ADVANTEST

ADVANTEST CORPORATION

R3477 Series OPT54

cdma2000 1xEV-DO Analysis Software

User's Guide

MANUAL NUMBER FOE-8440212B00

Applicable Model
R3477

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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

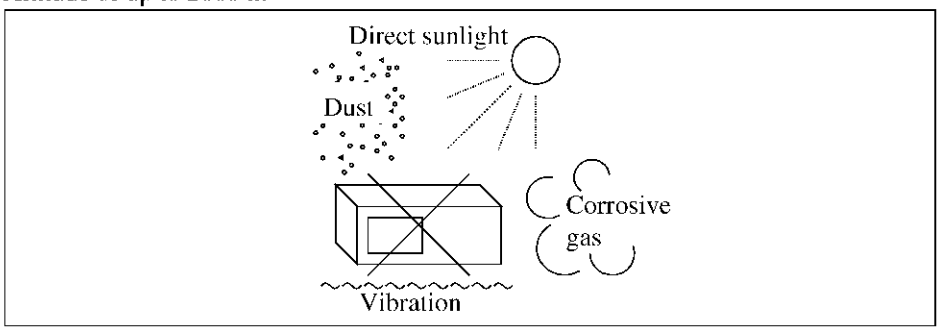


Figure-1 Environmental Conditions

- Operating position

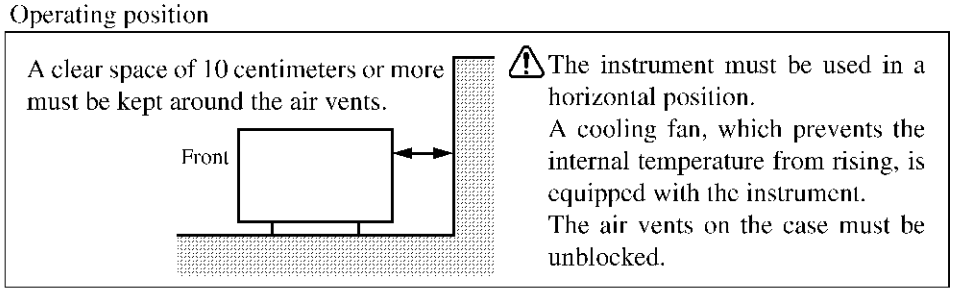


Figure-2 Operating Position

- Storage position

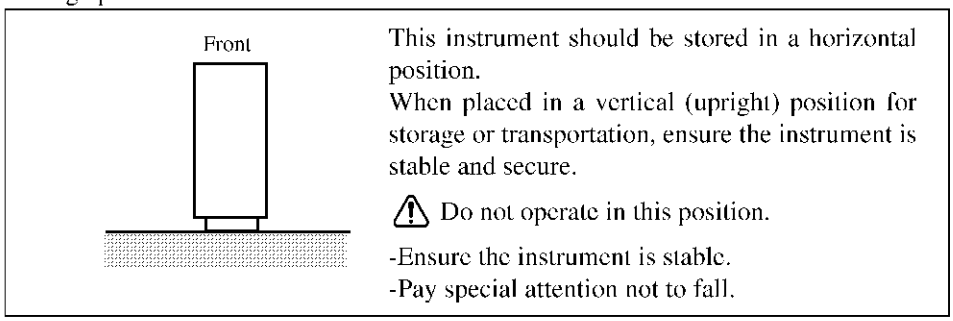


Figure-3 Storage Position

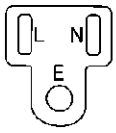
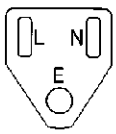
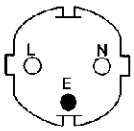
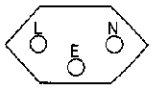
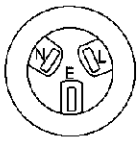
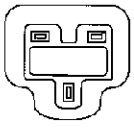
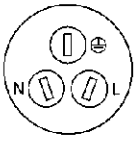
- The classification of the transient over-voltage, which exists typically in the main power supply, and the pollution degree is defined by IEC61010-1 and described below.

  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 54 (cdma2000 1xEV-DO 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 EXAMPLES	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. • Command format • Function description • Parameters • Query reply
Chapter 7. PERFORMANCE VERIFICATION	This chapter describes the performance verification test procedures of the option 54.
Chapter 8. SPECIFICATIONS	This chapter describes the specifications of the option 54.
APPENDIX	This chapter describes the principle of operation and error code table.

1.2 Product Overview

The cdma2000 1xEV-DO analysis option (OPT54) adds the Tx Tester function, which measures the signals of cdma2000 EV-DO, to the R3477 series.

This option includes the following features.

- Performing modulation analysis in the BTS Code Domain mode after whether the measurement signal includes only the Idle slot or only the Active slot has been automatically judged.
- Displaying a power envelope with template in the BTS Pilot/MAC Channel Power measurement. Measuring the Pilot Channel and MAC Channel power of a real signal.
- Analyzing the code domain of MS.
- 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

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

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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

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.***

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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.

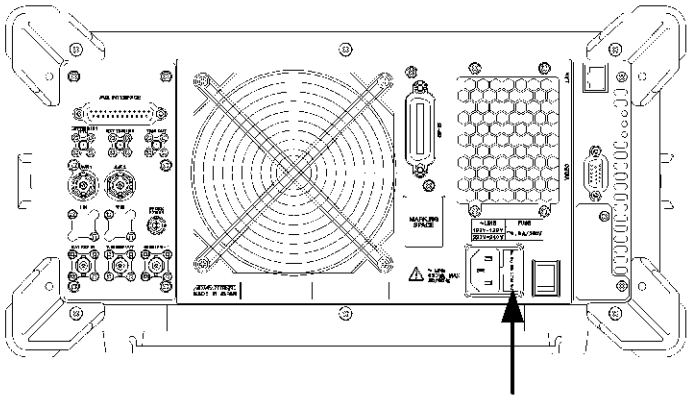

Figure 2-1 Fuse Holder Location

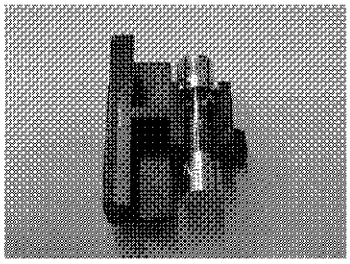

Figure 2-2 Fuse Holder

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

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

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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 OPT54 User's Guide	ER3477OPT54-U	1	English version

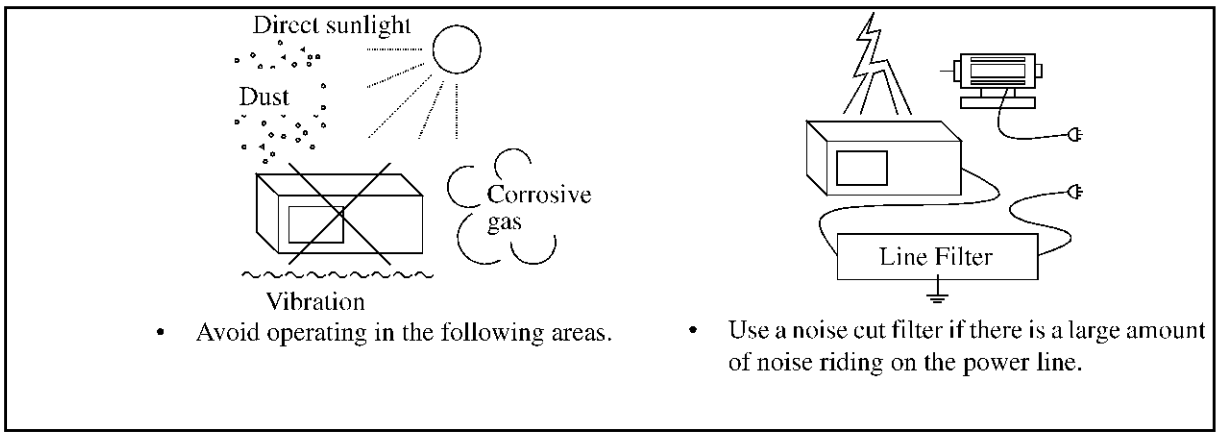
3.2 Installation Environment

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.



- Avoid operating in the following areas.
- Use a noise cut filter if there is a large amount of noise riding on the power line.

Figure 3-1 Operating Environment

- Operating position

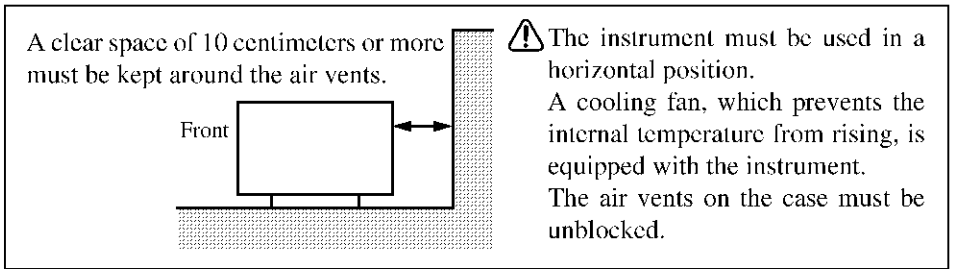


Figure 3-2 Operating Position

- Storage position

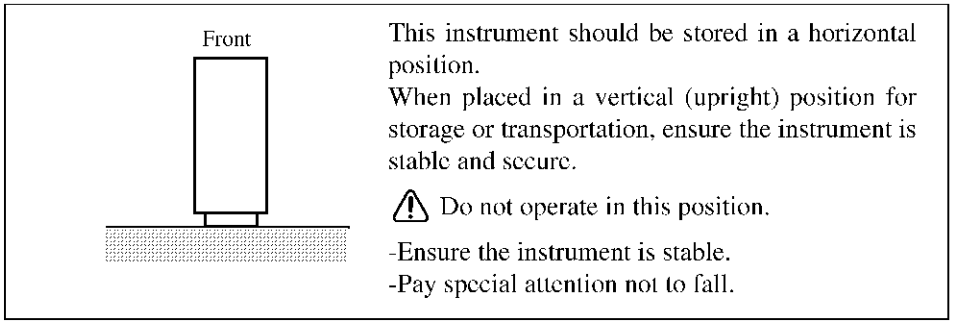


Figure 3-3 Storage Position

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).

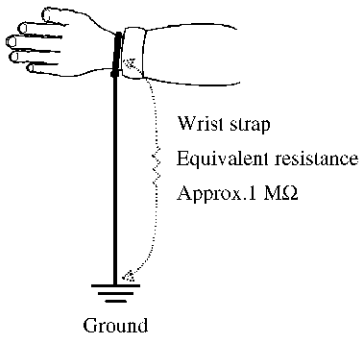


Figure 3-4 Countermeasures for Static Electricity from the Human Body

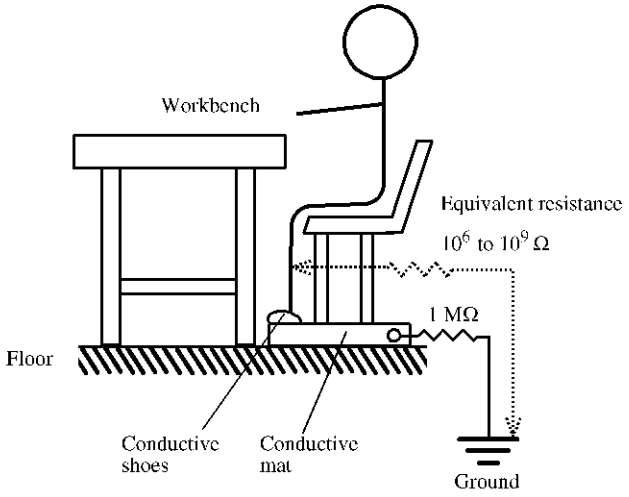


Figure 3-5 Countermeasures for Static Electricity from the Work Floor

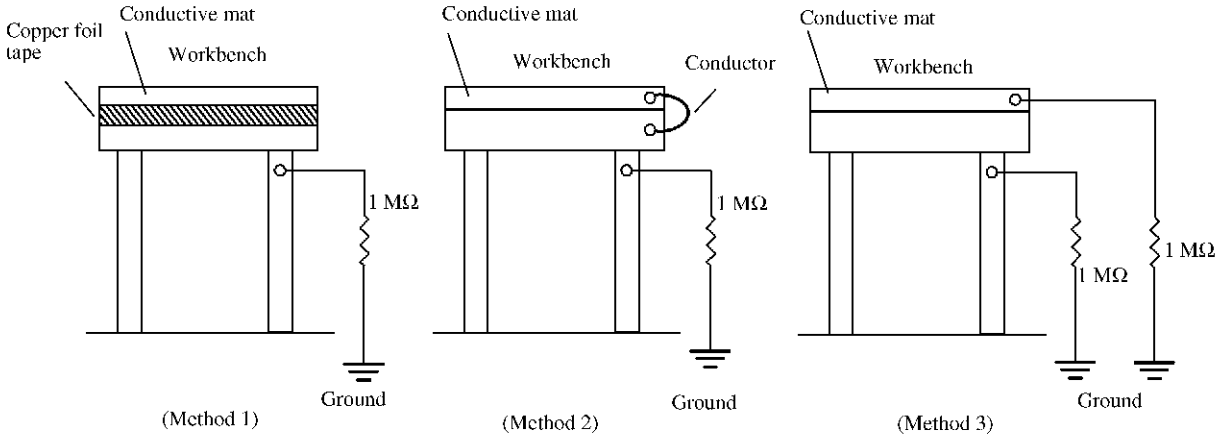


Figure 3-6 Countermeasures for Static Electricity from the Workbench

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.

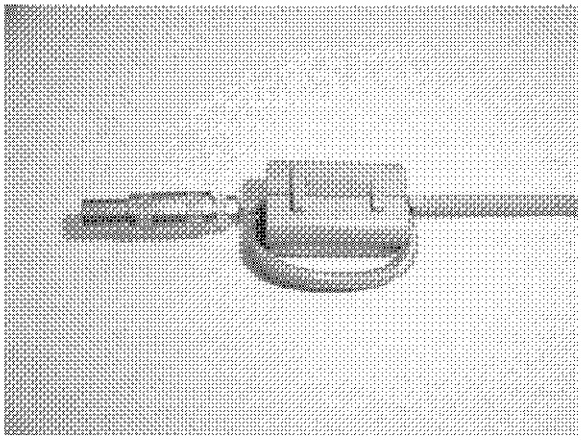


Figure 3-7 A ferrite core

3.4 Power Supply

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).

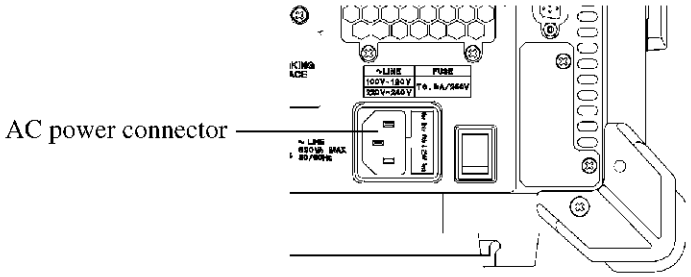


Figure 3-8 Connecting the Power Cable

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

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.

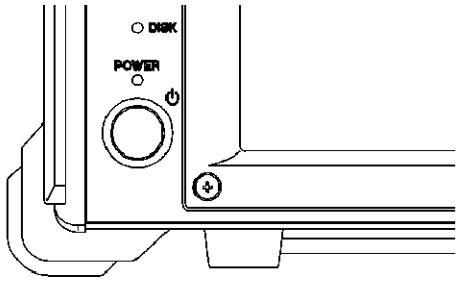


Figure 3-9 **POWER** switch

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.***

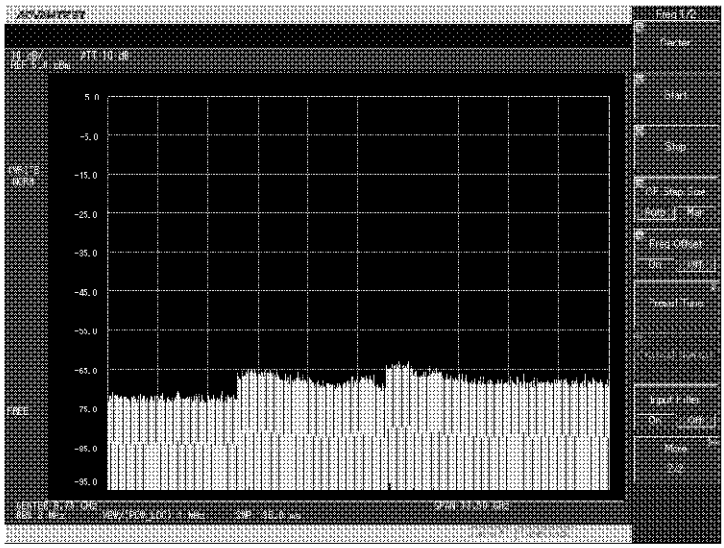


Figure 3-10 Initial Screen

Performing autocalibration

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

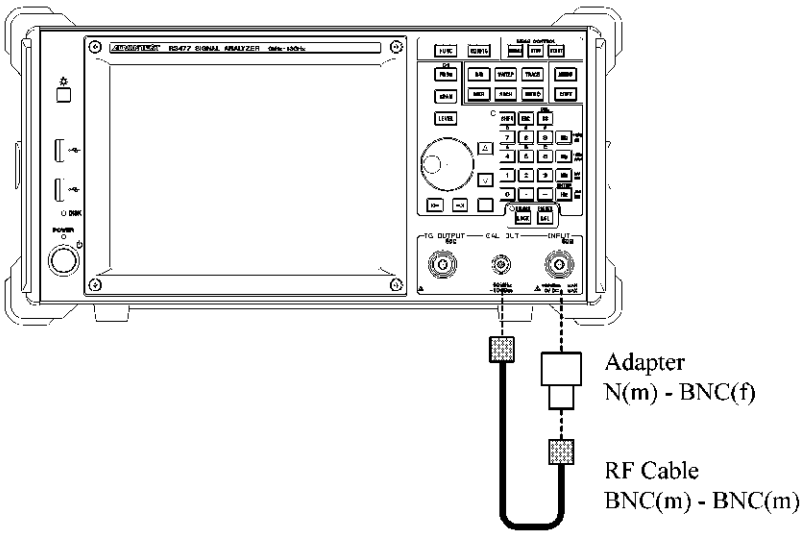


Figure 3-11 Autocalibration

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.

7. Press the **MENU** key, select the **Cal** key from the soft menu, and select the **SA Cal** key form 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 EXAMPLES

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

4.1 Code Domain Power Measurement of Access Network Signals (Subtype 0&1)

Specifications of the signal to be measured

The target signal, whose frequency is 870.03 MHz and level is -10 dBm, is compliant with IS-856.

It is assumed that the Even Second Clock, the 10-MHz reference signal, and the signal are output from the Access Network.

Signal specifications:

Slot Structure

Active Slot

Modulation Parameters

Data Rate: 614.4 kbps

Modulation Type: QPSK

RA channel

MAC Index: 4

Connections

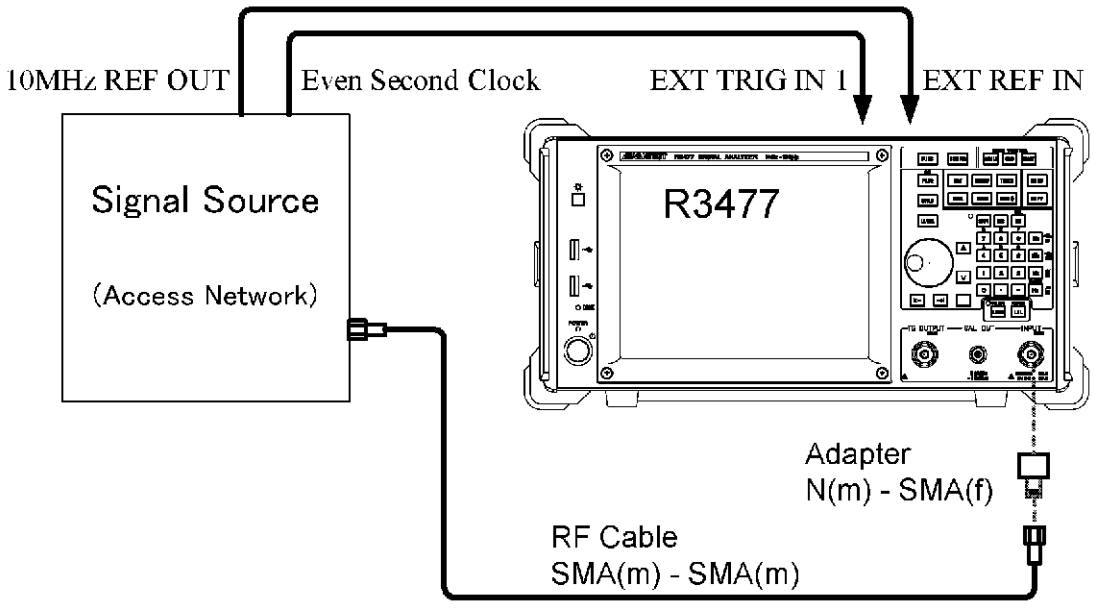


Figure 4-1 Connection Diagram for Code Domain Power Measurement of Access Network Signals

Measurement condition settings

1. Press the **CONFIG** key.
2. Touch the **STD Setup** key and select **[1xEV-DO DL]**.
3. Touch the **Apply** key to apply the setting.
4. Touch the **Tx Tester** key and select Tx Tester.
5. Press **FREQ**, **Center**, **8**, **7**, **0**, **.**, **0**, **3**, and **MHz** in this order.
   The center frequency is set to 870.03 MHz.
6. Press the **FUNC** key.
7. Touch **Modulation**, **Meas Mode**, and **Code Domain**.
   The Code Domain measurement mode is selected.
8. Touch the **Return** key.
9. Touch the **Auto Level Set** key.
   The Ref Level is automatically set to the optimum value.
10. Touch **Trigger**, **Trigger Source**, and **Ext1**.
    The trigger source is set to the external trigger.
11. Touch the **Return** key twice and return to Modulation menu.
12. Touch **Meas Setup** and **Meas Parameters**.
    The **[Measurement Parameters Setup]** dialog box is displayed.
13. Set the **[Physical Layer]** option button to **[Subtype 0&1]**.
14. Touch the **[Complementary Filter Rolloff]** text box and press **0**, **.**, **2**, and **Hz** (ENTER) on the keypad.
    The roll-off factor of the complementary filter is set to 0.2.
15. Set the **[Equalizing Filter]** option button to **[ON]**.
16. Touch the **[PN Offset]** text box and press **0** and **Hz** (ENTER) on the keypad.
    The value of PN Offset is set to 0.
17. Touch the **[MAC Threshold]** text box and press **-**, **2**, **7**, and **Hz** (ENTER) on the keypad.
18. Touch the **[Data Code Domain N]** text box and press **4** and **Hz** (ENTER) on the keypad.
    The measurement length N, in which Data Code Domain is measured, is set to 4.
19. Set the **[Phase Tracking]** option button to **[OFF]**.
    The Phase Tracking function is set to OFF.

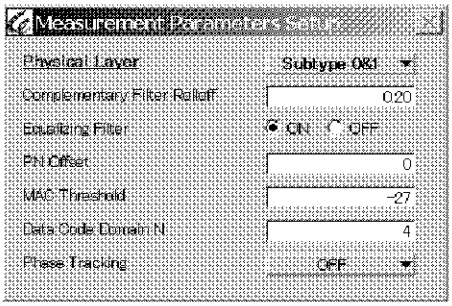


Figure 4-2 **[Measurement Parameters Setup]** Dialog Box

20. Touch the **Close** key to close the dialog box.

21. Press the **SINGLE** key.

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

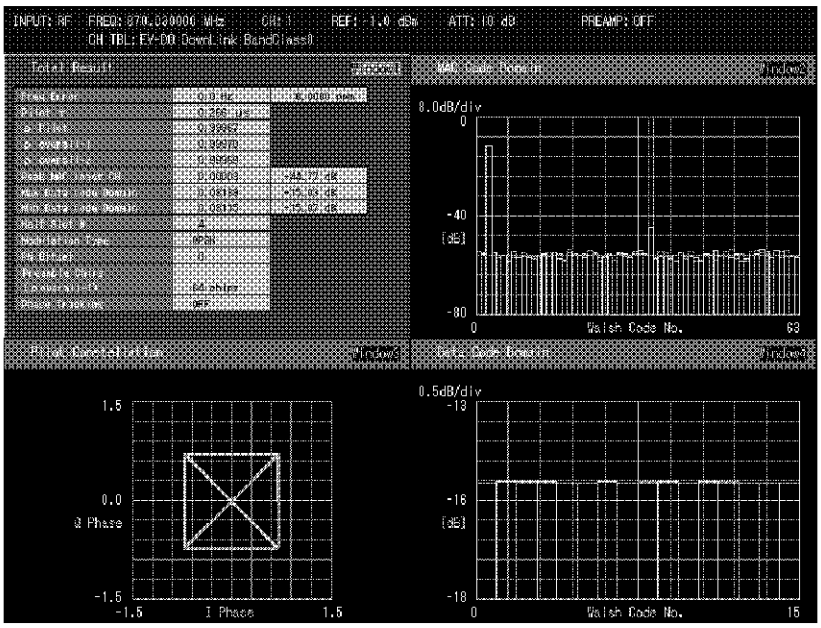


Figure 4-3 Code Domain Measurement Results of 1xEV-DO Access Network Signal (Subtype 0&1)

Upper left window

Freq Error	The carrier frequency error (Hz, ppm) from the set center frequency This value is acquired in 10-slot Pilot channels.
τ (Pilot Time Alignment Error)	Delay time (μs) from a trigger point to the head of a frame This value is acquired in 10-slot Pilot channels. If the Even Second signal is entered as the external trigger signal, the pilot time alignment error, which is the Minimum Standard value of Pilot Channel Time Tolerance, is acquired.
ρ_{pilot}	Waveform quality in Pilot Channel This value is acquired in 10-slot Pilot channels. (N=20: 20 half slot) ρ_{pilot}, which is one of the Minimum Standard value in Waveform Quality, is acquired.
$\rho_{overall-1}$	Waveform quality in Pilot Channel, MAC Channel, and either Forward Traffic or Control Channel This value is acquired in one slot. (N=2: 2 half slot) Whether the slot is idle or active is automatically checked. Whether the preamble is included in a slot is checked. Whether the modulation type is QPSK, 8PSK, or 16QAM is judged. $\rho_{overall-1}$, which is one of the Minimum Standard value in Waveform Quality, is acquired.
$\rho_{overall-2}$	Waveform quality in the Pilot channel, MAC channel, and either Forward Traffic channel or Control channel which are shifted to 512 chips from those of $\rho_{overall-2}$. $\rho_{overall-2}$, which is one of the Minimum Standard value in Waveform Quality, is acquired.
Peak MAC Inact CH	The maximum and logarithmic values of the Code domain power $\rho_{MAC,\ real(i)}$, and $\rho_{MAC,\ imag(i)}$ of the MAC channels which are judged as the inactive channel. This value is acquired in 8 slots. (N=16: 16 half slot) Whether a MAC channel is active or inactive is judged according to the following conditions: the $\rho_{MAC,\ real(i)}$, and $\rho_{MAC,\ imag(i)}$ values exceed the MAC threshold value and the MAC channel is specified by MAC Index. If the $\rho_{MAC,\ real(i)}$ and $\rho_{MAC,\ imag(i)}$ values do not exceed the MAC threshold value, the channel is judged as an inactive channel. However, the MAC channel in the following conditions is judged as an inactive channel even if the code domain power of the MAC channel exceeds the MAC Threshold value. When **[Physical Layer]** is set to Subtype 0&1, and the Walsh Code number (i) is 32 to 63 in $\rho_{MAC,\ real(i)}$. the Walsh Code number (i) is 0 to 31 in $\rho_{MAC,\ imag(i)}$. The logarithmic MAC threshold value is set in the Measurement Parameters Setup dialog box. The Minimum Standard value of Code Domain Power of MAC channel is acquired.

Max Data Code Domain	The maximum and logarithmic values (dB) of the Code domain power $\rho_{Data,\ real(i)}$ and $\rho_{Data,\ imag(i)}$ of the 16 orthogonal code channels in which the preambles of Control Channel and Forward Traffic Channel are excluded. Regarding the Idle slot, "*" is displayed. The Minimum Standard value of Code Domain Power of Forward Traffic and Control Channel is acquired.
Min Data Code Domain	The minimum and logarithmic values (dB) of the Code domain power $\rho_{Data,\ real(i)}$ and $\rho_{Data,\ imag(i)}$ of the 16 orthogonal code channels in which the preambles of Control Channel and Forward Traffic Channel are excluded. Regarding the Idle slot, "*" is displayed. The Minimum Standard value of Code Domain Power of Forward Traffic and Control Channel is acquired.
Half Slot N	The number of half slots when the values on the Max Data Code Domain, Min Data Code Domain, and Data Code Domain graphs were acquired.
Modulation Type	The modulation format of Control Channel or Forward Traffic Channel in slots in which $\rho_{overall-1}$ was acquired. (QPSK, 8-PSK, 16-QAM) Regarding the Idle slot, "Idle" is displayed.
PN Offset	PN Offset value used in Pilot PN Sequence The PN Offset value, which is set in the Measurement Parameters Setup dialog box, is displayed. If any signal except for set PN Offset is entered, the PN Offset value is acquired assuming that the trigger is the even second time reference signal.
Preamble Chips($\rho_{overall-1}$)	The number of chips that is equivalent to the number of preambles in slots in which $\rho_{overall-1}$ was acquired.
Phase Tracking	Displays a tracking method which is selected in the Measurement Parameters Setup dialog box.

22. Touch **[Window2]**.

23. Press the **MKR** key.

    The marker is displayed.

Walsh No.	The Walsh Code number of a channel which is specified by the marker
MAC Index	The MAC Index number of a channel which is specified by the marker
$\rho_{MAC,\ real}$	The logarithmic value (dB) of Code Domain Power $\rho_{MAC,\ real(i)}$ of a channel which is specified by the marker
$\rho_{MAC,\ imag}$	The logarithmic value (dB) of Code Domain Power $\rho_{MAC,\ imag(i)}$ of a channel which is specified by the marker

When **[Physical Layer]** is set to Subtype 2, the 128-code horizontal axis is displayed on the MAC Code Domain graph shown in Figure 4-4.

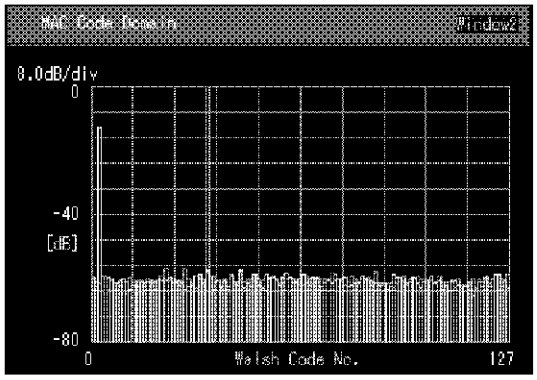


Figure 4-4 MAC Code Domain Display when Setting **[Physical Layer]** to Subtype 2

4.2 Pilot/MAC Channel Power Measurement of Access Network Signals

Specifications of the signal to be measured

The target signal, whose frequency is 870.03 MHz and level is -10 dBm, is compliant with IS-856.

It is assumed that the Even Second Clock, the 10-MHz reference signal, and the signal are output from the Access Network.

Signal specifications:

Slot Structure

Active Slot

Connections

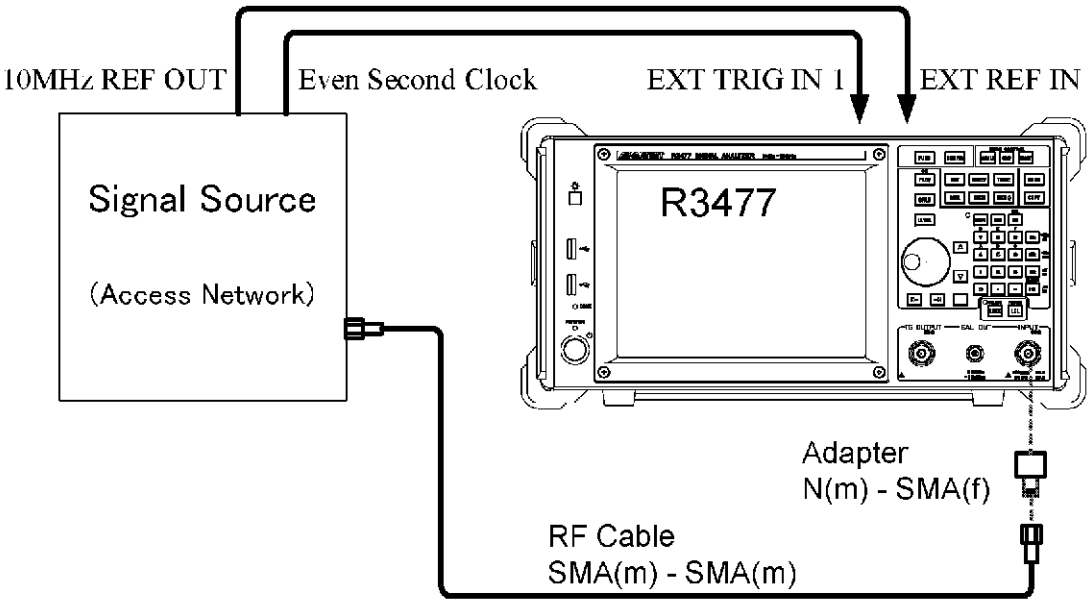


Figure 4-5 Connection Diagram for Code Domain Power Measurement of Access Network Signals

Measurement condition settings

1. Press the **CONFIG** key.
2. Touch the **STD Setup** key and select **[1xEV-DO DL]**.
3. Touch the **Apply** key to apply the setting.
4. Touch the **Tx Tester** key and select Tx Tester.
5. Press **FREQ**, **Center**, **8**, **7**, **0**, **.**, **0**, **3**, and **MHz** in this order. The center frequency is set to 870.03 MHz.

6. Press the [FUNC] key.
7. Touch **Modulation**, **Meas Mode**, and **Pilot/MAC Channel Power**.
   The Pilot/MAC Channel Power measurement mode is selected.
8. Touch the **Return** key.
9. Touch the **Auto Level Set** key.
   The Ref level is automatically set to the optimum value.
10. Touch **Trigger**, **Trigger Source**, and **Ext1**.
    The trigger source is set to the external trigger.
11. Touch **Meas Setup** and **Meas Parameters**.
    The **[Measurement Parameters Setup]** dialog box is displayed.
12. Touch the **[PN Offset]** text box and press [0] and [Hz](ENTER) on the keypad.
    The value of PN Offset is set to 0.
13. Set the **[Bandpass Filter]** option button to **[OFF]**.

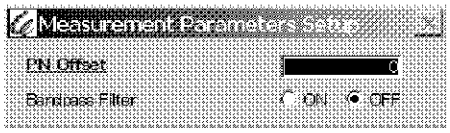


Figure 4-6 **[Measurement Parameters Setup]** Dialog Box

14. Touch the **Close** key to close the dialog box.
15. Touch the **Template Entry** key.
    The **[Template Entry]** dialog box is displayed.
16. Touch the Y0 text box and press [-], [2], [.], [5], and [GHz](dB) on the keypad.
    Template Y0 is set to -2.5 dB.
17. Touch the Y1 text box and press [2], [.], [5], and [GHz](dB) on the keypad.
    Template Y1 is set to 2.5 dB.
18. Touch the Y2 text box and press [-], [7], and [GHz](dB) on the keypad.
    Template Y2 is set to -7 dB.
19. Touch the **Close** key to close the dialog box.

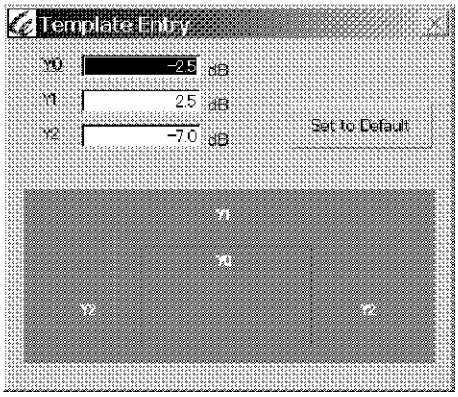


Figure 4-7 **[Template Entry]** Dialog Box

20. Touch the **Average** key and set the average to On or Off and the averaging count.

    Press **1**, **0**, **0**, and **Hz** (ENTER) on the keypad to set the averaging count to 100.

21. Press the **SINGLE** key.

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

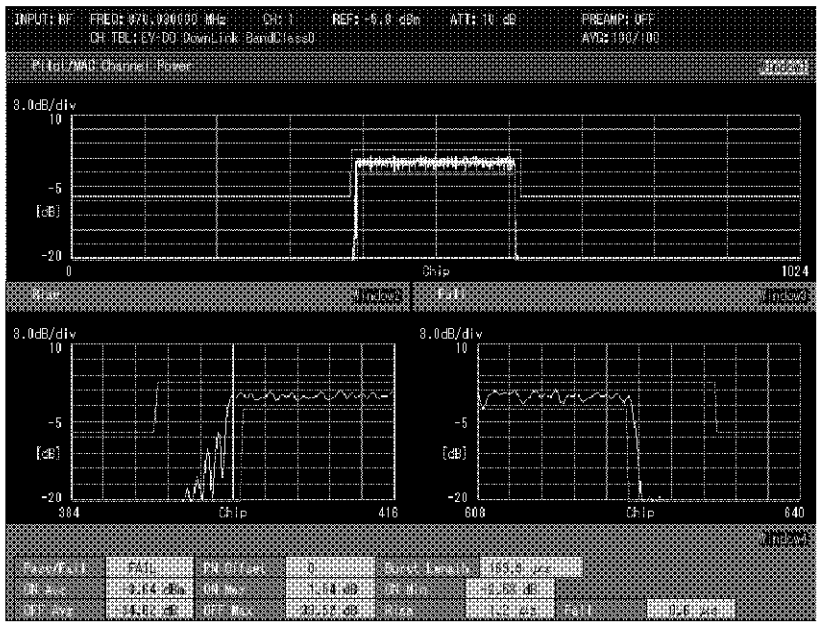


Figure 4-8 Pilot/MAC Channel Power Measurement Results

Pass/Fail	Pass or Fail judgment on the template
PN Offset	PN Offset value used in Pilot PN Sequence The PN Offset value, which is set in the Measurement Parameters Setup dialog box, is displayed. If any signal except for set PN Offset is entered, the PN Offset value is acquired assuming that the trigger is the even second time reference signal.
Burst Length	ON period of the burst (µs) The period of the burst, whose level is within Template Y0 and Y1, is acquired. Indicates a period from the center of the template to a point where the burst level exceeds the range of Template Y0 and Y1.
ON Avg	Average power (dBm) in the ON period (222 chips) of the burst The average power in the ON period (222 chips) of the burst, which is a part of the ensemble average waveform, is acquired.
ON Max	Maximum value (dB) in the ON period (7 µs + 222 chips + 7 µs) of the burst Indicates the relative power (dB) to ON Avg (average power) which is normalized to 0 dB.
ON Min	Minimum value in the ON period (222 chips) of the burst
OFF Avg	Relative average power (dB) in the OFF period of the burst (all periods except for the ON period: 7 µs + 222 chips + 7 µs)
OFF Max	Maximum value (dB) in the OFF period of the burst (all periods except for the ON period: 7 µs + 222 chips + 7 µs)
Rise	Rise time of the burst (µs) Time from the rising edge of the ON period (222 chips) of the burst to the point where the burst waveform crosses down the Y2 level
Fall	Fall time of the burst (µs) Time from the falling edge of the ON period (222 chips) of the burst to the point where the burst waveform crosses down the Y2 level

22. Press the **MKR** key.

    A marker is displayed. Another marker appears on the lower left window by specifying the marker position to 384.

4.3 Code Domain Power Measurement of Access Terminal Signal (Subtype 0&1)

Specifications of signal to be measured

The target signal, whose frequency is 825.03 MHz and level is -10 dBm, is compliant with IS-856.

Long Code Mask I: 33333333333

Long Code Mask Q: 26666666667

Reverse Traffic Channel signal in which the following channels are multiplexed

Pilot Channel (Pilot/Reverse Rate Indicator (RRI) Channel)

ACK Channel (Acknowledgment Channel)

DRC Channel (Data Rate Control Channel)

Data Channel

Connections

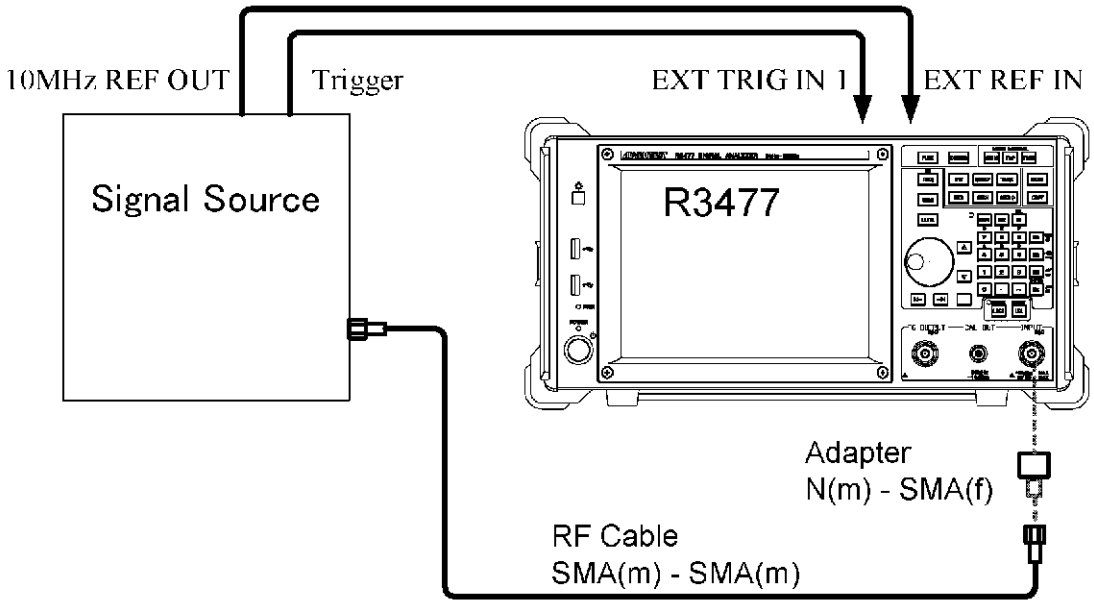


Figure 4-9 Connection Diagram for Code Domain Power Measurement of Access Terminal Signal

Measurement condition settings

1. Press the [CONFIG] key.
2. Touch the **STD Setup** key and select **[1xEV-DO 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 [M/n] in this order.
   The center frequency is set to 825.03 MHz.
6. Press the [FUNC] key and touch the **Modulation** key.
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 **Subtype 0&1**.
    The measurement mode is set to Subtype 0&1.
11. Touch the **Return** key to return to the Modulation menu.
12. Touch **Meas Setup** and **Meas Parameters**.
    The **[Measurement Parameters Setup]** dialog box is displayed.
13. Touch the **[Meas Range]** text box and press [1] and [Hz](ENTER) on the keypad.
    The measurement length is set to 1 slot.
14. Touch the **[Threshold]** text box and press [-], [2], [3], and [GHz](dB) on the keypad.
    The threshold level is set to -23 dB.
15. Set the **[PN Delay Search]** option button to **[ON]**.
    The PN Delay search is set to ON.
16. Touch the **[Long Code Mask I]** text box and press [3], [3], [3], [3], [3], [3], [3], [3], [3], [3], [3], [3], and [Hz](ENTER) on the keypad.
17. Touch the **[Long Code Mask Q]** text box and press [2], [6], [6], [6], [6], [6], [6], [6], [6], [6], [6], [7], and [Hz](ENTER) on the keypad.
18. Set the **[Freq Meas Range]** option button to **[±1 kHz]**.
    The frequency error measurement range is set to ±1 kHz.

19. Set the **[Chip Rate Error]** option button to **[ON]**.
    Chip Rate Error can be measured.

20. Set the **[Quadrature Error]** option button to **[ON]**.
    Quadrature Error can be measured.

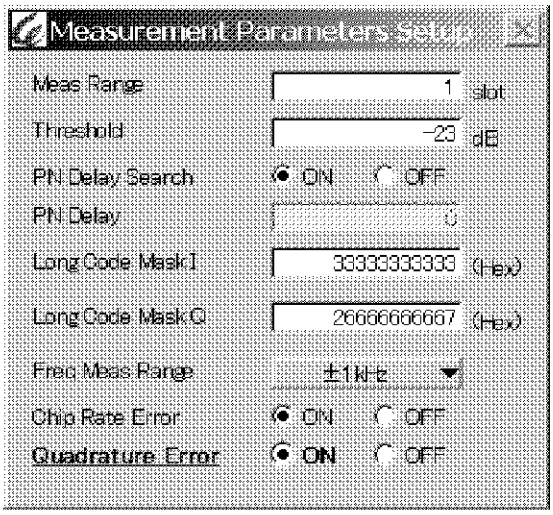


Figure 4-10 **[Measurement Parameters Setup]** Dialog Box (Subtype 0&1)

21. Touch the **Close** key to close the dialog box.

22. Press the **SINGLE** key.
    The Single measurement is performed, and the measurement results are displayed.

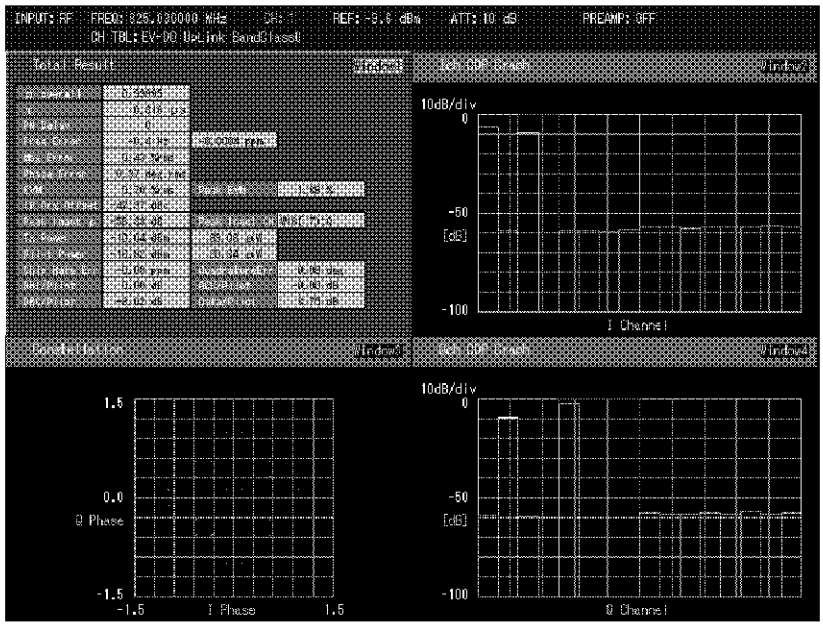


Figure 4-11 Measurement Results of 1xEV-DO Access Terminal Signal (Subtype 0&1)

Upper left window

$\rho_{overall}$	Waveform quality in Pilot Channel, DRC Channel, ACK Channel, and Data Channel
τ (Time Alignment Error)	Delay time (μs) from a trigger point to the head of a frame
PN Delay	Delay time from the head of Pilot PN Sequence and that is a value of 0 to 511 in units of 64 chips
Freq Error	The carrier frequency error (Hz, ppm) from the set center frequency
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)
Peak EVM	Peak Error Vector Magnitude of the multiplex signal (%)
IQ Org Offset	IQ origin offset (dBc)
Peak Inact ρ	The maximum logarithmic coefficient for each I and Q channels Code Domain power in inactive channels
Peak Inact CH	Walsh Code number, length, and components of Peak Inact ρ
Tx Power	Transmission power (dBm, W)
Pilot Power	Power of the pilot channel (dBm, W)
Chip Rate Err	Chip rate error (ppm) in relation to 1.2288 Mcps as a reference

Quadrature Err	Q-axis quadrature error (degree) in relation to the I-axis
RRI/Pilot	Logarithmic power ratio (dB) of the RRI channel to the Pilot channel*
ACK/Pilot	Logarithmic power ratio (dB) of the ACK channel to the Pilot channel
DRC/Pilot	Logarithmic power ratio (dB) of the DRC channel to the Pilot channel
Data/Pilot	Logarithmic power ratio (dB) of the Data channel to the Pilot channel

MEMO: ***The Pilot channel* indicates the Pilot channel from which the RRI channel is excluded.***

Marker display

23. Touch **[Window2]**.
24. Press the **MKR** key.

    The transmission channel marker is displayed.

Walsh Code	The Walsh Code number and length of a channel which is specified by the marker
CH	The name for the Pilot, ACK, DRC, and Data channels (Active channel names are displayed.)
Rate	The modulation symbol rate of a channel which is specified by the marker
ρ × TxPow	The product of ρ and TxPower of a channel which is specified by the marker (dBm, W)
ρ	The Code Domain power coefficient of a channel which is specified by the marker (dB, linear)

4.4 Code Domain Power Measurement of Access Terminal Signal (Subtype 2)

Specifications of signal to be measured

The target signal, whose frequency is 825.03 MHz and level is -10 dBm, is compliant with IS-856.

Long Code Mask I: 33333333333

Long Code Mask Q: 26666666667

Reverse Traffic Channel signal in which the following channels are multiplexed

- Pilot Channel
- Reverse Rate Indicator (RRI) Channel
- Data Source Control (DSC) Channel
- Data Rate Control (DRC) Channel
- ACK Channel
- Data Channel
- Auxiliary Pilot Channel

Connections

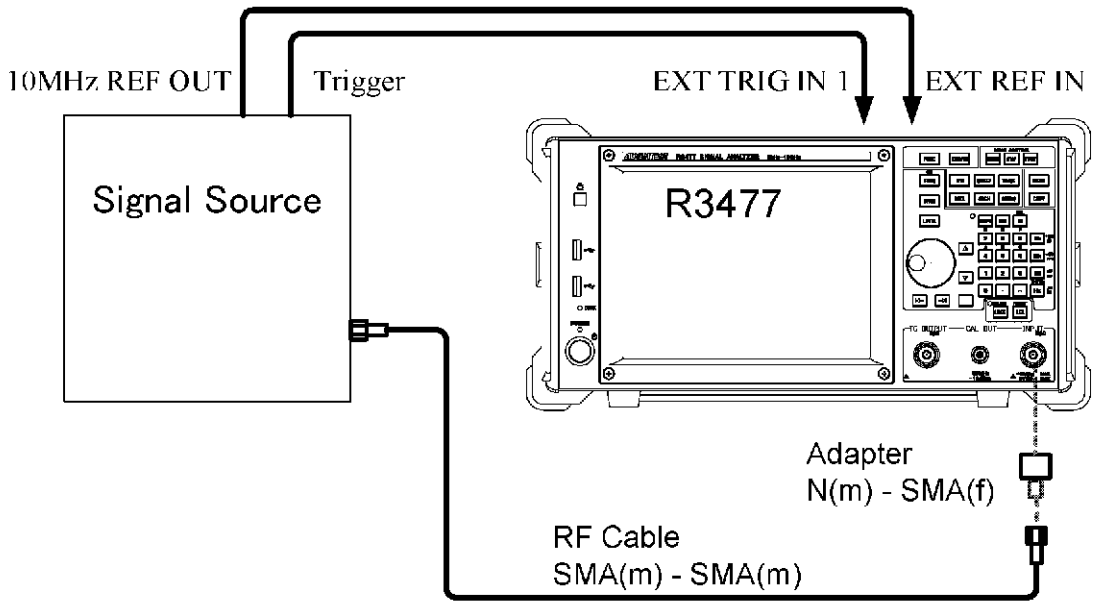


Figure 4-12 Connection Diagram for Code Domain Power Measurement of Access Terminal Signal

Measurement condition settings

1. Press the [CONFIG] key.
2. Touch the **STD Setup** key and select **[1xEV-DO 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 [M/n] in this order.
   The center frequency is set to 825.03 MHz.
6. Press the [FUNC] key and touch the **Modulation** key.
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 **Subtype 2**.
    The measurement mode is set to Subtype 2.
11. Touch the **Return** key to return to the Modulation menu.
12. Touch **Meas Setup** and **Meas Parameters**.
    The **[Measurement Parameters Setup]** dialog box is displayed.
13. Set the **[User Table]** option button to **[NOT USE]**.
    The user table cannot be used.
14. Set the **[Data Channel Detection]** option button to **[RRI]**.
    The Data channel is analyzed according to the RRI channel information.
15. Touch the **[Meas Range]** text box and press [2] and [Hz](ENTER) on the keypad.
    The measurement length is set to 2 half slot.
16. Touch the **[Threshold]** text box and press [-], [2], [3], and [GHz](dB) on the keypad.
    The threshold level is set to -23 dB.
17. Set the **[PN Delay Search]** option button to **[ON]**.
    The PN Delay search is set to ON.
18. Touch the **[Long Code Mask I]** text box and press [3], [3], [3], [3], [3], [3], [3], [3], [3], [3], [3], and [Hz](ENTER) on the keypad.

19. Touch the **[Long Code Mask Q]** text box and press [2], [6], [6], [6], [6], [6], [6], [6], [6], [6], [7], and [Hz] (ENTER) on the keypad.
20. Set the **[Freq Meas Range]** option button to **[±1 kHz]**.
    The frequency error measurement range is set to ±1 kHz.
21. Set the **[Chip Rate Error]** option button to **[ON]**.
    Chip Rate Error can be measured.
22. Set the **[Quadrature Error]** option button to **[ON]**.
    Quadrature Error can be measured.
23. Set the **[Half Slot Timing Adjust]** option button to **[ON]**.
    The time correction at the data position can be performed in each half slot timing.

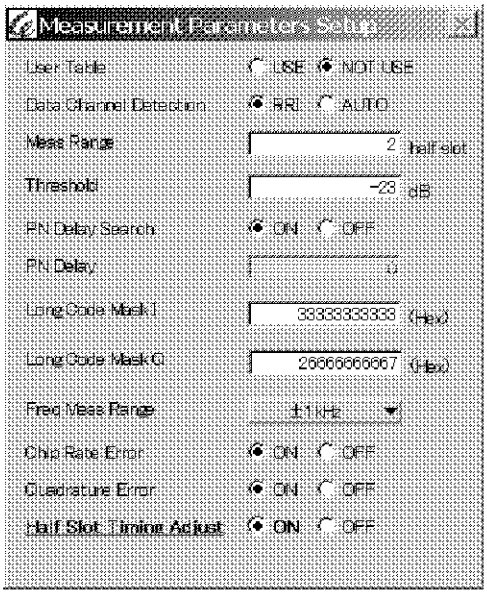


Figure 4-13 **[Measurement Parameters Setup]** Dialog Box (Subtype 2)

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

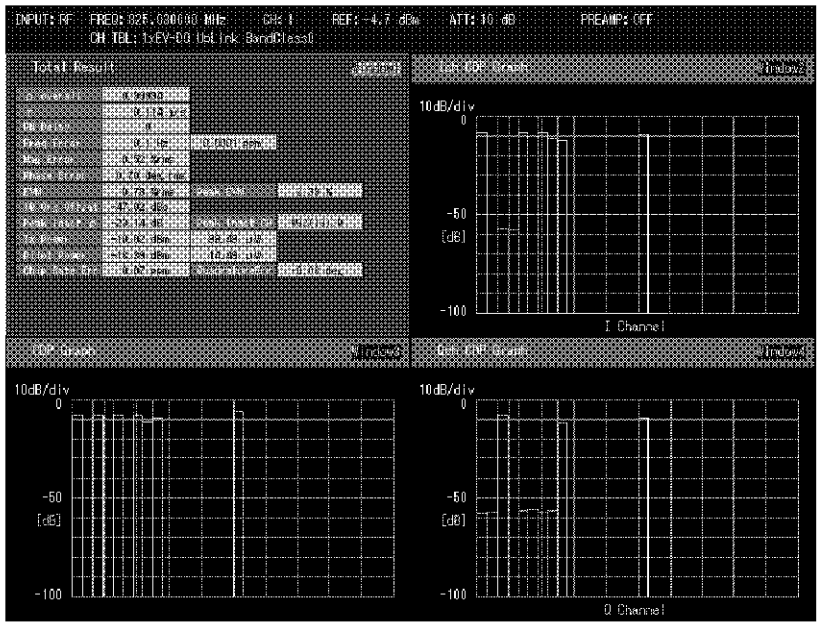


Figure 4-14 Measurement Results of 1xEV-DO Access Terminal Signal (Subtype 2)

Upper left window

$\rho_{overall}$	Waveform quality in Pilot Channel, RRI Channel, DSC Channel, DRC Channel, ACK Channel, Data Channel and Auxiliary Pilot Channel
τ (Time Alignment Error)	Delay time (μs) from a trigger point to the head of a frame
PN Delay	Delay time from the head of Pilot PN Sequence and that is a value of 0 to 511 in units of 64 chips
Freq Error	The carrier frequency error (Hz, ppm) from the set center frequency
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)
Peak EVM	Peak Error Vector Magnitude of the multiplex signal (%)
IQ Org Offset	IQ origin offset (dBc)
Peak Inact ρ	The maximum logarithmic coefficient for each I and Q channels Code Domain power in inactive channels
Peak Inact CH	Walsh Code number, length, and components of Peak Inact ρ
Tx Power	Transmission power (dBm, W)
Pilot Power	Power of the pilot channel (dBm, W)

Chip Rate Err	Chip rate error (ppm) in relation to 1.2288 Mcps as a reference
Quadrature Err	Q-axis quadrature error (degree) in relation to the I-axis

Marker display

26. Touch **[Window3]**.

27. Press the **MKR** key and touch the **Active CH. Marker** key.
    The transmission channel marker is displayed.

Walsh Code	The Walsh Code number and length of a channel which is specified by the marker
CH	Channel name
Rate	The modulation symbol rate (ksps) of a channel which is specified by the marker
ρ × TxPow	The product of ρ and TxPower of a channel which is specified by the marker (dBm, W)
ρ	The Code Domain power coefficient of a channel which is specified by the marker (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

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**.

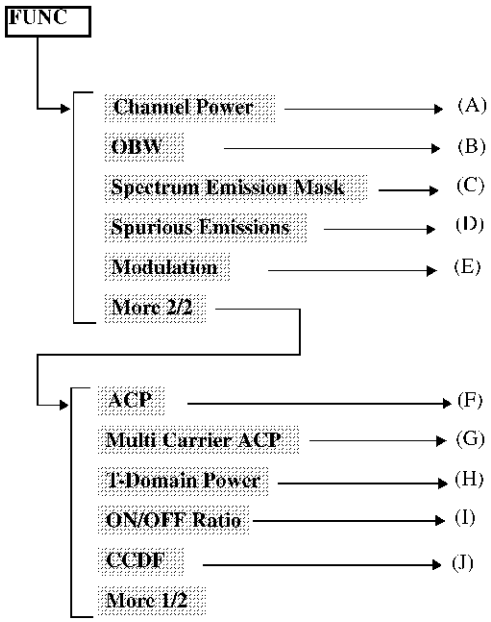
5.3 Key Function Descriptions

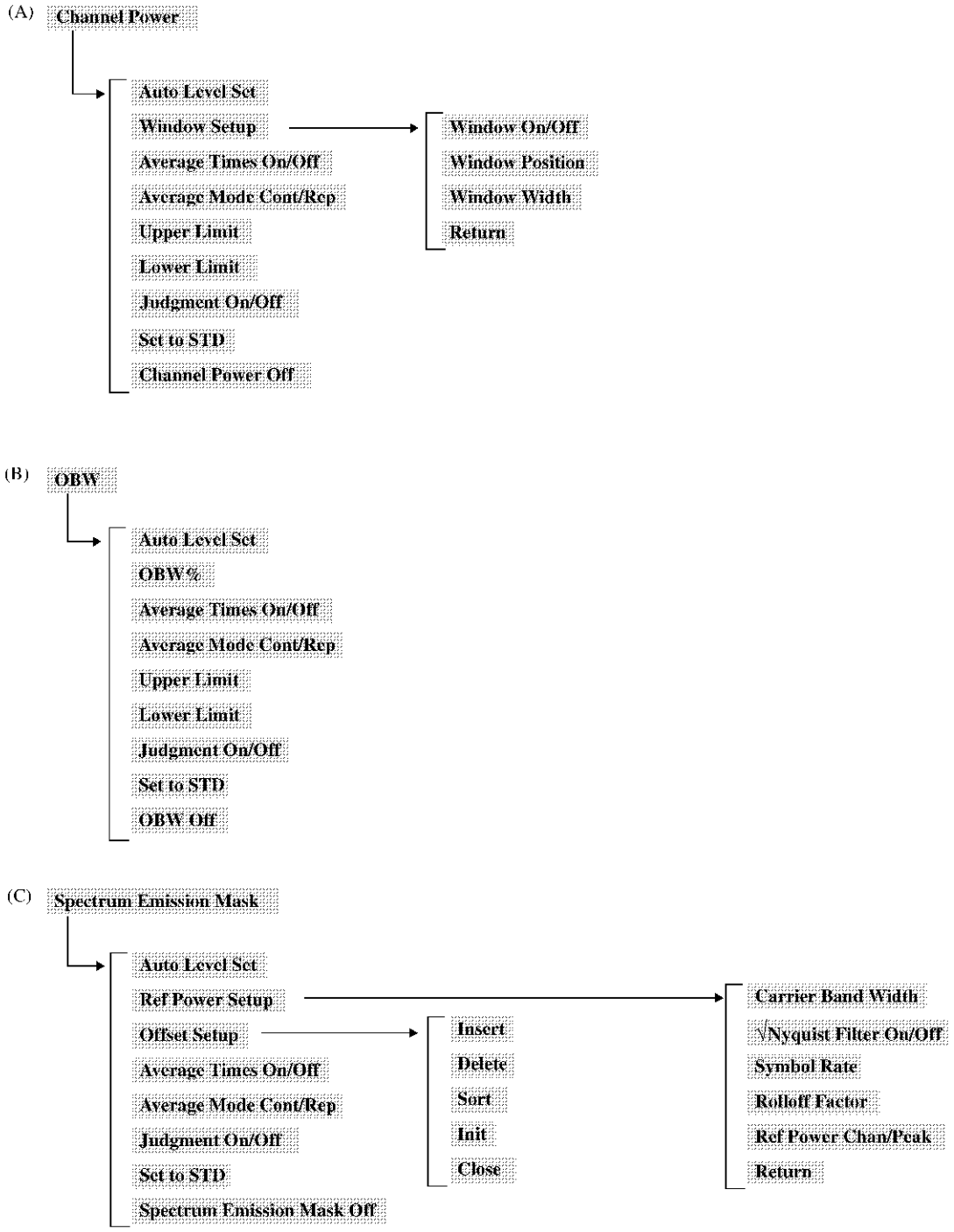
This section describes the function of each key.

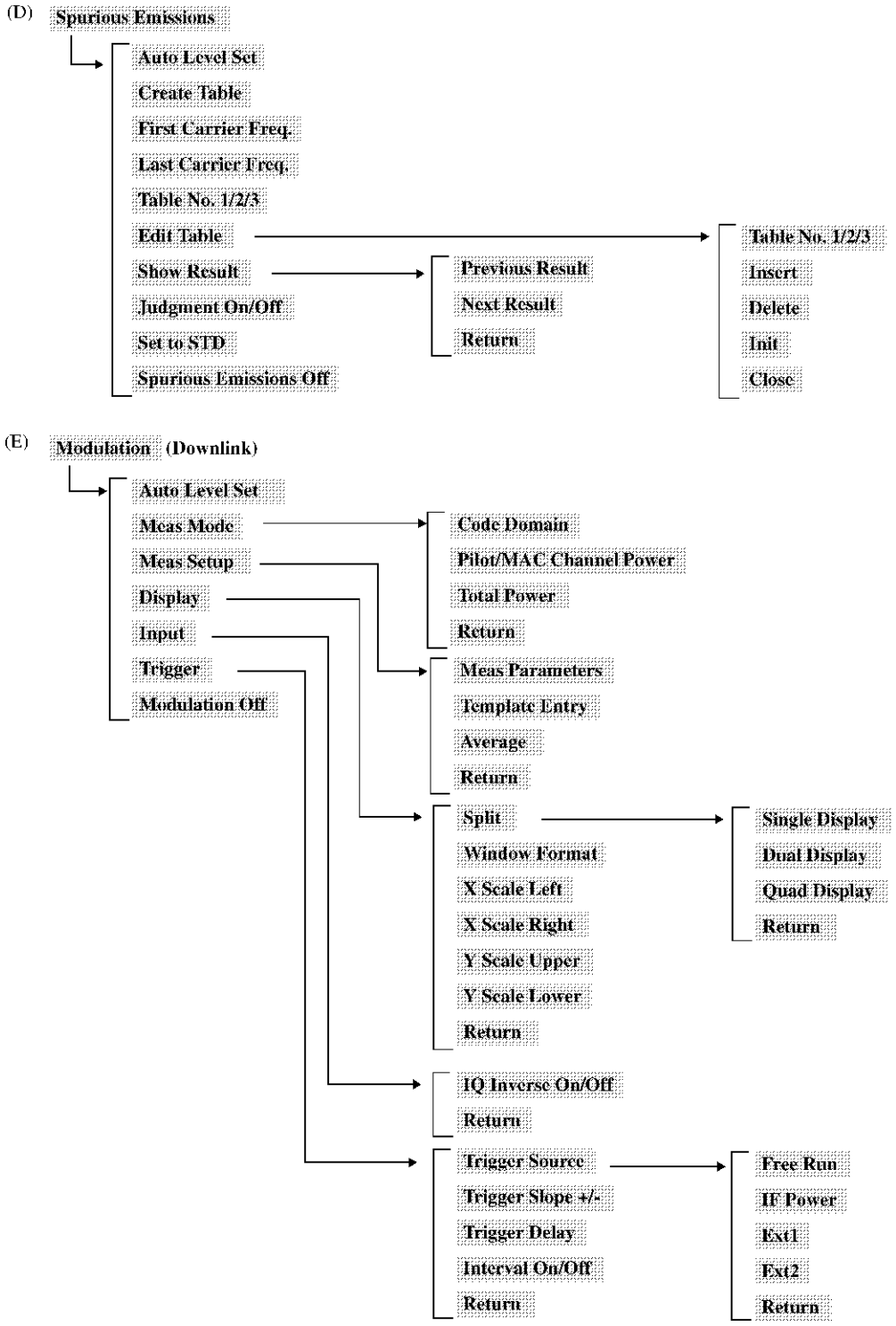
5.3.1 [FUNC]

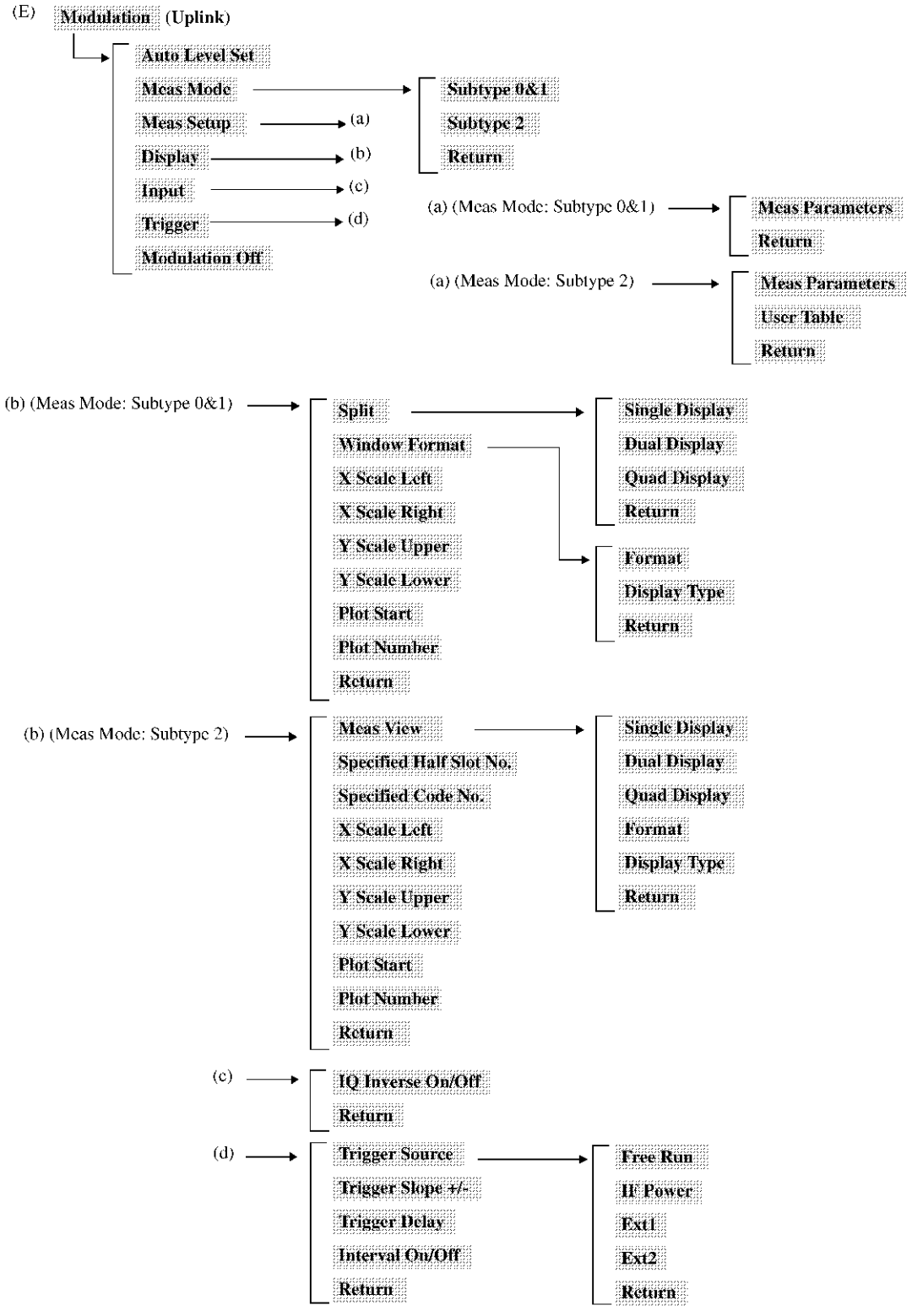
Pressing the FUNC key displays the Function menu from which measurement functions can be selected.

The following shows the Function menu map.

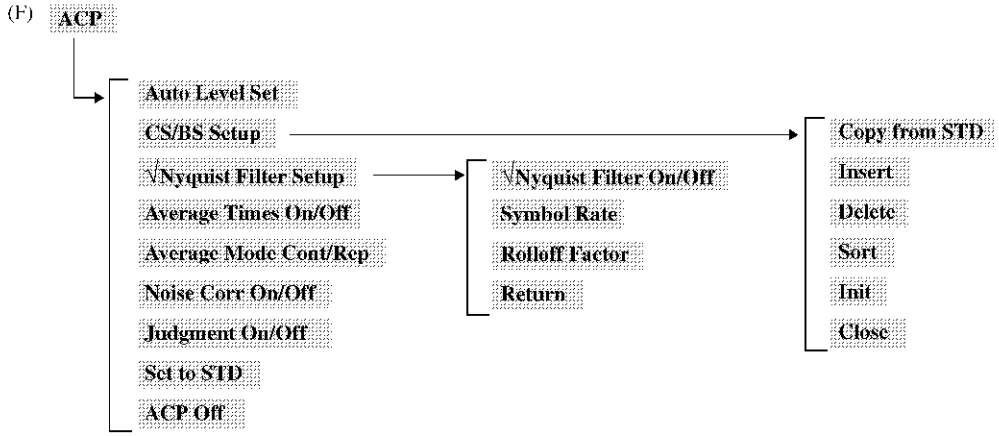


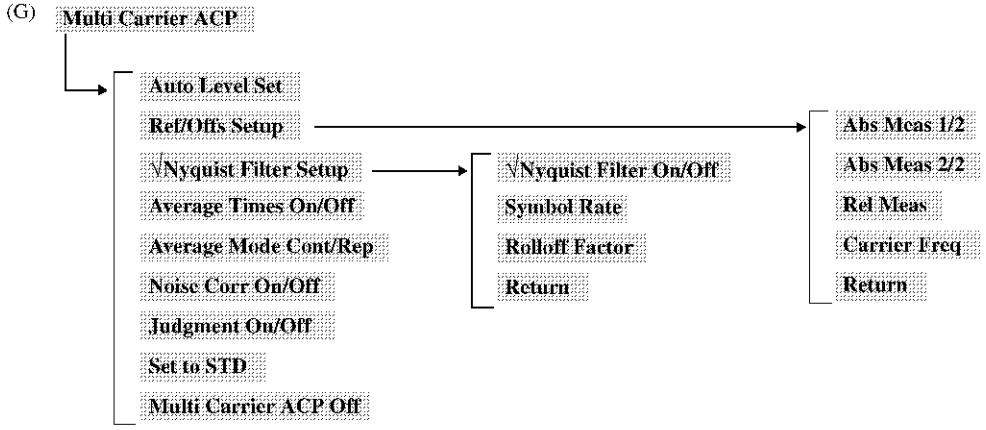

(A)
Channel Power
Auto Level Set
Window Setup
Window On/Off
Window Position
Window Width
Return
Average Times On/Off
Average Mode Cont/Rep
Upper Limit
Lower Limit
Judgment On/Off
Set to STD
Channel Power Off
(B)
OBW
Auto Level Set
OBW %
Average Times On/Off
Average Mode Cont/Rep
Upper Limit
Lower Limit
Judgment On/Off
Set to STD
OBW Off
(C)
Spectrum Emission Mask
Auto Level Set
Ref Power Setup
Carrier Band Width
√Nyquist Filter On/Off
Symbol Rate
Rolloff Factor
Ref Power Chan/Peak
Return
Offset Setup
Insert
Delete
Sort
Init
Close
Average Times On/Off
Average Mode Cont/Rep
Judgment On/Off
Set to STD
Spectrum Emission Mask Off

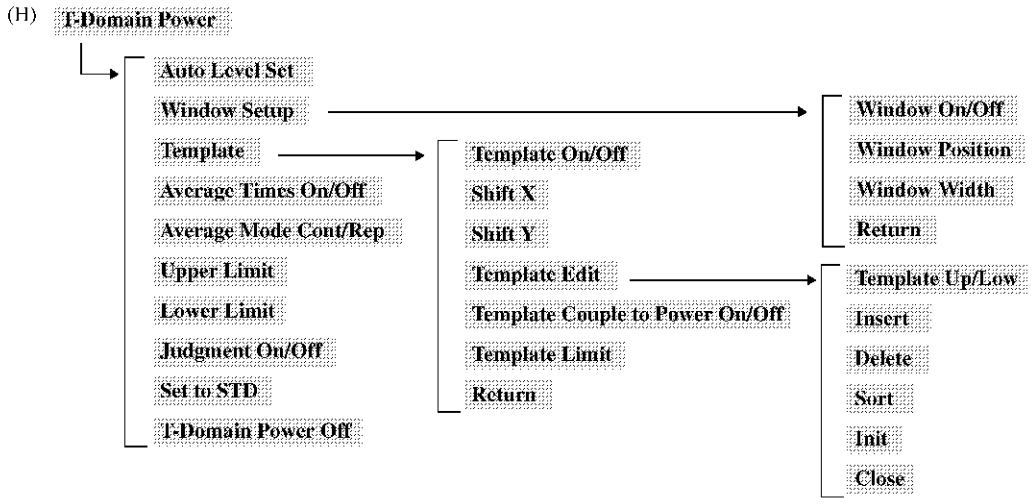

(D)
Spurious Emissions
Auto Level Set
Create Table
First Carrier Freq.
Last Carrier Freq.
Table No. 1/2/3
Edit Table
Show Result
Judgment On/Off
Set to STD
Spurious Emissions Off
Previous Result
Next Result
Return
Table No. 1/2/3
Insert
Delete
Init
Close
(E)
Modulation (Downlink)
Auto Level Set
Meas Mode
Meas Setup
Display
Input
Trigger
Modulation Off
Code Domain
Pilot/MAC Channel Power
Total Power
Return
Meas Parameters
Template Entry
Average
Return
Split
Window Format
X Scale Left
X Scale Right
Y Scale Upper
Y Scale Lower
Return
Single Display
Dual Display
Quad Display
Return
IQ Inverse On/Off
Return
Trigger Source
Trigger Slope +/-
Trigger Delay
Interval On/Off
Return
Free Run
IF Power
Ext1
Ext2
Return


(E)
Modulation (Uplink)
Auto Level Set
Meas Mode
Meas Setup
Display
Input
Trigger
Modulation Off
(a)
(b)
(c)
(d)
Subtype 0&1
Subtype 2
Return
(a) (Meas Mode: Subtype 0&1)
Meas Parameters
Return
(a) (Meas Mode: Subtype 2)
Meas Parameters
User Table
Return
(b) (Meas Mode: Subtype 0&1)
Split
Window Format
X Scale Left
X Scale Right
Y Scale Upper
Y Scale Lower
Plot Start
Plot Number
Return
Single Display
Dual Display
Quad Display
Return
Format
Display Type
Return
(b) (Meas Mode: Subtype 2)
Meas View
Specified Half Slot No.
Specified Code No.
X Scale Left
X Scale Right
Y Scale Upper
Y Scale Lower
Plot Start
Plot Number
Return
Single Display
Dual Display
Quad Display
Format
Display Type
Return
(c)
IQ Inverse On/Off
Return
(d)
Trigger Source
Trigger Slope +/-
Trigger Delay
Interval On/Off
Return
Free Run
IF Power
Ext1
Ext2
Return

5.3.1 [FUNC]


(F) ACP
Auto Level Set
CS/BS Setup
√Nyquist Filter Setup
Average Times On/Off
Average Mode Cont/Rep
Noise Corr On/Off
Judgment On/Off
Set to STD
ACP Off
√Nyquist Filter On/Off
Symbol Rate
Rolloff Factor
Return
Copy from STD
Insert
Delete
Sort
Init
Close


(G) Multi Carrier ACP
Auto Level Set
Ref/Offs Setup
√Nyquist Filter Setup
Average Times On/Off
Average Mode Cont/Rep
Noise Corr On/Off
Judgment On/Off
Set to STD
Multi Carrier ACP Off
√Nyquist Filter On/Off
Symbol Rate
Rolloff Factor
Return
Abs Meas 1/2
Abs Meas 2/2
Rel Meas
Carrier Freq
Return


(H) T-Domain Power
Auto Level Set
Window Setup
Template
Average Times On/Off
Average Mode Cont/Rep
Upper Limit
Lower Limit
Judgment On/Off
Set to STD
T-Domain Power Off
Template On/Off
Shift X
Shift Y
Template Edit
Template Couple to Power On/Off
Template Limit
Return
Window On/Off
Window Position
Window Width
Return
Template Up/Low
Insert
Delete
Sort
Init
Close

(I) ON/OFF Ratio

- Auto Level Set
- Window Setup
  - ON Position
  - ON Width
  - OFF Position
  - OFF Width
  - Return
- Average Times On/Off
- Average Mode Cont/Rep
- Limit
- Judgment On/Off
- Set to STD
- ON/OFF Ratio Off

(J) CCDF

- Auto Level Set
- CCDF RBW
- Meas Sample
- Trace Write On/Off
- Gaussian On/Off
- X Scale Max
- CCDF Gate On/Off
- CCDF Off

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] ≤ 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.

OBW Off — Quits the OBW measurement function.

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.

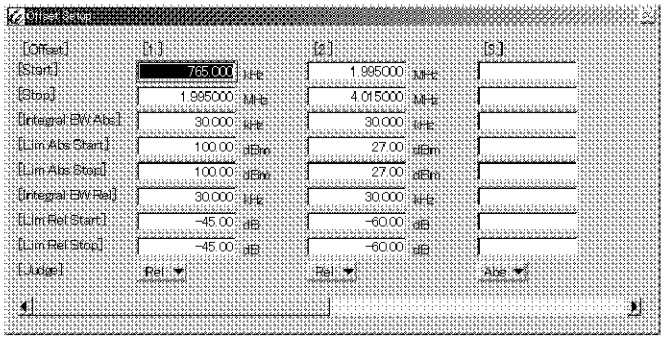
Ref Power Chan/Peak Switches the calculation mode of the reference power between the Channel mode and the Peak Power mode.

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.

- 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.

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.

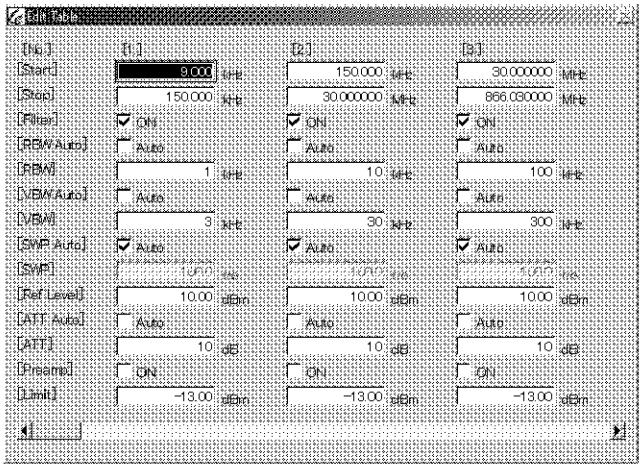


Table No. 1/2/3

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 Mode Displays the Meas Mode menu.

Code Domain Performs the Code Domain analysis.

Pilot/MAC Channel Power Performs the Pilot/MAC Channel Power analysis.

Total Power Performs the Total Power analysis.

Return Returns to the previous menu.

Meas Setup Displays the Meas Setup menu.

Meas Parameters Displays the dialog box to set the measurement conditions.

Code Domain measurement

[Physical Layer]
Sets Subtype of the physical layer.

[Complementary Filter Rolloff]
Sets the roll-off factor that determines the characteristics of the complementary filter. A value from 0.05 to 0.2 can be set.

[Equalizing Filter]
Sets the Equalizing filter to ON or OFF. Set to ON if the output of Access Network passes through the equalizing filter.

[PN Offset] Sets the PN Offset number. A number from 0 to 511 can be set.

[MAC Threshold]
Sets the logarithmic threshold value that is used to judge whether the MAC channel is active or inactive. A value from -100 dB to 0 dB can be set.

[Data Code Domain N]
Sets the number of half slots N that is used to acquire the values on the Max Data Code Domain, Min Data Code Domain, and Data Code Domain graphs. A number from 4 to 32 can be set.

[Phase Tracking]
Sets the Phase Tracking function.

Slot: The measurement is performed while tracking the phase of the Pilot channel in each Slot.

Half Slot: The measurement is performed while tracking the phase of the Pilot channel in each Half Slot.

OFF: The measurement is performed without phase tracking.

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

Pilot/MAC Channel Power and Total Power Measurement

[PN Offset] Sets the PN offset number. A number from 0 to 511 can be set.

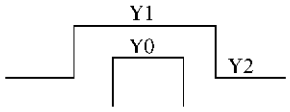
[Bandpass Filter]
Sets the bandpass filter to ON or OFF. Set to ON if the spurious emissions exist in the bandwidth that is adjacent to the measurement bandwidth. The signal passes through the bandpass filter whose bandwidth is ±625 kHz from the carrier frequency.

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

Template Entry This function is enabled in the Pilot/MAC Channel Power and Total Power measurements.
Displays the dialog box in which the template is set.

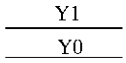
[Set to Default] Selects the standard template.

Default template of Pilot/MAC Channel Power



Y0	-2.5 dB
Y1	2.5 dB
Y2	-7.0 dB

Default template of Total Power



Y0	-2.5 dB
Y1	2.5 dB

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

Average This function is enabled in the Pilot/MAC Channel Power and Total Power measurements.
Sets the number of times averaging is performed.
Up to 512 counts can be set if the average is set to ON.

Return Returns to the previous menu.

Display Displays the Display menu.

Split Displays the Split 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.

Return Returns to the previous menu.

Window Format Selects the measurement result window to be displayed.

[Total Result] Displays the analyzed numerical result.

[MAC Code Domain]
Selects the code domain display of MAC Channel. On the graph, the horizontal axis indicates Walsh Code Number and the vertical axis indicates the logarithmic ρ (10 × Log10[ρ] dB). The Code Domain power of MAC Channel $\rho_{MAC,\ real(i)}$ and $\rho_{MAC,\ imag(i)}$ are displayed by yellow and green respectively. These values are acquired in 8 slots.(N=16:16 half slot)

MEMO: The number of codes on the horizontal axis is 64 when [Physical Layer] is set to Subtype 0&1, and 128 when [Physical Layer] is set to Subtype 2.

[Data Code Domain]
Selects the code domain display of all Data except for preambles. On the graph, the horizontal axis indicates Walsh Code Number and the vertical axis indicates the logarithmic ρ (10 × Log10[ρ] dB). The Code Domain power of Traffic Channel or Control Channel $\rho_{Data,\ real(i)}$ and $\rho_{Data,\ imag(i)}$ are displayed by yellow and green respectively.

[Pilot Constellation]
Selects the constellation display of Pilot Channel. Constellations of 10-slot Pilot channels are displayed.(N=20: 20 half slot)

[Data Despread Constellation]
Selects the constellation display of all Data except for preambles which have been already despread by using Walsh Code. Constellations of 2-slot Data are displayed.(N=4: 4 half slot)
16 dots are displayed in each symbol in order of the Walsh Code number because the symbol (16 chips) is despread by using 16 Walsh Code numbers

[Phase Error (Pilot)]
Selects the Phase Error graph display of Pilot Channel.
Phase errors at each chip in 10-slot Pilot channels are displayed.(N=20: 20 half slot)

Close Closes the dialog box and 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.

5.3.1.6 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.

Subtype 0&1 Selects the Subtype 0&1 mode. In the Subtype 0&1 mode, the analysis of the Subtype 0 or Subtype 1 signal, which is compliant with the physical layer standards, is performed.

Subtype 2 Selects the Subtype 2 mode. In the Subtype 2 mode, the analysis of the Subtype 2 signal, which is compliant with the physical layer standards, is performed.

Return Returns to the previous menu.

Meas Setup Displays the Meas Setup menu.

(When Meas Mode is Subtype 0&1)

Meas Parameters Displays the dialog box to set the measurement conditions.

[Meas Range] Sets the measurement length in units of Slot.

[Threshold] Sets a threshold value that is used to judge whether the channel is active.

[PN Delay Search]

ON: Searches for a PN sequence position of the signal.

OFF: Set **[PN Delay Search]** to OFF and sets **[PN Delay]** if the relationship between the external trigger and the PN delay of the input signal is known.

[PN Delay] Sets a PN sequence synchronization position to a value of 0 to 511 in units of 64 chips.

[Long Code Mask I]
Sets Long Code Mask (42 bit) of the I channel in hexadecimal.

[Long Code Mask Q]
Sets Long Code Mask (42 bit) of the Q channel in hexadecimal.

[Freq Meas Range]
Sets a search range of a carrier frequency.
±150 Hz, ±1 kHz, and ±4 kHz can be selected as a search range.

MEMO: The available search range varies depending on the multiplex signal level ratios and noise components.

[Chip Rate Error]
Selects whether to measure a chip rate error (ppm) in relation to 1.2288 Mcps as a reference.

ON: Measures a chip rate error.

OFF: Does not measure a chip rate error.

[Quadrature Error]
Selects whether to measure a Q-axis quadrature error (degree) in relation to the I-axis as a reference.

ON: Measures a quadrature error.

OFF: Does not measure a quadrature error.

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

Return Returns to the previous menu.

(When Meas Mode is Subtype 2)

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 judged.

[Data Channel Detection]
Selects a detection method of the data channel when **[User Table]** is set to NOT USE.

RRI: Determines the modulation format and Walsh Code of the data channel according to the RRI channel information.

AUTO: The modulation format and Walsh Code of the data channel are automatically judged according to the signal form.

[Meas Range] Sets the measurement length in units of half slot.

[Threshold] Sets a threshold value that is used to judge whether the channel is active.

[PN Delay Search]

ON: Searches for a PN sequence position of the signal.

OFF: Set **[PN Delay Search]** to OFF and sets **[PN Delay]** if the relationship between the external trigger and the PN delay of the input signal is known.

[PN Delay] Sets a PN sequence synchronization position to a value of 0 to 511 in units of 64 chips.

[Long Code Mask I]
Sets Long Code Mask (42 bit) of the I channel in hexadecimal.

[Long Code Mask Q]
Sets Long Code Mask (42 bit) of the Q channel in hexadecimal.

[Freq Meas Range]
Sets a search range of a carrier frequency.
±150 Hz, ±1 kHz, and ±4 kHz can be selected as a search range.

MEMO: The available search range varies depending on the multiplex signal level ratios and noise components.

[Chip Rate Error]
Selects whether to measure a chip rate error (ppm) in relation to 1.2288 Mcps as a reference.

ON: Measures a chip rate error.

OFF: Does not measure a chip rate error.

[Quadrature Error]
Selects whether to measure a Q-axis quadrature error (degree) in relation to the I-axis as a reference.

ON: Measures a quadrature error.

OFF: Does not measure a quadrature error.

[Half Slot Timing Adjust]
Selects whether to perform the time correction at the data position in each half slot timing.

ON: Performs the time correction.

OFF: Does not perform the time correction.

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

User Table The User Table dialog box is displayed.
The channels defined here are valid if **[User Table]** is set to USE.
Abbreviation for each channel is as follows:

DRC: Data Rate Control Channel

RRI: Reverse Rate Indicator Channel

ACK: ACK Channel

DSC: Data Source Control Channel

Data: Data Channel

Aux Pilot: Auxiliary Pilot Channel

[DRC] OFF: Sets the condition in which no DRC is transmitted.

ON: Sets the Walsh function of DRC to W16 (8), the modulation format to Q-component BPSK, and then sets the condition in which DRC is transmitted.

[RRI]	OFF:	Sets the condition in which no RRI is transmitted.
	ON:	Sets the Walsh function of RRI to W16 (4), the modulation format to I-component BPSK, and then sets the condition in which RRI is transmitted.
[ACK/DSC]	OFF:	Sets the condition in which ACK and DSC are not transmitted.
	ON:	Sets the Walsh function of ACK and DSC to W32 (12), the modulation format to I-component BPSK, and then sets the condition in which ACK and DSC are transmitted.
[Data]	OFF:	Sets the condition in which no Data is transmitted.
	B4:	Sets the Walsh function of Data to W4 (2), the modulation format to Q-component BPSK, and then sets the condition in which Data is transmitted.
	Q4:	Sets the Walsh function of Data to W4 (2), the modulation format to QPSK, and then sets the condition in which Data is transmitted.
	Q2:	Sets the Walsh function of Data to W2 (1), the modulation format to QPSK, and then sets the condition in which Data is transmitted.
	Q4Q2:	Sets the Walsh function of Data to W4 (2) and W2 (1), the modulation format to QPSK, and then sets the condition in which Data is transmitted.
	E4E2:	Sets the Walsh function of Data to W4 (2) and W2 (1), the modulation format to 8PSK, and then sets the condition in which Data is transmitted.
[Aux Pilot]	OFF:	Sets the condition in which no Aux Pilot is transmitted.
	ON:	Sets the Walsh function of Aux Pilot to W32 (28), the modulation format to I-component BPSK, and then sets the condition in which Aux Pilot is transmitted.
Close		Closes the dialog box and returns to the previous menu.
Return		Returns to the previous menu.

Display Displays the Display menu.

(When Meas Mode is Subtype 0&1)

Split Displays the Split 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.

Return Returns to the previous menu.

Window Format Displays the Window Format menu.

Format Selects the measurement result window to be displayed.

[Total Result]
Displays numerical measurement results.

[I ch CDP Graph]
Displays the code domain power of the I channel.

[Q ch CDP Graph]
Displays the code domain power of the Q channel.

[I ch CDP Table]
Displays the code domain power of the I channel in table format.

[Q ch CDP Table]
Displays the code domain power of the Q channel in table format.

[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 EVM (Error Vector Magnitude) of each chip.

[Mag Error vs Chip]
Displays the magnitude error of each chip.

[Phase Error vs Chip]
Displays the phase error of each chip.

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 chip positions or chip positions and the transition lines between the chip positions, when displaying the constellation on a graph.

Trace & Chip:
Displays both chip positions and transition lines.

Chip: 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.

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.

(When Meas Mode is Subtype 2)

Meas View Sets the measurement result display window.

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.

Format Selects the measurement result window to be displayed.

[All Half Slot]
Measures all codes in all Half Slots.

[Total Result]
Displays numerical measurement results.

[Δρ] Displays the relative ρ value of each channel based on ρ of the pilot channel.

[CDP Graph]
Displays the code domain power.

[CDP Table]
Displays the code domain power in table format.

[I ch CDP Graph]
Displays the code domain power of the I channel.

[I ch CDP Table]
Displays the code domain power of the I channel in table format.

[Q ch CDP Graph]
Displays the code domain power of the Q channel.

[Q ch CDP Table]
Displays the code domain power of the Q channel in table format.

[Tx Power vs Half Slot]
Displays the power of each Half Slot.

[Freq Error vs Half Slot]
Displays the frequency error in each Half Slot.

[EVM vs Chip]
Displays EVM (Error Vector Magnitude) of each chip.

[Mag Error vs Chip]
Displays the magnitude error of each chip.

[Phase Error vs Chip]
Displays the phase error of each chip.

[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 Half Slot]
Measures the specified Half Slot only.

[Δρ] Displays the relative ρ value of each channel based on ρ of the pilot channel.

[CDP Graph]
Displays the code domain power.

[CDP Table]
Displays the code domain power in table format.

[I ch CDP Graph]
Displays the code domain power of the I channel.

[I ch CDP Table]
Displays the code domain power of the I channel in table format.

[Q ch CDP Graph]
Displays the code domain power of the Q channel.

[Q ch CDP Table]
Displays the code domain power of the Q channel in table format.

[Specified Code]
Measures the specified code only.

[CDP vs Half Slot]
Displays the power of the specified code in each Half Slot.

[I ch CDP vs Half Slot]
Displays the I-component power of the specified code in each Half Slot.

[Q ch CDP vs Half Slot]
Displays the Q-component power of the specified code in each Half Slot.

[Constellation]
Displays the constellation of the specified code.

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

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

[Constellation]
Selects whether to display either chip positions or chip positions and the transition lines between the chip positions, when the **[All Half Slot]** constellation on a graph is displayed.

Trace & Chip:
Displays both chip positions and transition lines.

Chip: Displays chip positions only.

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

Return Returns to the previous menu.

Specified Half Slot No.
Sets the Half Slot number to display its graph.

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

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 a drawing start point when a Constellation diagram and Eye diagram are displayed.

Plot Number Sets the drawing length by using the number of chips when a Constellation diagram 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.

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.

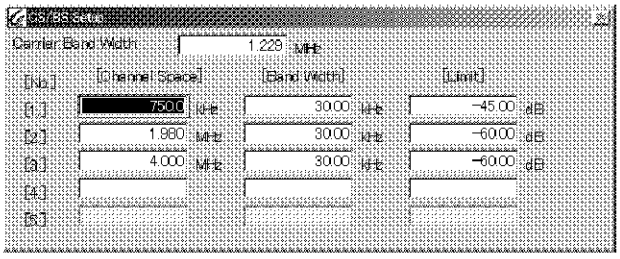
Modulation Off Quits the Modulation measurement function.

5.3.1.7 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.

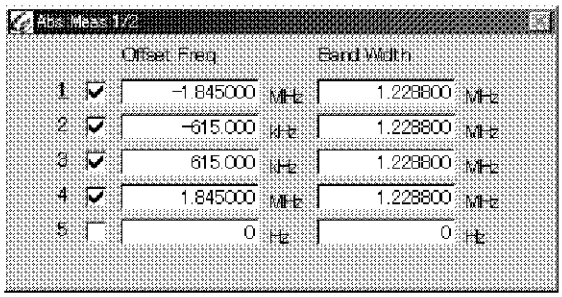
5.3.1.8 Multi Carrier ACP

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.

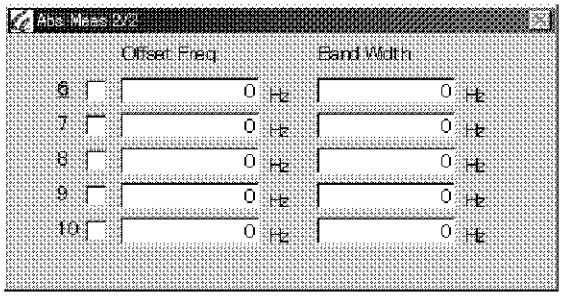
Ref/Offs Setup Displays the Ref/Offs Setup menu.

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]**.



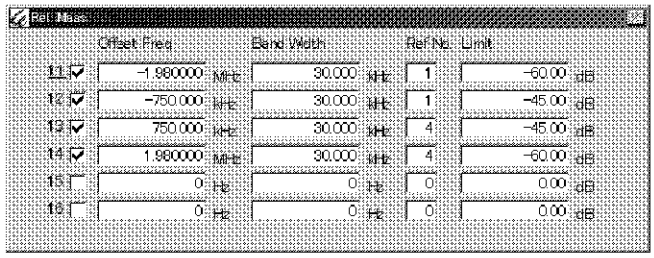
Close Closes the dialog box and returns to the previous menu.

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



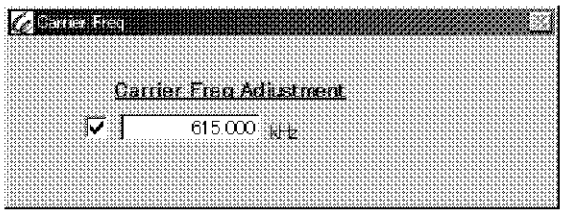
Close Closes the dialog box and returns to the previous menu.

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 √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.

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.

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
Set 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.

5.3.1.11 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.

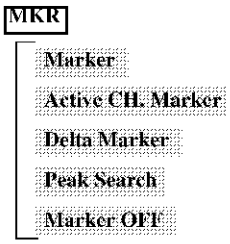
CCDF Off

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 Marker menu is enabled when a graph screen is selected.



Marker — Displays a marker and sets the marker position.

Active CH. Marker — (This menu is displayed only when Meas Mode is set to Subtype 2 in Uplink.)
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.

Delta Marker — Sets the delta marker.

Peak Search — Sets the peak search marker.

Marker OFF — Hides marker display.

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}]

  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 IEEE 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)

6.3.1 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	–	–	
Pilot/MAC Channel Power mode setting	:CONFigure:PMCPower	–	–	
Total Power mode setting	:CONFigure:TPOWer	–	–	

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	–	–	
Meas Parameters (Code Doamin)				
Physical Layer setting	[:SENSe]:CONDition:PLAYer	STYP01|STYP2	STYP01|STYP2	
Complementary Filter Rolloff setting	[:SENSe]:CONDition:CFRolloff	<real>	<real>	
Equalizing Filter ON/OFF	[:SENSe]:CONDition:EFILter	OFF|ON	OFF|ON	
PN Offset setting	[:SENSe]:CONDition:PNOFfset	<int>	<int>	
MAC Threshold setting	[:SENSe]:CONDition:MTHReshold	<int>	<int>	
Data Code Domain N setting	[:SENSe]:CONDition:DCDN	<int>	<int>	
Phase Tracking setting	[:SENSe]:CONDition:PTRacking	OFF|HALF|SLOT	OFF|HALF|SLOT	
Meas Parameters (Pilot/MAC Channel Power)				
PN Offset setting	[:SENSe]:CONDition:PMCPower:PNOFfset	<int>	<int>	
Bandpass Filter ON/OFF	[:SENSe]:CONDition:PMCPower:BFILter	OFF|ON	OFF|ON	
Template Entry (Pilot/MAC Channel Power)				
Y0, Y1, Y2 setting	[:SENSe]:CONDition:PMCPower:TEMPlate	<real1>,<real2>,<real3>	<real1>,<real2>,<real3>	<Y0>,<Y1>,<Y2>
Set to Default execution	[:SENSe]:CONDition:PMCPower:TEMPlate:DEFault	–	–	
Average (Pilot/MAC Channel Power)				
Average ON/OFF	[:SENSe]:CONDition:PMCPower:AVERage[:STATe]	OFF|ON	OFF|ON	
Average setting	[:SENSe]:CONDition:PMCPower:AVERage:COUNt	<int>	<int>	
Meas Parameters (Total Power)				
PN Offset setting	[:SENSe]:CONDition:TPOWer:PNOFfset	<int>	<int>	
Bandpass Filter ON/OFF	[:SENSe]:CONDition:TPOWer:BFILter	OFF|ON	OFF|ON	
Template Entry (Total Power)				
Y0, Y1 setting	[:SENSe]:CONDition:TPOWer:TEMPlate	<real1>,<real2>	<real1>,<real2>	<Y0>,<Y1>
Set to Default execution	[:SENSe]:CONDition:TPOWer:TEMPlate:DEFault	–	–	
Average (Total Power)				
Average ON/OFF	[:SENSe]:CONDition:TPOWer:AVERage[:STATe]	OFF|ON	OFF|ON	
Average setting	[:SENSe]:CONDition:TPOWer:AVERage:COUNt	<int>	<int>	

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
Code Domain measurement and reading results				
Reading Frequency Error result	:MEASure:TRESult:FERRor?	–	<real1>,<real2>	<Hz>,<ppm>
Reading Pilot τ	:MEASure:TRESult:PTAU?	–	<real>	
Reading ρ_{Pilot}	:MEASure:TRESult:RPILot?	–	<real>	
Reading $\rho_{overall}$	:MEASure:TRESult:ROVer?	–	<real1>,<real2>	<$\rho_{overall-1}$>, <$\rho_{overall-2}$>
Reading Peak MAC Inactive Channel	:MEASure:TRESult:PMINAct?	–	<real1>,<real2>	<Linear value>, <dB>
Reading Max Data Code Domain	:MEASure:TRESult:DCDomain:MAX?	–	<real1>,<real2>	<Linear value>, <dB>
Reading Min Data Code Domain	:MEASure:TRESult:DCDomain:MIN?	–	<real1>,<real2>	<Linear value>, <dB>
Reading Half Slot N	:MEASure:TRESult:HSN?	–	<int>	
Reading Modulation Type	:MEASure:TRESult:MTYPe?	–	IDLE|QPSK|PSK8|QAM16	
Reading PN Offset	:MEASure:TRESult:PNOFfset?	–	<int>	
Reading Preamble Chips	:MEASure:TRESult:PCHips?	–	<int>	
Reading Phase Tracking	:MEASure:TRESult:PTRacking?	–	OFF|HALF|SLOT	
Pilot/MAC Channel Power measurement and reading results				
Reading Pass/Fail	:MEASure:PMCPower:FAIL?	–	PASS|FAIL	
Reading PN Offset	:MEASure:PMCPower:PNOFfset?	–	<int>	
Reading Burst Length	:MEASure:PMCPower:BLENgth?	–	<real>	
Reading ON Avg	:MEASure:PMCPower:ONAVG?	–	<real>	
Reading ON Max	:MEASure:PMCPower:ONMAX?	–	<real>	
Reading ON Min	:MEASure:PMCPower:ONMIN?	–	<real>	
Reading OFF Avg	:MEASure:PMCPower:OFFAVG?	–	<real>	
Reading OFF Max	:MEASure:PMCPower:OFFMAX?	–	<real>	
Reading Rise	:MEASure:PMCPower:RISE?	–	<real>	
Reading Fall	:MEASure:PMCPower:FALL?	–	<real>	

Function description	SCPI command	Parameter	Query reply	Remarks
Total Power measurement and reading results				
Reading Pass/Fail	:MEASure:TPOWer:FAIL?	–	PASS|FAIL	
Reading PN Offset	:MEASure:TPOWer:PNOFfset?	–	<int>	
Reading Avg	:MEASure:TPOWer:AVG?	–	<real>	
Reading Max	:MEASure:TPOWer:MAX?	–	<real>	
Reading Min	:MEASure:TPOWer:MIN?	–	<real>	

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	*1
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	

*1: 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

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	
Display Screen division setting	:DISPlay	SINGle|DUAL|QUAD	SING|DUAL|QUAD	
Window Format Result display format selection	:DISPlay:WINDow<scrn=1|2|3|4>:FORMat	TRESult|MCODe|DCODe|PCONstellation|DCONstellation|PPERror	TRES|MCOD|DCOD|PCON|DCON|PPER	
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>	

6.3.8 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	*2
Saving the settings of this instrument	:MMEMory:STORe:STATe	<int>	–	*3
Loading the settings of this instrument	:MMEMory:LOAD:STATe	<int>	–	*3
Measurement condition Save selection	:MMEMory:SELect:ITEM:EVDODL:SETup	OFF|ON	OFF|ON	

*2 The following devices are specified depending on the parameter:
C C:\MyData\SVRCL
D D:\ADVANTEST
E E:\ADVANTEST

*3 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				
Marker ON/OFF	:CALCulate:MARKer<scrn=1|2|3|4>[:STATe]	OFF|ON	OFF|ON	
Delta Marker ON/OFF	:CALCulate:DELTamarker<scrn=1|2|3|4>[:STATe]	OFF|ON	OFF|ON	
Peak Search execution	:CALCulate:MARKer<scrn=1|2|3|4>:MAXimum	–	–	
Marker X setting MAC Code Domain graph	:CALCulate:MARKer<scrn=1|2|3|4>:X	<int>	<int>	<Walsh No.>
Reading Marker Y MAC Code Domain graph	:CALCulate:MARKer<scrn=1|2|3|4>:Y?	–	<int>,<real1>, <real2>	<MACIndex>, <$\rho_{MAC, real}$>, <$\rho_{MAC, imag}$>
Marker X setting Data Code Domain graph	:CALCulate:MARKer<scrn=1|2|3|4>:X	<int>	<int>	<Walsh No.>
Reading Marker Y Data Code Domain graph	:CALCulate:MARKer<scrn=1|2|3|4>:Y?	–	<real1>,<real2>	<$\rho_{Data, real}$>, <$\rho_{Data, imag}$>
Marker position setting Pilot Constellation graph	:CALCulate:MARKer<scrn=1|2|3|4>:CHIP	<int1>,<int2>	<int1>,<int2>	<Half Slot No.>, <Chip No.>
Reading Marker I Pilot Constellation graph	:CALCulate:MARKer<scrn=1|2|3|4>:I?	–	<real>	<I>
Reading Marker Q Pilot Constellation graph	:CALCulate:MARKer<scrn=1|2|3|4>:Q?	–	<real>	<Q>
Marker position setting Data Despread Constellation graph	:CALCulate:MARKer<scrn=1|2|3|4>:SYMBol	<int1>,<int2>	<int1>,<int2>	<Symbol>, <Walsh Code>
Reading Marker I Data Despread Constellation graph	:CALCulate:MARKer<scrn=1|2|3|4>:I?	–	<real>	<I>
Reading Marker Q Data Despread Constellation graph	:CALCulate:MARKer<scrn=1|2|3|4>:Q?	–	<real>	<Q>
Marker X setting Phase Error (Pilot) graph	:CALCulate:MARKer<scrn=1|2|3|4>:CHIP	<int1>,<int2>	<int1>,<int2>	<Half Slot No.>, <Chip No.>
Reading Marker Y Phase Error (Pilot) graph	:CALCulate:MARKer<scrn=1|2|3|4>:Y?	–	<real>	<Phase Error>
Marker X setting Pilot/MAC Channel Power mode graph	:CALCulate:MARKer<scrn=1|2|3|4>:CHIP	<int1>,<int2>	<int1>,<int2>	<Chip>, <Sample>
Reading Marker Y Pilot/MAC Channel Power mode graph	:CALCulate:MARKer<scrn=1|2|3|4>:Y?	–	<real>	<Power>
Marker X setting Total Power mode graph	:CALCulate:MARKer<scrn=1|2|3|4>:CHIP	<int1>,<int2>	<int1>,<int2>	<Chip>, <Sample>
Reading Marker Y Total Power mode graph	:CALCulate:MARKer<scrn=1|2|3|4>:Y?	–	<real>	<Power>

6.3.10 Subsystem-SYSTem

Function description	SCPI command	Parameter	Query reply	Remarks
Measurement system selection	:SYSTem:SELect	SANalyzer|TXTester	SAN|TXT	
Setting the measurement standard	:SYSTem:SELect:STANdard	<str1>,<str2>	<str1>,<str2>	*4
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>	*5
Inquiring about the details of the error log	:SYSTem:ERRor:ALL?	–	<int>,<str>	*5
Inquiring about the R3477 series options	:SYSTem:OPTions?	–	<str>[,...]	

*4 Sets the name of the standard to <str1> and a band class to <str2>.
<str1> = "1xEV-DO_DL"
<str2> = {"1xEV-DO_DL_BC00" | "1xEV-DO_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

*5 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
Subtype 0&1 mode setting	:CONFigure:STYPe{0|1}	–	–	
Subtype 2 mode setting	:CONFigure:STYPe2	–	–	

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 (Subtype 0&1 mode)				
Meas Range setting	[:SENSe]:CONDition:MRANge	<int>	<int>	
Threshold setting	[:SENSe]:CONDition:THReshold	<int>	<int>	
PN Delay Search ON/OFF	[:SENSe]:CONDition:PNDSearch	OFF|ON	OFF|ON	
PN Delay setting	[:SENSe]:CONDition:PNDelay	<int>	<int>	
Long Code Mask I setting	[:SENSe]:CONDition:LCMI	<str>	<str>	Hexadecimal
Long Code Mask Q setting	[:SENSe]:CONDition:LCMQ	<str>	<str>	Hexadecimal
Freq Meas Range setting	[:SENSe]:CONDition:FMRange	HZ150|HZ1000|HZ4000	HZ150|HZ1000|HZ4000	
Chip Rate Error setting	[:SENSe]:CONDition:CRERror	OFF|ON	OFF|ON	
Quadrature Error setting	[:SENSe]:CONDition:QERRor	OFF|ON	OFF|ON	

6.4.3 Subsystem-SENSe

Function description	SCPI command	Parameter	Query reply	Remarks
Meas Parameters (Subtype 2 mode)				
User Table setting	[:SENSe]:CONDition:STYPe2:UTABle	NOT|USE	NOT|USE	
Data Channel Detection setting	[:SENSe]:CONDition:STYPe2:DCDetection	RRI|AUTO	RRI|AUTO	
Meas Range setting	[:SENSe]:CONDition:STYPe2:MRANge	<int>	<int>	
Threshold setting	[:SENSe]:CONDition:STYPe2:THReshold	<int>	<int>	
PN Delay Search ON/OFF	[:SENSe]:CONDition:STYPe2:PNDSearch	OFF|ON	OFF|ON	
PN Delay setting	[:SENSe]:CONDition:STYPe2:PNDelay	<int>	<int>	
Long Code Mask I setting	[:SENSe]:CONDition:STYPe2:LCMI	<str>	<str>	Hexadecimal
Long Code Mask Q setting	[:SENSe]:CONDition:STYPe2:LCMQ	<str>	<str>	Hexadecimal
Freq Meas Range setting	[:SENSe]:CONDition:STYPe2:FMRange	HZ150|HZ1000|HZ4000	HZ150|HZ1000|HZ4000	
Chip Rate Error setting	[:SENSe]:CONDition:STYPe2:CRERror	OFF|ON	OFF|ON	
Quadrature Error setting	[:SENSe]:CONDition:STYPe2:QERRor	OFF|ON	OFF|ON	
Half Slot Timing Adjust setting	[:SENSe]:CONDition:STYPe2:HSTAdjust	OFF|ON	OFF|ON	
User Table (Subtype 2 mode)				
DRC channel setting	[:SENSe]:CONDition:STYPe2:UTABle:DRC	OFF|ON	OFF|ON	
RRI channel setting	[:SENSe]:CONDition:STYPe2:UTABle:RRI	OFF|ON	OFF|ON	
ACK/DSC channel setting	[:SENSe]:CONDition:STYPe2:UTABle:ACKDSC	OFF|ON	OFF|ON	
Data channel setting	[:SENSe]:CONDition:STYPe2:UTABle:DATA	OFF|B4|Q4|Q2|Q4Q2|B4E2	OFF|B4|Q4|Q2|Q4Q2|B4E2	
Aux Pilot channel setting	[:SENSe]:CONDition:STYPe2:UTABle:AUXPilot	OFF|ON	OFF|ON	

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
Measuring and reading results				
Reading $\rho_{overall}$	:MEASure:TRESult:ROVer?	–	<real>	
Reading τ	:MEASure:TRESult:TAU?	–	<real>	
Reading PN Delay	:MEASure:TRESult:PNDelay?	–	<int>	
Reading Frequency Error	:MEASure:TRESult:FERRor?	–	<real1>,<real2>	<Hz>,<ppm>
Reading Magnitude Error	:MEASure:TRESult:MERRor?	–	<real>	
Reading Phase Error	:MEASure:TRESult:PERRor?	–	<real>	
Reading EVM	:MEASure:TRESult:EVM?	–	<real>	
Reading Peak EVM	:MEASure:TRESult:PEVM?	–	<real>	
Reading I/Q Origin Offset	:MEASure:TRESult:IQOFfset?	–	<real>	
Reading Peak Inactive ρ	:MEASure:TRESult:PIRHo?	–	<real>	
Reading Peak Inactive CH	:MEASure:TRESult:PICHannel?	–	<int1>,<int2>,<str>	<Walsh Code>,<Walsh Len>,<"I"|"Q">
Reading Tx Power	:MEASure:TRESult:POWer?	–	<real>,<real>	<dBm>,<W>
Reading Pilot Power	:MEASure:TRESult:PILot?	–	<real>,<real>	<dBm>,<W>
Reading Chip Rate Error	:MEASure:TRESult:CRERror?	–	<real>	
Reading Quadrature Error	:MEASure:TRESult:QERRor?	–	<real>	
Reading RRI/Pilot	:MEASure:TRESult:PPILot:RRI?	–	<real>	
Reading ACK/Pilot	:MEASure:TRESult:PPILot:ACK?	–	<real>	
Reading DRC/Pilot	:MEASure:TRESult:PPILot:DRC?	–	<real>	
Reading Data/Pilot	:MEASure:TRESult:PPILot:DATA?	–	<real>	

Function description	SCPI command	Parameter	Query reply	Remarks
Δρ (All Half Slot)				
Reading Pilot	:MEASure:DRHO:PILot?	–	<real>,<real>	<ρ>,<Δρ>
Reading DRC	:MEASure:DRHO:DRC?	–	<real>,<real>	<ρ>,<Δρ>
Reading RRI	:MEASure:DRHO:RRI?	–	<real>,<real>	<ρ>,<Δρ>
Reading ACK/DSC	:MEASure:DRHO:ADSC?	–	<real>,<real>	<ρ>,<Δρ>
Reading Aux Pilot	:MEASure:DRHO:APILot?	–	<real>,<real>	<ρ>,<Δρ>
Reading Data	:MEASure:DRHO:DATA?	–	<str>, <real>,<real>, <str>, <real>,<real>, <str>, <real>,<real>	<"B4","Q4", "E4","W4">, <ρ>,<Δρ>, <"Q2","E2", "W2">, <ρ>,<Δρ>, <"ALL">, <ρ>,<Δρ>
Δρ (Specified Half Slot)		–		
Reading Pilot	:MEASure:SHDRho:PILot?	–	<real>,<real>	<ρ>,<Δρ>
Reading DRC	:MEASure:SHDRho:DRC?	–	<real>,<real>	<ρ>,<Δρ>
Reading RRI	:MEASure:SHDRho:RRI?	–	<real>,<real>	<ρ>,<Δρ>
Reading ACK/DSC	:MEASure:SHDRho:ADSC?	–	<real>,<real>	<ρ>,<Δρ>
Reading Aux Pilot	:MEASure:SHDRho:APILot?	–	<real>,<real>	<ρ>,<Δρ>
Reading Data	:MEASure:SHDRho:DATA?	–	<str>, <real>,<real>, <str>, <real>,<real>, <str>, <real>,<real>	<"B4","Q4", "E4">, <ρ>,<Δρ>, <"Q2","E2">, <ρ>,<Δρ>, <"ALL">, <ρ>,<Δρ>

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	*1
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	

*1: 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

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	
Display Screen division setting	:DISPlay	SINGle|DUAL| QUAD	SING|DUAL| QUAD	
Window Format (Subtype 0&1 mode) Result display format selection	:DISPlay:WINDow<scrn=1|2|3|4>:FORMat	TRESult| ICDGraph| QCDGraph| ICDTable| QCDTable| CONStellation| IEYE|QEYE| EVM|MERRor| PERRor	TRES|ICDG| QCDG|ICDT| QCDT|CONS| IEYE|QEYE| EVM|MERR| PERR	
Constellation display Trace & Chip/Chip setting	:DISPlay:WINDow<scrn=1|2|3|4>:CONStellation :TYPE	TCHip|CHIP	TCH|CHIP	

6.4.7 Subsystem-DISPlay

Function description	SCPI command	Parameter	Query reply	Remarks
Window Format (Subtype 2 mode)				
Result display format selection	:DISPlay:WINDow<scrn=1|2|3|4>:FORMat	TRESult|DRHO| CDGRaph| CDTable| ICDGraph| ICDTable| QCDGraph| QCDTable| POWer|FERRor| EVM|MERRor| PERRor| CONStellation| IEYE|QEYE| SHDRho| SHCDGraph| SHCDTable| SHICDGraph| SHICDTable| SHQCDGraph| SHQCDTable| SCCDGraph| SCICDGraph| SCQCDGraph| SCCONStellation	TRES|DRHO| CDGR|CDT| ICDG|ICDT| QCDG|QCDT| POW|FERR| EVM|MERR| PERR|CONS| IEYE|QEYE| SHDR| SHCDG| SHCDT| SHICDG| SHICDT| SHQCDG| SHQCDT| SCCDG| SCICDG| SCQCDG| SCCONS	
Constellation display Trace & Chip/Chip setting	:DISPlay:WINDow<scrn=1|2|3|4>:CONStellation :TYPE	TCHip|CHIP	TCH|CHIP	
Specified Half Slot No. setting	:DISPlay:HSLot	<int>	<int>	
Specified Code No. setting	:DISPlay:CODE	<int>	<int>	
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>	
Plot Start setting on Constellation	:DISPlay[:WINDow<scrn=1|2|3|4>]:TRACe :CONStellation:CHIP:STARt	<int>	<int>	
Plot Start setting on I Eye Diagram	:DISPlay[:WINDow<scrn=1|2|3|4>]:TRACe :IEYE:CHIP:STARt	<int>	<int>	
Plot Start setting on Q Eye Diagram	:DISPlay[:WINDow<scrn=1|2|3|4>]:TRACe :QEYE:CHIP:STARt	<int>	<int>	
Plot Number setting on Constellation	:DISPlay[:WINDow<scrn=1|2|3|4>]:TRACe :CONStellation:CHIP:NUMBer	<int>	<int>	
Plot Number setting on I Eye Diagram	:DISPlay[:WINDow<scrn=1|2|3|4>]:TRACe:IEYE :CHIP:NUMBer	<int>	<int>	
Plot Number setting on Q Eye Diagram	:DISPlay[:WINDow<scrn=1|2|3|4>]:TRACe:QEYE :CHIP:NUMBer	<int>	<int>	

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	*2
Saving the settings of this instrument	:MMEMory:STORe:STATe	<int>	–	*3
Loading the settings of this instrument	:MMEMory:LOAD:STATe	<int>	–	*3
Measurement condition Save selection	:MMEMory:SELect:ITEM:EVDOUL:SETup	OFF|ON	OFF|ON	

*2 The following devices are specified depending on the parameter:
C C:\MyData\SVRCL
D D:\ADVANTEST
E E:\ADVANTEST

*3 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 (Subtype 0&1 mode)				
Marker ON/OFF	:CALCulate:MARKer<scrn=1|2|3|4>[:STATe]	OFF|ON	OFF|ON	
Delta Marker ON/OFF	:CALCulate:DELTamarker<scrn=1|2|3|4>[:STATe]	OFF|ON	OFF|ON	
Peak Search execution	:CALCulate:MARKer<scrn=1|2|3|4>:MAXimum	–	–	
Marker X setting Ich CDP graph Qch CDP graph	:CALCulate:MARKer<scrn=1|2|3|4>:X	<int>	<int>	
Reading Marker Y Ich CDP graph Qch CDP graph	:CALCulate:MARKer<scrn=1|2|3|4>:Y?	–	<int1>,<int2>, <str>,<real1>, <real2>,<real3>, <real4>,<real5>	<Walsh Len>, <Walsh Code>, <CH>,<Rate>, <Power[dB]>, <Power[W]>, <ρ[dB]>,<ρ>
Marker position setting Constellation graph I Eye Diagram graph Q Eye Diagram graph	:CALCulate:MARKer<scrn=1|2|3|4>:CHIP	<int>	<int>	<Chip>
Reading Marker I Constellation graph I Eye Diagram graph	:CALCulate:MARKer<scrn=1|2|3|4>:I?	–	<real>	<I>
Reading Marker Q Constellation graph Q Eye Diagram graph	:CALCulate:MARKer<scrn=1|2|3|4>:Q?	–	<real>	<Q>
Marker X setting EVM vs Chip graph Mag Error vs Chip graph Phase Error vs Chip graph	:CALCulate:MARKer<scrn=1|2|3|4>:X	<int>	<int>	<Chip>
Reading Marker Y EVM vs Chip graph	:CALCulate:MARKer<scrn=1|2|3|4>:Y?	–	<real>	<EVM>

6.4.9 Subsystem-CALCulate

Function description	SCPI command	Parameter	Query reply	Remarks
Reading Marker Y Mag Error vs Chip graph	:CALCulate:MARKer<scrn=1|2|3|4>:Y?	–	<real>	<Mag Err>
Reading Marker Y Phase Error vs Chip graph	:CALCulate:MARKer<scrn=1|2|3|4>:Y?	–	<real>	<Phase Err>
Marker (Subtype 2 mode)				
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	
Delta Marker ON/OFF	:CALCulate:DELTamarker<scrn=1|2|3|4>[:STATe]	OFF|ON	OFF|ON	
Peak Search execution	:CALCulate:MARKer<scrn=1|2|3|4>:MAXimum	–	–	
Marker X setting CDP graph CDP (Specified Half Slot) graph	:CALCulate:MARKer<scrn=1|2|3|4>:X	<int>	<int>	
Reading Marker Y CDP graph CDP (Specified Half Slot) graph	:CALCulate:MARKer<scrn=1|2|3|4>:Y?	–	<int>,<int>, <real>,<real>, <real>,<real>	<Walsh Len>, <Walsh Code>, <Rate>, <ρxTxPow[dBm]>, <ρxTxPow[W]>, <ρ[dB]>
Active CH. Marker X setting CDP graph CDP (Specified Half Slot) graph	:CALCulate:ACMarker<scrn=1|2|3|4>:X	<int>	<int>	
Reading Active CH. Marker Y CDP graph	:CALCulate:ACMarker<scrn=1|2|3|4>:Y?	–	<int>,<int>, <str>, <real>,<real>, <real>,<real>	<Walsh Len>, <Walsh Code>, <"Pilot"|"DRC"| "RRI"| "ACK/DSC"| "Aux Pilot"| "Data">,<Rate>, <ρxTxPow[dBm]>, <ρxTxPow[W]>, <ρ[dB]>

Function description	SCPI command	Parameter	Query reply	Remarks
Reading Active CH. Marker Y CDP (Specified Half Slot) graph	:CALCulate:ACMarker<scrn=1|2|3|4>:Y?	–	<int>,<int>,<str>,<str>,<real>,<real>,<real>,<real>	<Walsh Len>,<Walsh Code>,<"Pilot"|"DRC"|"RRI"|"ACK/DSC"|"Aux Pilot"|"Data">,<"BPSK"|"QPSK"|"8PSK">,<Rate>,<ρ×TxPow[dBm]>,<ρ×TxPow[W]>,<ρ[dB]>
Marker X setting Ich CDP graph Qch CDP graph Ich CDP (Specified Half Slot) graph Qch CDP (Specified Half Slot) graph	:CALCulate:MARKer<scrn=1|2|3|4>:X	<int>	<int>	
Reading Marker Y Ich CDP graph Qch CDP graph Ich CDP (Specified Half Slot) graph Qch CDP (Specified Half Slot) graph	:CALCulate:MARKer<scrn=1|2|3|4>:Y?	–	<int>,<int>,<real>,<real>	<Walsh Len>,<Walsh Code>,<Rate>,<ρ[dB]>
Reading Active CH. Marker Y Ich CDP graph Qch CDP graph	:CALCulate:ACMarker<scrn=1|2|3|4>:Y?	–	<int>,<int>,<str>,<str>,<real>,<real>	<Walsh Len>,<Walsh Code>,<"Pilot"|"DRC"|"RRI"|"ACK/DSC"|"Aux Pilot"|"Data">,<Rate>,<ρ[dB]>
Reading Active CH. Marker Y Ich CDP (Specified Half Slot) graph Qch CDP (Specified Half Slot) graph	:CALCulate:ACMarker<scrn=1|2|3|4>:Y?	–	<int>,<int>,<str>,<str>,<real>,<real>	<Walsh Len>,<Walsh Code>,<"Pilot"|"DRC"|"RRI"|"ACK/DSC"|"Aux Pilot"|"Data">,<"BPSK"|"QPSK"|"8PSK">,<Rate>,<ρ[dB]>
Marker X setting Tx Power vs Half Slot graph Freq Error vs Half Slot graph CDP vs Half Slot graph Ich CDP vs Half Slot graph Qch CDP vs Half Slot graph	:CALCulate:MARKer<scrn=1|2|3|4>:X	<int>	<int>	
Reading Marker Y Tx Power vs Half Slot graph	:CALCulate:MARKer<scrn=1|2|3|4>:Y?	–	<real>,<real>	<Power[dBm]>,<Power[W]>
Reading Marker Y Freq Error vs Half Slot graph	:CALCulate:MARKer<scrn=1|2|3|4>:Y?	–	<real>	<Freq Error>

6.4.9 Subsystem-CALCulate

Function description	SCPI command	Parameter	Query reply	Remarks
Reading Marker Y CDP vs Half Slot graph	:CALCulate:MARKer<scrn=1|2|3|4>:Y?	–	<str>, <real>,<real>, <real>	<"BPSK"| "QPSK"|"8PSK"| "BPSK+QPSK"| "BPSK+8PSK"| "QPSK+8PSK"| "BPSK+QPSK+ 8PSK">,<ρ>, <ρ×TxPow[dBm]>, <ρ×TxPow[W]>
Reading Marker Y Ich CDP vs Half Slot graph Qch CDP vs Half Slot graph	:CALCulate:MARKer<scrn=1|2|3|4>:Y?	–	<str>,<real>	<"BPSK"| "QPSK"|"8PSK"| "BPSK+QPSK"| "BPSK+8PSK"| "QPSK+8PSK"| "BPSK+QPSK+ 8PSK">,<ρ>
Marker position setting Constellation graph I Eye Diagram graph Q Eye Diagram graph	:CALCulate:MARKer<scrn=1|2|3|4>:CHIP	<int>	<int>	<Chip>
Marker position setting Constellation (Specified Code) graph	:CALCulate:MARKer<scrn=1|2|3|4>:SYMBol	<int>	<int>	<Symbol>
Reading Marker I Constellation graph I Eye Diagram graph	:CALCulate:MARKer<scrn=1|2|3|4>:I?	–	<real>	<I>
Reading Marker Q Constellation graph Q Eye Diagram graph	:CALCulate:MARKer<scrn=1|2|3|4>:Q?	–	<real>	<Q>
Marker X setting EVM vs Chip graph Mag Error vs Chip graph Phase Error vs Chip graph	:CALCulate:MARKer<scrn=1|2|3|4>:X	<int>	<int>	<Chip>
Reading Marker Y EVM vs Chip graph	:CALCulate:MARKer<scrn=1|2|3|4>:Y?	–	<real>	<EVM>
Reading Marker Y Mag Error vs Chip graph	:CALCulate:MARKer<scrn=1|2|3|4>:Y?	–	<real>	<Mag Err>
Reading Marker Y Phase Error vs Chip graph	:CALCulate:MARKer<scrn=1|2|3|4>:Y?	–	<real>	<Phase Err>

6.4.10 Subsystem-SYSTem

Function description	SCPI command	Parameter	Query reply	Remarks
Measurement system selection	:SYSTem:SELect	SANalyzer|TXTester	SAN|TXT	
Setting the measurement standard	:SYSTem:SELect:STANdard	<str1>,<str2>	<str1>,<str2>	*4
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>	*5
Inquiring about the details of the error log	:SYSTem:ERRor:ALL?	–	<int>,<str>	*5
Inquiring about the R3477 series options	:SYSTem:OPTions?	–	<str>[,...]	

*4 Sets the name of the standard to <str1> and a band class to <str2>.
<str1> = "1xEV-DO_UL"
<str2> = {"1xEV-DO_UL_BC00" | "1xEV-DO_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

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

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 preselector	[: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}:BWIDth	<real>	<real>	
Setting the reference power area of the measurement carrier and adjacent channel	[:SENSe]:{MCACLr|MCACp}:PARameter {11|12|...|16}:REFerence	<int>	<int>	
Setting a limit value, which is used to check measurement results as pass or fail	[:SENSe]:{MCACLr|MCACp}:PARameter {11|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 } Preamp 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:LEVel: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:JUDGe	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

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
ACLR/ACP				
Performing the ACLR/ACP measurement and reading all measurement results	:MEASure:{ACLR|ACP}[:NUMBer{1|2|3|4|5}]?	--	<real1>,<real12>,<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

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

Function description	SCPI command	Parameter	Query reply	Remarks
Spectrum Emission Mask				
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
CCDF				
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

Function description	SCPI command	Parameter	Query reply	Remarks
Setting the reference level	:DISPlay:TRACe:Y[:SCALe]:RLEVel	<real>	<real>	
Setting the offset value to the reference level value	:DISPlay:TRACe:Y[:SCALe] :RLEVel:OFFSet	<real>	<real>	
Setting the offset value to the reference level value to ON or OFF	:DISPlay:TRACe:Y[:SCALe]:RLEVel: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 TxTester 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>	

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<mkr>]:SET :CENTer	--	--	
Setting the marker level value as the reference level	:CALCulate:MARKer[:NUMBer<mkr>]:SET :RLEVel	--	--	
Setting the marker frequency as the center frequency step size	:CALCulate:MARKer[:NUMBer<mkr>]:SET :CENTer:STEP	--	--	
Setting the marker frequency as the marker step size	:CALCulate:MARKer[:NUMBer<mkr>]:SET :MARKer:STEP	--	--	
Setting the marker frequency as the center frequency after the peak search is performed	:CALCulate:MARKer[:NUMBer<mkr>]: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 → center frequency	:CALCulate:DELTamarker[:NUMBer<mkr>]:SET :CENTer	--	--	
Setting the Δ marker → span frequency	:CALCulate:DELTamarker[:NUMBer<mkr>]:SET :SPAN	--	--	
Setting the Δ marker → center frequency step size	:CALCulate:DELTamarker[:NUMBer<mkr>]:SET :CENTer:STEP	--	--	
Setting the Δ marker → 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	--	--	

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

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

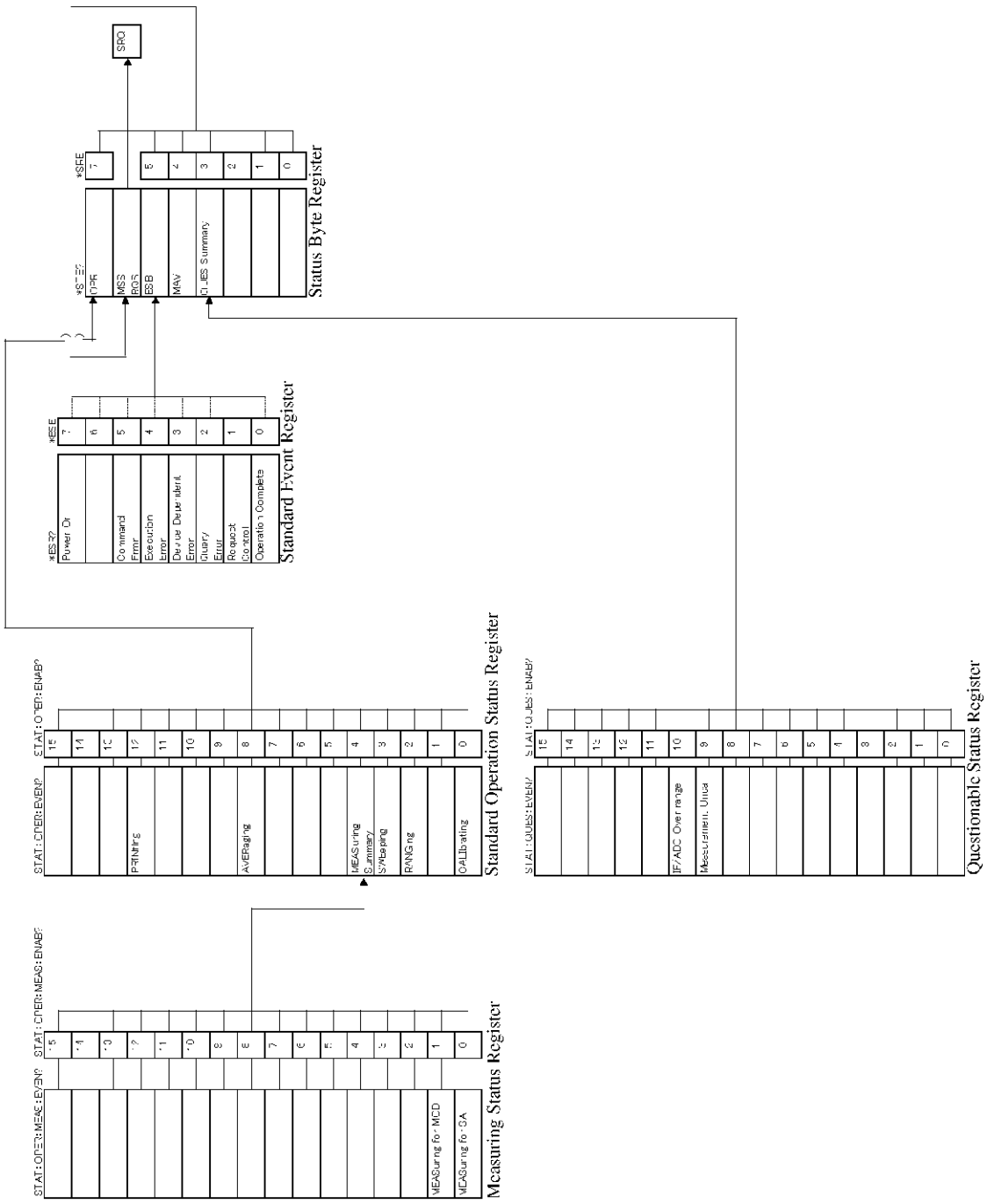


Figure 6-1 Status Registers

7. PERFORMANCE VERIFICATION

This chapter describes how to verify whether this instrument meets the specified performance.

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

IMPORTANT: Before executing the performance verification, execute warm-up and all calibrations.

7.1 Test Signal Specifications

The test signals used for performance verification are shown below:

Table 7-1 Test Signal Specifications (1 of 2)

<table>
<tr><th>No.</th><th>Test signal name</th><th>Signal specifications</th><th>Test item</th></tr>
<tr><td>1</td><td>Base station signal</td><td>IS-856 Forward Link signal
<table><tr><th>Channel</th><th>Power ratio</th></tr><tr><td>Pilot</td><td>1</td></tr><tr><td>MAC
RA
RPC</td><td>
1/16
15/16</td></tr><tr><td>Traffic</td><td>1/16 × 16 ch</td></tr></table>Traffic channel: 1-slot continuous transmission signal whose data rare is 614.4 kbps
RA channel: MAC Index 4</td><td>Downlink
Base station signal measurement</td></tr>
<tr><td>2</td><td>Mobile station signal (Subtype 0&1)</td><td>IS-856 Reverse Link signal
Long Code Mask I: 33333333333
Long Code Mask Q: 26666666667
Signal in which Pilot, ACK, DRC, and Data Channel are multiplexed
<table><tr><th>Channel</th><th>Pilot Channel ratio</th></tr><tr><td>ACK</td><td>0 dB</td></tr><tr><td>DRC</td><td>0 dB</td></tr><tr><td>Data</td><td>3.75 dB</td></tr></table>ACK channel: Transmitting in all slots
DRC channel: Transmitting continuously</td><td>Uplink
Mobile station signal measurement
(Subtype 0&1)</td></tr>
</table>

Table 7-1 Test Signal Specifications (2 of 2)

<table>
<tr><th>No.</th><th>Test signal name</th><th>Signal specifications</th><th>Test item</th></tr>
<tr><td>3</td><td>Mobile station signal
(Subtype 2)</td><td>IS-856 Reverse Link signal
Long Code Mask I: 33333333333
Long Code Mask Q: 26666666667
Signal in which Pilot, RRI, ACK, DSC, DRC, Data, and Aux Pilot Channel are multiplexed
<table><tr><th>Channel</th><th>Pilot Channel ratio</th></tr><tr><td>RRI</td><td>0 dB</td></tr><tr><td>ACK</td><td>0 dB</td></tr><tr><td>DSC</td><td>0 dB</td></tr><tr><td>DRC</td><td>0 dB</td></tr><tr><td>Data (E4E2)</td><td>3.75 dB</td></tr><tr><td>Aux Pilot</td><td>0 dB</td></tr></table>ACK channel: Transmitting in all slots
DSC channel: Transmitting in all slots
DRC channel: Transmitting continuously
Aux Pilot channel: Transmitting for half a slot in every 4 slots.</td><td>Uplink
Mobile station signal measurement
(Subtype 2)</td></tr>
</table>

7.2 Test Procedures

This section describes the procedures of each test item.

7.2.1 Base Station Signal Measurement

Connect the signal source as shown below:

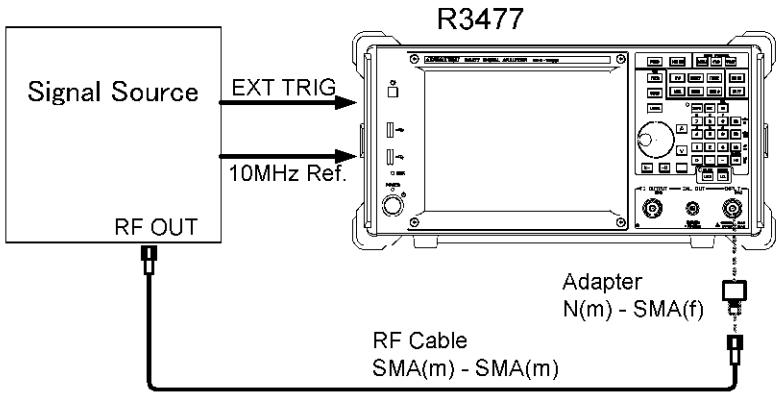


Figure 7-1 Test Signal Connection (RF Input)

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

Meas Mode: **Code Domain**

Meas Setup: **Meas Parameters**

<When the Subtype 0 or Subtype 1 signal is measured.>

[Physical Layer]: Subtype 0&1

<When the Subtype 2 signal is measured.>

[Physical Layer]: Subtype 2

[Complementary Filter Rolloff]: 0.2
[Equalizing Filter]: ON
[PN Offset]: 0
[MAC Threshold]: -27.0 dB
[Data Code Domain N]: 4
[Phase Tracking]: OFF

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.
5. To measure the power, change to the measurement mode as follows:

   Meas Mode: **Total Power**

   Meas Setup: **[PN Offset]**: 0
   [Bandpass Filter]: OFF

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

7.2.2 Mobile Station Signal Measurement (Subtype 0&1)

Connect the signal source as shown below:

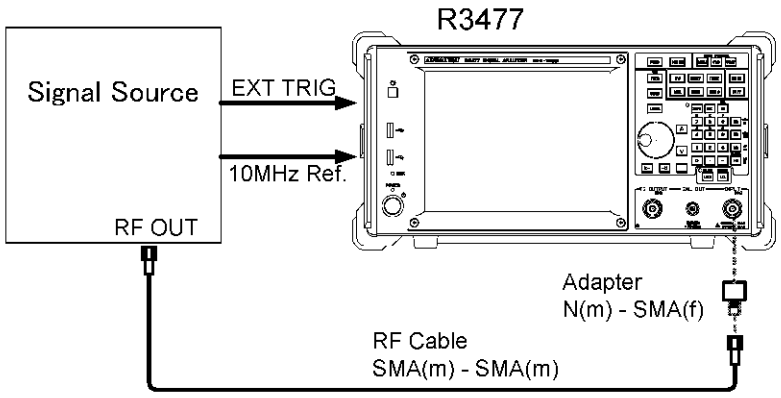


Figure 7-2 Test Signal Connection (RF Input)

1. Output the mobile station signal (Subtype 0&1), 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 :	**Subtype 0&1**		
Meas Setup :	**Meas Parameters**		
	[Meas Range]:	1 slot	
	[Threshold]:	-23 dB	
	[PN Delay Search Mode]:	ON	
	[Long Code Mask I]:	33333333333	
	[Long Code Mask Q]:	26666666667	
	[Freq Meas Range]:	±1 kHz	
	[Chip Rate Error]:	ON	
	[Quadrature Error]:	ON	
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 Mobile Station Signal Measurement (Subtype 2)

Connect the signal source as shown below:

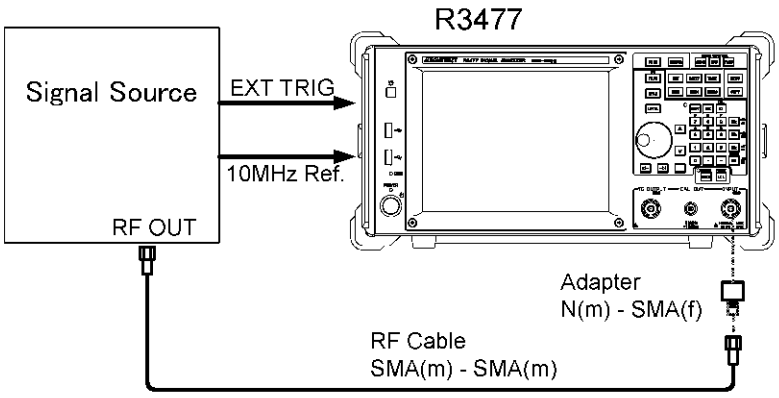


Figure 7-3 Test Signal Connection (RF Input)

1. Output the mobile station signal (Subtype 2), 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: **Subtype 2**

Meas Setup: **Meas Parameters**

[User Table]:	NOT USE
[Data Channel Detection]:	RRI
[Meas Range]:	2 half slot
[Threshold]:	-23 dB
[PN Delay Search Mode]:	ON
[Long Code Mask I]:	33333333333
[Long Code Mask Q]:	26666666667
[Freq Meas Range]:	±1 kHz
[Chip Rate Error]:	ON
[Quadrature Error]:	ON
[Half Slot Timing Adjust]:	ON

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

Test data record sheet

Model name:

Serial number:

1. Base station signal measurement

Test item	Specifications			Determination Pass/Fail
	Minimum value	Measured value	Maximum value	
Carrier Frequency Error	-5 Hz		+5 Hz	
ρ_{pilot}	0.995		None	
$\rho_{overall-1}$	0.995		None	
$\rho_{overall-2}$	0.995		None	
Power	-10.9 dBm		-9.1 dBm	

2. Mobile station signal measurement (Subtype 0&1)

Test item	Specifications			Determination Pass/Fail
	Minimum value	Measured value	Maximum value	
Carrier Frequency Error	-10 Hz		+10 Hz	
$\rho_{overall}$	0.995		None	
Power	-10.9 dBm		-9.1 dBm	

3. Mobile station signal measurement (Subtype 2)

Test item	Specifications			Determination Pass/Fail
	Minimum value	Measured value	Maximum value	
Carrier Frequency Error	-10 Hz		+10 Hz	
$\rho_{overall}$	0.995		None	
Power	-10.9 dBm		-9.1 dBm	

8. SPECIFICATIONS

8.1 Specifications (Downlink)

8.1.1 cdma2000 1xEV-DO Modulation Analysis Compliance System

In compliance with

3rd Generation Partnership Project 2 (3GPP2)

TSG-C Specifications

C.S0024-A Version 1.0 (IS-856)

8.1.2 cdma2000 1xEV-DO Modulation Analysis Performance

Code Domain measurement (When 1xEV-DO Downlink is selected)

Item	Specifications
Carrier Frequency Error	
Measurement range	<±500 Hz
Measurement accuracy	<±(Reference frequency accuracy × Carrier frequency + 5 Hz)
ρ_{pilot}	Residual response: <±0.005
$\rho_{overall-1}$	Residual response: <±0.005
$\rho_{overall-2}$	Residual response: <±0.005
Power measurement accuracy (When -10 dBm is input)	<±(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

8.1.2 cdma2000 1xEV-DO Modulation Analysis Performance

Conditions

<table>
<tr><th>Item</th><th>Conditions</th></tr>
<tr><td>Temperature range</td><td>+20°C to +30°C</td></tr>
<tr><td>Signal</td><td>IS-856 Base station
<table><tr><th>Channel</th><th>Power ratio</th></tr><tr><td>Pilot</td><td>1</td></tr><tr><td>MAC
RA
RPC</td><td>
1/16
15/16</td></tr><tr><td>Traffic</td><td>1/16 × 16 ch</td></tr></table>Traffic channel: 614.4 kbps Data rate
RA channel: MAC Index 4</td></tr>
<tr><td>Center frequency</td><td>800 MHz or 2 GHz</td></tr>
<tr><td>Transmission power</td><td>-10 dBm, -20 dBm</td></tr>
<tr><td>ρ</td><td>>0.9999</td></tr>
<tr><td>Measurement mode</td><td>Code Domain</td></tr>
</table>

8.2 Specifications (Uplink)

8.2.1 cdma2000 1xEV-DO Modulation Analysis Compliance System

In compliance with
3rd Generation Partnership Project 2 (3GPP2)
TSG-C Specifications
C.S0024-A Version 1.0 (IS-856)

8.2.2 cdma2000 1xEV-DO Modulation Analysis Performance

Item	Specifications
Carrier Frequency Error	When Freq Meas Range is set to 1 kHz.
Measurement range	<±1 kHz
Measurement accuracy	<±(Reference frequency accuracy × Carrier frequency + 10 Hz)
$\rho_{overall}$	Residual response: <±0.005
Power measurement accuracy (When -10 dBm is input)	<±(0.3 + Frequency response + Calibration level accuracy) dB
	Frequency response
	50 MHz to 2.5 GHz <±0.4 dB
	Calibration level accuracy <±0.2 dB

Conditions (Subtype 0&1)

<table>
<tr><th>Item</th><th>Conditions</th></tr>
<tr><td>Temperature range</td><td>+20°C to +30°C</td></tr>
<tr><td>Signal

Center frequency
Transmission power
ρ</td><td>IS-856 Mobile station
Long Code Mask I: 33333333333
Long Code Mask Q: 26666666667
Signal in which Pilot, ACK, DRC, and Data Channel are multiplexed
<table><tr><th>Channel</th><th>Pilot Channel ratio</th></tr><tr><td>ACK</td><td>0 dB</td></tr><tr><td>DRC</td><td>0 dB</td></tr><tr><td>Data</td><td>3.75 dB</td></tr></table>ACK channel: Transmitting in all slots
DRC channel: Transmitting continuously
800 MHz or 2 GHz
-10 dBm, -20 dBm
>0.9999</td></tr>
<tr><td>Meas Range</td><td>1 slot</td></tr>
<tr><td>Freq Meas Range</td><td>±1 kHz</td></tr>
</table>

Conditions (Subtype 2)

<table>
<tr><th>Item</th><th>Specifications</th></tr>
<tr><td>Temperature range</td><td>+20°C to +30°C</td></tr>
<tr><td>Signal</td><td>IS-856 Mobile station
Long Code Mask I: 33333333333
Long Code Mask Q: 26666666667
Signal in which Pilot, RRI, ACK, DSC, DRC, Data, and Aux Pilot Channel are multiplexed
<table><tr><th>Channel</th><th>Pilot Channel ratio</th></tr><tr><td>RRI</td><td>0 dB</td></tr><tr><td>ACK</td><td>0 dB</td></tr><tr><td>DSC</td><td>0 dB</td></tr><tr><td>DRC</td><td>0 dB</td></tr><tr><td>Data (E4E2)</td><td>3.75 dB</td></tr><tr><td>Aux Pilot</td><td>0 dB</td></tr></table>
ACK channel: Transmitting in all slots
DSC channel: Transmitting in all slots
DRC channel: Transmitting continuously
Aux Pilot channel: Transmitting for half a slot in every 4 slots.</td></tr>
<tr><td>Center frequency</td><td>800 MHz or 2 GHz</td></tr>
<tr><td>Transmission power</td><td>-10 dBm, -20 dBm</td></tr>
<tr><td>ρ</td><td>>0.9999</td></tr>
<tr><td>Meas Range</td><td>2 half slot</td></tr>
<tr><td>Freq Meas Range</td><td>±1 kHz</td></tr>
</table>

APPENDIX

This section describes the following supplemental information:

A.1 Technical Data

A.2 Error Message List

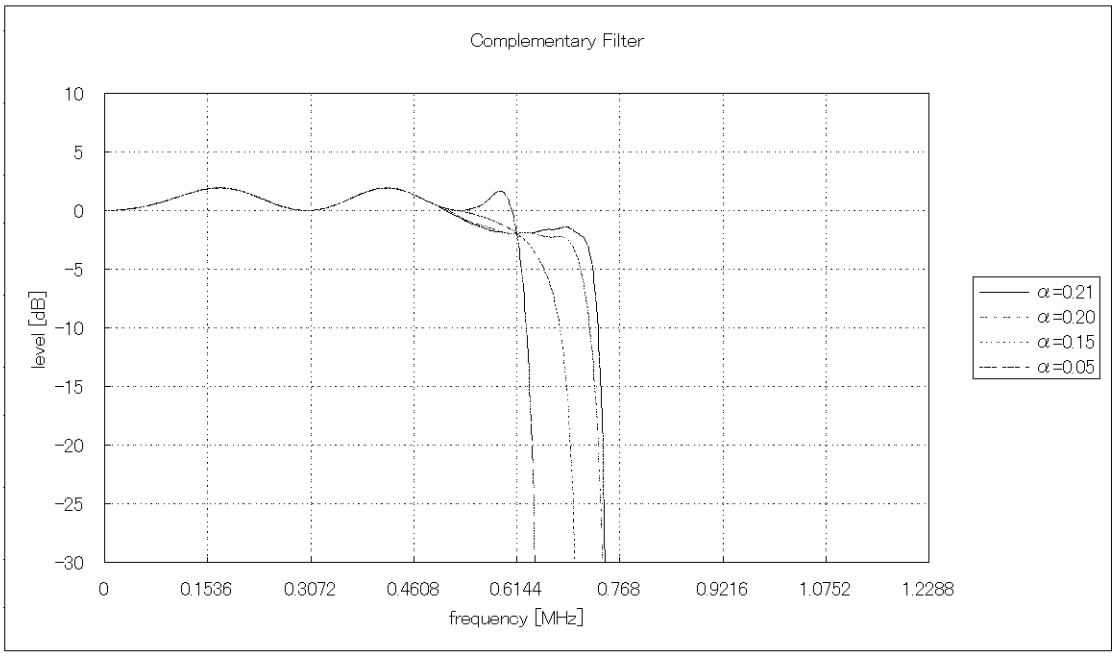
A.1 Technical Data

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 standards contain no regulations concerning the roll-off factor (α) of the Nyquist filter. In this instrument, α can be set between 0.05 and 0.20 in Downlink and is set to 0.21 in Uplink.



Phase Equalizing Filter

The base station equalizes the phase of the signal, which travels down the transmission signal path, according to the IS-856 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 **[Equalizing Filter]** of **Meas Parameters** to ON.

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

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

Error messages described in Table A-1 are specific to this option.
For more information on other error messages, refer to section 9.8 "Error Message List" in the 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.
-3220	Cannot find out signal, Input level may be too low.	The input signal level is too low to analyze.
-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.	No measurements can be performed. Check the input signal.
-3247	Cannot synchronize to PICH. Adjust Threshold Level.	The Pilot channel cannot be synchronized. Re-set Threshold.
-3251	Cannot find out active Channel. Down the MAC Threshold.	No active MAC channel exists. Lower the threshold level.
-3252	No Active Slot within a frame. Check the input signal.	No Active Slot exists in the frame.
-3253	Level of MAC channel is too low. Check MAC channel.	The level of the MAC channel is too low to measure.

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

Error number	Displayed message	Description
-3254	Cannot synchronize to PICH. Adjust PN Delay	The Pilot channel cannot be synchronized. Re-set PN Delay.
-3267	Level of RRICH is too low. Cannot judge DCH modulation and Walsh Code.	The level of RRI Channel is too low to identify the modulation format and Walsh Code of Data Channel. Check the input signal.

ALPHABETICAL INDEX

[Symbol]

[A]

[B]

[C]

[D]

[E]

[F]

[G]

[H]

[I]

[Q]

[R]

[S]

[T]

[U]

[W]

[X]

[Y]

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