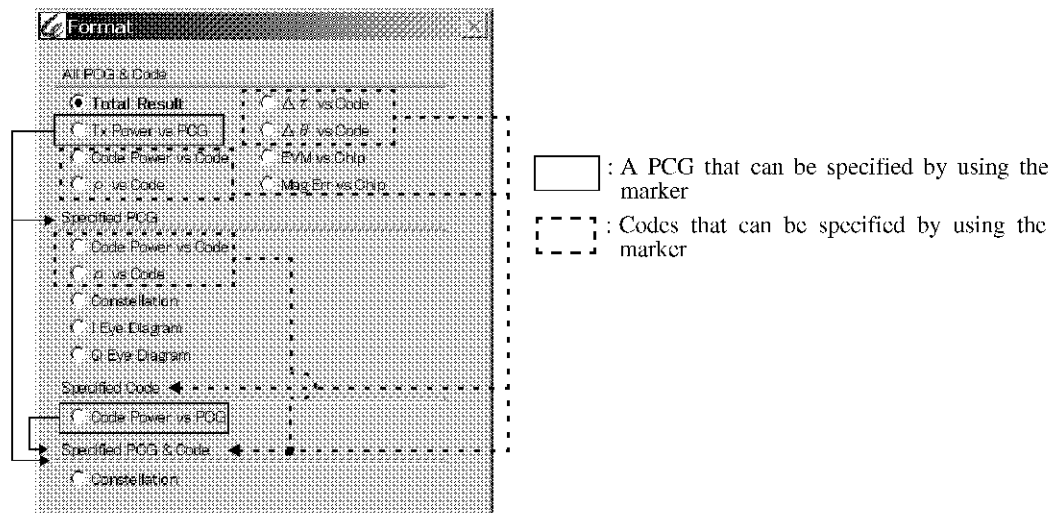


Figure A-1 [Format] Dialog Box

A.1 Technical Data

- How to specify the PCG by using the marker

The PCG (power control group) graph can be switched by moving the marker in the [Tx Power vs PCG] graph, which was selected from [All PCG & Code], and in the [Code Power vs PCG] graph, which was selected from [Specified Code]. (See Figure A-1).

Figure A-2 shows that the [Tx Power vs PCG] graph is displayed in the upper window [Window1] and [ρ vs Code] selected from [Specified PCG] is displayed in the lower window [Window2].

If [Marker]→[Specified PCG] is set to "On" after [Window1] is activated and [MKR] is pressed, the [ρ vs Code] graph of the PCG that is specified by using [Marker] is displayed on [Window2], coupling with the marker position that changes in [Window1].

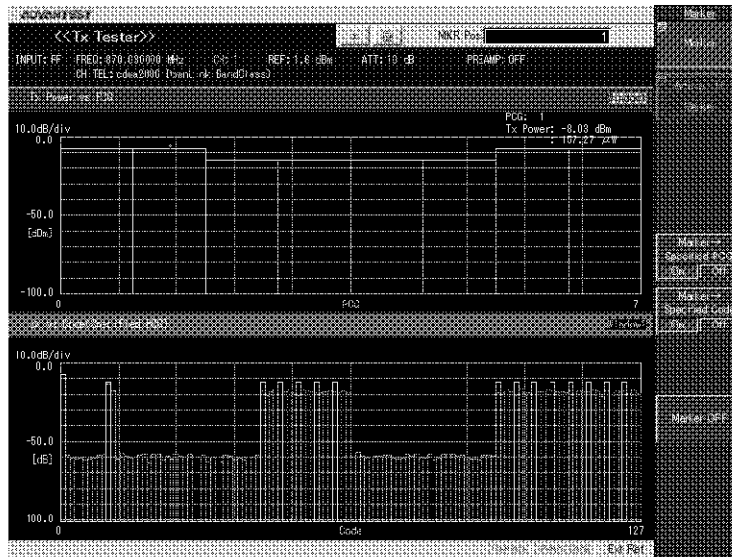


Figure A-2 Marker→Specified PCG On Usage Example

- How to specify the Code by using the marker

If [Code Power vs Code], [ρ vs Code], [$\Delta\tau$ vs Code], or [$\Delta\theta$ vs Code] is selected, the [Code Power vs PCG (power control group)] graph and the [Constellation] graph, in which the PCG and the code are specified, can be switched by coupling the marker (See Figure A-1).

Figure A-3 shows that the [p vs Code] graph selected from [All PCG & Code] is displayed in [Window1] and [Code Power vs PCG] selected from [Specified Code] is displayed in [Window2].

If [Marker→Specified Code] is set to "On" after [Window1] is activated and [Active CH. Marker] on the side bar is displayed, the [Code Power vs PCG] graph of the code that is specified by using [Active CH. Marker] is displayed on [Window2], coupling with the active channel marker that changes in [Window1].

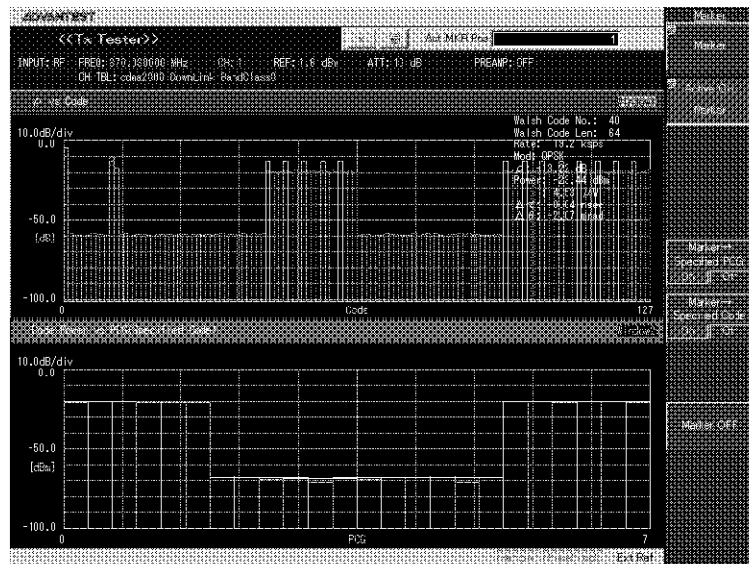


Figure A-3 Marker→Specified Code On Usage Example

Null Offset Graph (Uplink)

The display functions of Null Offset Constellation, Null Offset I Eye Diagram, and Null Offset Q Eye Diagram can be used when MEAS MODE is set to cdmaOne and graphs are displayed.

The constellation does not converge because the Offset QPSK modulation is used in cdmaOne.

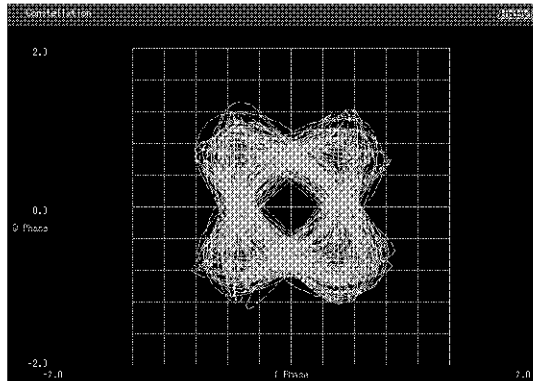


Figure A-4 Constellation

The QPSK constellation, in which symbol points converge on a point as shown in Figure A-5, is acquired by canceling the I and Q offsets of Offset QPSK and using the inverse characteristic filter against the baseband filter that is compliant with IS-2000. This graph is called a Null Offset Constellation graph.

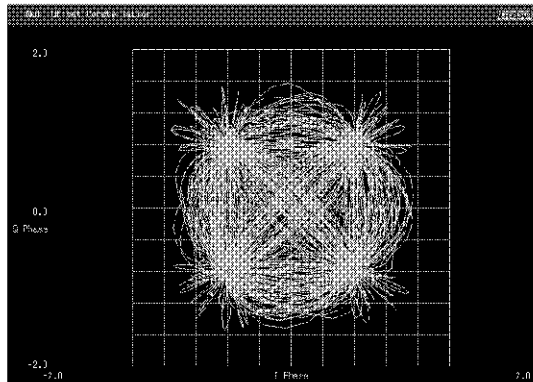


Figure A-5 Null Offset Constellation

NOTE: Even if the I and Q offsets of Offset QPSK are canceled, a graph, in which symbol points converge on a point, cannot be acquired because of the interference between symbols in the baseband filter that is compliant with IS-2000.

Example of how User Table is used (Uplink)

How to set this instrument when measuring a signal, which is shown in 4.3, by using User Table is described below.

Signal specifications

Channel	Walsh function
PICH	W_0^{64}
DCCH	W_8^{16}
SCH2	$W_2^4(M=1)$
FCH	W_4^{16}
SCH1	$W_1^2(M=1)$

M: Walsh Function Repetition Factor

1. Set the **[User Table]** dialog box as Figure A-6. (The PICH settings are not required because PICH is always set in this instrument.)

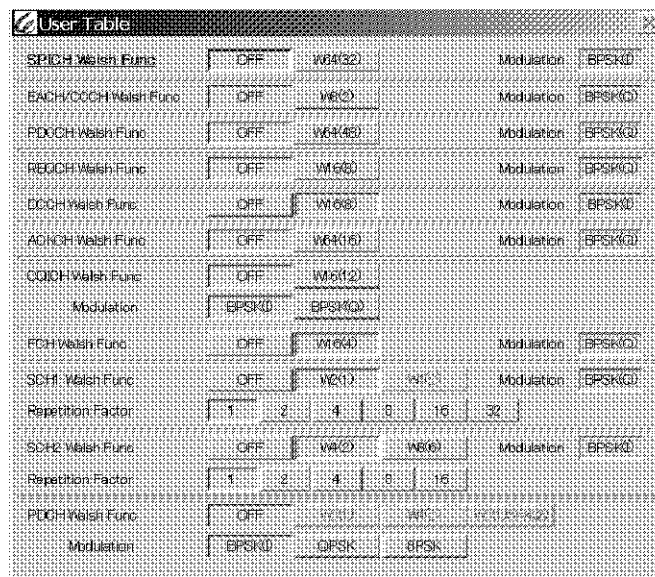


Figure A-6 Setting Example of the **[User Table]** Dialog Box

2. Set **[USE]** of the **[User Table]** option button in the **[Measurement Parameters Setup]** dialog box. This instrument is set so that User Table set in previous step 1 is used. (See Figure A-7)

A.1 Technical Data

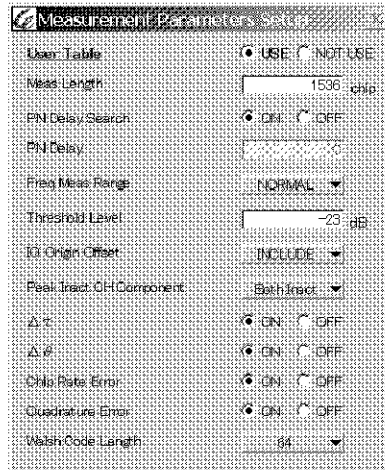


Figure A-7 [Measurement Parameters Setup] Dialog Box when Using [User Table]

A.2 Error Message List

This section describes the error messages displayed on this instrument.

The following information is included.

- Error number
- Displayed message
- Cause of generation and cancellation method

Table A-1 shows the error messages that are unique to this option.

For more information on other error messages, refer to Section 9.8 "Error Message List" of R3477 Series User's Guide.

Table A-1 Error Message List (1 of 2)

Error number	Displayed message	Description
-2250	Template table contains no data.	The function cannot be performed because no data exists in the template table.
-2251	Not available. T-Domain Power is ON.	Cannot be executed in the T-Domain Power measurement mode.
-2252	Not available. ON/OFF Ratio is ON.	Cannot be executed in the ON/OFF Ratio measurement mode.
-3210	Input Level is out of range. Check the Ref. Level.	The input signal level is outside the permitted range. Check the reference level or input signal level.
-3211	Auto Level Set cannot be succeed. Signal level is not stable.	Auto Level Set is not complete. Check to see if the input signal level is not constant or if the attenuator is set to manual.
-3238	Incorrect User Table setting. Check the User Table.	The combination of data in the user table is incorrect and measurements cannot be performed. Check the user table setting.
-3239	Cannot execute measurement. Because ρ is too low.	ρ is too low to analyze. Check the input signal.
-3240	Frequency Error is out of Meas. Range.	The frequency error exceeds the measurement range. Check the frequency deviance of the input signal.
-3241	Parameter Estimation Error. Check the input signal.	The parameter cannot be estimated. Check the input signal.
-3245	Meas Length was changed in order to measure ACKCH.	The setting value of Meas Length has been changed to measure ACKCH.
-3247	Cannot synchronize to PICH. Adjust Threshold Level.	The Pilot channel cannot be synchronized. Re-set Threshold Level.

A.2 Error Message List

Table A-1 Error Message List (2 of 2)

Error number	Displayed message	Description
-3248	[Peak Inact Pwr] is larger than Threshold Level. Adjust Threshold Level or check User Table.	The value of [Peak Inact Pwr] is larger than Threshold Level. If the channel of [Peak Inact Pwr] is noise, set Threshold Level to the higher value. If the channel of [Peak Inact Pwr] is a transmission channel, set Threshold Level to the lower value or check the User Table setting.
-3254	Cannot synchronize to PICH. Adjust PN Delay.	The Pilot channel cannot be synchronized. Re-set PN Delay.

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