ADVANTEST

ADVANTEST CORPORATION

R3477 Series OPT50

3GPP (HSDPA) Analysis Software

User's Guide

MANUAL NUMBER FOE-8440198C00

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

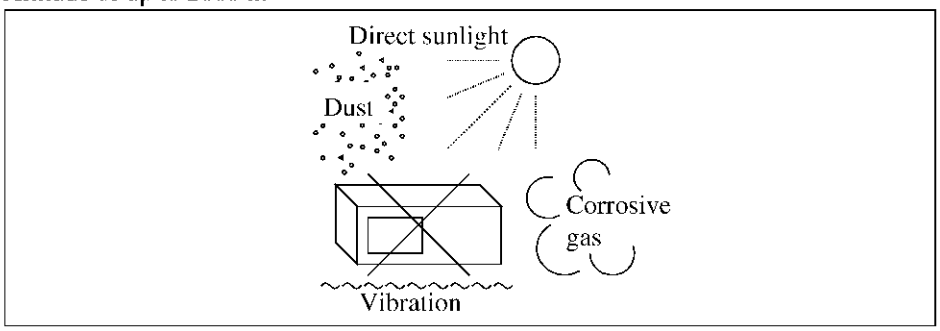


Figure-1 Environmental Conditions

- Operating position

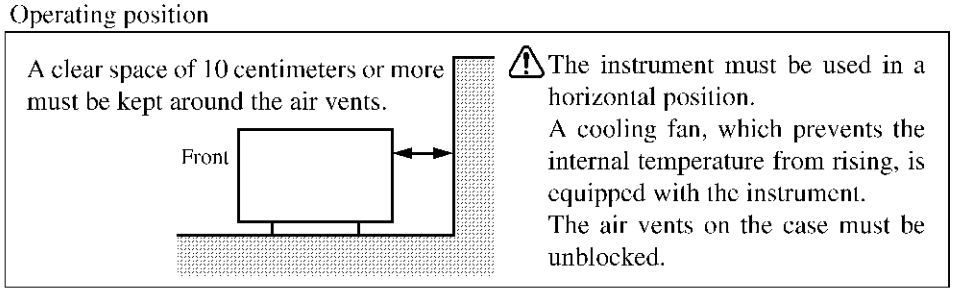


Figure-2 Operating Position

- Storage position

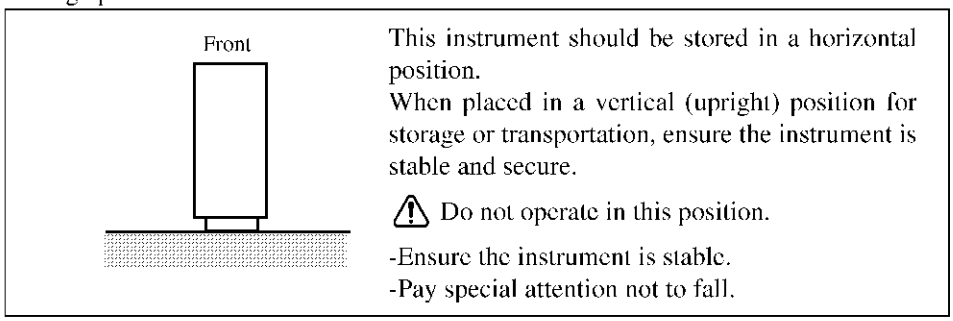


Figure-3 Storage Position

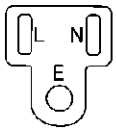
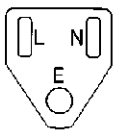
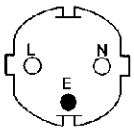
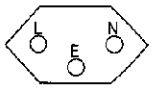
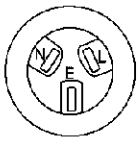
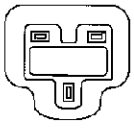
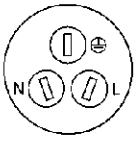
- The classification of the transient over-voltage, which exists typically in the main power supply, and the pollution degree is defined by IEC61010-1 and described below.

  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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LIST OF TABLES

1. INTRODUCTION

This chapter describes the outline of this manual and the product overview of the R3477 series signal analyzer option 50 3GPP (HSDPA) Modulation Analysis.

1.1 Outline of This Manual

The outline of each chapter is shown below:

For basic operating methods, functions and the remote programming method of the signal analyzer, refer to "1.3 Other Manuals Related to This Instrument."

Chapter 1. INTRODUCTION	Describes the outline of this manual and the product overview.
Chapter 2. PRECAUTIONS WHEN USING THE R3477	Provides preliminary tips on using this instrument. Read this chapter before using this instrument.
Chapter 3. SETUP	Describes how to set up this instrument. After installing this instrument in position, switch it on to make sure that it starts successfully.
Chapter 4. MEASUREMENT EXAMPLES	Describes example measurements.
Chapter 5. MENU MAP, FUNCTIONAL EXPLANATION	Describes the menu configuration and functions of the soft keys.
Chapter 6. SCPI COMMAND REFERENCE	SCPI command reference. The command reference describes the commands in order of function. The following items are described: • Command format • Function description • Parameters • Query response
Chapter 7. PERFORMANCE VERIFICATION	Describes the performance verification test procedures for option 50.
Chapter 8. SPECIFICATIONS	Shows the specifications of option 50.
APPENDIX	Describes operation principles and the error code table.

1.2 Product Overview

The 3GPP (HSDPA) analysis option (OPT50) is optional software that adds the Tx Tester function, which is used to measure the 3GPP HSDPA signal, to the R3477 series.

This option includes the following features.

- Measurement of modulation accuracy, frequency error, and code domain power.
- Measurement of OBW and Spurious Emissions, which are compliant with the standard, by using simple key sequences.

1.3 Other Manuals Related to This Instrument

The following manuals are available for this instrument:

- 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, controlling by remote, 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 Conventions of Notation Used in This Document

In this document, hard keys, touch-screen buttons and menus are represented by the following symbols:

Hard keys
"Hard keys" are hardware keys which are on the panel.

Sample	Indicates a hard key labeled "Sample." Example: **FREQ**, **LEVEL**

Touch-screen system menus

[Sample]	Indicates a touch-screen menu, tab, button or dialog box that is labeled "Sample" and that is selected or executed when touched. Example: **[Normal]** tab, **[Option]** button

Touch-screen soft menu bar

Sample	Indicates a touch-screen soft menu bar labeled "Sample." Example: **Center** key, **Ref Level** key

Sequential key operation

FREQ, **Center**	Indicates that you need to touch the **FREQ** key and then touch the **Center** key.

Toggle key operation

ΔMarker On/Off	(On)	Indicates that you need to touch the **ΔMarker On/Off** key to turn on the ΔMarker.

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- Other product and company names referenced herein are trademarks or registered trademarks of their respective owners.

2. PRECAUTIONS WHEN USING THE R3477

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

2.1 If a Fault Occurs

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

2.2 Removing the Case

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

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

2.3 Power Fuse

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.

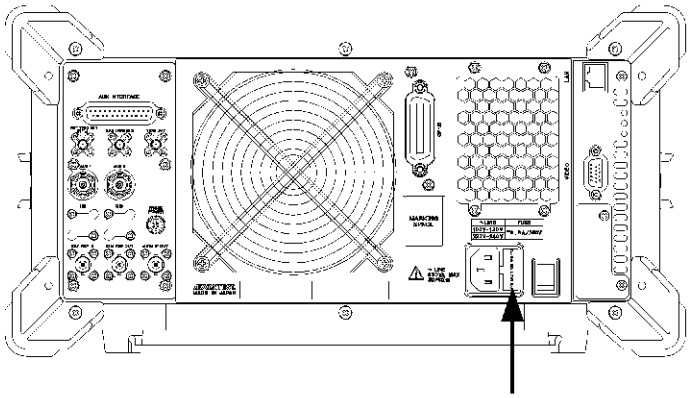

Figure 2-1 Fuse Holder Location

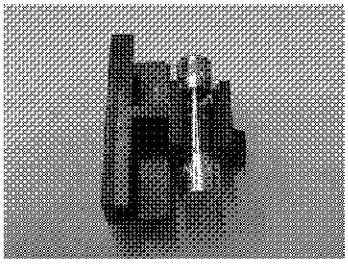

Figure 2-2 Fuse Holder

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 the 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 accessory listed of the OPT50 in Table 3-1 is complete and this is 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 Accessory

Name	Model	Quantity	Remarks
R3477 Series OPT50 User's Guide	ER3477OPT50-U	1	English version

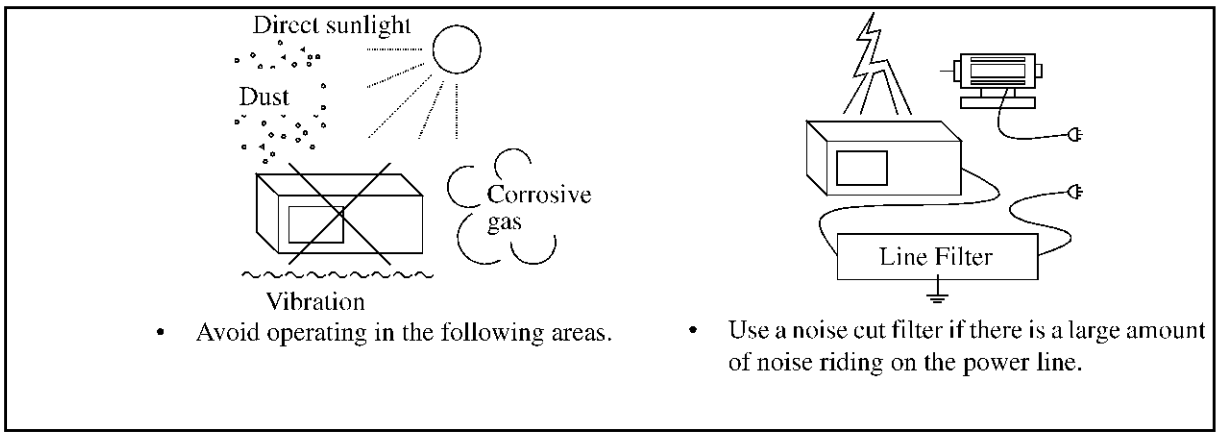
3.2 Installation Environment

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

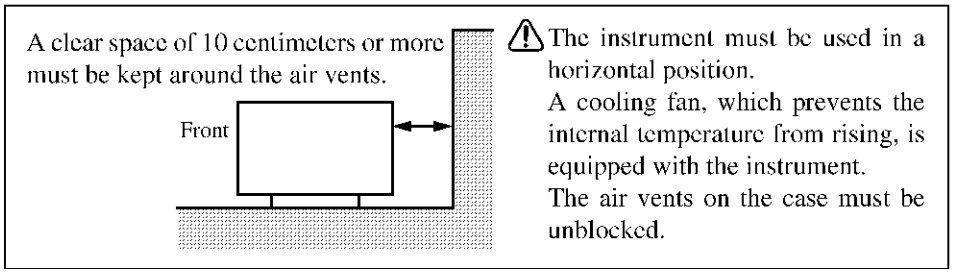


Figure 3-2 Operating Position

- Storage position

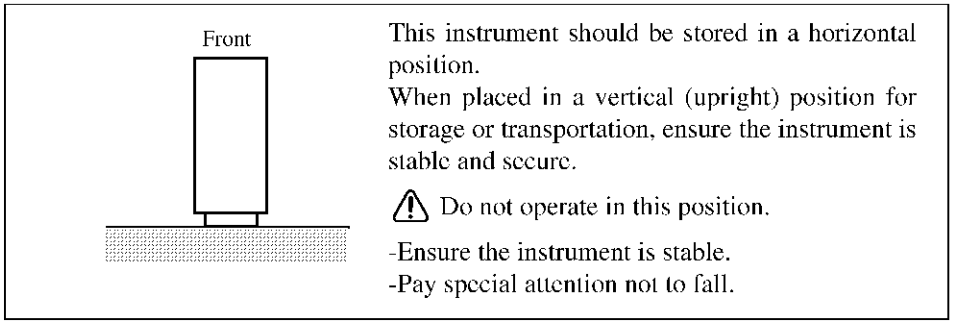


Figure 3-3 Storage Position

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).

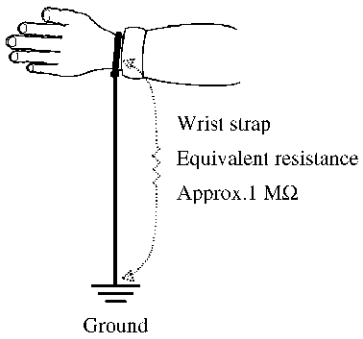


Figure 3-4 Countermeasures for Static Electricity from the Human Body

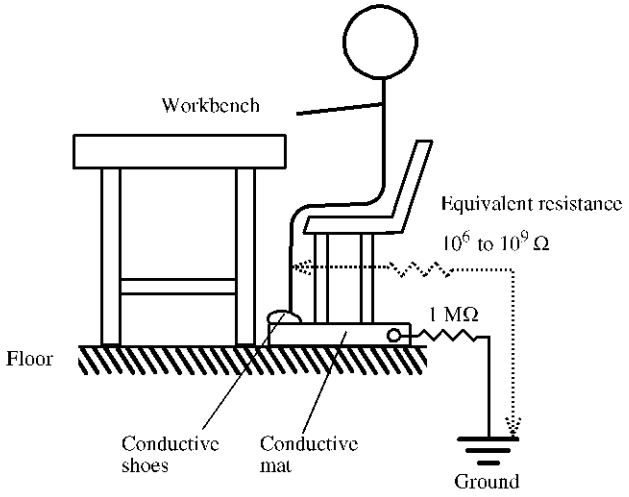


Figure 3-5 Countermeasures for Static Electricity from the Work Floor

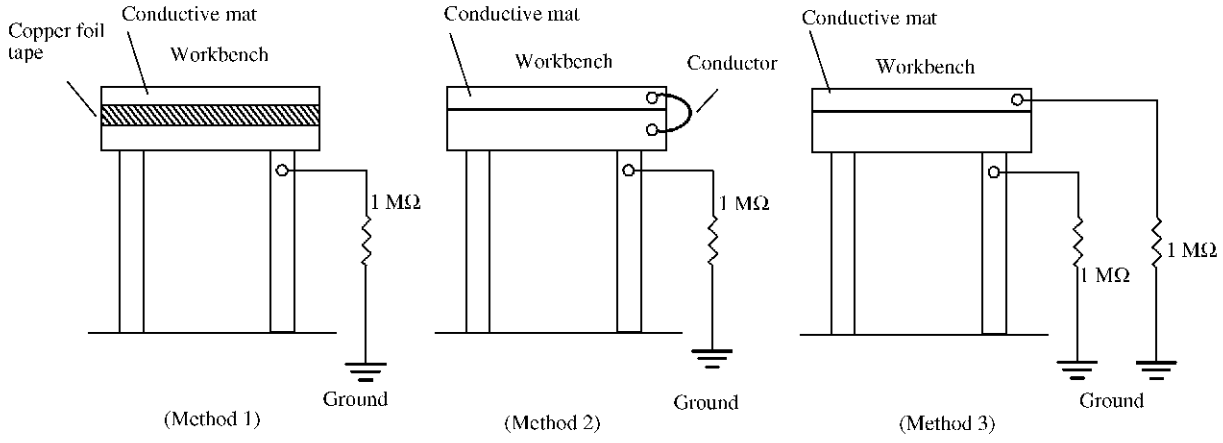


Figure 3-6 Countermeasures for Static Electricity from the Workbench

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.

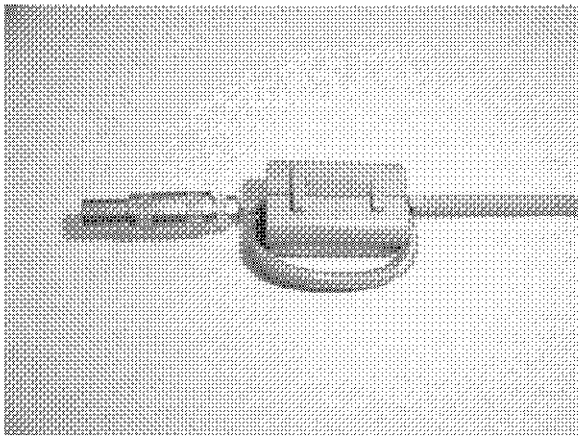


Figure 3-7 A ferrite core

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).

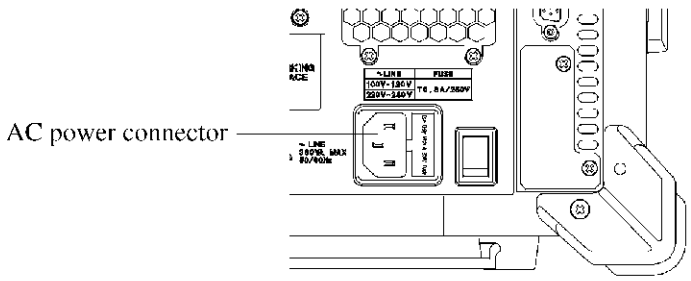


Figure 3-8 Connecting the Power Cable

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.

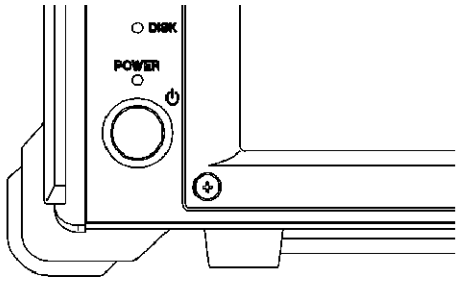


Figure 3-9 **POWER** switch

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 Series User's Guide.***

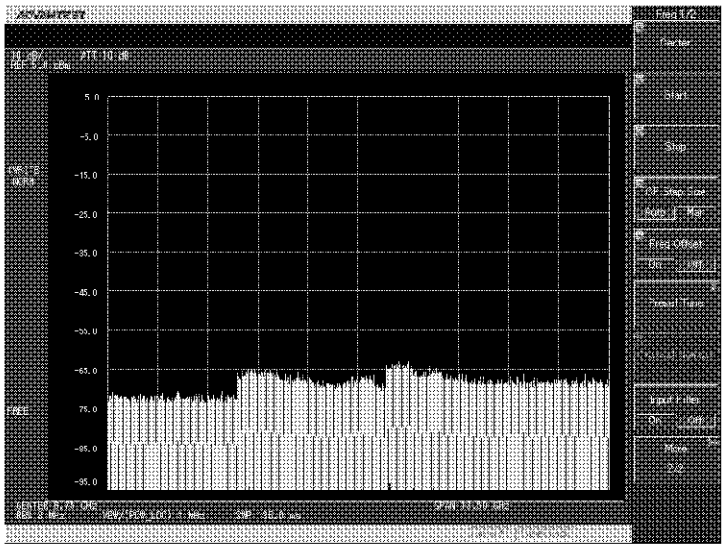


Figure 3-10 Initial Screen

Performing autocalibration

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

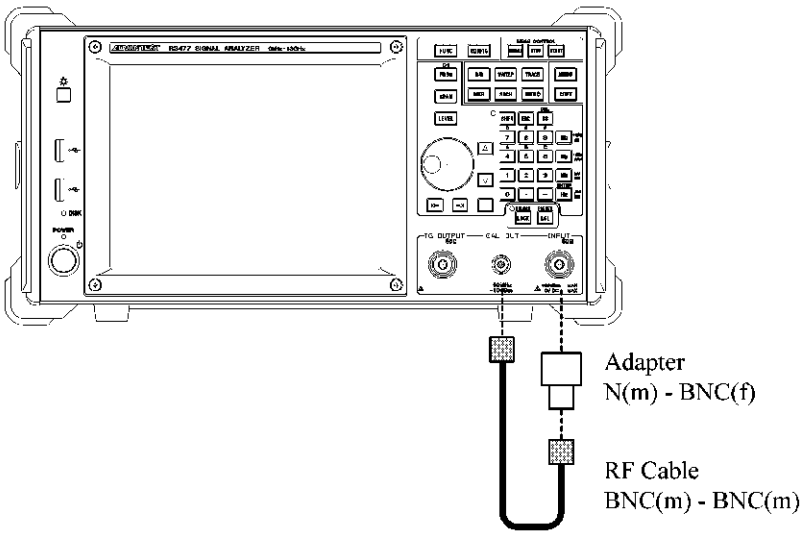


Figure 3-11 Autocalibration

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 Series User's Guide.***

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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 Series 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 3GPP Base Station Signal Measurement

Signal Specifications

The target signal is the signal in the 3GPP system test unit and the channel, which is complied with 3GPP Standard TS.25.141V5.7.0, is output with the following specifications.

Table 4-1 Signal Specifications

Carrier	1	2	3	4
Carrier frequency	1995 MHz	2000 MHz	2005 MHz	2010 MHz
Level	-10 dBm	-10 dBm	-10 dBm	-10 dBm
Scrambling Code No.	0	16	32	48
Active channel	TestModel1 DPCH64codes	TestModel1 DPCH64codes	TestModel1 DPCH64codes	TestModel1 DPCH64codes

4.1.1 3GPP Base Station Signal Measurements Using the Concise Mode

The Error Vector Magnitude etc. of each carrier for the 4-carrier multiplex signal can be measured by using the Concise Mode. An example of the 4-carrier Error Vector Magnitude measurement is shown below.

Connection

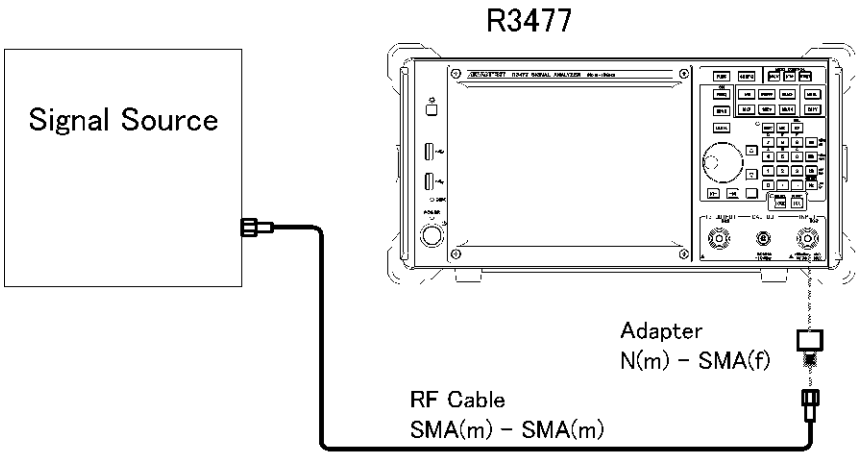


Figure 4-1 Connection Diagram Using the Concise Mode

Measurement condition setting

1. Press the **CONFIG** key.
2. Touch the **STD Setup** key and select **[3GPP DL]**.
3. Touch the **Apply** key to apply all selected items.
4. Touch the **Tx Tester** key and select Tx Tester.
5. Press **FREQ**, **Center**, **2**, and **GHz**.
   The center frequency is set to 2 GHz.
6. Press the **FUNC** key and select **Modulation**.
7. Touch the **Auto Level Set** key.
   Ref Level is automatically set to the optimum value.
8. Touch **Trigger**, **Trigger Source**, and **Free Run**.
   The trigger source is set to the internal trigger.
9. Touch the **Return** key twice to return to the Modulation menu.
10. Touch **Meas Mode** and **Concise**.
    The measurement mode is set to the Concise mode.
11. Touch the **Return** key to return to the Modulation menu.
12. Touch the **Meas Setup** key.

13. Touch the **Meas Parameters** button on the soft menu bar.
    The **[Measurement Parameters Setup]** dialog box appears.
14. Set the **[Meas Band Width]** option button to **[Multi Carrier]**.
    The measurable bandwidth is set to the width of four carriers.
15. Touch the **[Multi Carrier Number]** text box in the **[Measurement Parameters Setup]** dialog box and press **4** and **Hz** (ENTER) on the keypad.
    The number of carriers to be measured is set to 4.
16. Set the **[Setup Carrier]** option button to **[1st Carrier]**.
    The measurement conditions can be set for the first carrier.
17. Touch the **[Carrier Frequency Offset]** text box and press **0** and **Hz** (ENTER) on the keypad.
    The offset frequency from the center frequency is set to 0 Hz.
18. Set the **[Scrambling Code Define]** option button to **[UNDEFINE]**.
    The mode, which automatically detects the Scrambling Code number, is set.
19. Set the **[Active CH Detection]** option button to **[TestModel1 DPCH64codes]**.
    The active channel is set to the TestModel1 DPCH64codes multiplex signal.
20. Set the **[SCH]** option button to **[ON]**.
    The SCH portion is set to within the measurement range.
21. Touch the **[Threshold]** text box and press **-**, **3**, **0** and **GHz** (dB) on the keypad.
    The Threshold level is set to -30 dB.

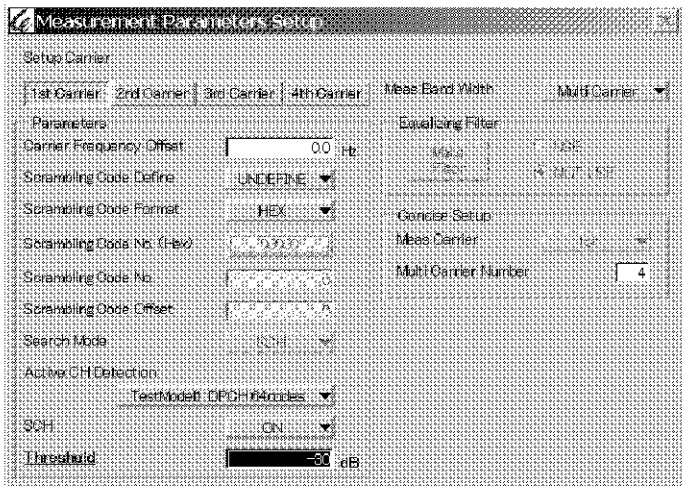


Figure 4-2 **[Measurement Parameters Setup]** Dialog Box

22. Set the **[Setup Carrier]** option button to **[2nd Carrier]**.
    The measurement conditions can be set for the second carrier.

23. Touch the **[Carrier Frequency Offset]** text box and press [-], [5] and [MHz] on the keypad.
    The offset frequency from the center frequency is set to -5 MHz.
24. Set the **[Scrambling Code Define]** option button to **[UNDEFINE]**.
    The mode, which automatically detects the Scrambling Code number, is set.
25. Set the **[Active CH Detection]** option button to **[TestModel1 DPCH64codes]**.
    The active channel is set to the TestModel1 DPCH64codes multiplex signal.
26. Set the **[SCH]** option button to **[ON]**.
    The SCH portion is set to within the measurement range.
27. Touch the **[Threshold]** text box and press [-], [3], [0] and [GHz](dB) on the keypad.
    The Threshold level is set to -30 dB.
28. Set the **[Setup Carrier]** option button to **[3rd Carrier]**.
    The measurement conditions can be set for the third carrier.
29. Touch the **[Carrier Frequency Offset]** text box and press [5] and [MHz] on the keypad.
    The offset frequency from the center frequency is set to 5 MHz.
30. Set the **[Scrambling Code Define]** option button to **[UNDEFINE]**.
    The mode, which automatically detects the Scrambling Code number, is set.
31. Set the **[Active CH Detection]** option button to **[TestModel1 DPCH64codes]**.
    The active channel is set to the TestModel1 DPCH64codes multiplex signal.
32. Set the **[SCH]** option button to **[ON]**.
    The SCH portion is set to within the measurement range.
33. Touch the **[Threshold]** text box and press [-], [3], [0] and [GHz](dB) on the keypad.
    The Threshold level is set to -30 dB.
34. Set the **[Setup Carrier]** option button to **[4th Carrier]**.
    The measurement conditions can be set for the fourth carrier.
35. Touch the **[Carrier Frequency Offset]** text box and press [1], [0] and [MHz] on the keypad.
    The offset frequency from the center frequency is set to 10 MHz.
36. Set the **[Scrambling Code Define]** option button to **[UNDEFINE]**.
    The mode, which automatically detects the Scrambling Code number, is set.
37. Set the **[Active CH Detection]** option button to **[TestModel1 DPCH64codes]**.
    The active channel is set to the TestModel1 DPCH64codes multiplex signal.

38. Set the **[SCH]** option button to **[ON]**.
    The SCH portion is set to within the measurement range.

39. Touch the **[Threshold]** text box and press [-], [3], [0] and [GHz](dB) on the keypad.
    The Threshold level is set to -30 dB.

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

41. Push the [SINGLE] button on the front panel.
    The Single measurement is executed, and the measurement results are displayed.

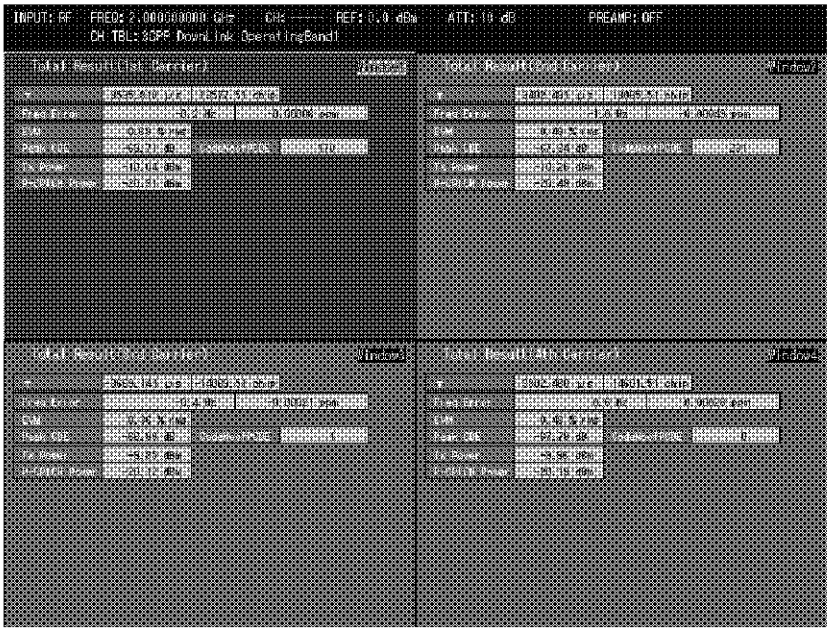


Figure 4-3 Concise Mode Measurement Results

τ	Delay (μs, chip)
Freq Error	Carrier frequency error (Hz, ppm)
EVM	Error Vector Magnitude (%rms)
Peak CDE	Peak code domain error (dB)
Code No. of PCDE	Code number of the Peak CDE
Tx Power	Transmission power (dBm)
P-CPICH Power	P-CPICH power (dBm)

4.1.2 3GPP Base Station Signal Measurements Using the Code Domain Mode

The Code Domain Power etc. for the specified carrier can be measured by using the Code Domain Mode. An example of the Code Domain analysis for the first carrier is shown below.

Connection

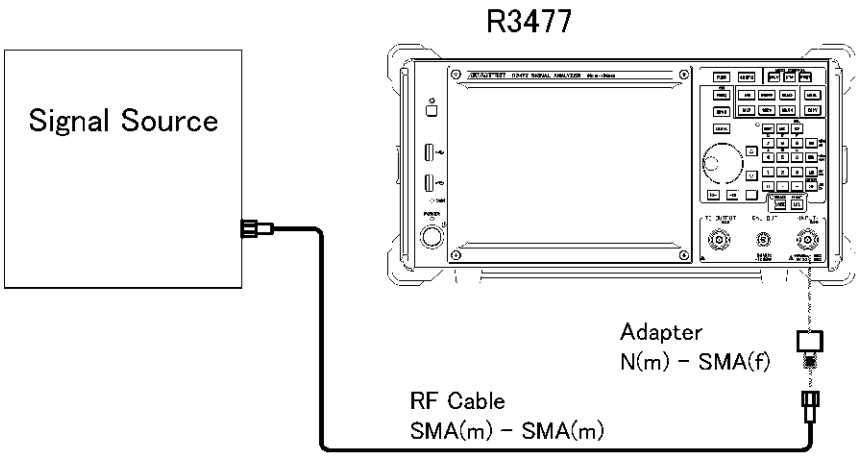


Figure 4-4 Connection Diagram Using the Code Domain Mode

Measurement condition setting

1. Press the **CONFIG** key.
2. Touch the **STD Setup** key and select **[3GPP DL]**.
3. Touch the **Apply** key to apply all selected items.
4. Touch the **Tx Tester** key and select Tx Tester.
5. Press **FREQ**, **Center**, **2**, and **GHz**.
   The center frequency is set to 2 GHz.
6. Press the **FUNC** key and select **Modulation**.
7. Touch the **Auto Level Set** key.
   Ref Level is automatically set to the optimum value.
8. Touch **Trigger**, **Trigger Source**, and **Free Run**.
   The trigger source is set to the internal trigger.
9. Touch the **Return** key twice to return to the Modulation menu.

10. Touch **Meas Mode** and **Code Domain**.
    The measurement mode is set to the Code Domain mode.
11. Touch the **Return** key to return to the Modulation menu.
12. Touch the **Meas Setup** key.
13. Touch the **Meas Parameters** key.
    The **[Measurement Parameters Setup]** dialog box appears.
14. Set the **[Meas Band Width]** option button to **[Multi Carrier]**.
    The measurable bandwidth is set to the width of four carriers.
15. Set the **[Setup Carrier]** option button to **[1st Carrier]**.
    The measurement conditions can be set for the first carrier.
16. Touch the **[Carrier Frequency Offset]** text box and press **0** and **Hz** (ENTER) on the keypad.
    The offset frequency from the center frequency is set to 0 Hz.
17. Set the **[Scrambling Code Define]** option button to **[UNDEFINE]**.
    The mode, which automatically detects the Scrambling Code number, is set.
18. Set the **[Active CH Detection]** option button to **[TestModel1 DPCH64codes]**.
    The active channel is set to the TestModel1 DPCH64codes multiplex signal.
19. Set the **[SCH]** option button to **[ON]**.
    The SCH portion is set to within the measurement range.
20. Touch the **[Threshold]** text box and press **-**, **3**, **0** and **GHz** (dB) on the keypad.
    The Threshold level is set to -30 dB.
21. Set the **[Meas Carrier]** option button to **[1st]**.
    The first carrier is set to the object to be measured.
22. Set the **[Analysis Rate]** option button to **[7.5 ksps]**.
    The symbol rate to be analyzed is set to 7.5 ksps.
23. Set the **[Meas Length]** option button to **[1 FRAME]**.
    The Measurement length is set to 1 frame.

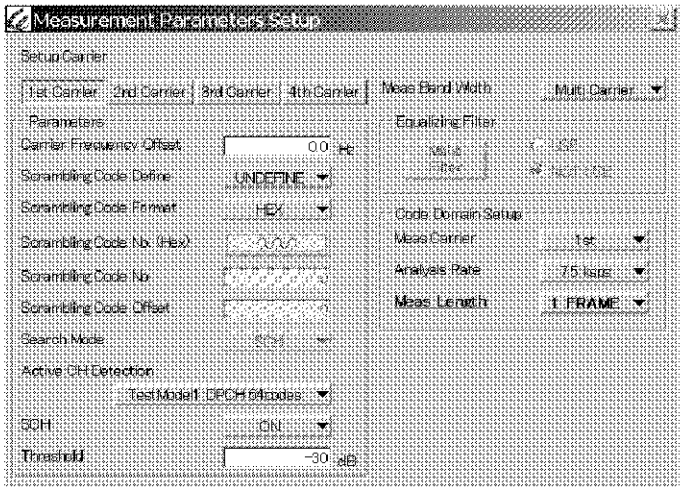


Figure 4-5 **[Measurement Parameters Setup]** Dialog Box

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

25. Push the **SINGLE** button on the front panel.
The Single measurement is executed, and the measurement results are displayed.

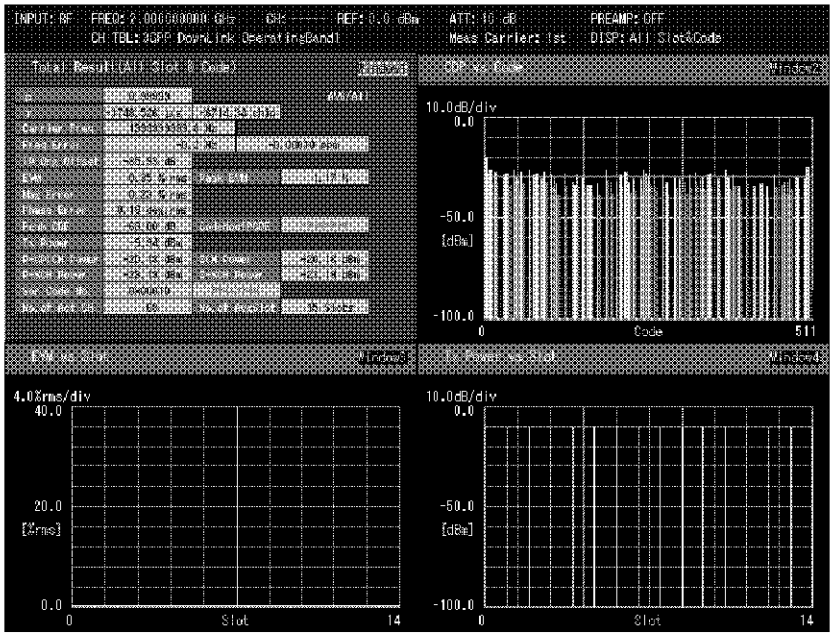


Figure 4-6 Code Domain Mode Measurement Results

Upper left window

ρ	Waveform quality
τ	Delay (μs, chip)
Carrier Freq	Carrier frequency (Hz)
Freq Error	Carrier frequency error (Hz, ppm)
IQ Org Offset	IQ origin offset (dB)
EVM	Error Vector Magnitude (%rms)
Peak EVM	Peak Error Vector Magnitude (%)
Mag. Error	Magnitude error (%rms)
Phase Error	Phase error (deg.rms)
Peak CDE	Peak code domain error (dB)
Code No. of PCDE	Code number of the Peak CDE
Tx Power	Transmission power (dBm)
P-CPICH Power	P-CPICH power (dBm)
SCH Power	SCH power (dBm)
P-SCH Power	P-SCH power (dBm)
S-SCH Power	S-SCH power (dBm)
Scr Code No.	Scrambling Code number (DEC, HEX)
No. of ActCh	Number of active channels
No. of Avg Slot	Number of average slot (Slots)

Upper right window

Horizontal axis - Code

Vertical axis - Code domain power (dBm)

Lower left window

Horizontal axis - Slot

Vertical axis - Error Vector Magnitude (%rms)

Lower right window

Horizontal axis - Slot

Vertical axis - Transmission power (dBm)

4.1.3 EVM Measurement of the DUT by Using the Equalizing Filter

The EVM of the DUT such as amplifiers or filters can be measured with the cancellation of the signal source frequency characteristics by using the Equalizing Filter function. An example, which is measured by using the Equalizing Filter function for the first carrier, is shown below.

Connection

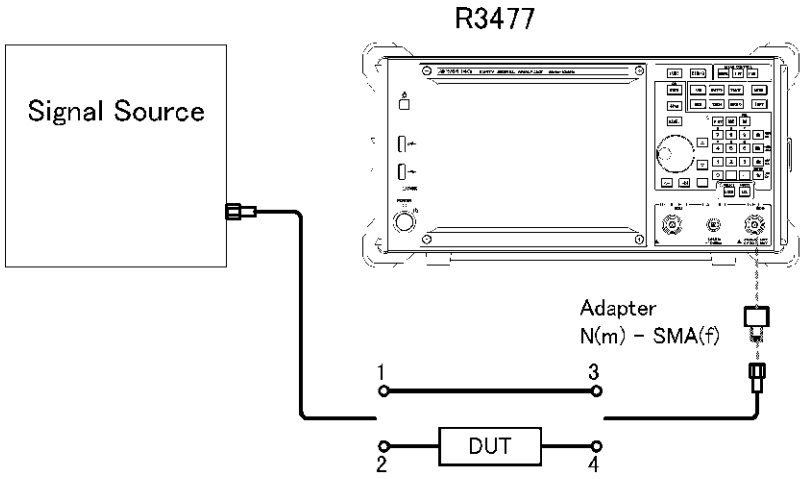


Figure 4-7 Connection Diagram Using the Equalizing Filter

Measurement condition setting

1. Connect the instruments to the 1-3 path.
2. Press the **CONFIG** key.
3. Touch the **STD Setup** key and select **[3GPP DL]**.
4. Touch the **Apply** key to apply all selected items.
5. Touch the **Tx Tester** key and select Tx Tester.
6. Press **FREQ**, **Center**, **2**, and **GHz**.
   The center frequency is set to 2 GHz.
7. Press the **FUNC** key and select **Modulation**.
8. Touch the **Auto Level Set** key.
   Ref Level is automatically set to the optimum value.
9. Touch **Trigger**, **Trigger Source**, and **Free Run**.
   The trigger source is set to the internal trigger.

10. Touch the **Return** key twice to return to the Modulation menu.
11. Touch **Meas Mode** and **Code Domain**.
    The measurement mode is set to the Code Domain mode.
12. Touch the **Return** key to return to the Modulation menu.
13. Touch the **Meas Setup** key.
14. Touch the **Meas Parameters** key.
    The **[Measurement Parameters Setup]** dialog box appears.
15. Set the **[Meas Band Width]** option button to **[Multi Carrier]**.
    The measurable bandwidth is set to the width of four carriers.
16. Set the **[Setup Carrier]** option button to **[1st Carrier]**.
    The measurement conditions can be set for the first carrier.
17. Touch the **[Carrier Frequency Offset]** text box and press **0** and **Hz** (ENTER) on the keypad.
    The offset frequency from the center frequency is set to 0 Hz.
18. Set the **[Scrambling Code Define]** option button to **[UNDEFINE]**.
    The mode, which automatically detects the Scrambling Code number, is set.
19. Set the **[Active CH Detection]** option button to **[TestModel1 DPCH64codes]**.
    The active channel is set to the TestModel1 DPCH64codes multiplex signal.
20. Set the **[SCH]** option button to **[ON]**.
    The SCH portion is set to within the measurement range.
21. Touch the **[Threshold]** text box and press **-**, **3**, **0** and **GHz** (dB) on the keypad.
    The Threshold level is set to -30 dB.
22. Set the **[Meas Carrier]** option button to **[1st]**.
    The first carrier is set to the object to be measured.
23. Set the **[Analysis Rate]** option button to **[7.5 ksps]**.
    The symbol rate to be analyzed is set to 7.5 ksps.
24. Set the **[Meas Length]** option button to **[1 FRAME]**.
    The measurement length is set to 1 frame.

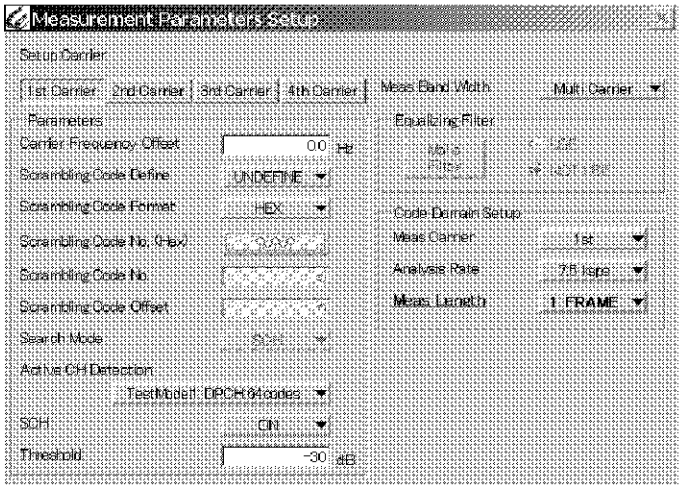


Figure 4-8 **[Measurement Parameters Setup]** Dialog Box

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

26. Push the **SINGLE** button on the front panel.

    The Single measurement is executed, and the measurement results are displayed. Verify that the EVM in the upper left window (Total Result) is 17.5% or less.

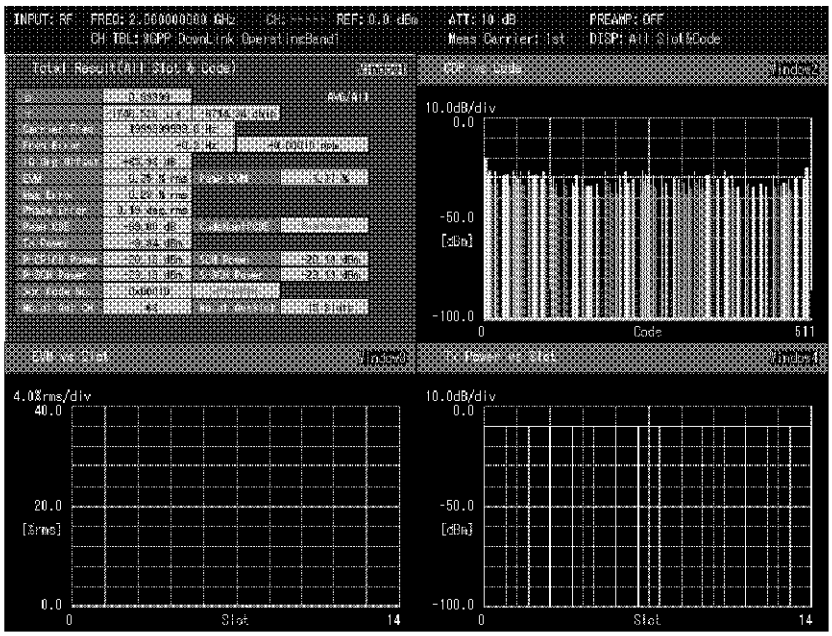


Figure 4-9 Measurement Results of the Code Domain Mode

27. Touch the **Meas Parameters** key.

    The **[Measurement Parameters Setup]** dialog box appears.

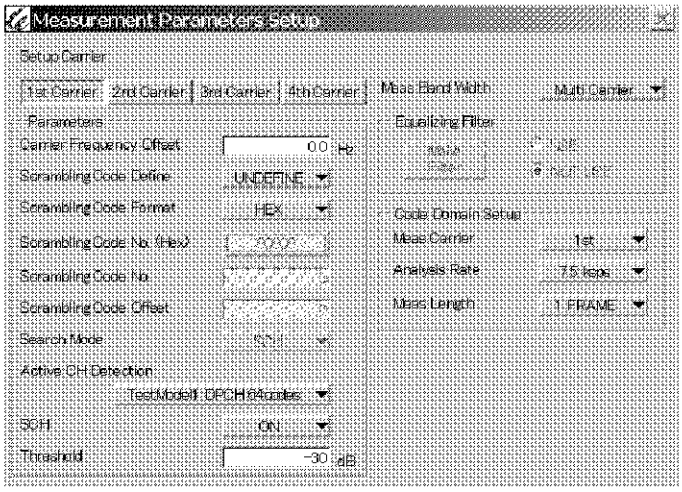


Figure 4-10 **[Measurement Parameters Setup]** Dialog Box

28. Press the **[Make Filter]** button.
    The Equalizing Filter coefficient is created.

29. Connect the instruments to the 2-4 path.

30. Touch the **[USE]**.
    The mode, which uses the Equalizing Filter coefficient, is set.

31. Touch the **Close** key to close the **[Measurement Parameters Setup]** dialog box.

32. Push the **SINGLE** button on the front panel.
    The Single measurement is executed, and the measurement results of the DUT, which are processed by the Equalizer, are displayed.

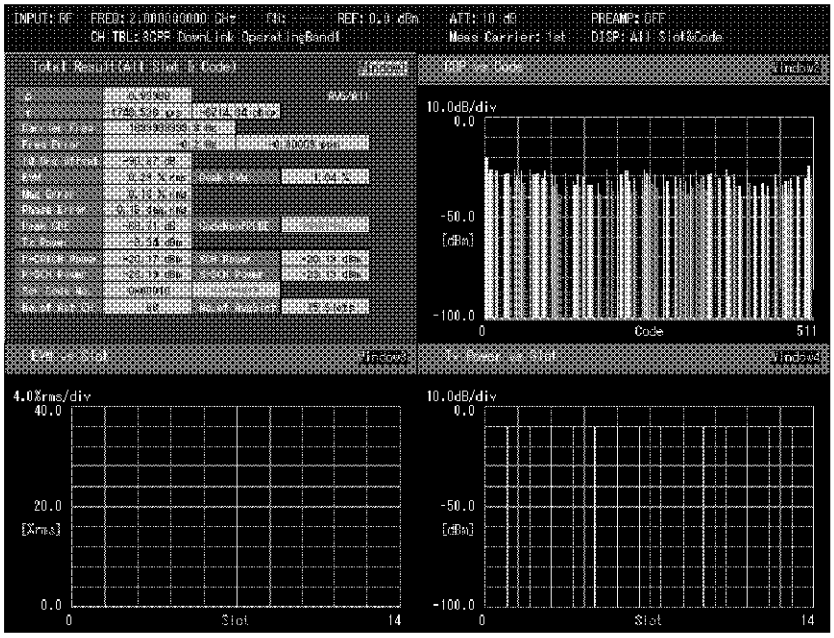


Figure 4-11 Measurement Results of the DUT

Upper left window

ρ	Waveform quality
τ	Delay (μs, chip)
Carrier Freq	Carrier frequency (Hz)
Freq Error	Carrier frequency error (Hz, ppm)
IQ Org Offset	IQ origin offset (dB)
EVM	Error Vector Magnitude (%rms)
Peak EVM	Peak Error Vector Magnitude (%)
Mag. Error	Magnitude error (%rms)
Phase Error	Phase error (deg.rms)
Peak CDE	Peak Code Domain Error (dB)
Code No. of PCDE	Code number of the Peak CDE
Tx Power	Transmission power (dBm)
P-CPICH Power	P-CPICH power (dBm)
SCH Power	SCH power (dBm)
P-SCH Power	P-SCH power (dBm)
S-SCH Power	S-SCH power (dBm)
Scr Code No.	Scrambling Code number (DEC, HEX)
No. of ActCh	Number of active channels
No. of Avg Slot	Number of average slot (Slots)

Upper right window

Horizontal axis - Code

Vertical axis - Code Domain Power (dBm)

Lower left window

Horizontal axis - Slot

Vertical axis - Error Vector Magnitude (%rms)

Lower right window

Horizontal axis - Slot

Vertical axis - Transmission power (dBm)

4.1.4 3GPP Base Station Signal Measurements Using the P-CPICH Power Mode

The P-CPICH Power etc. for the specified carrier can be measured by using the P-CPICH Power Mode. An example of the analysis for the first carrier is shown below.

Connection

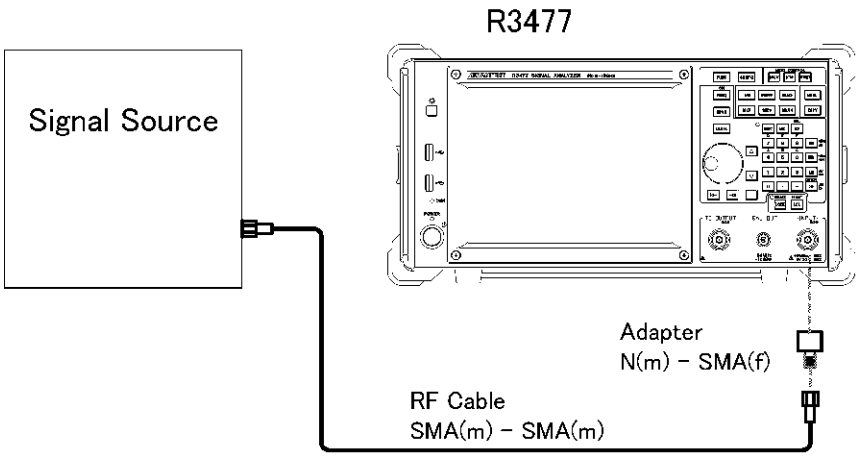


Figure 4-12 Connection Diagram Using the P-CPICH Power

Measurement condition setting

1. Press the **CONFIG** key.
2. Touch the **STD Setup** key and select **[3GPP DL]**.
3. Touch the **Apply** key to apply all selected items.
4. Touch the **Tx Tester** key and select Tx Tester.
5. Press **FREQ**, **Center**, **2**, and **GHz**.
   The center frequency is set to 2 GHz.
6. Press the **FUNC** key and select **Modulation**.
7. Touch the **Auto Level Set** key.
   Ref Level is automatically set to the optimum value.
8. Touch **Trigger**, **Trigger Source**, and **Free Run**.
   The trigger source is set to the internal trigger.
9. Touch the **Return** key twice to return to the Modulation menu.

10. Touch **Meas Mode** and **P-CPICH Power**.
    The measurement mode is set to the P-CPICH Power.
11. Touch the **Return** key to return to the Modulation menu.
12. Touch the **Meas Setup** key.
13. Touch the **Meas Parameters** key.
    The **[Measurement Parameters Setup]** dialog box appears.
14. Set the **[Setup Carrier]** option button to **[1st Carrier]**.
    The measurement conditions can be set for the first carrier.
15. Touch the **[Carrier Frequency Offset]** text box and press **0** and **Hz** (ENTER) on the keypad.
    The offset frequency from the center frequency is set to 0 Hz.
16. Set the **[Scrambling Code Define]** option button to **[UNDEFINE]**.
    The mode, which automatically detects the Scrambling Code number, is set.
17. Set the **[Meas Carrier]** option button to **[1st]**.
    The first carrier is set to the object to be measured.
18. Set the **[Meas Length]** option button to **[1 FRAME]**.
    The measurement length is set to 1 frame.

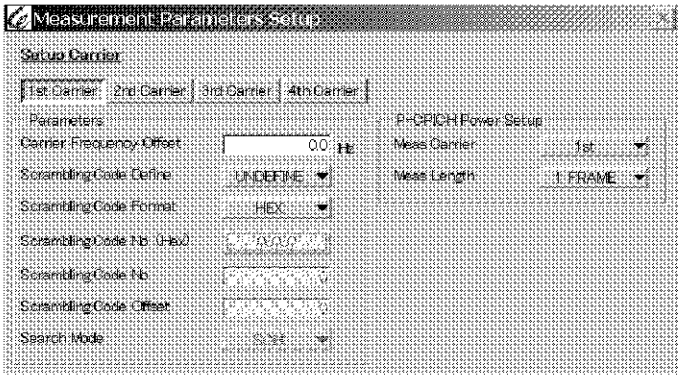


Figure 4-13 **[Measurement Parameters Setup]** Dialog Box

19. Touch the **Close** key to close the dialog box.
20. Push the **SINGLE** button on the front panel.
    The Single measurement is executed, and the measurement results are displayed.

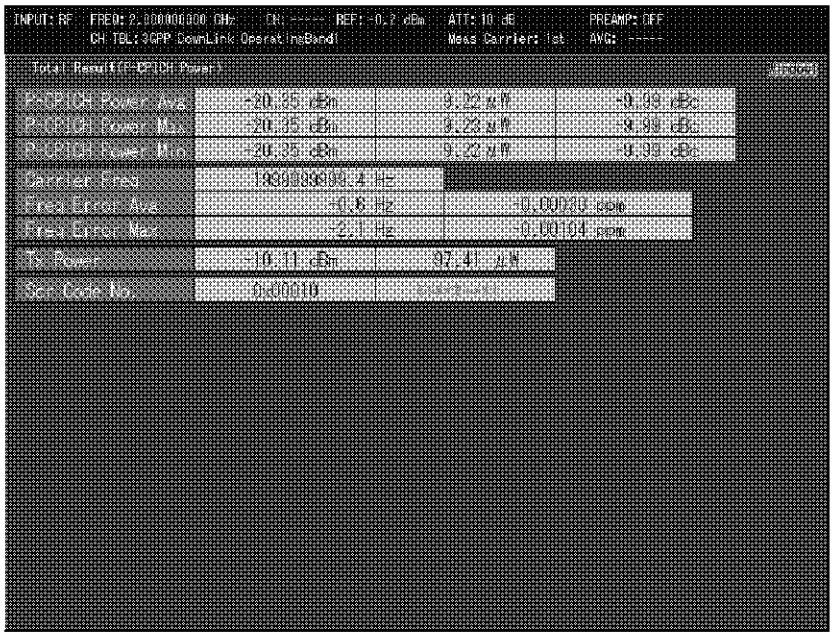


Figure 4-14 Measurement Results of P-CPICH Power Mode

P-CPICH Power Avg	P-CPICH power average value (dBm, W, dBc)
P-CPICH Power Max	P-CPICH power maximum value (dBm, W, dBc)
P-CPICH Power Min	P-CPICH power minimum value (dBm, W, dBc)
Carrier Freq	Carrier frequency (Hz)
Freq Error Avg	Average Carrier frequency error (Hz, ppm)
Freq Error Max	Maximum Carrier frequency error (Hz, ppm)
Tx Power	Transmitted power (dBm and W)
Scrambling Code No.	Scrambling code number (DEC, HEX)

4.2 3GPP Mobile Station Signal Measurement

Signal Specifications

The target is the signal in the 3GPP system test unit and is output with the following specifications.

Table 4-2 Signal Specifications

Carrier frequency	1.9 GHz				
Level	-10 dBm				
Scrambling Code No.	1				
Active channel	DPCCH	15 ksps	No.0	Q	-5.46 dB
	DPDCH	60 ksps	No.16	I	0.00 dB

4.2.1 3GPP Mobile Station Signal Measurements Using the Concise Mode

The numerical results such as Error Vector Magnitude can be measured by using the Concise Mode. The following shows measurement examples:

Connection

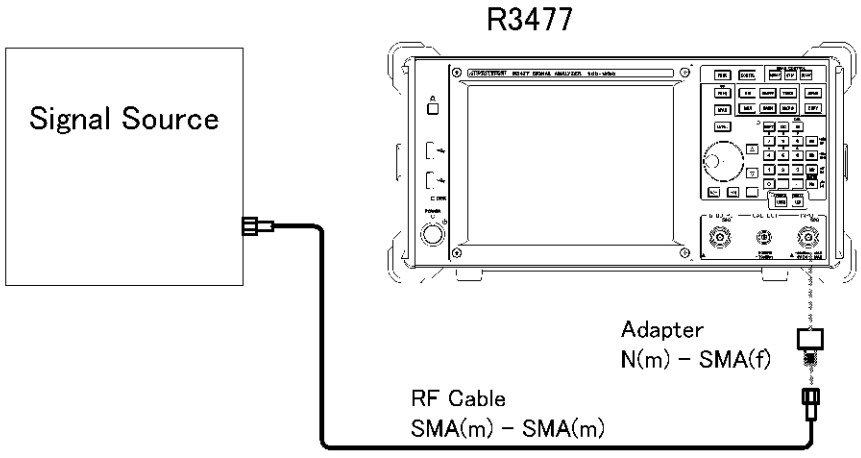


Figure 4-15 Connection Diagram Using the Concise Mode

Measurement condition setting

1. Press the **CONFIG** key.
2. Touch the **STD Setup** key and select **[3GPP UL]**.
3. Touch the **Apply** key to apply all selected items.
4. Touch the **Tx Tester** key and select Tx Tester.
5. Press **FREQ**, **Center**, **1**, **.**, **9**, and **GHz**.
   The center frequency is set to 1.9 GHz.
6. Press the **FUNC** key and select **Modulation**.
7. Touch the **Auto Level Set** key.
   Ref Level is automatically set to the optimum value.
8. Touch **Trigger**, **Trigger Source**, and **Free Run**.
   The trigger source is set to the internal trigger.
9. Touch the **Return** key twice to return to the Modulation menu.
10. Touch **Meas Mode** and **Concise**.
    The measurement mode is set to the Concise mode.
11. Touch the **Return** key to return to the Modulation menu.
12. Touch the **Meas Setup** key.
13. Touch the **Meas Parameters** key.
    The **[Measurement Parameters Setup]** dialog box appears.
14. Touch the **[Scrambling Code No.]** text box and press **1** and **Hz** (ENTER) on the keypad.
    The Scrambling Code number is set to 1.
15. Touch the **[Excluding chips in slot boundary]** text box and press **9**, **6**, and **Hz** (ENTER) on the keypad.
    The length of the chips in the first and last parts of the slot, which are excluded from the measurement range, is set to "96 chips".
16. Touch the **[Threshold]** text box and press **-**, **3**, **0** and **GHz** (dB) on the keypad.
    The Threshold level is set to -30 dB.

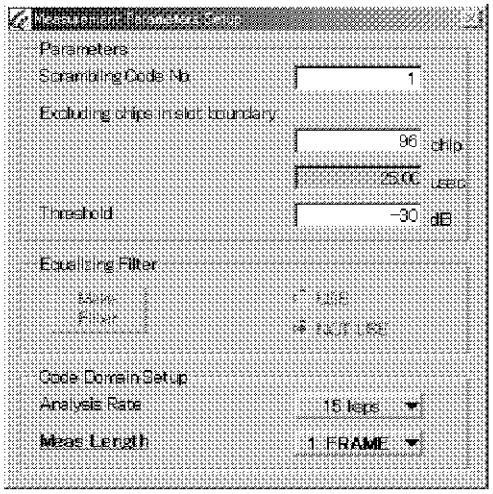


Figure 4-16 **[Measurement Parameters Setup]** Dialog Box

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

18. Push the **SINGLE** button on the front panel.
    The Single measurement is executed, and the measurement results are displayed.

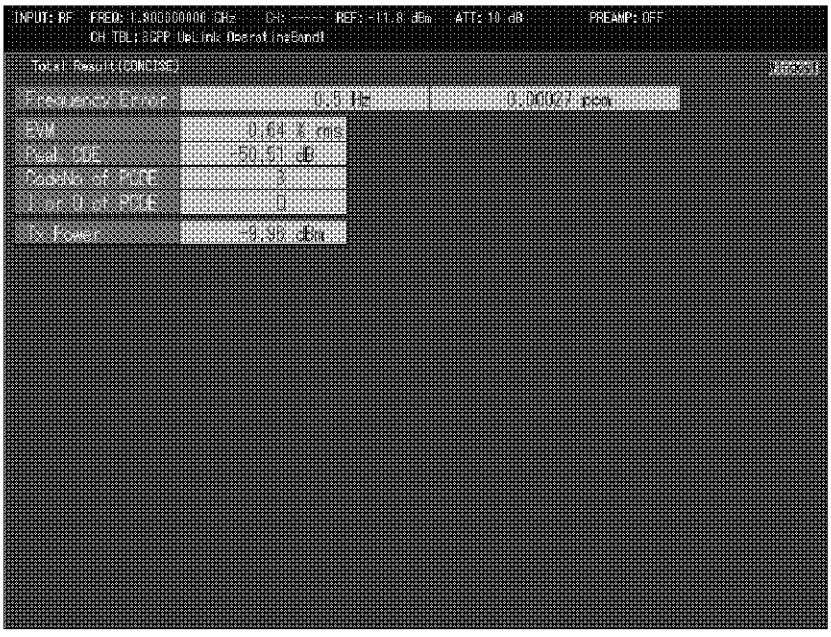


Figure 4-17 Concise Mode Measurement Results

Frequency Error	Carrier frequency error (Hz, ppm)
EVM	Error Vector Magnitude (%rms)
Peak CDE	Peak code domain error (dB)
Code No. of PCDE	Code number of the Peak CDE

I or Q of PCDE	I or Q of the Peak CDE
Tx Power	Transmission power (dBm)

4.2.2 3GPP Mobile Station Signal Measurements Using the Code Domain Mode

The Code Domain Power etc. can be measured by using the Code Domain Mode. The following shows the measurement examples:

Connection

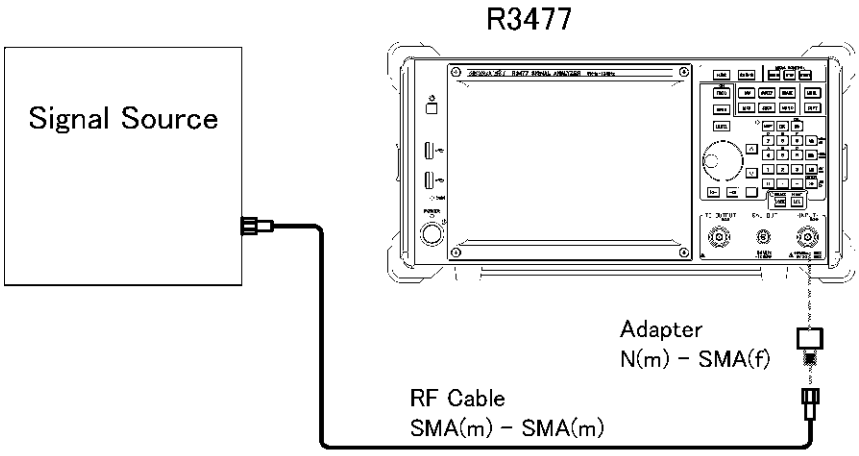


Figure 4-18 Connection Diagram Using the Code Domain Mode

Measurement condition setting

1. Press the **CONFIG** key.
2. Touch the **STD Setup** key and select **[3GPP UL]**.
3. Touch the **Apply** key to apply all selected items.
4. Touch the **Tx Tester** key and select Tx Tester.
5. Press **FREQ**, **Center**, **1**, **.**, **9**, and **GHz**.
   The center frequency is set to 1.9 GHz.
6. Press the **FUNC** key and select **Modulation**.
7. Touch the **Auto Level Set** key.
   Ref Level is automatically set to the optimum value.

8. Touch **Trigger**, **Trigger Source**, and **Free Run**.
   The trigger source is set to the internal trigger.

9. Touch the **Return** key twice to return to the Modulation menu.

10. Touch **Meas Mode** and **Code Domain**.
    The measurement mode is set to the Code Domain mode.

11. Touch the **Return** key to return to the Modulation menu.

12. Touch the **Meas Setup** key.

13. Touch the **Meas Parameters** key.
    The **[Measurement Parameters Setup]** dialog box appears.

14. Touch the **[Scrambling Code No.]** text box and press **1** and **Hz** (ENTER) on the keypad.
    The Scrambling Code number is set to 1.

15. Touch the **[Excluding chips in slot boundary]** text box and press **9**, **6**, and **Hz** (ENTER) on the keypad.
    The length of the chips in the first and last parts of the slot, which are excluded from the measurement range, is set to "96 chips".

16. Touch the **[Threshold]** text box and press **-**, **3**, **0** and **GHz** (dB) on the keypad.
    The Threshold level is set to -30 dB.

17. Set the **[Analysis Rate]** option button to **[15 ksps]**.
    The symbol rate to be analyzed is set to 15 ksps.

18. Set the **[Meas Length]** option button to **[1 FRAME]**.
    The Measurement length is set to 1 frame.

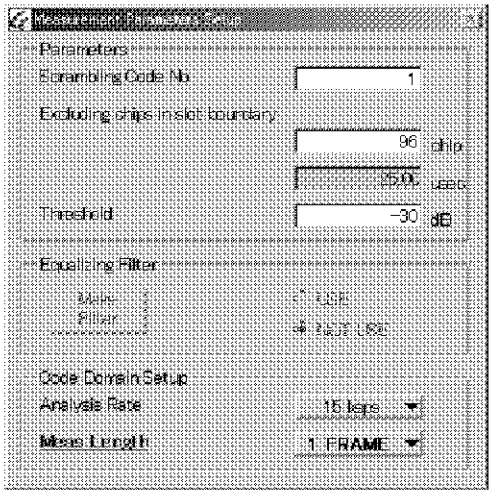


Figure 4-19 **[Measurement Parameters Setup]** Dialog Box

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

20. Push the **SINGLE** button on the front panel.
    The Single measurement is executed, and the measurement results are displayed.

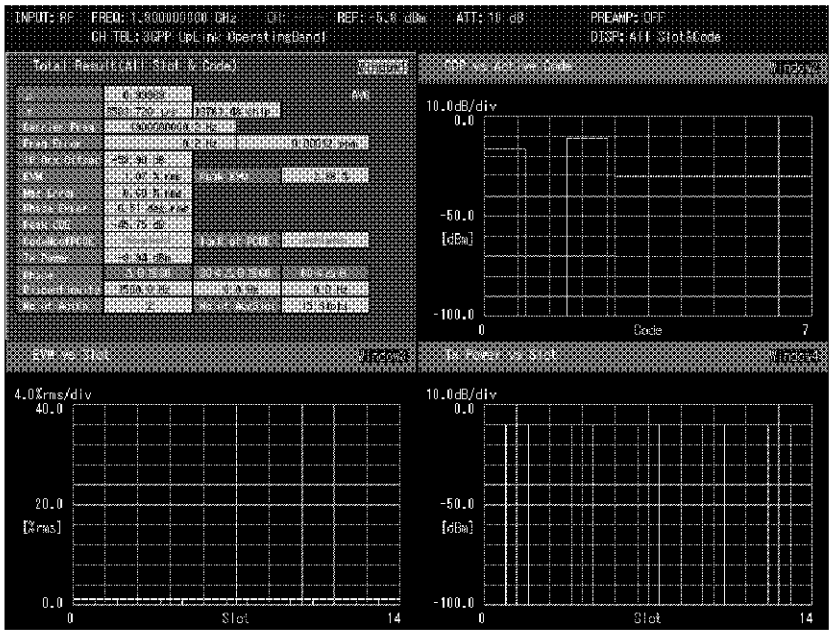


Figure 4-20 Code Domain Mode Measurement Results

4.2.3 EVM Measurement of the DUT by Using the Equalizing Filter

The EVM of the DUT such as amplifiers or filters can be measured with the cancellation of the signal source frequency characteristics by using the Equalizing Filter function. An example, which is measured by using the Equalizing Filter function is shown below.

Connection

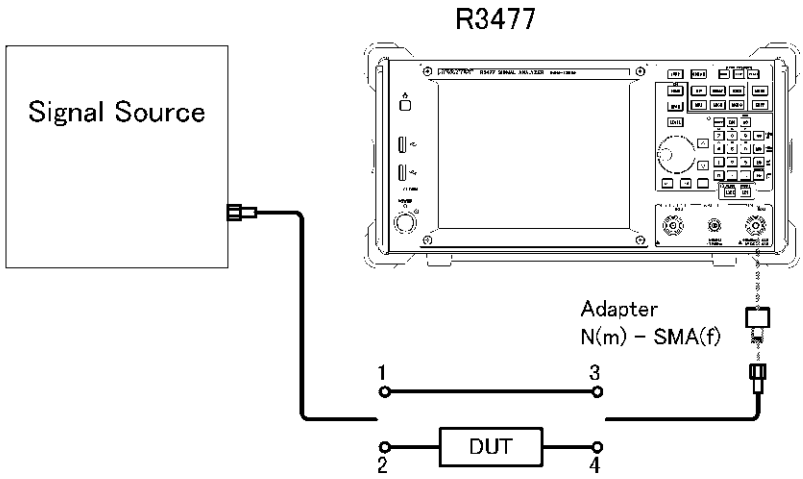


Figure 4-21 Connection Diagram Using the Equalizing Filter

Measurement condition setting

1. Connect the instruments to the 1-3 path.
2. Press the **CONFIG** key.
3. Touch the **STD Setup** key and select **[3GPP UL]**.
4. Touch the **Apply** key to apply all selected items.
5. Touch the **Tx Tester** key and select Tx Tester.
6. Press **FREQ**, **Center**, **1**, **.**, **9**, and **GHz**.
   The center frequency is set to 1.9 GHz.
7. Press the **FUNC** key and select **Modulation**.
8. Touch the **Auto Level Set** key.
   Ref Level is automatically set to the optimum value.
9. Touch **Trigger**, **Trigger Source**, and **Free Run**.
   The trigger source is set to the internal trigger.

10. Touch the **Return** key twice to return to the Modulation menu.
11. Touch **Meas Mode** and **Code Domain**.
    The measurement mode is set to the Code Domain mode.
12. Touch the **Return** key to return to the Modulation menu.
13. Touch the **Meas Setup** key.
14. Touch the **Meas Parameters** key.
    The **[Measurement Parameters Setup]** dialog box appears.
15. Touch the **[Scrambling Code No.]** text box and press **1** and **Hz** (ENTER) on the keypad.
    The Scrambling Code number is set to 1.
16. Touch the **[Excluding chips in slot boundary]** text box and press **9**, **6**, and **Hz** (ENTER) on the keypad.
    The length of the chips in the first and last parts of the slot, which are excluded from the measurement range, is set to "96 chips".
17. Touch the **[Threshold]** text box and press **-**, **3**, **0** and **GHz** (dB) on the keypad.
    The Threshold level is set to -30 dB.
18. Set the **[Analysis Rate]** option button to **[15 ksps]**.
    The symbol rate to be analyzed is set to 15 ksps.
19. Set the **[Meas Length]** option button to **[1 FRAME]**.
    The Measurement length is set to 1 frame.

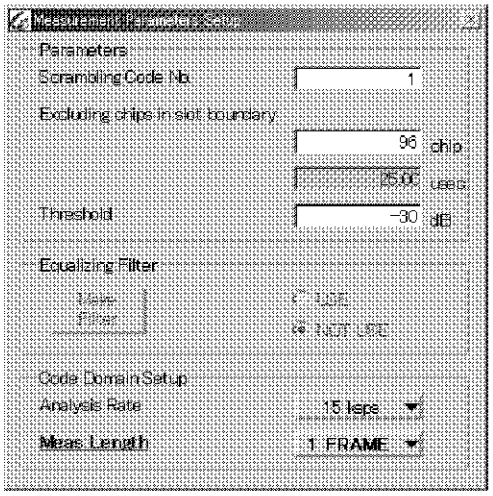


Figure 4-22 **[Measurement Parameters Setup]** Dialog Box

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

21. Push the **SINGLE** button on the front panel.

    The Single measurement is executed, and the measurement results are displayed. Verify that the EVM in the upper left window (Total Result) is 17.5% or less.

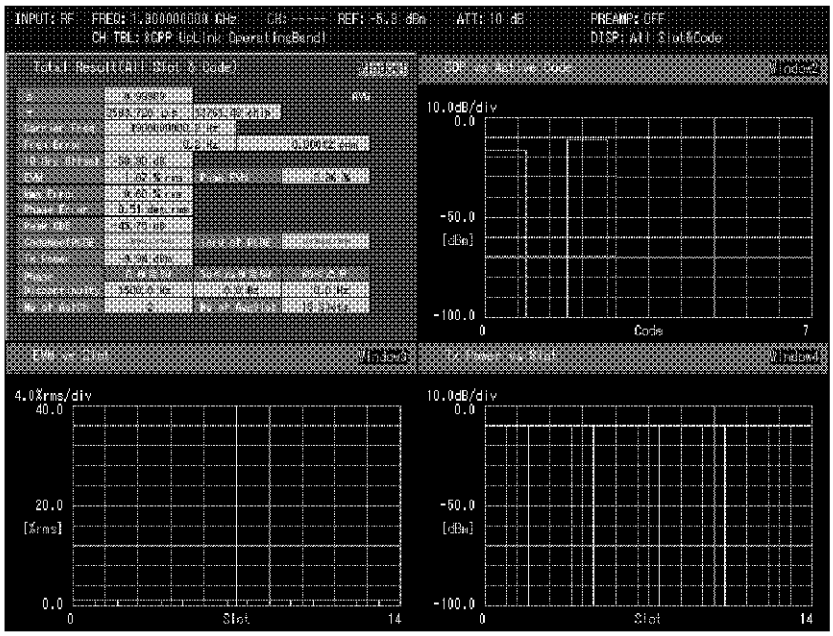


Figure 4-23 Measurement Results of the Code Domain Mode

22. Touch the **Meas Parameters** key.

    The **[Measurement Parameters Setup]** dialog box appears.

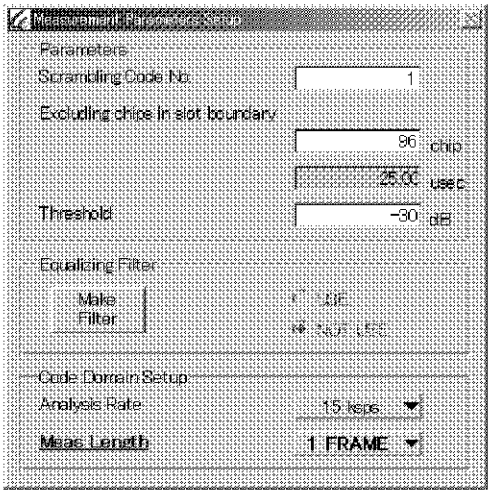


Figure 4-24 **[Measurement Parameters Setup]** Dialog Box

23. Press the **[Make Filter]** button.

    The Equalizing Filter coefficient is created.

24. Connect the instruments to the 2-4 path.
25. Touch the **[USE]**.
    The mode, which uses the Equalizing Filter coefficient, is set.
26. Touch the **Close** key to close the dialog box.
27. Push the **SINGLE** button on the front panel.
    The Single measurement is executed, and the measurement results of the DUT, which are processed by the Equalizer, are displayed.

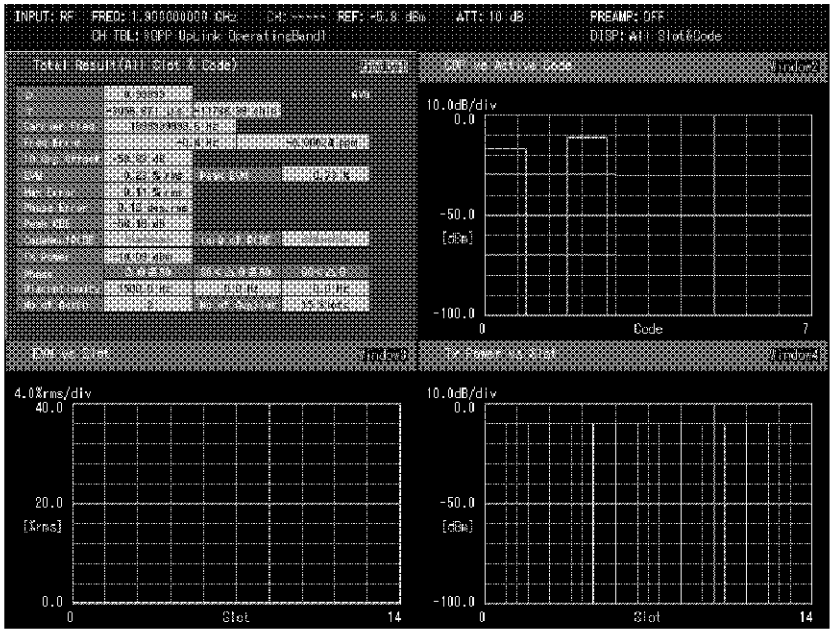


Figure 4-25 Measurement Results of the DUT

Upper left window

ρ	Waveform quality
τ	Delay (μs, chip)
Carrier Freq	Carrier frequency (Hz)
Freq Error	Carrier frequency error (Hz, ppm)
IQ Org Offset	IQ origin offset (dB)
EVM	Error Vector Magnitude (%rms)
Peak EVM	Peak Error Vector Magnitude (%)
Mag. Error	Magnitude error (%rms)
Phase Error	Phase error (deg.rms)
Peak CDE	Peak Code Domain Error (dB)
Code No. of PCDE	Code number of the Peak CDE

I or Q of PCDE	I or Q of the Peak CDE
Tx Power	Transmission power (dBm)
Phase Discontinuity	Discontinuity between the slots (Hz)
No. of ActCh	Number of active channels
No. of Avg Slot	Number of average slot (Slots)

Upper right window

Horizontal axis - Code

Vertical axis - Code Domain Power (dBm)

Lower left window

Horizontal axis - Slot

Vertical axis - Error Vector Magnitude (%rms)

Lower right window

Horizontal axis - Slot

Vertical axis - Transmission power (dBm)

4.3 QPSK Signal Measurement

Signal Specifications

The measured signal is output with the following specifications.

Table 4-3 Signal Specifications

Carrier frequency	1.9 GHz
Level	-10 dBm
Modulation format	QPSK
Transmission filter	Root Nyquist filter with a roll-off factor of 0.22
Chip rate	3.84 Mcps

4.3.1 QPSK Signal Measurements Using the QPSK Mode

If the QPSK mode is used, Error Vector Magnitude can be measured.

The following shows an example of the QPSK signal measurement that is performed when the measurement length is set to 2560 chips:

Connection

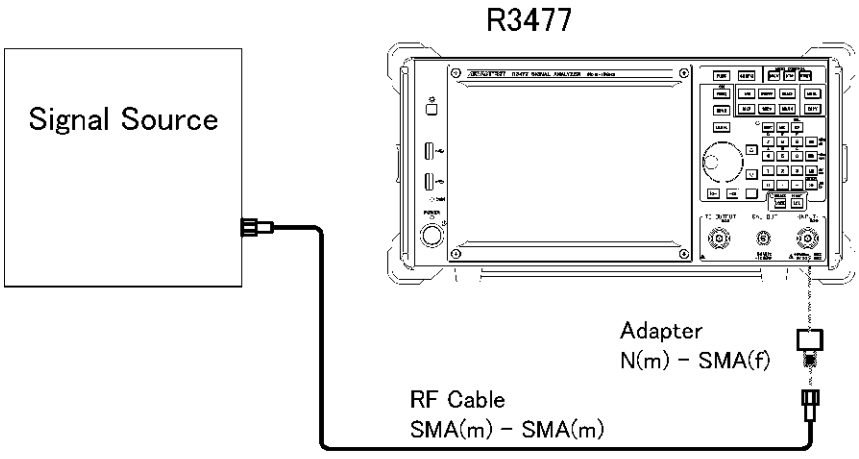


Figure 4-26 Connection Diagram Using the QPSK Mode

Measurement condition setting

1. Press the **CONFIG** key.

2. Touch the **STD Setup** key and select **[3GPP UL]**.
3. Touch the **Apply** key to apply all selected items.
4. Touch the **Tx Tester** key and select Tx Tester.
5. Press **FREQ**, **Center**, **1**, **.**, **9**, and **GHz**.
   The center frequency is set to 1.9 GHz.
6. Press the **FUNC** key and select **Modulation**.
7. Touch the **Auto Level Set** key.
   Ref Level is automatically set to the optimum value.
8. Touch **Trigger**, **Trigger Source**, and **Free Run**.
   The trigger source is set to the internal trigger.
9. Touch the **Return** key twice to return to the Modulation menu.
10. Touch **Meas Mode** and **QPSK**.
    The measurement mode is set to the QPSK mode.
11. Touch the **Return** key to return to the Modulation menu.
12. Touch the **Meas Setup** key.
13. Touch the **Meas Parameters** key.
    The **[Measurement Parameters Setup]** dialog box appears.
14. Set the **[Single Type]** option button to **[QPSK]**.
    The modulation format to be analyzed is set to QPSK.
15. Touch the **[Meas Length]** text box and press **2**, **5**, **6**, **0**, and **Hz** (ENTER) on the keypad.
    The measurement length is set to 2560 chips.
16. Touch **[ON]** of **[Root Nyquist Filter]**.
    The mode, in which the analysis is performed by using the Root Nyquist filter, is set.
17. Set the **[IQ Origin Offset]** option button to **[INCLUDE]**.
    The mode, in which the analysis is performed including the IQ origin offset, is set.

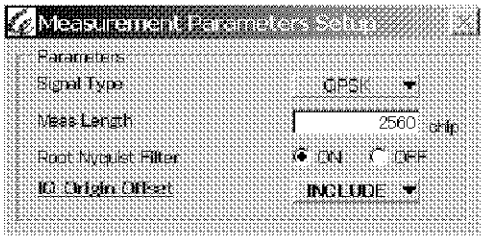


Figure 4-27 **[Measurement Parameters Setup]** Dialog Box

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

19. Push the **SINGLE** button on the front panel.
The Single measurement is executed, and the measurement results are displayed.

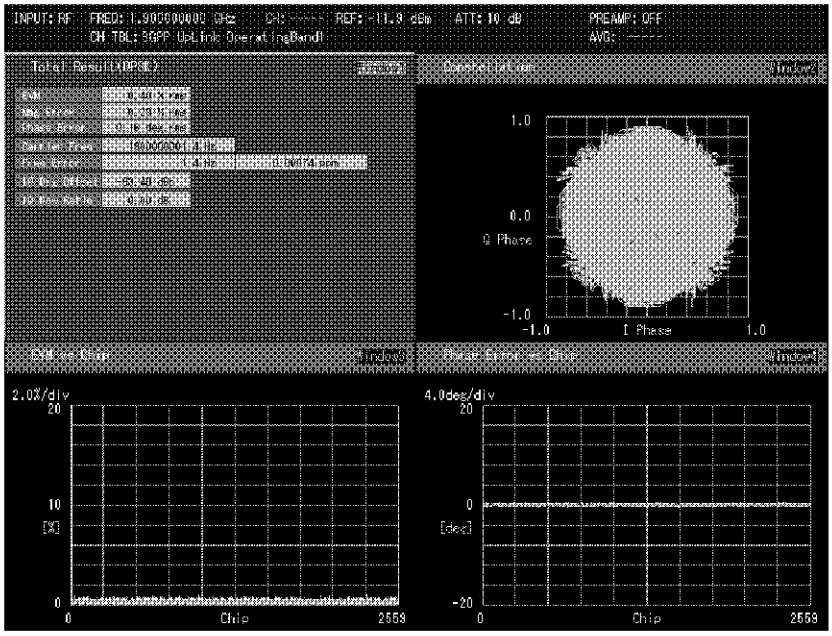


Figure 4-28 QPSK Mode Measurement Results

Upper left window

EVM	Error vector magnitude (%rms)
Mag. Error	Magnitude error (%rms)
Phase Error	Phase error (deg.rms)
Carrier Freq	Carrier frequency (Hz)
Freq Error	Carrier frequency error (Hz, ppm)
IQ Org Offset	IQ origin offset (dB)
IQ Power Ratio	IQ power ratio (dB)

Upper right window

Constellation

Lower left window

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

Lower right window

Horizontal axis - Chip
Vertical axis - Phase error (deg.)

5. MENU MAP, FUNCTIONAL EXPLANATION

This chapter describes the configurations and functions of the soft keys displayed on the touch screen of the 3GPP (HSDPA) analysis option.

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.

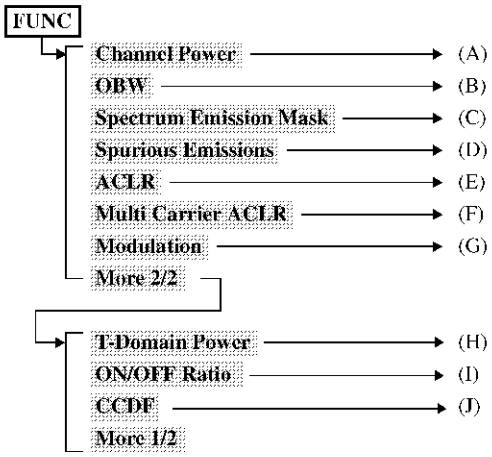
Select the communication system, which is used for measuring from the dialog box that is displayed by pressing **STD Setup**.

5.3 Key Function Descriptions

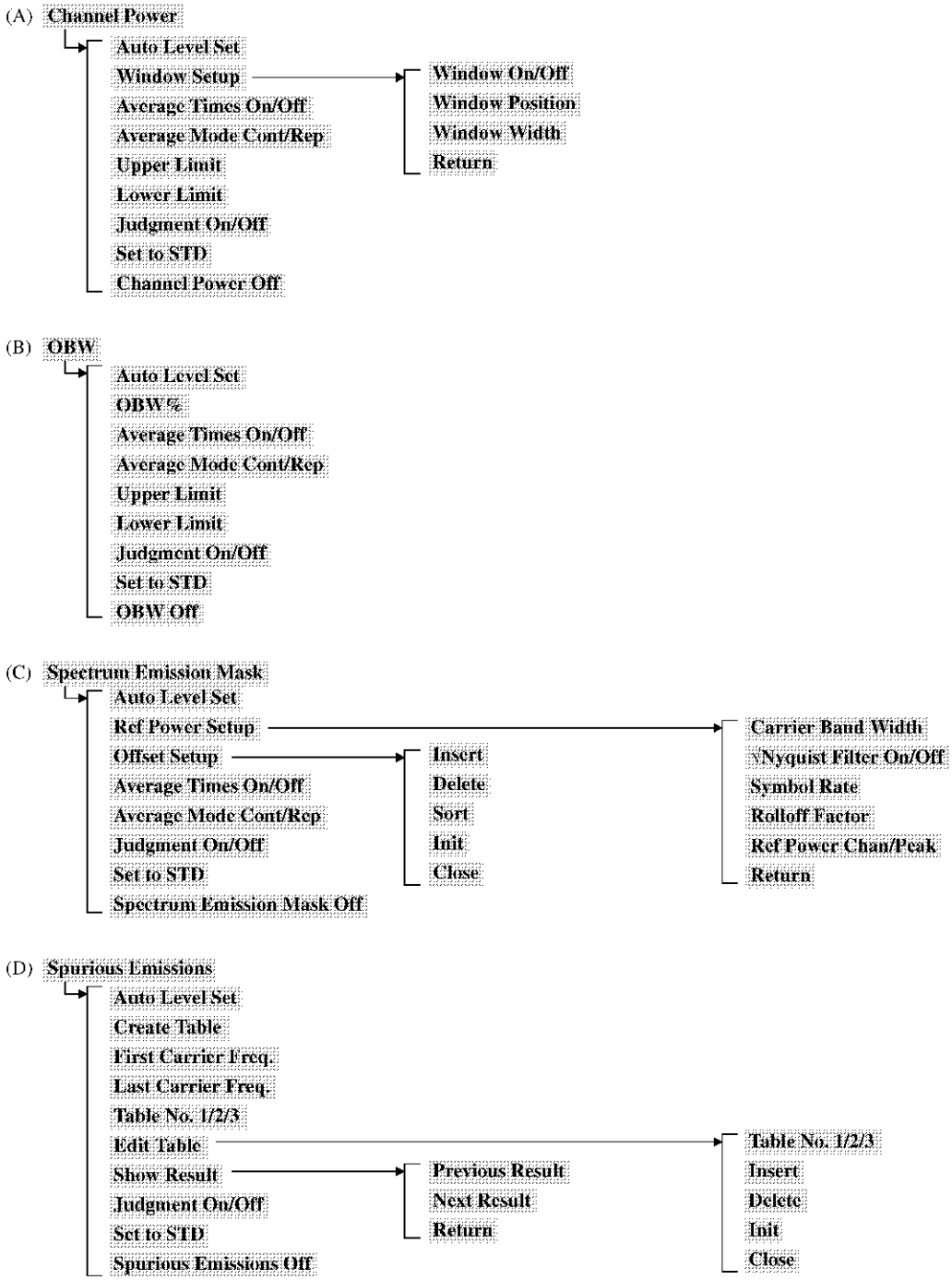
This section describes the function of each key.

5.3.1 FUNC

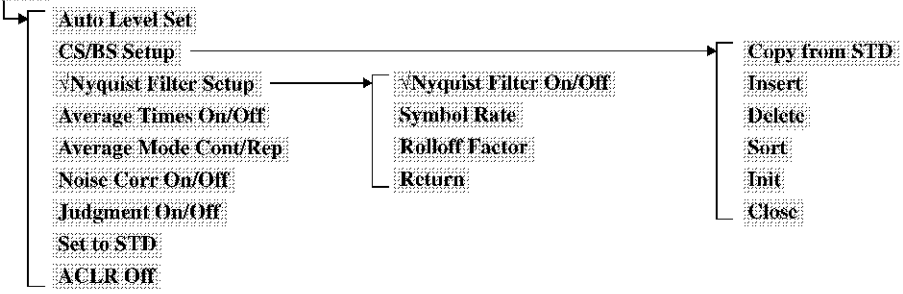
Pressing the **FUNC** key displays the Function menu from which measurement functions can be selected. The following shows the Function menu map:



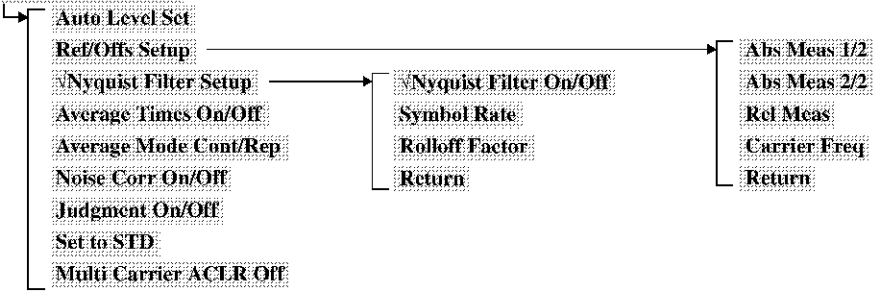
5.3.1 FUNC


(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
Table No. 1/2/3
Insert
Delete
Init
Close
Show Result
Previous Result
Next Result
Return
Judgment On/Off
Set to STD
Spurious Emissions Off

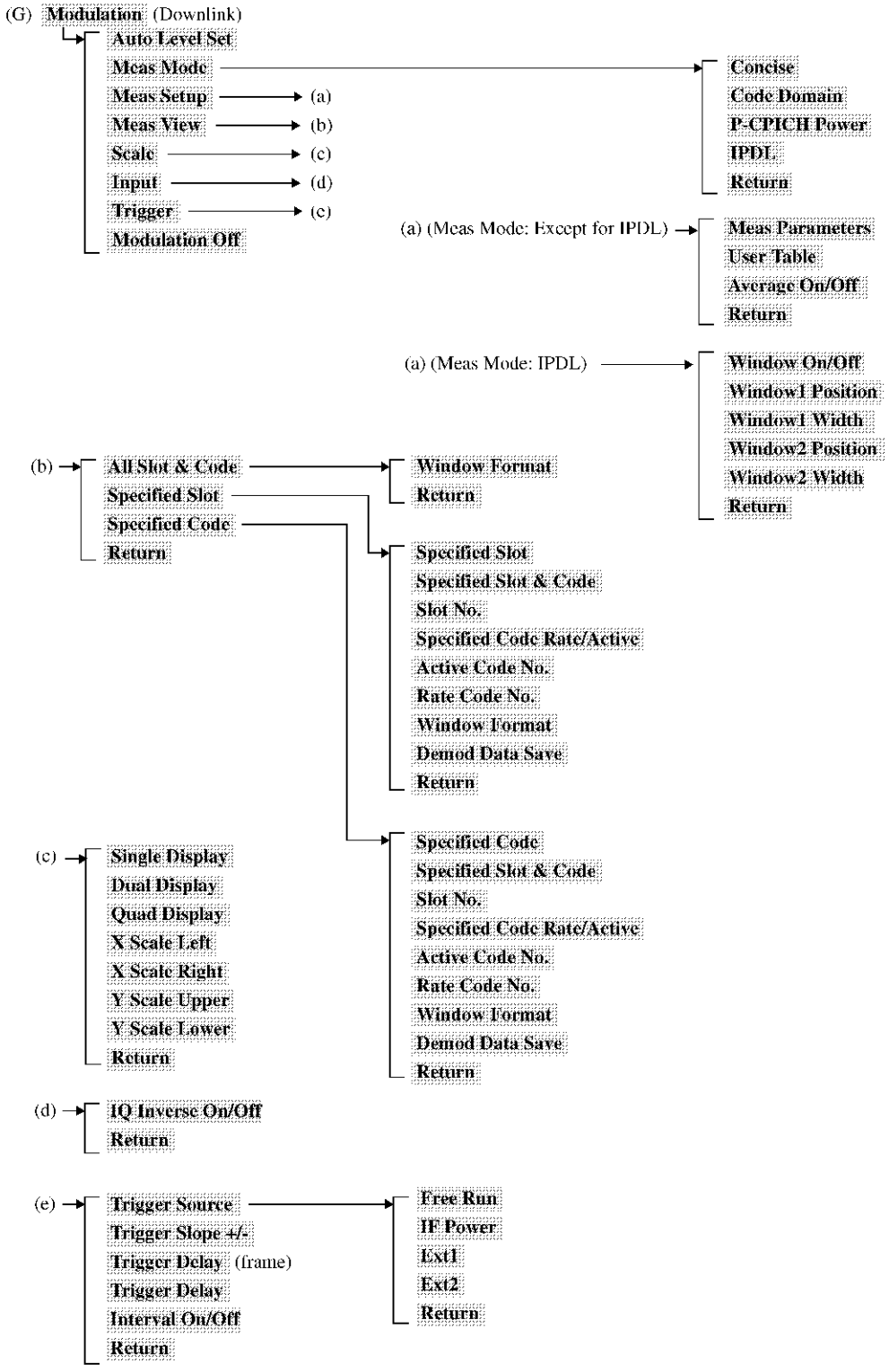
(E) **ACLR**

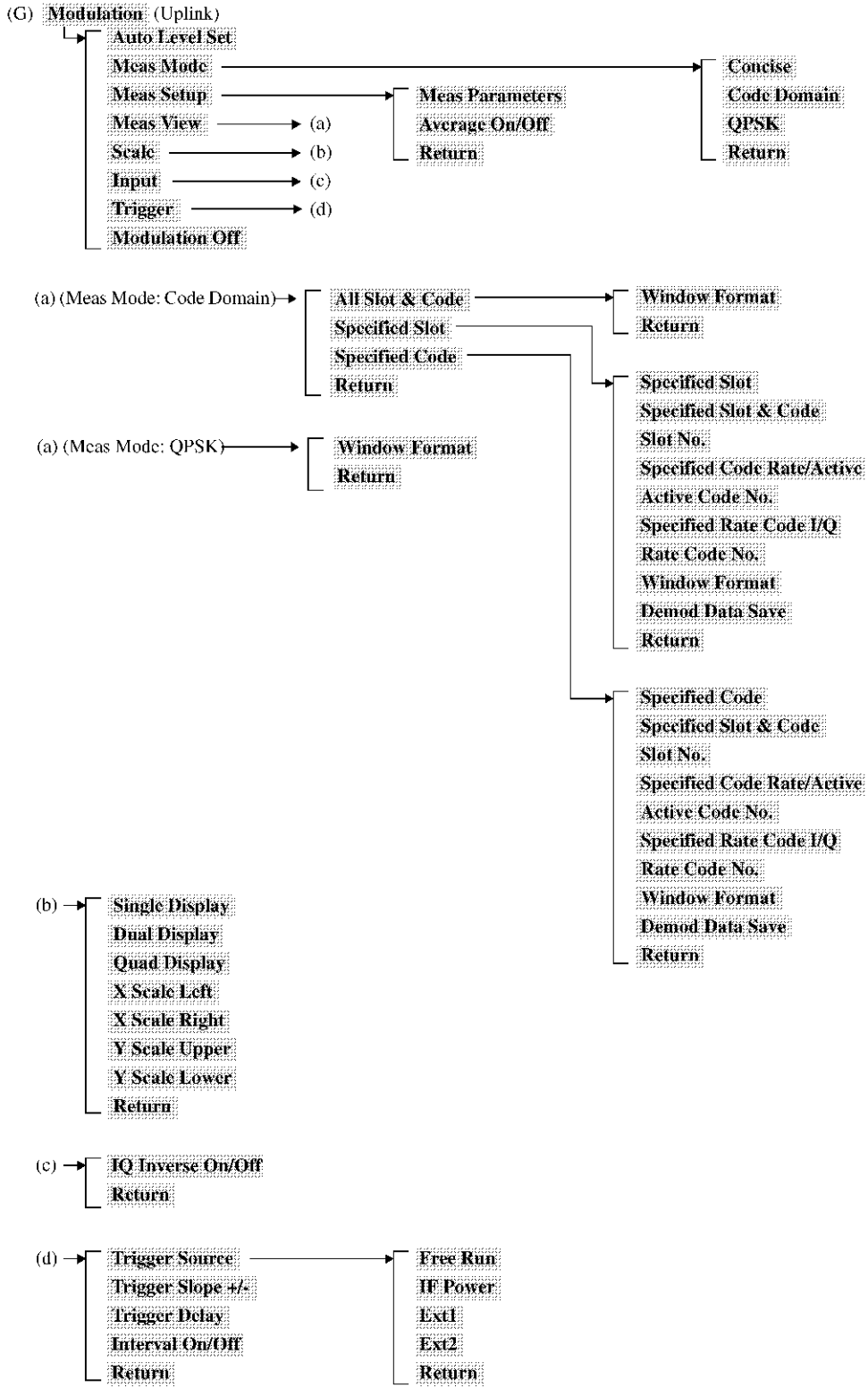


(F) **Multi Carrier ACLR**

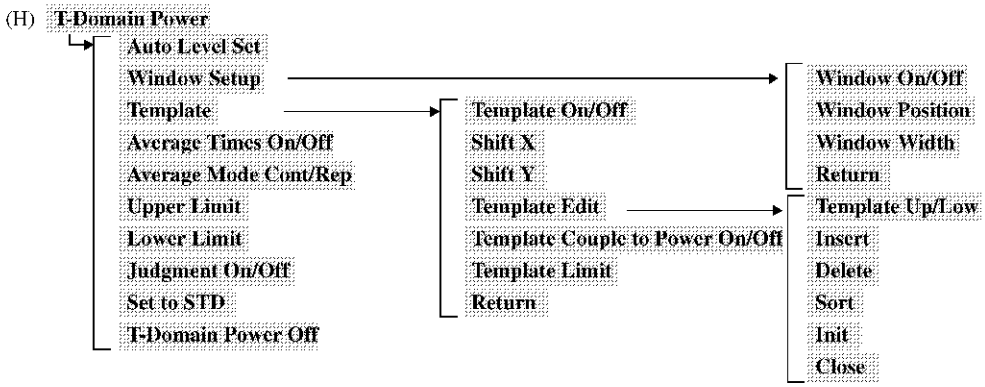


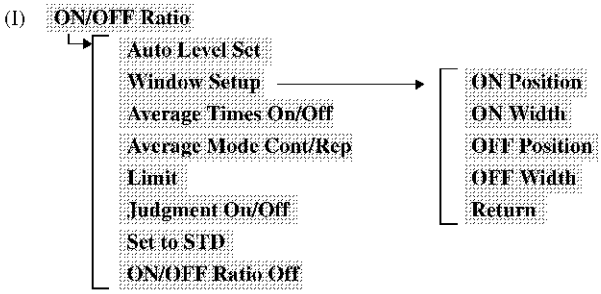
5.3.1 FUNC

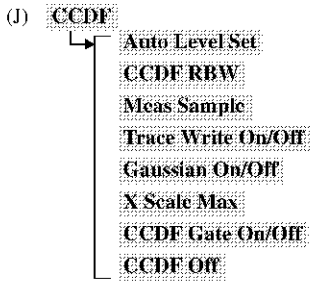

(G) Modulation (Downlink)
Auto Level Set
Meas Mode
Meas Setup
Meas View
Scale
Input
Trigger
Modulation Off
(a)
(b)
(c)
(d)
(e)
Concise
Code Domain
P-CPICH Power
IPDL
Return
(a) (Meas Mode: Except for IPDL)
Meas Parameters
User Table
Average On/Off
Return
(a) (Meas Mode: IPDL)
Window On/Off
Window1 Position
Window1 Width
Window2 Position
Window2 Width
Return
(b)
All Slot & Code
Specified Slot
Specified Code
Return
Window Format
Return
Specified Slot
Specified Slot & Code
Slot No.
Specified Code Rate/Active
Active Code No.
Rate Code No.
Window Format
Demod Data Save
Return
Specified Code
Specified Slot & Code
Slot No.
Specified Code Rate/Active
Active Code No.
Rate Code No.
Window Format
Demod Data Save
Return
(c)
Single Display
Dual Display
Quad Display
X Scale Left
X Scale Right
Y Scale Upper
Y Scale Lower
Return
(d)
IQ Inverse On/Off
Return
(e)
Trigger Source
Trigger Slope +/-
Trigger Delay (frame)
Trigger Delay
Interval On/Off
Return
Free Run
IF Power
Ext1
Ext2
Return


(G) Modulation (Uplink)
Auto Level Set
Meas Mode
Meas Setup
Meas View
Scale
Input
Trigger
Modulation Off
(a)
(b)
(c)
(d)
Meas Parameters
Average On/Off
Return
Concise
Code Domain
QPSK
Return
(a) (Meas Mode: Code Domain)
All Slot & Code
Specified Slot
Specified Code
Return
Window Format
Return
Specified Slot
Specified Slot & Code
Slot No.
Specified Code Rate/Active
Active Code No.
Specified Rate Code I/Q
Rate Code No.
Window Format
Demod Data Save
Return
Specified Code
Specified Slot & Code
Slot No.
Specified Code Rate/Active
Active Code No.
Specified Rate Code I/Q
Rate Code No.
Window Format
Demod Data Save
Return
(a) (Meas Mode: QPSK)
Window Format
Return
(b)
Single Display
Dual Display
Quad Display
X Scale Left
X Scale Right
Y Scale Upper
Y Scale Lower
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


(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
Average Times On/Off
Average Mode Cont/Rep
Limit
Judgment On/Off
Set to STD
ON/OFF Ratio Off
ON Position
ON Width
OFF Position
OFF Width
Return


(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 the 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 the 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.

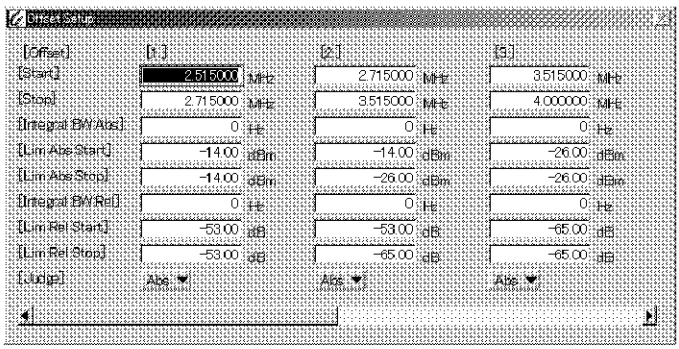
Ref Power Chan/Peak Switches the calculation mode of the reference power between the Channel mode and the Peak Power mode.

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 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 value. 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 set 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 Emission 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 settings in the table do not change.
The contents of Table No.1 is created according to Category A.
The contents of Table No.2 is 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.

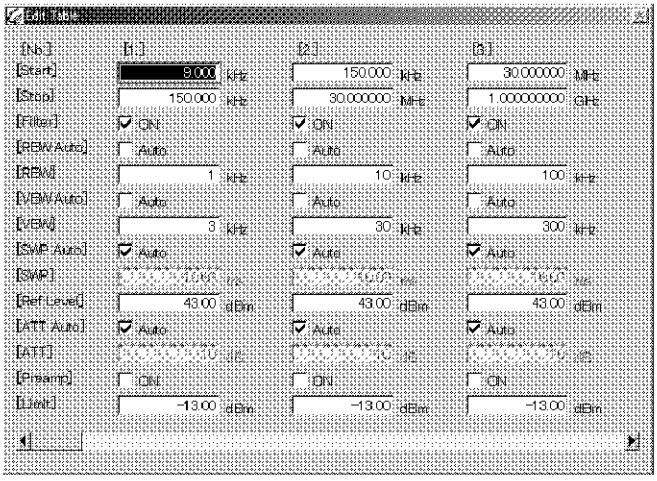


Table No. 1/2/3

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 vertical 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

Closes the measurement result window and 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

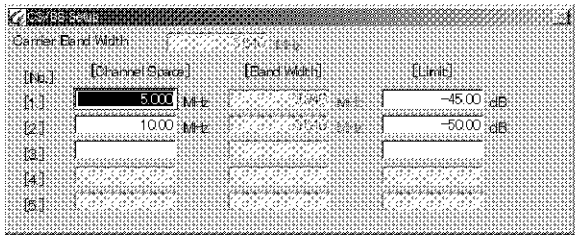
Quits the Spurious Emissions measurement function.

5.3.1.5 ACLR

ACLR — Displays the ACLR 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 the 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 the 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 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 a 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.

ACLR Off Quits the ACLR measurement function.

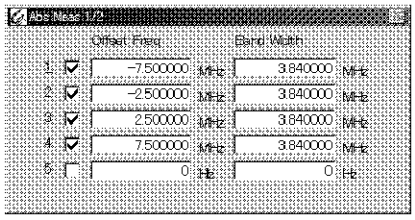
5.3.1.6 MULTI CARRIER ACLR

Multi Carrier ACLR Displays the Multi Carrier ACLR 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.

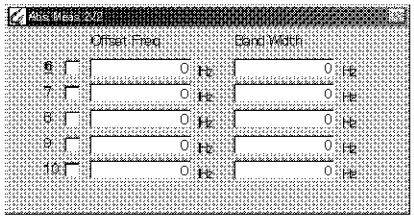
Ref/Offs Setup Displays the Ref/Offs Setup menu.

Abs Meas 1/2 Displays the **[Abs Meas 1/2]** dialog box. Sets the offset frequency and bandwidth of the reference carrier. Set 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]**.



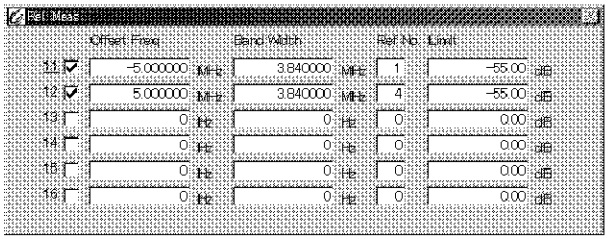
Close Closes the dialog box and returns to the previous menu.

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



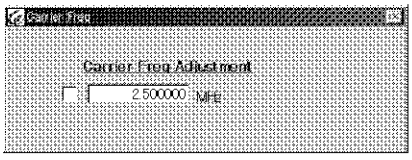
Close Closes the dialog box and returns to the previous menu.

Rel Meas Displays the **[Rel Meas]** dialog box. The frequencies and bandwidths of up to six waves in the frequency range in which ACLR is measured can be set. The frequency to be measured is set 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 that is used as the reference in Multi Carrier ACLR 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 the 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 the 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 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 ACLR Off Quits the Multi Carrier ACLR measurement function.

5.3.1.7 MODULATION (Downlink)

Modulation Displays the Modulation menu.

Auto Level Set Sets the reference level to its optimum value according to the measured signal. When the key is pressed, Auto Level Set is executed.

IMPORTANT: While Auto Level Set is being executed, the level of the measured signal must remain constant.

Meas Mode Displays the menu related to the selection of the measurement mode.

Concise If the **Concise** key is touched, the Concise mode is set. In the Concise mode, a single slot of the signal, which is multiplexed up to 4 carriers, is analyzed for each carrier and the numerical results are displayed.

MEMO: In the Concise mode, the multi carriers can be measured for the same AD data. This mode is suitable for the high-speed measurement to obtain the numerical results.

Code Domain If the **Code Domain** key is touched, the Code Domain mode is set. In the Code Domain mode, up to 4 frames are analyzed for a single carrier and the numerical results and the graphs are displayed.

MEMO: The analysis in the Concise mode can be performed in detail than in the Multi-Carrier mode.

P-CPICH Power If the **P-CPICH Power** key is touched, the P-CPICH Power mode is set. In the P-CPICH power mode, the P-CPICH power of up to four frames is measured for a single carrier and the numerical result is displayed.

MEMO: The P-CPICH power mode is suitable when the P-CPICH power is measured at high speed.

IPDL If the **IPDL** key is touched, the IPDL time mask measurement mode is set. Specifies the transmission ON and OFF periods on the time-axis (unit: Chip), and displays the average power in each period and the ratio between the average powers.

Return Returns to the previous menu.

Meas Setup Displays the menu in which the analysis parameters are set.

a) When **Concise** or **Code Domain** is selected as **Meas Mode**.

Meas Parameters If the **Meas Parameters** key is touched, the dialog box used to set the measurement conditions is displayed.

[Setup Carrier] Selects the carrier for which the measurement conditions are set.

1st Carrier:
Sets the measurement conditions for the 1st carrier.

2nd Carrier:
Sets the measurement conditions for the 2nd carrier.

3rd Carrier:
Sets the measurement conditions for the 3rd carrier.

4th Carrier:
Sets the measurement conditions for the 4th carrier.

[Meas Band Width] Selects the bandwidth to be measured.

Single Carrier: Measures signals in the specified carrier bandwidth.

Multi Carrier: Measures signals in the four-carrier bandwidth.

MEMO: **[Multi Carrier]** *is used when two or more carriers are measured for the same AD data.*
|Single Carrier| *is used when a specified carrier is measured.* **[Single Carrier]** *is ideal for when a signal includes only one carrier or the carrier power is smaller than that of other carriers.*

[Parameters] Sets the measurement conditions for the carrier specified by **[Setup Carrier]**.

[Carrier Frequency Offset]
Sets the offset frequency from the center frequency. Can be set between -10 MHz and 10 MHz in step of 100 kHz.

[Scrambling Code Define]
Selects the detection method of the Scrambling Code number.

DEFINE: Sets the Scrambling Code number.

UNDEFINE:
Automatically detects the Scrambling Code number.

MEMO: *If the* **[Scrambling Code Define]** *is set to* **[UNDEFINE]**, *the Scrambling Code number is automatically detected. P-SCH and S-SCH are used to detect the Scrambling Code number. If P-SCH and S-SCH are not multiplexed, measurements cannot be performed even if* **|UNDEFINE|** *is set. If 00,10,20, ... or 1FF0[HEX] is used as the Scrambling Code number, measurements can be performed.*

[Scrambling Code Format]
Selects the format to set the Scrambling Code number.

HEX: Sets in hexadecimal format.

DEC(×16): Separates the scrambling code number between a code number and offset, and sets them to decimal format.

DEC(=HEX): Sets to decimal format.

[Scrambling Code No. (Hex)]
Sets the Scrambling Code number in hexadecimal.
Valid when **[Scrambling Code Format]** is set to **[HEX]**.

[Scrambling Code No.]
Sets the quotient, which is the result of dividing the Scrambling Code number by 16, to decimal format when the **[Scrambling Code Format]** is set to **[DEC(×16)]**.
Sets the Scrambling Code number to decimal format when the **[Scrambling Code Format]** is set to **[DEC(=HEX)]**.

[Scrambling Code Offset]
Sets the remainder, which is the result of dividing the Scrambling Code number by 16, in decimal format. Valid when the **[Scrambling Code Format]** is set to **[DEC(×16)]**.

[Search Mode] Selects the method used to complete the synchronization.

SCH: Synchronizes by using SCH.

P-CPICH:Synchronizes by using P-CPICH.

MEMO: *If* **[Scrambling Code Define]** *is set to* **[UNDEFINE]**, **[Search Mode]** *is set to* **[SCH]**.

[Active CH Detection]
Selects the detection method of the active channel.

Auto Detection:
Automatically detects the active channel information.

TestModel1 DPCH16codes:
Uses the active channel information of the TestModel1 DPCH16codes which complies with the TS25.141 Standard.

TestModel1 DPCH32codes:
Uses the active channel information of the TestModel1 DPCH32codes which complies with the TS25.141 Standard.

TestModel1 DPCH64codes:
Uses the active channel information of the TestModel1 DPCH64codes which complies with the TS25.141 Standard.

TestModel2:
Uses the active channel information of the TestModel2 which complies with the TS25.141 Standard.

TestModel3 DPCH16codes:
Uses the active channel information of the TestModel3 DPCH16codes which complies with the TS25.141 Standard.

TestModel3 DPCH32codes:
Uses the active channel information of the TTestModel3 DPCH32codes which complies with the TS25.141 Standard.

TestModel4 PCPICH OFF:
Uses the active channel information of the TestModel4 (PCPICH OFF) which complies with the TS25.141 Standard.

TestModel4 PCPICH ON:
Uses the active channel information of the TestModel4 (PCPICH ON) which complies with the TS25.141 Standard.

TestModel5 DPCH6codes:
Uses the active channel information of the TestModel5 DPCH6codes which complies with the TS25.141 Standard.

TestModel5 DPCH14codes:
Uses the active channel information of the TestModel5 DPCH14codes which complies with the TS25.141 Standard.

TestModel5 DPCH30codes:
Uses the active channel information of the TestModel5 DPCH30codes which complies with the TS25.141 Standard.

User Table:
Sets the active channel information to the User Table.

[SCH] Selects whether to include the SCH portion, which consists of the first 256 chips of the P-CPICH slot, in the measurement range.

ON: Includes the SCH portion in the measurement.

OFF: Excludes the SCH portion from the measurement.

[Threshold] Sets the threshold level to determine the active channel. Can be set between - 5 dB and - 40 dB.

MEMO: ***The channel, whose Code Domain Power [dB] is less than the level set by*** **[Threshold]**, ***is determined that the transmission is not performed.***

[Equalizing Filter] Sets to make the Equalizing Filter and sets whether to use it.

[Make Filter] Makes the Equalizing Filter.

[USE] Uses the Equalizing Filter.

[NOT USE] Does not use the Equalizing Filter.

IMPORTANT: ***Sets the*** **[Parameters]** ***correctly when performing the*** **[Make Filter]**.

[Concise Setup] Sets the measurement condition that is used when the Concise mode is set.
Valid only when the **Meas Mode** is set to **Concise**.

[Meas Carrier] Sets which carrier that is set in Setup Carrier is measured. Valid only when Single Carrier is selected in **[Meas Band Width]**.

1st: Analyzes the 1st carrier.

2nd: Analyzes the 2nd carrier.

3rd: Analyzes the 3rd carrier.

4th: Analyzes the 4th carrier.

[Multi Carrier Number]
Sets the number of measured carriers. Can be set between 1 and 4. Valid when **[Meas Band Width]** is set to **[Multi Carrier]**.

[Code Domain Setup] Sets the measurement conditions in the **Code Domain** Mode. Valid only when the **Meas Mode** is set to the Code Domain.

[Meas Carrier] Selects the carrier used to perform the Code Domain analysis.

1st: Analyzes the 1st carrier.

2nd: Analyzes the 2nd carrier.

3rd: Analyzes the 3rd carrier.

4th: Analyzes the 4th carrier.

[Analysis Rate] Selects the symbol rate used to perform the Code Domain analysis.

7.5 ksps: Performs the Code Domain analysis at a symbol rate of 7.5 ksps.

15 ksps: Performs the Code Domain analysis at a symbol rate of 15 ksps.

30 ksps: Performs the Code Domain analysis at a symbol rate of 30 ksps.

60 ksps: Performs the Code Domain analysis at a symbol rate of 60 ksps.

120 ksps: Performs the Code Domain analysis at a symbol rate of 120 ksps.

240 ksps: Performs the Code Domain analysis at a symbol rate of 240 ksps.

480 ksps: Performs the Code Domain analysis at a symbol rate of 480 ksps.

960 ksps: Performs the Code Domain analysis at a symbol rate of 960 ksps.

MEMO: The results, which are analyzed at the symbol rate selected in the **[Analysis Rate]** *and analyzed at the active channel symbol rate, are displayed.*

[Meas Length] Selects the signal length used to perform the Code Domain analysis.

1SLOT: Performs the Code Domain analysis over the length of time of one slot.

1FRAME: Performs the Code Domain analysis over the length of time of one frame for each slot.

2FRAME: Performs the Code Domain analysis over the length of time of two frames for each slot.

3FRAME: Performs the Code Domain analysis over the length of time of three frames for each slot.

4FRAME: Performs the Code Domain analysis over the length of time of four frames for each slot.

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

User Table If the **User Table** key is touched, the dialog box used to set the active channel information is displayed.

[Setup Carrier] Selects a carrier.

1st Car: Selects the 1st carrier.

2nd Car: Selects the 2nd carrier.

3rd Car: Selects the 3rd carrier.

4th Car: Selects the 4th carrier.

[User Define Table] Sets the active channel information.

[Multi Channel No.] Sets the number of active channels.

[SF] Sets the SF of each channel which is set in the **[Multi Channel No.]**.

[Number] Sets the code number of each channel which is set in the **[Multi Channel No.]**.

[Modulation] Sets the modulation format of each channel which is set in the **[Multi Channel No.]**. Valid only when the **[SF]** is set to 16.

QPSK: Sets the modulation format to the QPSK.

16QAM: Sets the modulation format to the 16QAM.

IMPORTANT: ***If the SF or the code number is set to not fulfill the orthogonality between the different channels, an error occurs.***

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

b) When **P-CPICH Power** is selected as **Meas Mode**.

Meas Parameters If the **Meas Parameters** key is touched, the dialog box used to set the measurement conditions is displayed.

[Setup Carrier] Selects the carrier for which the measurement conditions are set.

1st Carrier:
Sets the measurement conditions for the 1st carrier.

2nd Carrier:
Sets the measurement conditions for the 2nd carrier.

3rd Carrier:
Sets the measurement conditions for the 3rd carrier.

4th Carrier:
Sets the measurement conditions for the 4th carrier.

[Parameters] Sets the measurement conditions for the carrier specified by **[Setup Carrier]**.

[Carrier Frequency Offset]
Sets the offset frequency from the center frequency. Can be set between -10 MHz and 10 MHz in step of 100 kHz.

[Scrambling Code Define]
Selects the detection method of the Scrambling Code number.

DEFINE: Sets the Scrambling Code number.

UNDEFINE:
Automatically detects the Scrambling Code number.

MEMO: ***If the [Scrambling Code Define] is set to [UNDEFINE], the Scrambling Code number is automatically detected. P-SCH and S-SCH are used to detect the Scrambling Code number. If P-SCH and S-SCH are not multiplexed, measurements cannot be performed even if [UNDEFINE] is set. If 00,10,20, ... or 1FF0[HEX] is used as the Scrambling Code number, measurements can be performed.***

[Scrambling Code Format]
Selects the format to set the Scrambling Code number.

HEX: Sets in hexadecimal format.

DEC(×16): Separates the scrambling code number between a code number and offset, and sets them to decimal format.

DEC(=HEX): Sets to decimal format.

[Scrambling Code No. (Hex)]
Sets the Scrambling Code number in hexadecimal.
Valid when **[Scrambling Code Format]** is set to **[HEX]**.

[Scrambling Code No.]
Sets the quotient, which is the result of dividing the Scrambling Code number by 16, to decimal format when the **[Scrambling Code Format]** is set to **[DEC(×16)]**.
Sets the Scrambling Code number to decimal format when the **[Scrambling Code Format]** is set to **[DEC(=HEX)]**.

[Scrambling Code Offset]
Sets the remainder, which is the result of dividing the Scrambling Code number by 16, in decimal format. Valid when the **[Scrambling Code Format]** is set to **[DEC(×16)]**.

[Search Mode] Selects the method used to complete the synchronization.

SCH: Synchronizes by using SCH.

P-CPICH:Synchronizes by using P-CPICH.

MEMO: *If* **[Scrambling Code Define]** *is set to* **[UNDEFINE], [Search Mode]** *is set to* **[SCH].**

[P-CPICH Power Setup]
Sets the measurement conditions in the P-CPICH Power Mode.

[Meas Carrier] Selects the carrier used to perform the analysis.

1st: Analyzes the 1st carrier.

2nd: Analyzes the 2nd carrier.

3rd: Analyzes the 3rd carrier.

4th: Analyzes the 4th carrier.

[Meas Length] Selects the signal length used to perform the Code Domain analysis.

1FRAME:
Performs the Code Domain analysis over the length of time of one frame for each slot.

2FRAME:
Performs the Code Domain analysis over the length of time of two frames for each slot.

3FRAME:
Performs the Code Domain analysis over the length of time of three frames for each slot.

4FRAME:
Performs the Code Domain analysis over the length of time of four frames for each slot.

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

Average On/Off Performs the averaging process.

On: Performs the averaging process the set number of times.

Off: Performs no averaging process.

MEMO: ***Max and Min, which are the maximum and minimum values of all the measurement results, display the largest and smallest values from the measurements***

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c) When **IPDL** is selected as **Meas Mode**.

Window On/Off Switches the window display, which shows the measuring period, On and Off.

On: Displays the window in the screen.

Off: Hides the window in the screen.

Window1 Position Sets the start position of the window that shows the period in which Power1 is measured.

Window1 Width Sets the window width that shows the period in which Power1 is measured.

Window2 Position Sets the start position of the window that shows the period in which Power2 is measured.

Window2 Width Sets the window width that shows the period in which Power2 is measured.

Return Returns to the previous menu.

Meas View Displays the menu in which the displayed screen is set.
Valid only when **Meas Mode** is set to **Code Domain**.

All Slot & Code If the **All Slot & Code** key is touched, the measurement results for all slots and all codes are displayed.

Window Format If the **Window Format** key is touched, the dialog box used to set the measurement result window is displayed.

[Window1] Sets the measurement result window located in the upper left when the 4-window display mode is set.

[Format] Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results of the analyzed multiplex signal.

CDP vs Code(dBm):
Displays the Code Domain Power [dBm] of each code on a graph.

CDP vs Code(dB):
Displays the Code Domain Power [dB] of each code on a graph.

EVM vs Slot:
Displays the Error Vector Magnitude of each slot on a graph.

Tx Power vs Slot:
Displays the Transmission Power of each slot on a graph.

SCH Power vs Slot:
Displays the SCH Power of each slot on a graph.

Carrier Frequency Error vs Slot:
Displays the Carrier Frequency Error of each slot on a graph.

PCDE vs Slot:
Displays the Peak Code Domain Error of each slot on a graph.

Active Channel List:
Displays a list of the measurement results of the transmission channels.

[Result Value Type]
Selects the process type of the numerical results. Valid only when the **[Format]** is set to **[Total Result]** or **[Active Channel List]**.

AVG: Displays the average value of the numerical results for each slot.

MAX: Displays the maximum value of the numerical results for each slot.

MIN: Displays the minimum value of the numerical results for each slot.

[Measurement Slot]
Selects the slot which performs the numerical process selected by the **[Result Value Type]**.

All: Processes all slots.

QPSK: Processes the slots in which the modulation format is set to the QPSK.

16QAM: Processes the slots in which the modulation format includes 16QAM.

MEMO: ***According to the 3GPP Standard (TS25.141), the specifications of the Error Vector Magnitude are different between the signal whose modulation format is set to the QPSK, and the signal which includes the 16QAM. Switch the display in accordance with the signal.***

[Window2] Sets the measurement result window located in the upper right when the 4-window display mode is set.

[Format] Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results of the analyzed multiplex signal.

CDP vs Code(dBm):
Displays the Code Domain Power [dBm] of each code on a graph.

CDP vs Code(dB):
Displays the Code Domain Power [dB] of each code on a graph.

EVM vs Slot:
Displays the Error Vector Magnitude of each slot on a graph.

Tx Power vs Slot:
Displays the Transmission Power of each slot on a graph.

SCH Power vs Slot:
Displays the SCH Power of each slot on a graph.

Carrier Frequency Error vs Slot:
Displays the Carrier Frequency Error of each slot on a graph.

PCDE vs Slot:
Displays the Peak Code Domain Error of each slot on a graph.

Active Channel List:
Displays a list of the measurement results of the transmission channels.

[Result Value Type]
Selects the process type of the numerical results. Valid only when the **[Format]** is set to **[Total Result]** or **[Active Channel List]**.

AVG: Displays the average value of the numerical results for each slot.

MAX: Displays the maximum value of the numerical results for each slot.

MIN: Displays the minimum value of the numerical results for each slot.

[Measurement Slot]
Selects the slot which performs the numerical process selected by the **[Result Value Type]**.

All: Processes for all slots.

QPSK: Processes for the slots in which the modulation format is set to the QPSK.

16QAM: Processes the slots in which the modulation format includes 16QAM.

MEMO: ***According to the 3GPP Standard (TS25.141), the specifications of the Error Vector Magnitude are different between the signal of which the modulation format is set to the QPSK, and the signal which includes the 16QAM. Switch the display in accordance with the signal.***

[Window3] Sets for the measurement result window located in the lower left when the 4-window display mode is set.

[Format] Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results of the analyzed multiplex signal.

CDP vs Code(dBm):
Displays the Code Domain Power [dBm] of each code on a graph.

CDP vs Code(dB):
Displays the Code Domain Power [dB] of each code on a graph.

EVM vs Slot:
Displays the Error Vector Magnitude of each slot on a graph.

Tx Power vs Slot:
Displays the Transmission Power of each slot on a graph.

SCH Power vs Slot:
Displays the SCH Power of each slot on a graph.

Carrier Frequency Error vs Slot:
Displays the Carrier Frequency Error of each slot on a graph.

PCDE vs Slot:
Displays the Peak Code Domain Error of each slot on a graph.

Active Channel List:
Displays a list of the measurement results of the transmission channels.

[Result Value Type]
Selects the process type of the numerical results. Valid only when the **[Format]** is set to **[Total Result]** or **[Active Channel List]**.

AVG: Displays the average value of the numerical results for each slot.

MAX: Displays the maximum value of the numerical results for each slot.

MIN: Displays the minimum value of the numerical results for each slot.

[Measurement Slot]
Selects the slot which performs the numerical process selected by the **[Result Value Type]**.

All: Processes for all slots.

QPSK: Processes for the slots in which the modulation format is set to the QPSK.

16QAM: Processes the slots in which the modulation format includes 16QAM.

MEMO: ***According to the 3GPP Standard (TS25.141), the specifications of the Error Vector Magnitude are different between the signal of which the modulation format is set to the QPSK, and the signal which includes the 16QAM. Switch the display in accordance with the signal.***

[Window4] Sets for the measurement result window located in the lower right when the 4-window display mode is set.

[Format] Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results of the analyzed multiplex signal.

CDP vs Code(dBm):
Displays the Code Domain Power [dBm] of each code on a graph.

CDP vs Code(dB):
Displays the Code Domain Power [dB] of each code on a graph.

EVM vs Slot:
Displays the Error Vector Magnitude of each slot on a graph.

Tx Power vs Slot:
Displays the Transmission Power of each slot on a graph.

SCH Power vs Slot:
Displays the SCH Power of each slot on a graph.

Carrier Frequency Error vs Slot:
Displays the Carrier Frequency Error of each slot on a graph.

PCDE vs Slot:
Displays the Peak Code Domain Error of each slot on a graph.

Active Channel List:
Displays a list of the measurement results of the transmission channels.

[Result Value Type]
Selects the process type of the numerical results. Valid only when the **[Format]** is set to **[Total Result]** or **[Active Channel List]**.

AVG: Displays the average value of the numerical results for each slot.

MAX: Displays the maximum value of the numerical results for each slot.

MIN: Displays the minimum value of the numerical results for each slot.

[Measurement Slot]
Selects the slot to perform the numerical process selected by the **[Result Value Type]**.

All: Processes for all slots.

QPSK: Processes for the slots in which the modulation format is set to the QPSK.

16QAM: Processes the slots in which the modulation format includes 16QAM.

MEMO: ***According to the 3GPP Standard (TS25.141), the specifications of the Error Vector Magnitude are different between the signal of which the modulation format is set to the QPSK, and the signal which includes the 16QAM. Switch the display in accordance with the signal.***

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

Return Returns to the previous menu.

Specified Slot If the **Specified Slot** key is touched, the measurement results for the specified slot are displayed.

Specified Slot Displays the results for all slots and all codes on the two upper windows, and the results for the specified slot on the two lower windows. The slot can be specified by using the marker which is located in the upper right window, or by using the **Slot No.** key.

Specified Slot & Code
Displays the results for the specified slot on the two upper windows, and the results for the specified slot and code on the two lower windows. The slot can be specified by using the **Slot No.** key. The code can be specified by using the marker which is located in the upper right window, or by using the **Code No.** key.

Slot No. Sets the slot number to display the results.

Specified Code Rate/Active
Selects the type of the specified code.
Valid only when **Specified Slot & Code** is selected.

Rate: Specifies the code in the symbol rate selected by **[Analysis Rate]**.

Active: Specifies the code of the transmission channel.

Active Code No. Specifies the code number of the transmission channel for which the result is displayed.
Valid only when Active is selected in **Specified Slot & Code** and **Specified Code**.

Rate Code No. Sets the code number for which the result is displayed.
Valid only when Rate is selected in **Specified Slot & Code** and **Specified Code**.

Window Format If the **Window Format** key is touched, the dialog box used to set the measurement result window is displayed.

a) When the **Specified Slot** is selected.

[Window1] Sets the measurement result window located in the upper left when the 4-window display mode is set. The measurement results for all slots and all codes are displayed.

[All Slot & Code]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results of the analyzed multiplex signal.

CDP vs Code(dBm):
Displays the Code Domain Power [dBm] of each code on a graph.

CDP vs Code(dB):
Displays the Code Domain Power [dB] of each code on a graph.

EVM vs Slot:
Displays the Error Vector Magnitude of each slot on a graph.

Tx Power vs Slot:
Displays the Transmission Power of each slot on a graph.

SCH Power vs Slot:
Displays the SCH Power of each slot on a graph.

Carrier Frequency Error vs Slot:
Displays the Carrier Frequency Error of each slot on a graph.

PCDE vs Slot:
Displays the Peak Code Domain Error of each slot on a graph.

Active Channel List:
Displays a list of the measurement results of the transmission channels.

[Result Value Type]
Selects the process type of the numerical results. Valid only when the **[All Slot & Code]** is set to **[Total Result]** or **[Active Channel List]**.

AVG: Displays the average value of the numerical results for each slot.

MAX: Displays the maximum value of the numerical results for each slot.

MIN: Displays the minimum value of the numerical results for each slot.

[Measurement Slot]
Selects the slot which performs the numerical process selected by the **[Result Value Type]**.

All: Processes for all slots.

QPSK: Processes the slots in which the modulation format is set to the QPSK.

16QAM: Processes the slots in which the modulation format includes 16QAM.

MEMO: ***According to the 3GPP Standard (TS25.141), the specifications of the Error Vector Magnitude are different between the signal of which the modulation format is set to the QPSK, and the signal which includes the 16QAM. Switch the display in accordance with the signal.***

[Window2] Sets the measurement result window located in the upper right when the 4-window display mode is set. The measurement results for all slots and all codes are displayed.

[All Slot & Code(Slot Selection)]
Selects the measurement result window to be displayed.

EVM vs Slot:
Displays the Error Vector Magnitude of each slot on a graph.

Tx Power vs Slot:
Displays the Transmission Power of each slot on a graph.

SCH Power vs Slot:
Displays the SCH Power of each slot on a graph.

Carrier Frequency Error vs Slot:
Displays the Carrier Frequency Error of each slot on a graph.

PCDE vs Slot:
Displays the Peak Code Domain Error of each slot on a graph.

[Window3] Sets the measurement result window located in the lower left when the 4-window display mode is set. The measurement results for the slot which is specified by the upper right window or the **Slot No.** are displayed.

[Specified Slot]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results of the analyzed multiplex signal.

CDP vs Code(dBm):
Displays the Code Domain Power [dBm] of each code on a graph.

CDP vs Code(dB):
Displays the Code Domain Power [dB] of each code on a graph.

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

Mag Error vs Chip:
Displays the Magnitude Error of each chip on a graph.

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

Constellation:
Displays the constellation of the multiplex signal on a graph.

Active Channel List:
Displays a list of the measurement results of the transmission channels.

[Window4] Sets for the measurement result window located in the lower right when the 4-window display mode is set. The measurement results for the slot which is specified by the upper right window or the **Slot No.** are displayed.

[Specified Slot]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results of the analyzed multiplex signal.

CDP vs Code(dBm):
Displays the Code Domain Power [dBm] of each code on a graph.

CDP vs Code(dB):
Displays the Code Domain Power [dB] of each code on a graph.

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

Mag Error vs Chip:
Displays the Magnitude Error of each chip on a graph.

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

Constellation:
Displays the constellation of the multiplex signal on a graph.

Active Channel List:
Displays a list of the measurement results of the transmission channels.

b) When the **Specified Slot & Code** key is selected.

[Window1] Sets for the measurement result window located in the upper left when the 4-window display mode is set. The measurement results for the slot which is specified by the **Slot No.** are displayed.

[Specified Slot]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results of the analyzed multiplex signal.

CDP vs Code(dBm):
Displays the Code Domain Power [dBm] of each code on a graph.

CDP vs Code(dB):
Displays the Code Domain Power [dB] of each code on a graph.

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

Mag Error vs Chip:
Displays the Magnitude Error of each chip on a graph.

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

Constellation:
Displays the constellation of the multiplex signal on a graph.

Active Channel List:
Displays a list of the measurement results of the transmission channels.

[Window2] Sets the measurement result window located in the upper right when the 4-window display mode is set. The measurement results for the slot which is specified by the **Slot No.** are displayed.

[Specified Slot(Code Selection)]
Selects the measurement result window to be displayed.

CDP vs Code(dBm):
Displays the Code Domain Power |dBm| of each code on a graph.

CDP vs Code(dB):
Displays the Code Domain Power [dB] of each code on a graph.

[Window3] Sets for the measurement result window located in the lower left when the 4-window display mode is set. The measurement results for the code which is specified by the upper right window or the **Code No.** are displayed.

[Specified Slot & Code]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results which are analyzed for the specified code.

CDP vs Symbol(dBm):
Displays the Code Domain Power [dBm] of each symbol on a graph.

CDP vs Symbol(dB):
Displays the Code Domain Power [dB] of each symbol on a graph.

EVM vs Symbol:
Displays the Error Vector Magnitude of each symbol on a graph.

Constellation:
Displays the constellation of the specified code on a graph.

Demodulated Data:
Displays a list of the demodulation data of the specified code for one slot.

[Window4] Sets for the measurement result window located in the lower right when the 4-window display mode is set. The measurement results for the code which is specified by the upper right window or the **Code No.** are displayed.

[Specified Slot & Code]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results which are analyzed for the specified code.

CDP vs Symbol(dBm):
Displays the Code Domain Power [dBm] of each symbol on a graph.

CDP vs Symbol(dB):
Displays the Code Domain Power [dB] of each symbol on a graph.

EVM vs Symbol:
Displays the Error Vector Magnitude of each symbol on a graph.

Constellation:
Displays the constellation of the specified code on a graph.

Demodulated Data:
Displays a list of the demodulation data of the specified code for one slot.

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

Demod Data Save Saves the same amount of demodulation data of the specified code as the measurement length.

Return Returns to the previous menu.

Specified Code If the **Specified Code** key is touched, the measurement results for the specified code are displayed.

Specified Code Displays the results for all slots and all codes on the two upper windows, and the results for the specified code on the two lower windows. The code can be specified by using the marker which is located in the upper right window, or by using the **Code No.** key.

Specified Slot & Code
Displays the results for the specified code on the two upper windows, and the results for specified slot and code on the two lower windows. The code can be specified by using the **Code No.** key. The slot can be specified by using the marker which is located in the upper right window, or by using the **Slot No.** key.

Slot No. Sets the slot number to display the results. Valid only when the **Specified Slot & Code** is selected.

Specified Code Rate/Active
Selects the type of the specified code.

Rate: Specifies the code in the symbol rate that was selected in **[Analysis Rate]**.

Active: Specifies the code of the transmission channel.

Active Code No. Specifies the code number of the transmission channel for which the result is displayed.
Valid only when Active is selected in **Specified Code**.

Rate Code No. Sets the code number for which the result is displayed.
Valid only when Rate is selected in **Specified Code**.

Window Format If the **Window Format** key is touched, the dialog box used to set the measurement result window is displayed.

a) When the **Specified Code** key is selected.

[Window1] Sets for the measurement result window located in the upper left when the 4-window display mode is set. The measurement results for all slots and all codes are displayed.

[All Slot & Code]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results of the analyzed multiplex signal.

CDP vs Code(dBm):
Displays the Code Domain Power |dBm| of each code on a graph.

CDP vs Code(dB):
Displays the Code Domain Power |dB| of each code on a graph.

EVM vs Slot:
Displays the Error Vector Magnitude of each slot on a graph.

Tx Power vs Slot:
Displays the Transmission Power of each slot on a graph.

SCH Power vs Slot:
Displays the SCH Power of each slot on a graph.

Carrier Frequency Error vs Slot:
Displays the Carrier Frequency Error of each slot on a graph.

PCDE vs Slot:
Displays the Peak Code Domain Error of each slot on a graph.

Active Channel List:
Displays a list of the measurement results of the transmission channels.

[Result Value Type]
Selects the process type of the numerical results. Valid only when the **[All Slot & Code]** is set to **[Total Result]** or **[Active Channel List]**.

AVG: Displays the average value of the numerical results for each slot.

MAX: Displays the maximum value of the numerical results for each slot.

MIN: Displays the minimum value of the numerical results for each slot.

[Measurement Slot]
Selects the slot which performs the numerical process selected by the **[Result Value Type]**.

All: Processes for all slots.

QPSK: Processes the slots in which the modulation format is set to the QPSK.

16QAM: Processes the slots in which the modulation format includes 16QAM.

MEMO: ***According to the 3GPP Standard (TS25.141), the specifications of the Error Vector Magnitude are different between the signal of which the modulation format is set to the QPSK, and the signal which includes the 16QAM. Switch the display in accordance with the signal.***

[Window2] Sets for the measurement result window located in the upper right when the 4-window display mode is set. The measurement results for all slots and all codes are displayed.

[All Slot & Code(Code Selection)]
Selects the measurement result window to be displayed.

CDP vs Code(dBm):
Displays the Code Domain Power [dBm] of each code on a graph.

CDP vs Code(dB):
Displays the Code Domain Power [dB] of each code on a graph.

[Window3] Sets the measurement result window located in the lower left when the 4-window display mode is set. The measurement results for the code which is specified by the upper right window or the **Code No.** are displayed.

[Specified Code]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results which are analyzed for the specified code.

CDP vs Slot(dBm):
Displays the Code Domain Power [dBm] of each slot on a graph.

EVM vs Slot:
Displays the Error Vector Magnitude of each slot on a graph.

[Result Value Type]
Selects the process type of the numerical results. Valid only when the **[Specified Code]** is set to **[Total Result]**.

AVG: Displays the average value of the numerical results for each slot.

MAX: Displays the maximum value of the numerical results for each slot.

MIN: Displays the minimum value of the numerical results for each slot.

[Measurement Slot]
Selects the slot which performs the numerical process selected by the **[Result Value Type]**.

All: Processes for all slots.

QPSK: Processes the slots in which the modulation format is set to the QPSK.

16QAM: Processes the slots in which the modulation format includes 16QAM.

MEMO: ***According to the 3GPP Standard (TS25.141), the specifications of the Error Vector Magnitude are different between the signal of which the modulation format is set to the QPSK, and the signal which includes the 16QAM. Switch the display in accordance with the signal.***

[Window4] Sets the measurement result window located in the lower right when the 4-window display mode is set. The measurement results for the code which is specified by the upper right window or the **Code No.** are displayed.

[Specified Code]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results which are analyzed for the specified code.

CDP vs Slot(dBm):
Displays the Code Domain Power [dBm] of each slot on a graph.

EVM vs Slot:
Displays the Error Vector Magnitude of each slot on a graph.

[Result Value Type]
Selects the process type of the numerical results. Valid only when the **[Specified Code]** is set to **[Total Result]**.

AVG: Displays the average value of the numerical results for each slot.

MAX: Displays the maximum value of the numerical results for each slot.

MIN: Displays the minimum value of the numerical results for each slot.

[Measurement Slot]
Selects the slot to perform the numerical process selected by the **[Result Value Type]**.

All: Processes for all slots.

QPSK: Processes the slots in which the modulation format is set to the QPSK.

16QAM: Processes the slots in which the modulation format includes 16QAM.

MEMO: According to the 3GPP Standard (TS25.141), the specifications of the Error Vector Magnitude are different between the signal of which the modulation format is set to the QPSK, and the signal which includes the 16QAM. Switch the display in accordance with the signal.

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b) When the **Specified Slot & Code** key is selected.

[Window1] Sets for the measurement result window located in the upper left when the 4-window display mode is set. The measurement results for the code which is specified by the **Code No.** are displayed.

[Specified Code]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results which are analyzed for the specified code.

CDP vs Slot(dBm):
Displays the Code Domain Power [dBm] of each slot on a graph.

EVM vs Slot:
Displays the Error Vector Magnitude of each slot on a graph.

[Result Value Type]
Selects the process type of the numerical results. Valid only when the **[Specified Code]** is set to **[Total Result]**.

AVG: Displays the average value of the numerical results for each slot.

MAX: Displays the maximum value of the numerical results for each slot.

MIN: Displays the minimum value of the numerical results for each slot.

[Measurement Slot]
Selects the slot to perform the numerical process selected by the **[Result Value Type]**.

All: Processes for all slots.

QPSK: Processes the slots in which the modulation format is set to the QPSK.

16QAM: Processes the slots in which the modulation format includes 16QAM.

MEMO: According to the 3GPP Standard (TS25.141), the specifications of the Error Vector Magnitude are different between the signal of which the modulation format is set to the QPSK, and the signal which includes the 16QAM. Switch the display in accordance with the signal.

[Window2] Sets the measurement result window located in the upper right when the 4-window display mode is set. The measurement results for the code which is specified by the **Code No.** are displayed.

[Specified Code(Slot Selection)]
Selects the measurement result window to be displayed.

CDP vs Slot(dBm):
Displays the Code Domain Power [dBm] of each slot on a graph.

EVM vs Slot:
Displays the Error Vector Magnitude of each slot on a graph.

[Window3] Sets the measurement result window located in the lower left when the 4-window display mode is set. The measurement results for the slot which is specified by the upper right window or the **Slot No.** are displayed.

[Specified Slot & Code]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results which are analyzed for the specified code.

CDP vs Symbol(dBm):
Displays the Code Domain Power [dBm] of each symbol on a graph.

CDP vs Symbol(dB):
Displays the Code Domain Power [dB] of each symbol on a graph.

EVM vs Symbol:
Displays the Error Vector Magnitude of each symbol on a graph.

Constellation:
Displays the constellation of the specified code on a graph.

Demodulated Data:
Displays a list of the demodulation data of the specified code for one slot.

[Window4] Sets the measurement result window located in the lower right when the 4-window display mode is set. The measurement results for the slot which is specified by the upper right window or the **Slot No.** are displayed.

[Specified Slot & Code]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results which are analyzed for the specified code.

CDP vs Symbol(dBm):
Displays the Code Domain Power [dBm] of each symbol on a graph.

CDP vs Symbol(dB):
Displays the Code Domain Power [dB] of each symbol on a graph.

EVM vs Symbol:
Displays the Error Vector Magnitude of each symbol on a graph.

Constellation:
Displays the constellation of the specified code on a graph.

Demodulated Data:
Displays a list of the demodulation data of the specified code for one slot.

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

Demod Data Save — Saves the same amount of demodulation data of the specified code as the measurement length.

Return — Returns to the previous menu.

Return — Returns to the previous menu.

Scale — Displays the menu in which the scale of the X-axis and Y-axis in the active window is set.

Single Display — Zooms in the upper left window when the 4-window display mode is set.

Dual Display — Zooms in the upper two windows when the 4-window display mode is set.

Quad Display — Changes the screen to the 4-window display mode.

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 setting menu.

IQ Inverse On/Off — Sets the phase of the input signal.

On: Inverts the phase.

Off: Does not invert the phase.

Return — Returns to the previous menu.

Trigger — Displays the menu in which the trigger is set.

Trigger Source — If the **Trigger Source** is touched, the soft keys related to the trigger setup are displayed on the soft menu bar.

Free Run — Obtains and analyzes data according to the internal timing of the measuring instrument.

IF Power — Obtains and analyzes data synchronized with the IF signal.

Ext1 — Synchronizes the data reading with the external signal and analyzes the data entered into the EXT TRIG IN 1 connector. The threshold level for Ext1 is fixed to the TTL level.

Ext2 — Synchronizes the data reading with the external signal and analyzes the data 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 polarity of the trigger slope.
Available only for IF Power, Ext1, and Ext2.

+: Starts sweeping at the rise of a trigger.

-: Starts sweeping at the fall of a trigger.

Trigger Delay (frame) — Sets the delay time from the trigger point in units of frame (1frame: 10 ms). This function is enabled only for IF Power, Ext1, and Ext2. The start position for acquiring A/D data, which is used to analyze, is shifted by the delay time.
(This function is displayed only when **IPDL** is selected as **Meas Mode**.)

Trigger Delay — Sets the delay time from the trigger point. Is available only for IF Power, Ext1, and Ext2. When analyzing, the start position of AD data acquisition is shifted to the delay time.

Interval On/Off — Sets whether to synchronize the trigger with the built-in counter whose period is set to 10 ms.

On: Synchronizes the trigger

Off: Does not synchronize the trigger

Return — Returns to the previous menu.

Modulation Off — Quits the Modulation measurement function.

5.3.1.8 MODULATION (Uplink)

Modulation — Displays the Modulation menu.

Auto Level Set — Sets the reference level to its optimum value according to the measured signal. When the key is pressed, Auto Level Set is executed.

IMPORTANT: While Auto Level Set is being executed, the level of the measured signal must remain constant.

Meas Mode — Displays the menu related to the selection of the measurement mode.

Concise — If the **Concise** key is touched, the Concise mode is set. In the Concise Mode, a single slot is analyzed and the numerical results are displayed.

MEMO: This mode is suitable for the high-speed measurement to obtain the numerical results.

Code Domain — If the **Code Domain** key is touched, the Code Domain mode is set. In the Code Domain Mode, up to four frames are analyzed and the numerical results and graphs are displayed.

MEMO: The analysis in the Code Domain mode can be performed in detail than in the Concise mode. The AD data which is the same used in the Concise mode can be analyzed by combining the **Analysis Restart** *key.*

QPSK — If the **QPSK** key is touched, the QPSK mode is set.
The QPSK mode analyzes the measurement signal as the QPSK signal or the HPSK signal and displays the numeric value result and the graph.

MEMO: The QPSK mode corresponds to 3.84 Mcps.

Return — Returns to the previous menu.

Meas Setup — Displays the menu in which the analysis parameters are set.

Meas Parameters — If the **Meas Parameters** key is touched, the dialog box used to set the measurement conditions is displayed.

a) When **Concise** or **Code Domain** is selected as **Meas Mode**.

[Parameters] Sets the measurement conditions.

[Scrambling Code No.]
Sets the Scrambling Code number.

[Excluding chips in slot boundary]
Sets the length of chips which are excluded from the first and last parts of the slot.
0 to 96 chips can be set as the measurement length.

[Threshold] Sets the threshold level to determine the active channel. Can be set between -5 dB and -40 dB.

MEMO: ***The channel, whose Code Domain Power [dB] is less than the level set by*** **[Threshold]**, ***is determined that the transmission is not performed.***

[Equalizing Filter] Sets to make the Equalizing Filter and sets whether to use it.

[Make Filter] Makes the Equalizing Filter.

[USE] Uses the Equalizing Filter.

[NOT USE] Does not use the Equalizing Filter.

IMPORTANT: ***Sets the*** **[Parameters]** ***correctly when performing the*** **[Make Filter]**.

[Code Domain Setup]
Sets the measurement conditions in the **Code Domain** Mode. Valid only when the **Meas Mode** is set to the Code Domain.

[Analysis Rate] Selects the symbol rate used to perform the Code Domain analysis.

15 ksps: Performs the Code Domain analysis at a symbol rate of 15 ksps.

30 ksps: Performs the Code Domain analysis at a symbol rate of 30 ksps.

60 ksps: Performs the Code Domain analysis at a symbol rate of 60 ksps.

120 ksps: Performs the Code Domain analysis at a symbol rate of 120 ksps.

240 ksps: Performs the Code Domain analysis at a symbol rate of 240 ksps.

480 ksps: Performs the Code Domain analysis at a symbol rate of 480 ksps.

960 ksps: Performs the Code Domain analysis at a symbol rate of 960 ksps.

MEMO: The results, which are analyzed at the symbol rate selected in the **[Analysis Rate]** *and analyzed at the active channel symbol rate, are displayed.*

[Meas Length] Selects the signal length used to perform the Code Domain analysis.

1SLOT: Performs the Code Domain analysis over the length of time of one slot.

1FRAME: Performs the Code Domain analysis over the length of time of one frame for each slot.

2FRAME: Performs the Code Domain analysis over the length of time of two frames for each slot.

3FRAME: Performs the Code Domain analysis over the length of time of three frames for each slot.

4FRAME: Performs the Code Domain analysis over the length of time of four frames for each slot.

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

b) When **QPSK** is selected as **Meas Mode**.

[Parameters] Sets the measurement conditions.

[Signal Type]
Selects the signal type.

QPSK: Analyzes the signal assuming it is a QPSK signal.

HPSK: Analyzes the signal assuming it is an HPSK signal.

IMPORTANT: To analyze the HPSK signal whose I and Q amplitudes are the same, select **[QPSK]**.

[Meas Length]
Sets the measurement length [chip].
64 to 4096 chips can be set as the measurement length.

[Root Nyquist Filter]
Sets whether to use the Root Nyquist filter (roll off: 0.22) when the measurement is performed.

ON: Uses the Root Nyquist filter.

OFF: Does not use the Root Nyquist filter.

[IQ Origin Offset]
Sets whether to include the IQ origin offset when EVM is calculated.

INCLUDE: Includes the IQ origin offset.

EXCLUDE: Does not includes the IQ origin offset.

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

Average On/Off Performs the averaging process.
Displayed only when **Meas Mode** is set to **QPSK**.

On: Performs the averaging process for the measurements which were performed the set number of times.

Off: Performs no averaging process.

Return Returns to the previous menu.

Meas View Displays the menu in which the displayed screen is set.
Valid only when **Meas Mode** is set to **Code Domain** or **QPSK**.

When **Meas Mode** is set to **Code Domain**.

All Slot & Code If the **All Slot & Code** key is touched, the measurement results for all slots and all codes are displayed.

Window Format If the **Window Format** key is touched, the dialog box used to set the measurement result window is displayed.

[Window1] Sets the measurement result window located in the upper left when the 4-window display mode is set.

[Format] Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results of the analyzed multiplex signal.

CDP vs Active Code(dBm):
Displays the code domain power [dBm] of the active channel on a graph.

CDP vs Active Code(dB):
Displays the code domain power [dB] of the active channel on a graph.

CDP vs I Code(dBm):
Displays the code domain power [dBm] of the In-phase component on a graph.

CDP vs Q Code(dBm):
Displays the code domain power [dBm] of the Quadrature component on a graph.

CDP vs I Code(dB):
Displays the code domain power [dB] of the In-phase component on a graph.

CDP vs Q Code(dB):
Displays the code domain power [dB] of the Quadrature component on a graph.

EVM vs Slot:
Displays the Error Vector Magnitude of each slot on a graph.

Tx Power vs Slot:
Displays the Transmission Power of each slot on a graph.

Carrier Frequency Error vs Slot:
Displays the Carrier Frequency Error of each slot on a graph.

PCDE vs Slot:
Displays the Peak Code Domain Error of each slot on a graph.

Phase Discontinuity vs Slot:
Displays the Phase Discontinuity of each slot on a graph.

Active Channel List:
Displays the measurement result for the active channel in a list.

[Result Value Type]
Selects the process type of the numerical results. Valid only when the **[Format]** is set to **[Total Result]** or **[Active Channel List]**.

AVG: Displays the average value of the numerical results for each slot.

MAX: Displays the maximum value of the numerical results for each slot.

MIN: Displays the minimum value of the numerical results for each slot.

[Window2] Sets the measurement result window located in the upper right when the 4-window display mode is set.

[Format] Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results of the analyzed multiplex signal.

CDP vs Active Code(dBm):
Displays the code domain power [dBm] of the active channel on a graph.

CDP vs Active Code(dB):
Displays the code domain power [dB] of the active channel on a graph.

CDP vs I Code(dBm):
Displays the code domain power [dBm] of the In-phase component on a graph.

CDP vs Q Code(dBm):
Displays the code domain power [dBm] of the Quadrature component on a graph.

CDP vs I Code(dB):
Displays the code domain power [dB] of the In-phase component on a graph.

CDP vs Q Code(dB):
Displays the code domain power [dB] of the Quadrature component on a graph.

EVM vs Slot:
Displays the Error Vector Magnitude of each slot on a graph.

Tx Power vs Slot:
Displays the Transmission Power of each slot on a graph.

Carrier Frequency Error vs Slot:
Displays the Carrier Frequency Error of each slot on a graph.

PCDE vs Slot:
Displays the Peak Code Domain Error of each slot on a graph.

Phase Discontinuity vs Slot:
Displays the Phase Discontinuity of each slot on a graph.

Active Channel List:
Displays the measurement result for the active channel in a list.

[Result Value Type]
Selects the process type of the numerical results. Valid only when the **[Format]** is set to **[Total Result]** or **[Active Channel List]**.

AVG: Displays the average value of the numerical results for each slot.

MAX: Displays the maximum value of the numerical results for each slot.

MIN: Displays the minimum value of the numerical results for each slot.

[Window3] Sets for the measurement result window located in the lower left when the 4-window display mode is set.

[Format] Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results of the analyzed multiplex signal.

CDP vs Active Code(dBm):
Displays the code domain power [dBm] of the active channel on a graph.

CDP vs Active Code(dB):
Displays the code domain power [dB] of the active channel on a graph.

CDP vs I Code(dBm):
Displays the code domain power [dBm] of the In-phase component on a graph.

CDP vs Q Code(dBm):
Displays the code domain power [dBm] of the Quadrature component on a graph.

CDP vs I Code(dB):
Displays the code domain power [dB] of the In-phase component on a graph.

CDP vs Q Code(dB):
Displays the code domain power [dB] of the Quadrature component on a graph.

EVM vs Slot:
Displays the Error Vector Magnitude of each slot on a graph.

Tx Power vs Slot:
Displays the Transmission Power of each slot on a graph.

Carrier Frequency Error vs Slot:
Displays the Carrier Frequency Error of each slot on a graph.

PCDE vs Slot:
Displays the Peak Code Domain Error of each slot on a graph.

Phase Discontinuity vs Slot:
Displays the Phase Discontinuity of each slot on a graph.

Active Channel List:
Displays the measurement result for the active channel in a list.

[Result Value Type]
Selects the process type of the numerical results. Valid only when the **[Format]** is set to **[Total Result]** or **[Active Channel List]**.

AVG: Displays the average value of the numerical results for each slot.

MAX: Displays the maximum value of the numerical results for each slot.

MIN: Displays the minimum value of the numerical results for each slot.

[Window4] Sets for the measurement result window located in the lower right when the 4-window display mode is set.

[Format] Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results of the analyzed multiplex signal.

CDP vs Active Code(dBm):
Displays the code domain power [dBm] of the active channel on a graph.

CDP vs Active Code(dB):
Displays the code domain power [dB] of the active channel on a graph.

CDP vs I Code(dBm):
Displays the code domain power [dBm] of the In-phase component on a graph.

CDP vs Q Code(dBm):
Displays the code domain power [dBm] of the Quadrature component on a graph.

CDP vs I Code(dB):
Displays the code domain power [dB] of the In-phase component on a graph.

CDP vs Q Code(dB):
Displays the code domain power [dB] of the Quadrature component on a graph.

EVM vs Slot:
Displays the Error Vector Magnitude of each slot on a graph.

Tx Power vs Slot:
Displays the Transmission Power of each slot on a graph.

Carrier Frequency Error vs Slot:
Displays the Carrier Frequency Error of each slot on a graph.

PCDE vs Slot:
Displays the Peak Code Domain Error of each slot on a graph.

Phase Discontinuity vs Slot:
Displays the Phase Discontinuity of each slot on a graph.

Active Channel List:
Displays the measurement result for the active channel in a list.

[Result Value Type]
Selects the process type of the numerical results. Valid only when the **[Format]** is set to **[Total Result]** or **[Active Channel List]**.

AVG: Displays the average value of the numerical results for each slot.

MAX: Displays the maximum value of the numerical results for each slot.

MIN: Displays the minimum value of the numerical results for each slot.

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

Return Returns to the previous menu.

Specified Slot If the **Specified Slot** key is touched, the measurement results for the specified slot are displayed.

Specified Slot Displays the results for all slots and all codes on the two upper windows, and the results for the specified slot on the two lower windows. The slot can be specified by using the marker which is located in the upper right window, or by using the **Slot No.** key.

Specified Slot & Code
Displays the results for the specified slot on the two upper windows, and the results for the specified slot and code on the two lower windows. The slot can be specified by using the **Slot No.** key. The code can be specified by using the marker which is located in the upper right window, or by using the **Active Code No.** key or the **Rate Code No.** key.

Slot No. Sets the slot number to display the results.

Specified Code Rate/Active

Sets the type of the specified code number.
Valid only when the **Specified Slot & Code** is selected.

Rate: Specifies the code in the symbol rate, which is selected by the **[Analysis Rate]**.

Active: Specifies the active channel.

Active Code No. Specifies the code number of the active channel to display the results.
Valid only when Active of **Specified Slot & Code** or **Specified Code** is selected.

Specified Rate Code I/Q

Select the code axis to display the results.
Valid only when Rate of **Specified Slot & Code** or **Specified Code** is selected.

I: Displays the result of the In-phase component.

Q: Displays the result of the Quadrature component.

Rate Code No. Sets the code number to display the results.
Valid only when the Rate of the **Specified Slot & Code** or **Specified Code** is selected.

Window Format If the **Window Format** key is touched, the dialog box used to set the measurement result window is displayed.

a) When the **Specified Slot** key is selected.

[Window1] Sets the measurement result window located in the upper left when the 4-window display mode is set. The measurement results for all slots and all codes are displayed.

[All Slot & Code]

Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results of the analyzed multiplex signal.

CDP vs Active Code(dBm):
Displays the code domain power [dBm] of the active channel on a graph.

CDP vs Active Code(dB):
Displays the code domain power [dB] of the active channel on a graph.

CDP vs I Code(dBm):
Displays the code domain power [dBm] of the In-phase component on a graph.

CDP vs Q Code(dBm):
Displays the code domain power [dBm] of the Quadrature component on a graph.

CDP vs I Code(dB):
Displays the code domain power [dB] of the In-phase component on a graph.

CDP vs Q Code(dB):
Displays the code domain power [dB] of the Quadrature component on a graph.

EVM vs Slot:
Displays the Error Vector Magnitude of each slot on a graph.

Tx Power vs Slot:
Displays the Transmission Power of each slot on a graph.

Carrier Frequency Error vs Slot:
Displays the Carrier Frequency Error of each slot on a graph.

PCDE vs Slot:
Displays the Peak Code Domain Error of each slot on a graph.

Phase Discontinuity vs Slot:
Displays the Phase Discontinuity of each slot on a graph.

Active Channel List:
Displays the measurement result for the active channel in a list.

[Result Value Type]
Selects the process type of the numerical results. Valid only when the **[All Slot & Code]** is set to **[Total Result]** or **[Active Channel List]**.

AVG: Displays the average value of the numerical results for each slot.

MAX: Displays the maximum value of the numerical results for each slot.

MIN: Displays the minimum value of the numerical results for each slot.

[Window2] Sets the measurement result window located in the upper right when the 4-window display mode is set. The measurement results for all slots and all codes are displayed.

[All Slot & Code(Slot Selection)]
Selects the measurement result window to be displayed.

EVM vs Slot:
Displays the Error Vector Magnitude of each slot on a graph.

Tx Power vs Slot:
Displays the Transmission Power of each slot on a graph.

Carrier Frequency Error vs Slot:
Displays the Carrier Frequency Error of each slot on a graph.

PCDE vs Slot:
Displays the Peak Code Domain Error of each slot on a graph.

Phase Discontinuity vs Slot:
Displays the Phase Discontinuity of each slot on a graph.

[Window3] Sets the measurement result window located in the lower left when the 4-window display mode is set. The measurement results for the slot which is specified by the upper right window or the **Slot No.** are displayed.

[Specified Slot]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results of the analyzed multiplex signal.

CDP vs Active Code(dBm):
Displays the code domain power [dBm] of the active channel on a graph.

CDP vs Active Code(dB):
Displays the code domain power [dB] of the active channel on a graph.

CDP vs I Code(dBm):
Displays the code domain power [dBm] of the In-phase component on a graph.

CDP vs Q Code(dBm):
Displays the code domain power [dBm] of the Quadrature component on a graph.

CDP vs I Code(dB):
Displays the code domain power [dB] of the In-phase component on a graph.

CDP vs Q Code(dB):
Displays the code domain power [dB] of the Quadrature component on a graph.

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

Mag Error vs Chip:
Displays the Magnitude Error of each chip on a graph.

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

Constellation:
Displays the constellation of the multiplex signal on a graph.

Active Channel List:
Displays the measurement result for the active channel in a list.

[Window4] Sets for the measurement result window located in the lower right when the 4-window display mode is set. The measurement results for the slot which is specified by the upper right window or the **Slot No.** are displayed.

[Specified Slot]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results of the analyzed multiplex signal.

CDP vs Active Code(dBm):
Displays the code domain power [dBm] of the active channel on a graph.

CDP vs Active Code(dB):
Displays the code domain power [dB] of the active channel on a graph.

CDP vs I Code(dBm):
Displays the code domain power [dBm] of the In-phase component on a graph.

CDP vs Q Code(dBm):
Displays the code domain power [dBm] of the Quadrature component on a graph.

CDP vs I Code(dB):
Displays the code domain power [dB] of the In-phase component on a graph.

CDP vs Q Code(dB):
Displays the code domain power [dB] of the Quadrature component on a graph.

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

Mag Error vs Chip:
Displays the Magnitude Error of each chip on a graph.

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

Constellation:
Displays the constellation of the multiplex signal on a graph.

Active Channel List:
Displays the measurement result for the active channel in a list.

b) When the **Specified Slot & Code** key is selected.

[Window1] Sets for the measurement result window located in the upper left when the 4-window display mode is set. The measurement results for the slot which is specified by the **Slot No.** are displayed.

[Specified Slot]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results of the analyzed multiplex signal.

CDP vs Active Code(dBm):
Displays the code domain power [dBm] of the active channel on a graph.

CDP vs Active Code(dB):
Displays the code domain power [dB] of the active channel on a graph.

CDP vs I Code(dBm):
Displays the code domain power [dBm] of the In-phase component on a graph.

CDP vs Q Code(dBm):
Displays the code domain power [dBm] of the Quadrature component on a graph.

CDP vs I Code(dB):
Displays the code domain power [dB] of the In-phase component on a graph.

CDP vs Q Code(dB):
Displays the code domain power [dB] of the Quadrature component on a graph.

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

Mag Error vs Chip:
Displays the Magnitude Error of each chip on a graph.

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

Constellation:
Displays the constellation of the multiplex signal on a graph.

Active Channel List:
Displays the measurement result for the active channel in a list.

[Window2] Sets the measurement result window located in the upper right when the 4-window display mode is set. The measurement results for the slot which is specified by the **Slot No.** are displayed.

[Specified Slot(Code Selection)]
Selects the measurement result window to be displayed.

CDP vs Active Code(dBm):
Displays the code domain power [dBm] of the active channel on a graph.

CDP vs Active Code(dB):
Displays the code domain power [dB] of the active channel on a graph.

CDP vs I Code(dBm):
Displays the code domain power [dBm] of the In-phase component on a graph.

CDP vs Q Code(dBm):
Displays the code domain power [dBm] of the Quadrature component on a graph.

CDP vs I Code(dB):
Displays the code domain power [dB] of the In-phase component on a graph.

CDP vs Q Code(dB):
Displays the code domain power [dB] of the Quadrature component on a graph.

[Window3] Sets for the measurement result window located in the lower left when the 4-window display mode is set. The measurement results for the code which is specified by the upper right window or the **Active Code No.** key or the **Rate Code No.** are displayed.

[Specified Slot & Code]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results which are analyzed for the specified code.

CDP vs Symbol(dBm):
Displays the Code Domain Power [dBm] of each symbol on a graph.

CDP vs Symbol(dB):
Displays the Code Domain Power [dB] of each symbol on a graph.

EVM vs Symbol:
Displays the Error Vector Magnitude of each symbol on a graph.

Demodulated Data:
Displays a list of the demodulation data of the specified code for one slot.

[Window4] Sets for the measurement result window located in the lower right when the 4-window display mode is set. The measurement results for the code which is specified by the upper right window or the **Active Code No.** key or the **Rate Code No.** are displayed.

[Specified Slot & Code]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results which are analyzed for the specified code.

CDP vs Symbol(dBm):
Displays the Code Domain Power [dBm] of each symbol on a graph.

CDP vs Symbol(dB):
Displays the Code Domain Power [dB] of each symbol on a graph.

EVM vs Symbol:
Displays the Error Vector Magnitude of each symbol on a graph.

Demodulated Data:
Displays a list of the demodulation data of the specified code for one slot.

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

Demod Data Save Saves the same amount of demodulation data of the specified code as the measurement length.

Return Returns to the previous menu.

Specified Code If the **Specified Code** key is touched, the measurement results for the specified code are displayed.

Specified Code Displays the results for all slots and all codes on the two upper windows, and the results for the specified code on the two lower windows. The code can be specified by using the marker which is located in the upper right window, or by using the **Active Code No.** key or the **Rate Code No.** key.

Specified Slot & Code
Displays the results for the specified code on the two upper windows, and the results for specified slot and code on the two lower windows. The code can be specified by using the **Active Code No.** key or the **Rate Code No.** key.
The slot can be specified by using the marker which is located in the upper right window, or by using the **Slot No.** key.

Slot No. Sets the slot number to display the results. Valid only when the **Specified Slot & Code** is selected.

Specified Code Rate/Active
Sets the type of the specified code number.

Rate: Specifies the code in the symbol rate, which is selected by the **[Analysis Rate]**.

Active: Specifies the active channel.

Active Code No. Specifies the code number of the active channel to display the results.
Valid only when Active of the **Specified Code** is selected.

Specified Rate Code I/Q
Select the code axis to display the results.
Valid only when Rate of the **Specified Code** is selected.

I: Displays the result of the In-phase component.

Q: Displays the result of the Quadrature component.

Rate Code No. Sets the code number to display the results.
Valid only when the Rate of the **Specified Code** is selected.

Window Format If the **Window Format** key is touched, the dialog box used to set the measurement result window is displayed.

a) When the **Specified Code** key is selected.

[Window1] Sets for the measurement result window located in the upper left when the 4-window display mode is set. The measurement results for all slots and all codes are displayed.

[All Slot & Code]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results of the analyzed multiplex signal.

CDP vs Active Code(dBm):
Displays the code domain power [dBm] of the active channel on a graph.

CDP vs Active Code(dB):
Displays the code domain power [dB] of the active channel on a graph.

CDP vs I Code(dBm):
Displays the code domain power [dBm] of the In-phase component on a graph.

CDP vs Q Code(dBm):
Displays the code domain power [dBm] of the Quadrature component on a graph.

CDP vs I Code(dB):
Displays the code domain power [dB] of the In-phase component on a graph.

CDP vs Q Code(dB):
Displays the code domain power [dB] of the Quadrature component on a graph.

EVM vs Slot:
Displays the Error Vector Magnitude of each slot on a graph.

Tx Power vs Slot:
Displays the Transmission Power of each slot on a graph.

Carrier Frequency Error vs Slot:
Displays the Carrier Frequency Error of each slot on a graph.

PCDE vs Slot:
Displays the Peak Code Domain Error of each slot on a graph.

Phase Discontinuity vs Slot:
Displays the Phase Discontinuity of each slot on a graph.

Active Channel List:
Displays the measurement result for the active channel in a list.

[Result Value Type]
Selects the process type of the numerical results. Valid only when the **[All Slot & Code]** is set to **[Total Result]** or **[Active Channel List]**.

AVG: Displays the average value of the numerical results for each slot.

MAX: Displays the maximum value of the numerical results for each slot.

MIN: Displays the minimum value of the numerical results for each slot.

[Window2] Sets for the measurement result window located in the upper right when the 4-window display mode is set. The measurement results for all slots and all codes are displayed.

[All Slot & Code(Code Selection)]
Selects the measurement result window to be displayed.

CDP vs Active Code(dBm):
Displays the code domain power [dBm] of the active channel on a graph.

CDP vs Active Code(dB):
Displays the code domain power [dB] of the active channel on a graph.

CDP vs I Code(dBm):
Displays the code domain power [dBm] of the In-phase component on a graph.

CDP vs Q Code(dBm):
Displays the code domain power [dBm] of the Quadrature component on a graph.

CDP vs I Code(dB):
Displays the code domain power [dB] of the In-phase component on a graph.

CDP vs Q Code(dB):
Displays the code domain power [dB] of the Quadrature component on a graph.

[Window3] Sets the measurement result window located in the lower left when the 4-window display mode is set. The measurement results for the code which is specified by the upper right window or the **Active Code No.** key or the **Rate Code No.** are displayed.

[Specified Code]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results which are analyzed for the specified code.

CDP vs Slot(dBm):
Displays the Code Domain Power [dBm] of each slot on a graph.

EVM vs Slot:
Displays the Error Vector Magnitude of each slot on a graph.

[Result Value Type]
Selects the process type of the numerical results. Valid only when the **[Specified Code]** is set to **[Total Result]**.

AVG: Displays the average value of the numerical results for each slot.

MAX: Displays the maximum value of the numerical results for each slot.

MIN: Displays the minimum value of the numerical results for each slot.

[Window4] Sets the measurement result window located in the lower right when the 4-window display mode is set. The measurement results for the code which is specified by the upper right window or the **Active Code No.** key or the **Rate Code No.** are displayed.

[Specified Code]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results which are analyzed for the specified code.

CDP vs Slot(dBm):
Displays the Code Domain Power [dBm] of each slot on a graph.

EVM vs Slot:
Displays the Error Vector Magnitude of each slot on a graph.

[Result Value Type]
Selects the process type of the numerical results. Valid only when the **[Specified Code]** is set to **[Total Result]**.

AVG: Displays the average value of the numerical results for each slot.

MAX: Displays the maximum value of the numerical results for each slot.

MIN: Displays the minimum value of the numerical results for each slot.

b) When the **Specified Slot & Code** key is selected.

[Window1] Sets for the measurement result window located in the upper left when the 4-window display mode is set. The measurement results for the code which is specified by the **Active Code No.** key or the **Rate Code No.** are displayed.

[Specified Code]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results which are analyzed for the specified code.

CDP vs Slot(dBm):
Displays the Code Domain Power [dBm] of each slot on a graph.

EVM vs Slot:
Displays the Error Vector Magnitude of each slot on a graph.

[Result Value Type]
Selects the process type of the numerical results. Valid only when the **[Specified Code]** is set to **[Total Result]**.

AVG: Displays the average value of the numerical results for each slot.

MAX: Displays the maximum value of the numerical results for each slot.

MIN: Displays the minimum value of the numerical results for each slot.

[Window2] Sets the measurement result window located in the upper right when the 4-window display mode is set. The measurement results for the code which is specified by the **Active Code No.** key or the **Rate Code No.** are displayed.

[Specified Code(Slot Selection)]
Selects the measurement result window to be displayed.

CDP vs Slot(dBm):
Displays the Code Domain Power [dBm] of each slot on a graph.

EVM vs Slot:
Displays the Error Vector Magnitude of each slot on a graph.

[Window3] Sets the measurement result window located in the lower left when the 4-window display mode is set. The measurement results for the slot which is specified by the upper right window or the **Slot No.** are displayed.

[Specified Slot & Code]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results which are analyzed for the specified code.

CDP vs Symbol(dBm):
Displays the Code Domain Power [dBm] of each symbol on a graph.

CDP vs Symbol(dB):
Displays the Code Domain Power [dB] of each symbol on a graph.

EVM vs Symbol:
Displays the Error Vector Magnitude of each symbol on a graph.

Demodulated Data:
Displays a list of the demodulation data of the specified code for one slot.

[Window4] Sets the measurement result window located in the lower right when the 4-window display mode is set. The measurement results for the slot which is specified by the upper right window or the **Slot No.** are displayed.

[Specified Slot & Code]
Selects the measurement result window to be displayed.

Total Result:
Displays the numerical results which are analyzed for the specified code.

CDP vs Symbol(dBm):
Displays the Code Domain Power [dBm] of each symbol on a graph.

CDP vs Symbol(dB):
Displays the Code Domain Power [dB] of each symbol on a graph.

EVM vs Symbol:
Displays the Error Vector Magnitude of each symbol on a graph.

Demodulated Data:
Displays a list of the demodulation data of the specified code for one slot.

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

Demod Data Save Saves the same amount of demodulation data of the specified code as the measurement length.

Return Returns to the previous menu.

Return Returns to the previous menu.

When **Meas Mode** is set to **QPSK**

Window Format If the **Window Format** key is touched, the dialog box used to set the measurement result window is displayed.

[Window1] Sets the measurement result window which is located in the upper left when the 4-window display mode is set.

[Format] Selects the measurement result window to be displayed.

Total Result: Displays the analyzed numeric value result.

Constellation: Displays the constellation on a graph.

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

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

Phase Error vs Chip:
Displays the phase error of each chip on a graph.

[Constellation Type]
Selects the type of constellation graph display. Valid only when the **[Format]** is set to **[Constellation]**.

Line&Chip: Displays the constellation in a line by connecting the transition between chips and displaying it in dots.

Chip: Displays the constellation in dots without connecting the transition between chips.

[Window2] Sets the measurement result window which is located in the upper right when the 4-window display mode is set.

[Format] Selects the measurement result window to be displayed.

Total Result: Displays the analyzed numeric value result.

Constellation: Displays the constellation on a graph.

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

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

Phase Error vs Chip:
Displays the phase error of each chip on a graph.

[Constellation Type]
Selects the type of constellation graph display.
Valid only when the **[Format]** is set to **[Constellation]**.

Line&Chip: Displays the constellation in a line by connecting the transition between chips and displaying it in dots.

Chip: Displays the constellation in dots without connecting the transition between chips.

[Window3] Sets the measurement result window which is located in the lower left when the 4-window display mode is set.

[Format] Selects the measurement result window to be displayed.

Total Result: Displays the analyzed numeric value result.

Constellation: Displays the constellation on a graph.

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

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

Phase Error vs Chip:
Displays the phase error of each chip on a graph.

[Constellation Type]
Selects the type of constellation graph display.
Valid only when the **[Format]** is set to **[Constellation]**.

Line&Chip: Displays the constellation in a line by connecting the transition between chips and displaying it in dots.

Chip: Displays the constellation in dots without connecting the transition between chips.

[Window4] Sets the measurement result window which is located in the lower right when the 4-window display mode is set.

[Format] **Selects the measurement result window to be displayed.**

Total Result: Displays the analyzed numeric value result.

Constellation: Displays the constellation on a graph.

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

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

Phase Error vs Chip:
Displays the phase error of each chip on a graph.

[Constellation Type]

Selects the type of constellation graph display. Valid only when the **[Format]** is set to **[Constellation]**.

Line&Chip: Displays the constellation in a line by connecting the transition between chips and displaying it in dots.

Chip: Displays the constellation in dots without connecting the transition between chips.

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

Return Returns to the previous menu.

Scale Displays the menu in which the scale of the X-axis and Y-axis in the active window is set.

Single Display Zooms in the upper left window when the 4-window display mode is set.

Dual Display Zooms in the upper two windows when the 4-window display mode is set.

Quad Display Changes the screen to the 4-window display mode.

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 setting menu.

IQ Inverse On/Off Sets the phase of the input signal.

On: Inverts the phase.

Off: Does not invert the phase.

Return Returns to the previous menu.

Trigger Displays the menu in which the trigger is set.

Trigger Source If the **Trigger Source** is touched, the soft keys related to the trigger setup are displayed on the soft menu bar.

Free Run Obtains and analyzes data according to the internal timing of the measuring instrument.

IF Power Obtains and analyzes data synchronized with the IF signal.

Ext1 Synchronizes the data reading with the external signal and analyzes the data entered into the EXT TRIG IN 1 connector. The threshold level for Ext1 is fixed to the TTL level.

Ext2 Synchronizes the data reading with the external signal and analyzes the data 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 polarity of the trigger slope.
Available only for IF Power, Ext1, and Ext2.

+: Starts sweeping at the rise of a trigger.

-: Starts sweeping at the fall of a trigger.

Trigger Delay Sets the delay time from the trigger point. Is available only for IF Power, Ext1, and Ext2. When analyzing, the start position of AD data acquisition is shifted to the delay time.

Interval On/Off Sets whether to synchronize the built-in counter, whose period is set to 10 ms, and the trigger.

On: Synchronizes them.

Off: Does not synchronize them.

Return Returns to the previous menu.

Modulation Off Quits the Modulation 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
Sets the start position of the OFF period in the burst signal.

OFF Width
Sets the width of the OFF period in the burst signal.

Return
Returns to the previous menu.

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

On: Sets the number of times averaging is performed and measures the average power.

Off: Cancels the averaging function.

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

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

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

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

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

On: Displays the judgment.

Off: Hides the judgment.

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

ON/OFF Ratio Off
Quits the ON/OFF Ratio measurement function.

5.3.1.11 CCDF

CCDF

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

Auto Level Set

Sets the reference level and ATT to the optimum value in accordance with the signal to be measured. When the key is pressed, Auto Level Set is executed.

CCDF RBW

Sets RBW.
RBW can be set to a range of 100 KHz to 10 MHz (1 and 3 sequence) and 20 MHz.

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

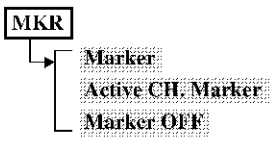
In the Modulation measurement function of the Tx Tester mode, the dedicated Marker menu is displayed by pressing the MKR key.

This section describes the Marker menu in the Modulation measurement and its functions.

The contents of the Marker menu in the Modulation function are different depending on whether Downlink or Uplink is selected.

The Marker menu can be used when the graph screen is selected.

5.3.2.1 MKR (MODULATION - Downlink)



Marker — Displays a marker and sets the marker position.

Active CH. Marker — Sets the code number of the transmission channel.
Valid only when the graph, in which the X-axis is set to the code, is displayed.

Marker OFF — Deletes the marker.

5.3.2.2 MKR (MODULATION - Uplink)

Marker — Displays a marker and sets the marker position.

Marker OFF — Deletes the marker.

6. SCPI COMMAND REFERENCE

This chapter describes the SCPI command reference for this instrument.

6.1 Command Reference Format

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

Each description includes the following items:

Function description

SCPI command

Parameter

Query reply

- [Function description]

  The usage of commands and operations in this instrument.

- [SCPI command]

  The SCPI command displays the syntax of a command sent from the external controller to this instrument. The syntax consists of a command and a number of parameters. The command and the parameters are separated by a space.

  If a command has multiple parameters, they are separated by commas (,). The three points (...) displayed between commas represent the parameter(s) omitted at that position.

  For example, the description <numeric value 1>,..., <numeric value 4> shows that four parameters, <numeric value 1>, <numeric value 2>, <numeric value 3>, and <numeric value 4>, are required.

  If the parameter is a character string type such as <character string>,<character string 1>, the parameter must be enclosed in double quotation marks (" "). If the parameter is <block>, it shows the block format data.

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

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

  The marks used in the syntax are defined as follows:

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

  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
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	
Setting the IQ inverse	:INPut:IQ:INVerse	OFF|ON	OFF|ON	

6.3.2 Subsystem-CONFigure

Function description	SCPI command	Parameter	Query reply	Remarks
Setting the Concise mode	:CONFigure:CONCise	--	--	
Setting the Code Domain mode	:CONFigure:CDOMain	--	--	
Setting the P-CPICH Power mode	:CONFigure:PCPICH	--	--	
Setting the IPDL mode	:CONFigure:IPDL	--	--	

6.3.3 Subsystem-SENSe

Function description	SCPI command	Parameter	Query reply	Remarks
FREQuency				
Setting the Center Freq	[:SENSe]:FREQuency:CENTer	<real>	<real>	
Setting the Freq Offset	[:SENSe]:FREQuency:OFFSet	<real>	<real>	
Freq Offset ON/OFF	[:SENSe]:FREQuency:OFFSet:STATe	OFF|ON	OFF|ON	
Setting the Channel Number	[:SENSe]:FREQuency:CHANnel:NUMBer	<int>	<int>	
Auto Level Set				
Executing the Auto Level Set	[:SENSe]:POWer:LEVel:AUTO	--	--	
Measurement Parameter				
Setting the Carrier Frequency Offset	[:SENSe]:CONDition[:CARRier<carr=1|2|3|4>]:CFOFfset	<real>	<real>	
Setting the Scrambling Code Define	[:SENSe]:CONDition[:CARRier<carr=1|2|3|4>]:SCDefine	DEFine|UNDefine	DEF|UND	*1
Setting the Scrambling Code No. (specified in decimal number)	[:SENSe]:CONDition[:CARRier<carr=1|2|3|4>]:SCNumber:DEC	<int>	<int>	*1
Setting the Scrambling Code No. (specified in hexadecimal number)	[:SENSe]:CONDition[:CARRier<carr=1|2|3|4>]:SCNumber:HEX	#H*****	#H*****	*1
Setting the Scrambling Code No.(DEC(=HEX))	[:SENSe]:CONDition[:CARRier<carr=1|2|3|4>]:SCNumber:DHEX	<int>	<int>	
Setting the Scrambling Code Offset	[:SENSe]:CONDition[:CARRier<carr=1|2|3|4>]:SCOFfset	<int>	<int>	*1
Setting the Search Mode	[:SENSe]:CONDition[:CARRier<carr=1|2|3|4>]:SMODe	SCH|PCPICH	SCH|PCPICH	*1
Measurement Parameter(Concise/Code Domain)				
Setting the Meas Band Width	[:SENSe]:CONDition:MBWidth	SINGle|MULTi	SING|MULT	
Setting the Active CH Detection	[:SENSe]:CONDition[:CARRier<carr=1|2|3|4>]:ACDetection	AUTO|USER|T1DP16|T1DP32|T1DP64|T2|T3DP16|T3DP32|T4PCOFF|T4PCON|T5DP6|T5DP14|T5DP30	AUTO|USER|T1DP16|T1DP32|T1DP64|T2|T3DP16|T3DP32|T4PCOFF|T4PCON|T5DP6|T5DP14|T5DP30	*1
SCH ON/OFF	[:SENSe]:CONDition[:CARRier<carr=1|2|3|4>]:SCH	OFF|ON	OFF|ON	*1
Setting the Threshold	[:SENSe]:CONDition[:CARRier<carr=1|2|3|4>]:THReshold	<int>	<int>	*1
Creating the Equalizing Filter	[:SENSe]:CONDition[:CARRier<carr=1|2|3|4>]:EQUAlizer:MAKE	--	--	*1
Equalizing Filter USE/NOT USE	[:SENSe]:CONDition[:CARRier<carr=1|2|3|4>]:EQUAlizer	NOT|USE	NOT|USE	*1
Setting the Meas Carrier	[:SENSe]:CONDition:MCARrier	1|2|3|4	1|2|3|4	

6.3.3 Subsystem-SENSe

Function description	SCPI command	Parameter	Query reply	Remarks
Measurement Parameter(Code Domain)				
Setting the Analysis Rate	[:SENSe]:CONDition[:CARRier<carr=1|2|3|4>]:RATE	R7500|R15000| R30000|R60000| R120000| R240000| R480000| R960000	R7500|R15000| R30000|R60000| R120000| R240000| R480000| R960000	*1
Setting the Meas Length	[:SENSe]:CONDition[:CARRier<carr=1|2|3|4>] :MLENgth	M1SLot| M1FRame| M2FRame| M3FRame| M4FRame	M1SL|M1FR| M2FR|M3FR| M4FR	*1
Measurement Parameter(Concise)				
Setting the Multi Carrier Number	[:SENSe]:CONDition:CARRier:NUMBer	<int>	<int>	
Measurement Parameter(P-CPICH Power)				
Setting the Meas Carrier	[:SENSe]:CONDition:PCPICH:MCARrier	<int>	<int>	
Setting the Meas Length	[:SENSe]:CONDition:PCPICH[:CARRier <carr=1|2|3|4>]:MLENgth	M1FRame| M2FRame| M3FRame| M4FRame	M1FR|M2FR| M3FR|M4FR	
User Table				
Setting the Multi Channel No.	[:SENSe]:CONDition[:CARRier<carr=1|2|3|4>] :UTABle:MCNumber	<int>	<int>	*1
Setting the SF	[:SENSe]:CONDition[:CARRier<carr=1|2|3|4>] :UTABle:SF<utch=1~75>	4|8|16|32|64|128| 256|512	4|8|16|32|64|128| 256|512	
Setting the Number	[:SENSe]:CONDition[:CARRier<carr=1|2|3|4>] :UTABle:NUMBer<utch=1~75>	<int>	<int>	
Setting the Modulation	[:SENSe]:CONDition[:CARRier<carr=1|2|3|4>] :UTABle:MODulation<utch=1~75>	QPSK|QAM16	QPSK|QAM16	
Average				
Average ON/OFF	[:SENSe]:CONDition:AVERage[:STATe]	OFF|ON	OFF|ON	
Setting the Average count	[:SENSe]:CONDition:AVERage:COUNt	<int>	<int>	
Window setting (IPDL)				
Setting the Window display to ON or OFF	[:SENSe]:IPDL:WINDow[:STATe]	OFF|ON	OFF|ON	
Setting the Window1 display position	[:SENSe]:IPDL:WINDow:NUMBer1:POSition	<int>	<int>	
Setting the Window1 display width	[:SENSe]:IPDL:WINDow:NUMBer1:WIDTh	<int>	<int>	
Setting the Window2 display position	[:SENSe]:IPDL:WINDow:NUMBer2:POSition	<int>	<int>	
Setting the Window2 display width	[:SENSe]:IPDL:WINDow:NUMBer2:WIDTh	<int>	<int>	

*1: When :CARRier<carr> is omitted, the setting is specified to 1.

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, Read, and Fetch commands is that the Measure and Read commands are used to execute measurements and the Fetch command is used only to read result data. Both the Measure and Read commands execute measurements. However, the initialization processes for the commands 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
Total Result(Concise)				
τ	:MEASure:CONCise:TRESult:TAU?	--	<real>,<real>, <real>,<real>, <real>,<real>, <real>,<real>	
Carrier Frequency Error	:MEASure:CONCise:TRESult:FERRor?	--	<real>,<real>, <real>,<real>, <real>,<real>, <real>,<real>	
EVM	:MEASure:CONCise:TRESult:EVM?	--	<real>,<real>, <real>,<real>	
Peak CDE	:MEASure:CONCise:TRESult:PCDE?	--	<real>,<real>, <real>,<real>	
Code Number of PCDE	:MEASure:CONCise:TRESult:PCDE:NUMBer?	--	<real>,<real>, <real>,<real>	
Tx Power	:MEASure:CONCise:TRESult:POWer?	--	<real>,<real>, <real>,<real>	
Primary CPICH Power	:MEASure:CONCise:TRESult:PCPICH:POWer?	--	<real>,<real>, <real>,<real>	
Total Result (ALL Slot & Code)				
ρ	:MEASure:ASCode:TRESult:RHO?	--	<real>	
τ	:MEASure:ASCode:TRESult:TAU?	--	<real>,<real>	
Carrier Frequency	:MEASure:ASCode:TRESult:CARRier?	–	<real>	
Carrier Frequency Error	:MEASure:ASCode:TRESult:FERRor?	--	<real>,<real>	
IQ Origin Offset	:MEASure:ASCode:TRESult:IQOFfset?	--	<real>	
EVM	:MEASure:ASCode:TRESult:EVM?	--	<real>	
Peak EVM	:MEASure:ASCode:TRESult:PEVM?	--	<real>	
Mag. Error	:MEASure:ASCode:TRESult:MERRor?	--	<real>	
Phase Error	:MEASure:ASCode:TRESult:PERRor?	--	<real>	
Peak CDE	:MEASure:ASCode:TRESult:PCDE?	--	<real>	
Code Number of PCDE	:MEASure:ASCode:TRESult:PCDE:NUMBer?	--	<int>	
Tx Power	:MEASure:ASCode:TRESult:POWer?	--	<real>	
Primary CPICH Power	:MEASure:ASCode:TRESult:PCPICH:POWer?	--	<real>	

Function description	SCPI command	Parameter	Query reply	Remarks
SCH Power	:MEASure:ASCode:TRESult:SCH:POWer?	--	<real>	
P-SCH Power	:MEASure:ASCode:TRESult:PSCH:POWer?	--	<real>	
S-SCH Power	:MEASure:ASCode:TRESult:SSCH:POWer?	--	<real>	
Scrambling Code Number(Dec)	:MEASure:ASCode:TRESult:SCNumber:DEC?	--	<int>,<int>	
Scrambling Code Number(Hex)	:MEASure:ASCode:TRESult:SCNumber:HEX?	--	#H*****	
Number Of Active Channel	:MEASure:ASCode:TRESult:ACHannel?	--	<int>	
Number Of Average Slot	:MEASure:ASCode:TRESult:AVERage:SLOT?	--	<int>	
Total Result (Specified Slot - Specified Slot)				
ρ	:MEASure:SSLot:TRESult:RHO?	--	<real>	
τ	:MEASure:SSLot:TRESult:TAU?	--	<real>,<real>	
Carrier Frequency	:MEASure:SSLot:TRESult:CARRier?	--	<real>	
Carrier Frequency Error	:MEASure:SSLot:TRESult:FERRor?	--	<real>,<real>	
IQ Origin Offset	:MEASure:SSLot:TRESult:IQOFfset?	--	<real>	
EVM	:MEASure:SSLot:TRESult:EVM?	--	<real>	
Peak EVM	:MEASure:SSLot:TRESult:PEVM?	--	<real>	
Mag. Error	:MEASure:SSLot:TRESult:MERRor?	--	<real>	
Phase Error	:MEASure:SSLot:TRESult:PERRor?	--	<real>	
Peak CDE	:MEASure:SSLot:TRESult:PCDE?	--	<real>	
Code Number of PCDE	:MEASure:SSLot:TRESult:PCDE:NUMBer?	--	<int>	
Tx Power	:MEASure:SSLot:TRESult:POWer?	--	<real>	
Primary CPICH Power	:MEASure:SSLot:TRESult:PCPICH:POWer?	--	<real>	
SCH Power	:MEASure:SSLot:TRESult:SCH:POWer?	--	<real>	
P-SCH Power	:MEASure:SSLot:TRESult:PSCH:POWer?	--	<real>	
S-SCH Power	:MEASure:SSLot:TRESult:SSCH:POWer?	--	<real>	
Scrambling Code Number(Dec)	:MEASure:SSLot:TRESult:SCNumber:DEC?	--	<int>,<int>	
Scrambling Code Number(Hex)	:MEASure:SSLot:TRESult:SCNumber:HEX?	--	#H*****	
Number Of Active Channel	:MEASure:SSLot:TRESult:ACHannel?	--	<int>	
P-CPICH Slot Number	:MEASure:SSLot:TRESult:PCPICH:SLOT?	--	<int>	
Total Result (Specified Slot - Specified Slot & Code)				
ρ	:MEASure:SSCode:TRESult:RHO?	--	<real>	
EVM	:MEASure:SSCode:TRESult:EVM?	--	<real>	
Peak EVM	:MEASure:SSCode:TRESult:PEVM?	--	<real>	
CDP	:MEASure:SSCode:TRESult:CDP?	--	<real>,<real>	
Timing Offset	:MEASure:SSCode:TRESult:TOFFset?	--	<int>,<int>	
P-CPICH Slot Number	:MEASure:SSCode:TRESult:PCPICH:SLOT?	--	<int>	
Symbol Rate	:MEASure:SSCode:TRESult:SRATe?	--	<real>	
SF	:MEASure:SSCode:TRESult:SF?	--	<int>	

Function description	SCPI command	Parameter	Query reply	Remarks
Code No.	:MEASure:SSCode:TRESult:CODE?	--	<int>	
Modulation	:MEASure:SSCode:TRESult:MODulation?	--	"QPSK"| "16QAM"| "QPSK&16QAM"	
Total Result (Specified Code - Specified Code)				
ρ	:MEASure:SCODe:TRESult:RHO?	--	<real>	
EVM	:MEASure:SCODe:TRESult:EVM?	--	<real>	
Peak EVM	:MEASure:SCODe:TRESult:PEVM?	--	<real>	
CDP	:MEASure:SCODe:TRESult:CDP?	--	<real>	
Timing Offset	:MEASure:SCODe:TRESult:TOFFset?	--	<int>,<int>	
Number Of Average Slot	:MEASure:SCODe:TRESult:AVERage:SLOT?	--	<int>	
Symbol Rate	:MEASure:SCODe:TRESult:SRATe?	--	<real>	
SF	:MEASure:SCODe:TRESult:SF?	--	<int>	
Code No.	:MEASure:SCODe:TRESult:CODE?	--	<int>	
Modulation	:MEASure:SCODe:TRESult:MODulation?	--	"QPSK"| "16QAM"| "QPSK&16QAM"	
Total Result (Specified Code - Specified Slot & Code)				
ρ	:MEASure:SCSLot:TRESult:RHO?	--	<real>	
EVM	:MEASure:SCSLot:TRESult:EVM?	--	<real>	
Peak EVM	:MEASure:SCSLot:TRESult:PEVM?	--	<real>	
CDP	:MEASure:SCSLot:TRESult:CDP?	--	<real>,<real>	
Timing Offset	:MEASure:SCSLot:TRESult:TOFFset?	--	<int>,<int>	
P-CPICH Slot Number	:MEASure:SCSLot:TRESult:PCPICH:SLOT?	--	<int>	
Symbol Rate	:MEASure:SCSLot:TRESult:SRATe?	--	<real>	
SF	:MEASure:SCSLot:TRESult:SF?	--	<int>	
Code No.	:MEASure:SCSLot:TRESult:CODE?	--	<int>	
Modulation	:MEASure:SCSLot:TRESult:MODulation?	--	"QPSK"| "16QAM"| "QPSK&16QAM"	
Code Domain (All Slot & Code)				
Scrambling Code Number (Dec=Hex)	:MEASure:ASCode:TRESult:SCNumber:DHEX?	--	<int>	
Code Domain (Specified Slot)				
Scrambling Code Number (Dec=Hex)	:MEASure:SSLot:TRESult:SCNumber:DHEX?	--	<int>	
P-CPICH Power				
P-CPICH Power Average [dBm, W, dBc]	:MEASure:PCPICH:TRESult:POWer:AVERage?	--	<real>,<real>, <real>	
P-CPICH Power Maximum [dBm, W, dBc]	:MEASure:PCPICH:TRESult:POWer:MAXimum?	--	<real>,<real>, <real>	
P-CPICH Power Minimum [dBm, W, dBc]	:MEASure:PCPICH:TRESult:POWer:MINimum?	--	<real>,<real>, <real>	

Function description	SCPI command	Parameter	Query reply	Remarks
Freq Error Average [Hz, ppm]	:MEASure:PCPICH:TRESult:FERRor:AVERage?	--	<real>,<real>	
Freq Error Maximum [Hz, ppm]	:MEASure:PCPICH:TRESult:FERRor:MAXimum?	--	<real>,<real>	
Carrier Frequency [Hz]	:MEASure:PCPICH:TRESult:CARRier:FREQ?	--	<real>	
Tx Power [dBm, W]	:MEASure:PCPICH:TRESult:POWer?	--	<real>,<real>	
Scrambling Code Number (Dec)	:MEASure:PCPICH:TRESult:SCNumber:DEC?	--	<int>,<int>	
Scrambling Code Number (Hex)	:MEASure:PCPICH:TRESult:SCNumber:HEX?	--	#H*****	
Scrambling Code Number (Dec=Hex)	:MEASure:PCPICH:TRESult:SCNumber:DHEX?	--	<int>	
IPDL				
Power1[dBm]	:MEASure:IPDL:POWer1?	--	<real>	
Power2[dBm]	:MEASure:IPDL:POWer2?	--	<real>	
Ratio[dB]	:MEASure:IPDL:RATio?	--	<real>	
All data[dBm,dBm,dB]	:MEASure:IPDL:ALL?	--	<real>,<real>, <real>	*2

*2: The query reply is output in order of Power1, Power2, and Ratio.

6.3.5 Subsystem-INITiate

Function description	SCPI command	Parameter	Query reply	Remarks
Executing the Single measurement	:INITiate:MEASure:SINGle	--	--	
Executing the Repeat measurement	:INITiate:MEASure:REPeat	--	--	
Stopping the measurement	:INITiate:ABORt	--	--	

6.3.6 Subsystem-TRIGger

Function description	SCPI command	Parameter	Query reply	Remarks
Setting the trigger	:TRIGger[:SEQuence]:SOURce	IMMediate|IF|EXT1|EXT2	IMM|IF|EXT1|EXT2	*3
Setting the trigger polarity of each trigger source	:TRIGger[:SEQuence]:SLOPe	NEGative|POSitive	NEG|POS	
Setting the trigger level when using the EXT2 (external input terminal 2) trigger	:TRIGger[:SEQuence]:LEVel:EXTernal	<real>	<real>	
Setting the trigger level when using the IF trigger	:TRIGger[:SEQuence]:LEVel:IF	<real>	<real>	
Setting the trigger delay value	:TRIGger[:SEQuence]:DELay	<real>	<real>	
Setting the trigger delay (Chip) value	:TRIGger[:SEQuence]:DELay:CHIP	<real>	<real>	
Setting the trigger delay (frame) value	:TRIGger[:SEQuence]:DELay:FRAMe	<int>	<int>	
Setting the Interval Trigger	:TRIGger[:SEQuence]:INTerval:STATe	OFF|ON	OFF|ON	

*3:
IMMediate: Free-run status where no trigger is set
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
Level				
Setting the Ref Level	:DISPlay:TRACe:Y[:SCALe]:RLEVel	<real>	<real>	
Setting the dB/div value (IPDL)	:DISPlay:TRACe:Y[:SCALe]:PDIVision	<real>	<real>	
Setting the Level Offset	:DISPlay:TRACe:Y[:SCALe]:RLEVel:OFFSet	<real>	<real>	
Level Offset ON/OFF	:DISPlay:TRACe:Y[:SCALe]:RLEVel:OFFSet:STATe	OFF|ON	OFF|ON	
Display				
Setting the result display screen mode	:DISPlay:MODE	ASCode|SSLot|SSCode|SCODe|SCSLot	ASC|SSL|SSC|SCOD|SCSL	
Setting the Slot No. (Specified Slot)	:DISPlay:MODE:SSLot:SLOT	<int>	<int>	
Setting the Rate Code No. (Specified Slot)	:DISPlay:MODE:SSLot:CODE:RATE	<int>	<int>	
Setting the Active Code No. (Specified Slot)	:DISPlay:MODE:SSLot:CODE:ACTive	<int>	<int>	
Setting the Code Rate/ Active (Specified Slot)	:DISPlay:MODE:SSLot:CODE:STATe	RATE|ACTive	RATE|ACT	
Setting the Slot No. (Specified Code)	:DISPlay:MODE:SCODe:SLOT	<int>	<int>	
Setting the Rate Code No. (Specified Code)	:DISPlay:MODE:SCODe:CODE:RATE	<int>	<int>	
Setting the Active Code No. (Specified Code)	:DISPlay:MODE:SCODe:CODE:ACTive	<int>	<int>	
Setting the Code Rate/ Active (Specified Code)	:DISPlay:MODE:SCODe:CODE:STATe	RATE|ACTive	RATE|ACT	
WINDow(All Slot & Code)				
Setting the Window Format	:DISPlay:MODE:ASCode:WINDow<scrn=1|2|3|4>:FORMat	TRESult|CDBM|CDDB|EVM|POWer|SPOWer|FERRor|PCDE|ACList	TRES|CDBM|CDDB|EVM|POW|SPOW|FERR|PCDE|ACL	
Setting the Window Result Value Type	:DISPlay:MODE:ASCode:WINDow<scrn=1|2|3|4>:FORMat:RVALue	AVG|MAX|MIN	AVG|MAX|MIN	
Setting the Window Measurement Slot	:DISPlay:MODE:ASCode:WINDow<scrn=1|2|3|4>:FORMat:MSLot	ALL|QPSK|QAM16	ALL|QPSK|QAM16	
WINDow(Specified Slot - Specified Slot)				
Setting the Window Format (Window 1)	:DISPlay:MODE:SSLot:WINDow<scrn=1>:FORMat	TRESult|CDBM|CDDB|EVM|POWer|SPOWer|FERRor|PCDE|ACList	TRES|CDBM|CDDB|EVM|POW|SPOW|FERR|PCDE|ACL	
Setting the Window Format (Window 2)	:DISPlay:MODE:SSLot:WINDow<scrn=2>:FORMat	EVM|POWer|SPOWer|FERRor|PCDE	EVM|POW|SPOW|FERR|PCDE	

Function description	SCPI command	Parameter	Query reply	Remarks
Setting the Window Format (Windows 3/4)	:DISPlay:MODE:SSLot:WINDow<scrn=3|4> :FORMat	TRESult|CDBM| CDDB|EVM| MERRor|PERRor| CONStellation| ACList	TRES|CDBM| CDDB|EVM| MERR|PERR| CONS|ACL	
Setting the Result Value Type (Window 1)	:DISPlay:MODE:SSLot:WINDow<scrn=1> :FORMat:RVALue	AVG|MAX|MIN	AVG|MAX|MIN	
Setting the Measurement Slot (Window 1)	:DISPlay:MODE:SSLot:WINDow<scrn=1> :FORMat:MSLot	ALL|QPSK| QAM16	ALL|QPSK| QAM16	
WINDow(Specified Slot - Specified Slot & Code)				
Setting the Window Format (Window 1)	:DISPlay:MODE:SSCode:WINDow<scrn=1> :FORMat	TRESult|CDBM| CDDB|EVM| MERRor|PERRor| CONStellation| ACList	TRES|CDBM| CDDB|EVM| MERR|PERR| CONS|ACL	
Setting the Window Format (Window 2)	:DISPlay:MODE:SSCode:WINDow<scrn=2> :FORMat	CDBM|CDDB	CDBM|CDDB	
Setting the Window Format (Windows 3/4)	:DISPlay:MODE:SSCode:WINDow<scrn=3|4> :FORMat	TRESult|CDBM| CDDB|EVM| CONStellation| DDATa	TRES|CDBM| CDDB|EVM| CONS|DDAT	
WINDow(Specified Code - Specified Code)				
Setting the Window Format (Window 1)	:DISPlay:MODE:SCODe:WINDow<scrn=1>:FORMat	TRESult|CDBM| CDDB|EVM| POWer|SPOWer| FERRor|PCDE| ACList	TRES|CDBM| CDDB|EVM| POW|SPOW| FERR|PCDE|ACL	
Setting the Window Format (Window 2)	:DISPlay:MODE:SCODe:WINDow<scrn=2>:FORMat	CDBM|CDDB	CDBM|CDDB	
Setting the Window Format (Windows 3/4)	:DISPlay:MODE:SCODe:WINDow<scrn=3|4> :FORMat	TRESult|CDBM| EVM	TRES|CDBM| EVM	
Setting the Result Value Type (Window 1/3/4)	:DISPlay:MODE:SCODe:WINDow<scrn=1|3|4> :FORMat:RVALue	AVG|MAX|MIN	AVG|MAX|MIN	
Setting the Measurement Slot (Window 1/3/4)	:DISPlay:MODE:SCODe:WINDow<scrn=1|3|4> :FORMat:MSLot	ALL|QPSK| QAM16	ALL|QPSK| QAM16	
WINDow(Specified Code - Specified Slot & Code)				
Setting the Window Format (Window 1)	:DISPlay:MODE:SCSLot:WINDow<scrn=1>:FORMat	TRESult|CDBM| EVM	TRES|CDBM| EVM	
Setting the Window Format (Window 2)	:DISPlay:MODE:SCSLot:WINDow<scrn=2>:FORMat	CDBM|EVM	CDBM|EVM	
Setting the Window Format (Windows 3/4)	:DISPlay:MODE:SCSLot:WINDow<scrn=3|4> :FORMat	TRESult|CDBM| CDDB|EVM| CONStellation| DDATa	TRES|CDBM| CDDB|EVM| CONS|DDAT	
Setting the Result Value Type (Window 1)	:DISPlay:MODE:SCSLot:WINDow<scrn=1> :FORMat:RVALue	AVG|MAX|MIN	AVG|MAX|MIN	
Setting the Measurement Slot (Window 1)	:DISPlay:MODE:SCSLot:WINDow<scrn=1> :FORMat:MSLot	ALL|QPSK| QAM16	ALL|QPSK| QAM16	

Function description	SCPI command	Parameter	Query reply	Remarks
Scale				
Setting the Multi Screen	:DISPlay	SINGle|DUAL|QUAD	SING|DUAL|QUAD	
Setting the X Scale Left	:DISPlay[:WINDow<scrn=1|2|3|4>]:TRACe:X[:SCALe]:LEFT	<real>	<real>	
Setting the X Scale Right	:DISPlay[:WINDow<scrn=1|2|3|4>]:TRACe:X[:SCALe]:RIGHt	<real>	<real>	
Setting the Y Scale Upper	:DISPlay[:WINDow<scrn=1|2|3|4>]:TRACe:Y[:SCALe]:UPPer	<real>	<real>	
Setting the Y Scale Lower	: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	*4
Saving the settings of this instrument	:MMEMory:STORe:STATe	<int>	--	*5
Loading the settings of this instrument	:MMEMory:LOAD:STATe	<int>	--	*5
Selecting whether to save the measurement conditions	:MMEMory:SELect:ITEM:GPPDL:SETup	OFF|ON	OFF|ON	
Creating the Demod Data Save	:MMEMory:STORe:DDATa:STATe	<int>	--	*5

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

*5: 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
Setting the marker function to ON or OFF	:CALCulate:MARKer<scrn=1|2|3|4>[:STATe]	OFF|ON	OFF|ON	
Setting the maker X	:CALCulate:MARKer<scrn=1|2|3|4>:X	<real>	<real>	
Reading the maker Y	:CALCulate:MARKer<scrn=1|2|3|4>:Y	--	<real>	
Active CH. Marker ON/OFF	:CALCulate:ACMarker<scrn=1|2|3|4>[:STATe]	OFF|ON	OFF|ON	
Setting the Active CH. Marker X	:CALCulate:ACMarker<scrn=1|2|3|4>:X	<real>	<real>	
Reading the Active CH. Marker Y	:CALCulate:ACMarker<scrn=1|2|3|4>:Y	--	<real>	
Setting the Marker in the Constellation display	:CALCulate:MARKer<scrn=1|2|3|4>:CHIP	<int>	<int>	
Reading the I signal in the Constellation display	:CALCulate:MARKer<scrn=1|2|3|4>:I	--	<real>	
Reading the Q signal in the Constellation display	:CALCulate:MARKer<scrn=1|2|3|4>:Q	--	<real>	
Setting the Result Value Type of Total Result in ALL Slot & Code measurement	:CALCulate:ASCode:RVALue	AVG|MAX|MIN	AVG|MAX|MIN	
Setting the Measurement Slot of Total Result in ALL Slot & Code measurement	:CALCulate:ASCode:MSLot	ALL|QPSK|QAM16	ALL|QPSK|QAM16	
Setting the Result Value Type of Total Result in Specified Code measurement	:CALCulate:SCODe:RVALue	AVG|MAX|MIN	AVG|MAX|MIN	
Setting the Measurement Slot of Total Result in Specified Code measurement	:CALCulate:SCODe:MSLot	ALL|QPSK|QAM16	ALL|QPSK|QAM16	

6.3.10 Subsystem-SYSTem

Function description	SCPI command	Parameter	Query reply	Remarks
Selecting the measurement system	:SYSTem:SELect	SANalyzer|TXTester	SAN|TXT	
Setting the measurement standard	:SYSTem:SELect:STANdard	<str1>,<str2>	--	*6
Initializing each measurement system parameter	:SYSTem:PRESet	--	--	
Initializing all measurement systems	:SYSTem:PRESet:ALL	--	--	
Inquiring about the most recent error	:SYSTem:ERRor?	--	<int>,<str>	*7
Inquiring about the error log	:SYSTem:ERRor:ALL?	--	<int>,<str>	*7
Inquiring about the R3477 series options	:SYSTem:OPTions?	--	<str>[,...]	

*6: In <str1>, the standard name is set. In <str2>, the operating band name is set.
<str1> = "3GPP_DL"
<str2> = {"3GPP_DL_OB01"| "3GPP_DL_OB02"| ...}
To specify 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

*7: In <int>, the error number is returned. In <str>, a character string of the error message is returned.

6.4 Modulation Analysis Commands (Uplink)

6.4.1 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	
Setting the IQ inverse	:INPut:IQ:INVerse	OFF|ON	OFF|ON	

6.4.2 Subsystem-CONFigure

Function description	SCPI command	Parameter	Query reply	Remarks
Setting the Concise mode	:CONFigure:CONCise	--	--	
Setting the Code Domain mode	:CONFigure:CDOMain	--	--	
Setting the QPSK mode	:CONFigure:QPSK	--	--	

6.4.3 Subsystem-SENSe

Function description	SCPI command	Parameter	Query reply	Remarks
FREQuency				
Setting the Center Freq	[:SENSe]:FREQuency:CENTer	<real>	<real>	
Setting the Freq Offset	[:SENSe]:FREQuency:OFFSet	<real>	<real>	
Freq Offset ON/OFF	[:SENSe]:FREQuency:OFFSet:STATe	OFF|ON	OFF|ON	
Setting the Channel Number	[:SENSe]:FREQuency:CHANnel:NUMBer	<int>	<int>	
Auto Level Set				
Executing the Auto Level Set	[:SENSe]:POWer:LEVel:AUTO	--	--	
Meas Parameters (Concise/Code Domain)				
Setting the Scrambling Code No.	[:SENSe]:CONDition:SCNumber	<int>	<int>	
Excluding chips in slot boundary	[:SENSe]:CONDition:ECHip	<int>	<int>	
Setting the Threshold	[:SENSe]:CONDition:THReshold	<real>	<real>	
Creating the Equalizing Filter	[:SENSe]:CONDition:EQUAlizer:MAKE	--	--	
Selecting whether to use Equalizing Filter	[:SENSe]:CONDition:EQUAlizer	NOT|USE	NOT|USE	
Selecting the Code Domain analysis rate	[:SENSe]:CONDition:RATE	R15000|R30000| R60000|R120000| R240000| R480000| R960000	R15000|R30000| R60000|R120000| R240000| R480000| R960000	
Setting the analysis range	[:SENSe]:CONDition:MLENgth	M1SLot| M1FRame| M2FRame| M3FRame| M4FRame	M1SL|M1FR| M2FR|M3FR| M4FR	
Meas Parameters (QPSK)				
Signal Type QPSK/HPSK	[:SENSe]:CONDition:QPSK:STYPe	QPSK|HPSK	QPSK|HPSK	
Setting the signal analysis range	[:SENSe]:CONDition:QPSK:MLENgth	<int>	<int>	
Root Nyquist Filter ON/OFF	[:SENSe]:CONDition:QPSK:RNFilter	OFF|ON	OFF|ON	
IQ Origin Offset ON/OFF	[:SENSe]:CONDition:QPSK:IQOFfset	INCLude| EXCLude	INCL|EXCL	
Average				
Average ON/OFF	[:SENSe]:CONDition:AVERage[:STATe]	OFF|ON	OFF|ON	
Setting the Average count	[:SENSe]:CONDition:AVERage:COUNt	<int>	<int>	

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

Function description	SCPI command	Parameter	Query reply	Remarks
MEASure: CONCise				
Reading the Carrier Frequency Error	:MEASure:CONCise:TRESult:FERRor?	--	<real>,<real>	*1
Reading the EVM	:MEASure:CONCise:TRESult:EVM?	--	<real>	
Reading the Peak CDE	:MEASure:CONCise:TRESult:PCDE?	--	<real>	
Reading the Code Number of PCDE	:MEASure:CONCise:TRESult:PCDE:NUMBer?	--	<int>	
Reading the I or Q of PCDE	:MEASure:CONCise:TRESult:PCDE:IQ?	--	I|Q	
Reading the Tx Power	:MEASure:CONCise:TRESult:POWer?	--	<real>	
MEASure: All Slot & Code				
Reading the ρ	:MEASure:ASCode:TRESult:RHO?	--	<real>	
Reading the τ	:MEASure:ASCode:TRESult:TAU?	--	<real>,<real>	*2
Reading the Carrier Frequency	:MEASure:ASCode:TRESult:CARRier?	--	<real>	
Reading the Carrier Frequency Error	:MEASure:ASCode:TRESult:FERRor?	--	<real>,<real>	*1
Reading the IQ Origin Offset	:MEASure:ASCode:TRESult:IQOFfset?	--	<real>	
Reading the EVM	:MEASure:ASCode:TRESult:EVM?	--	<real>	
Reading the Peak EVM	:MEASure:ASCode:TRESult:PEVM?	--	<real>	
Reading the Mag. Error	:MEASure:ASCode:TRESult:MERRor?	--	<real>	
Reading the Phase Error	:MEASure:ASCode:TRESult:PERRor?	--	<real>	
Reading the Peak CDE	:MEASure:ASCode:TRESult:PCDE?	--	<real>	
Reading the Code Number of PCDE	:MEASure:ASCode:TRESult:PCDE:NUMBer?	--	<int>	
Reading the I or Q of PCDE	:MEASure:ASCode:TRESult:PCDE:IQ?	--	I|Q	
Reading the Phase Discontinuity	:MEASure:ASCode:TRESult:PDIScontinuity?	--	<real>,<real>, <real>	*3
Reading the Tx Power	:MEASure:ASCode:TRESult:POWer?	--	<real>	

*1: Outputs the value of Frequency Error in order of [Hz] and [ppm].
*2: Outputs the value of τ in order of [μsec] and [chip].
*3: Outputs the value of Phase Discontinuity in order of $\Delta\theta \leq 30$deg, [Hz], 30deg $< \Delta\theta \leq$ 60deg, [Hz], 60deg, and $< \Delta\theta$ [Hz].

6.4.4 Subsystem-MEASure/READ/FETCh

Function description	SCPI command	Parameter	Query reply	Remarks
Reading the Number of Active Channel	:MEASure:ASCode:TRESult:ACHannel?	--	<int>	
Reading the Number of Average Slot	:MEASure:ASCode:TRESult:AVERage:SLOT?	--	<int>	
MEASure: Specified Slot				
Reading the ρ	:MEASure:SSLot:TRESult:RHO?	--	<real>	
Reading the τ	:MEASure:SSLot:TRESult:TAU?	--	<real>,<real>	*2
Reading the Carrier Frequency	:MEASure:SSLot:TRESult:CARRier?	--	<real>	
Reading the Carrier Frequency Error	:MEASure:SSLot:TRESult:FERRor?	--	<real>,<real>	*1
Reading the IQ Origin Offset	:MEASure:SSLot:TRESult:IQOFfset?	--	<real>	
Reading the EVM	:MEASure:SSLot:TRESult:EVM?	--	<real>	
Reading the Peak EVM	:MEASure:SSLot:TRESult:PEVM?	--	<real>	
Reading the Mag.Error	:MEASure:SSLot:TRESult:MERRor?	--	<real>	
Reading the Phase Error	:MEASure:SSLot:TRESult:PERRor?	--	<real>	
Reading the Peak CDE	:MEASure:SSLot:TRESult:PCDE?	--	<real>	
Reading the Code Number of PCDE	:MEASure:SSLot:TRESult:PCDE:NUMBer?	--	<int>	
Reading the I or Q of PCDE	:MEASure:SSLot:TRESult:PCDE:IQ?	--	I|Q	
Reading the Tx Power	:MEASure:SSLot:TRESult:POWer?	--	<real>	
Reading the Number of Active Channel	:MEASure:SSLot:TRESult:ACHannel?	--	<int>	
Reading the Slot Number	:MEASure:SSLot:TRESult:SLOT?	--	<int>	
MEASure: Specified Slot & Code				
Reading the ρ	:MEASure:SSCode:TRESult:RHO?	--	<real>	
Reading the EVM	:MEASure:SSCode:TRESult:EVM?	--	<real>	
Reading the Peak EVM	:MEASure:SSCode:TRESult:PEVM?	--	<real>	
Reading the CDP	:MEASure:SSCode:TRESult:CDP?	--	<real>,<real>	*4
Reading the Slot No.	:MEASure:SSCode:TRESult:SLOT?	--	<int>	
Reading the Symbol Rate	:MEASure:SSCode:TRESult:SRATe?	--	<real>	
Reading the SF	:MEASure:SSCode:TRESult:SF?	--	<int>	
Reading the Code No.	:MEASure:SSCode:TRESult:CODE?	--	<int>	
Reading the I or Q	:MEASure:SSCode:TRESult:IQ?	--	I|Q	
Reading the ACK/NACK	:MEASure:SSCode:TRESult:ACK?	--	<int>	
Reading the CQI	:MEASure:SSCode:TRESult:CQI?	--	<int>	

*1: Outputs the value of Frequency Error in order of [Hz] and [ppm].
*2: Outputs the value of τ in order of [μsec] and [chip].
*4: Outputs the value of Code Domain Power in order of [dBm] and [dB].

Function description	SCPI command	Parameter	Query reply	Remarks
MEASure: Specified Code				
Reading the ρ	:MEASure:SCODe:TRESult:RHO?	--	<real>	
Reading the EVM	:MEASure:SCODe:TRESult:EVM?	--	<real>	
Reading the Peak EVM	:MEASure:SCODe:TRESult:PEVM?	--	<real>	
Reading the CDP	:MEASure:SCODe:TRESult:CDP?	--	<real>,<real>	*4
Reading the Number of Average Slot	:MEASure:SCODe:TRESult:AVERage:SLOT?	--	<int>	
Reading the Symbol Rate	:MEASure:SCODe:TRESult:SRATe?	--	<real>	
Reading the SF	:MEASure:SCODe:TRESult:SF?	--	<int>	
Reading the Code No.	:MEASure:SCODe:TRESult:CODE?	--	<int>	
Reading the I or Q	:MEASure:SCODe:TRESult:IQ?	--	I|Q	
MEASure: Specified Code & Slot				
Reading the ρ	:MEASure:SCSLot:TRESult:RHO?	--	<real>	
Reading the EVM	:MEASure:SCSLot:TRESult:EVM?	--	<real>	
Reading the Peak EVM	:MEASure:SCSLot:TRESult:PEVM?	--	<real>	
Reading the CDP	:MEASure:SCSLot:TRESult:CDP?	--	<real>,<real>	*4
Reading the Slot No.	:MEASure:SCSLot:TRESult:SLOT?	--	<int>	
Reading the Symbol Rate	:MEASure:SCSLot:TRESult:SRATe?	--	<real>	
Reading the SF	:MEASure:SCSLot:TRESult:SF?	--	<int>	
Reading the Code No.	:MEASure:SCSLot:TRESult:CODE?	--	<int>	
Reading the I or Q	:MEASure:SCSLot:TRESult:IQ?	--	I|Q	
Reading the ACK/NACK	:MEASure:SCSLot:TRESult:ACK?	--	<int>	
Reading the CQI	:MEASure:SCSLot:TRESult:CQI?	--	<int>	
MEASure: QPSK				
Reading the EVM	:MEASure:QPSK:TRESult:EVM?	--	<real>	
Reading the Mag. Error	:MEASure:QPSK:TRESult:MERRor?	--	<real>	
Reading the Phase Error	:MEASure:QPSK:TRESult:PERRor?	--	<real>	
Reading the Carrier Frequency	:MEASure:QPSK:TRESult:CARRier?	--	<real>	
Reading the Carrier Frequency Error	:MEASure:QPSK:TRESult:FERRor?	--	<real>,<real>	
Reading the IQ Origin Offset	:MEASure:QPSK:TRESult:IQOFfset?	--	<real>	
Reading the IQ Power Ratio	:MEASure:QPSK:TRESult:IQPRatio?	--	<real>	

*4: Outputs the value of Code Domain Power in order of [dBm] and [dB].

6.4.5 Subsystem-INITiate

Function description	SCPI command	Parameter	Query reply	Remarks
Executing the Single measurement	:INITiate:MEASure:SINGle	--	--	
Executing the Repeat measurement	:INITiate:MEASure:REPeat	--	--	
Stopping the measurement	:INITiate:ABORt	--	--	

6.4.6 Subsystem-TRIGger

Function description	SCPI command	Parameter	Query reply	Remarks
Setting the trigger	:TRIGger[:SEQuence]:SOURce	IMMediate|IF|EXT1|EXT2	IMM|IF|EXT1|EXT2	*5
Setting the trigger polarity of each trigger source	:TRIGger[:SEQuence]:SLOPe	NEGative|POSitive	NEG|POS	
Setting the trigger level when using the EXT2 (external input terminal 2) trigger	:TRIGger[:SEQuence]:LEVel:EXTernal	<real>	<real>	
Setting the trigger level when using the IF trigger	:TRIGger[:SEQuence]:LEVel:IF	<real>	<real>	
Setting the trigger delay value	:TRIGger[:SEQuence]:DELay	<real>	<real>	
Setting the trigger delay (Chip) value	:TRIGger[:SEQuence]:DELay:CHIP	<real>	<real>	
Setting the Interval Trigger	:TRIGger[:SEQuence]:INTerval:STATe	OFF|ON	OFF|ON	

*5:
IMMediate: Free-run status where no trigger is set
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
WINDow				
Setting the Ref Level	:DISPlay:TRACe:Y[:SCALe]:RLEVel	<real>	<real>	
Setting the Level Offset	:DISPlay:TRACe:Y[:SCALe]:RLEVel:OFFSet	<real>	<real>	
Level Offset ON/OFF	:DISPlay:TRACe:Y[:SCALe]:RLEVel:OFFSet:STATe	OFF|ON	OFF|ON	
MEAS VIEW				
Selecting the MEAS VIEW	:DISPlay:MODE	ASCode|SSLot| SSCode|SCODe| SCSLot	ASC|SSL| SSC|SCOD| SCSL	
Specifying the Slot number (Specified Slot)	:DISPlay:MODE:SSLot:SLOT	<int>	<int>	
Setting the specification method of the Code number (Specified Slot)	:DISPlay:MODE:SSLot:CODE:STATe	RATE|ACTive	RATE|ACT	
Specifying the Active Code number (Specified Slot)	:DISPlay:MODE:SSLot:CODE:ACTive	<int>	<int>	
Setting the specified CH of the Rate Code number (Specified Slot)	:DISPlay:MODE:SSLot:RCODe:STATe	I|Q	I|Q	
Specifying the Rate specified analysis result Code number, which is displayed (Specified Slot)	:DISPlay:MODE:SSLot:CODE:RATE	<int>	<int>	
Specifying the Slot number (Specified Code)	:DISPlay:MODE:SCODe:SLOT	<int>	<int>	
Setting the specification method of the Code number (Specified Code)	:DISPlay:MODE:SCODe:CODE:STATe	RATE|ACTive	RATE|ACT	
Specifying the Active Code number (Specified Code)	:DISPlay:MODE:SCODe:CODE:ACTive	<int>	<int>	
Setting the specified CH of the Rate Code number (Specified Code)	:DISPlay:MODE:SCODe:RCODe:STATe	I|Q	I|Q	
Specifying the Rate specified analysis result Code number, which is displayed (Specified Code)	:DISPlay:MODE:SCODe:CODE:RATE	<int>	<int>	
Window Format: All Slot & Code				
Setting the Window Format	:DISPlay:MODE:ASCode:WINDow<scrn=1|2|3|4>:FORMat	TRESult|ADBM| ADB|IDBM| QDBM|IDB|QDB| EVM|POWer| FERRor|PCDE| ACList| PDIScontinuity	TRES|ADBM| ADB|IDBM| QDBM|IDB|QDB| EVM|POW| FERR|PCDE|ACL |PDIS	
Selecting the Result Value Type	:DISPlay:MODE:ASCode:WINDow<scrn=1|2|3|4>:FORMat:RVALue	AVG|MAX|MIN	AVG|MAX|MIN	

6.4.7 Subsystem-DISPlay

Function description	SCPI command	Parameter	Query reply	Remarks
Window Format: Specified Slot				
Setting the Window Format (Window 1)	:DISPlay:MODE:SSLot:WINDow<scrn=1>:FORMat	TRESult|ADBM|ADB|IDBM|QDBM|IDB|QDB|EVM|POWer|FERRor|PCDE|ACList|PDIScontinuity	TRES|ADBM|ADB|IDBM|QDBM|IDB|QDB|EVM|POW|FERR|PCDE|ACL|PDIS	
Setting the Window Format (Window 2)	:DISPlay:MODE:SSLot:WINDow<scrn=2>:FORMat	EVM|POWer|FERRor|PCDE|PDIScontinuity	EVM|POW|FERR|PCDE|PDIS	
Setting the Window Format (Windows 3/4)	:DISPlay:MODE:SSLot:WINDow<scrn=3|4>:FORMat	TRESult|ADBM|ADB|IDBM|QDBM|IDB|QDB|EVM|MERRor|PERRor|CONStellation|ACList	TRES|ADBM|ADB|IDBM|QDBM|IDB|QDB|EVM|MERR|PERR|CONS|ACL	
Selecting the Result Value Type selection	:DISPlay:MODE:SSLot:WINDow<scrn=1>:FORMat:RVALue	AVG|MAX|MIN	AVG|MAX|MIN	
Window Format: Specified Slot & Code				
Setting the Window Format (Window 1)	:DISPlay:MODE:SSCode:WINDow<scrn=1>:FORMat	TRESult|ADBM|ADB|IDBM|QDBM|IDB|QDB|EVM|MERRor|PERRor|CONStellation|ACList	TRES|ADBM|ADB|IDBM|QDBM|IDB|QDB|EVM|MERR|PERR|CONS|ACL	
Setting the Window Format (Window 2)	:DISPlay:MODE:SSCode:WINDow<scrn=2>:FORMat	ADBM|ADB|IDBM|QDBM|IDB|QDB	ADBM|ADB|IDBM|QDBM|IDB|QDB	
Setting the Window Format (Window 3/4)	:DISPlay:MODE:SSCode:WINDow<scrn=3|4>:FORMat	TRESult|CDBM|CDB|EVM|DDATa	TRES|CDBM|CDB|EVM|DDAT	
Window Format: Specified Code				
Setting the Window Format (Window 1)	:DISPlay:MODE:SCODe:WINDow<scrn=1>:FORMat	TRESult|ADBM|ADB|IDBM|QDBM|IDB|QDB|EVM|POWer|FERRor|PCDE|ACList|PDIScontinuity	TRES|ADBM|ADB|IDBM|QDBM|IDB|QDB|EVM|POW|FERR|PCDE|ACL|PDIS	
Setting the Window Format (Window 2)	:DISPlay:MODE:SCODe:WINDow<scrn=2>:FORMat	ADBM|ADB|IDBM|QDBM|IDB|QDB	ADBM|ADB|IDBM|QDBM|IDB|QDB	
Setting the Window Format (Windows 3/4)	:DISPlay:MODE:SCODe:WINDow<scrn=3|4>:FORMat	TRESult|CDBM|EVM	TRES|CDBM|EVM	
Selecting the Result Value Type selection	:DISPlay:MODE:SCODe:WINDow<scrn=1|3|4>:FORMat:RVALue	AVG|MAX|MIN	AVG|MAX|MIN	

Function description	SCPI command	Parameter	Query reply	Remarks
Window Format: Specified Code & Slot				
Setting the Window Format (Window 1)	:DISPlay:MODE:SCSLot:WINDow<scrn=1>:FORMat	TRESult|CDBM|EVM	TRES|CDBM|EVM	
Setting the Window Format (Window 2)	:DISPlay:MODE:SCSLot:WINDow<scrn=2>:FORMat	CDBM|EVM	CDBM|EVM	
Setting the Window Format (Window 3/4)	:DISPlay:MODE:SCSLot:WINDow<scrn=3|4>:FORMat	TRESult|CDBM|CDB|EVM|DDATa	TRES|CDBM|CDB|EVM|DDAT	
Setting the Result Value Type	:DISPlay:MODE:SCSLot:WINDow<scrn=1>:FORMat:RVALue	AVG|MAX|MIN	AVG|MAX|MIN	
Window Format: QPSK Setting the Window Format	:DISPlay:QPSK:WINDow<scrn=1|2|3|4>:FORMat	TRESult|CONStellation|EVM|MERRor|PERRor	TRES|CONS|EVM|MERR|PERR	
Selecting the Constellation Type	:DISPlay:QPSK:WINDow<scrn=1|2|3|4>:CONStellation:TYPE	LCHip|CHIP	LCHip|CHIP	
SCALe Setting the Multi Screen	:DISPlay	SINGle|DUAL|QUAD	SING|DUAL|QUAD	
Setting the X Scale Left	:DISPlay[:WINDow<scrn=1|2|3|4>]:TRACe:X[:SCALe]:LEFT	<real>	<real>	
Setting the X Scale Right	:DISPlay[:WINDow<scrn=1|2|3|4>]:TRACe:X[:SCALe]:RIGHt	<real>	<real>	
Setting the Y Scale Upper	:DISPlay[:WINDow<scrn=1|2|3|4>]:TRACe:Y[:SCALe]:UPPer	<real>	<real>	
Setting the Y Scale Lower	:DISPlay[:WINDow<scrn=1|2|3|4>]:TRACe:Y[:SCALe]:LOWer	<real>	<real>	

6.4.8 Subsystem-MMEMory

Function description	SCPI command	Parameter	Query reply	Remarks
Specifying the device used when executing the SAVE and LOAD functions.	:MMEMory:DEVice	C|D|E	C|D|E	*6
Saving the settings of this instrument	:MMEMory:STORe:STATe	<int>	--	*7
Loading the settings of this instrument	:MMEMory:LOAD:STATe	<int>	--	*7
Selecting whether to save the measurement conditions	:MMEMory:SELect:ITEM:GPPUL:SETup	OFF|ON	OFF|ON	
Creating the Demod Data Save	:MMEMory:STORe:DDATa:STATe	<int>	--	*7

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

*7: 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
Setting the marker function to ON or OFF	:CALCulate:MARKer<scrn=1|2|3|4>[:STATe]	OFF|ON	OFF|ON	
Setting the maker X	:CALCulate:MARKer<scrn=1|2|3|4>:X	<real>	<real>	
Reading the maker Y	:CALCulate:MARKer<scrn=1|2|3|4>:Y	--	<real>	
Setting the Marker in the Constellation display	:CALCulate:MARKer<scrn=1|2|3|4>:CHIP	<int>	<int>	
Reading the I signal in the Constellation display	:CALCulate:MARKer<scrn=1|2|3|4>:I	--	<real>	
Reading the Q signal in the Constellation display	:CALCulate:MARKer<scrn=1|2|3|4>:Q	--	<real>	
Setting the Result Value Type of Total Result in ALL Slot & Code measurement	:CALCulate:ASCode:RVALue	AVG|MAX|MIN	AVG|MAX|MIN	
Setting the Result Value Type of Total Result in Specified Code measurement	:CALCulate:SCODe:RVALue	AVG|MAX|MIN	AVG|MAX|MIN	

6.4.10 Subsystem-SYSTem

Function description	SCPI command	Parameter	Query reply	Remarks
Selecting the measurement system	:SYSTem:SELect	SANalyzer|TXTester	SAN|TXT	
Setting the measurement standard	:SYSTem:SELect:STANdard	<str1>,<str2>	--	*8
Initializing each measurement system parameter	:SYSTem:PRESet	--	--	
Initializing all measurement systems	:SYSTem:PRESet:ALL	--	--	
Inquiring about the most recent error	:SYSTem:ERRor?	--	<int>,<str>	*9
Inquiring about the error log	:SYSTem:ERRor:ALL?	--	<int>,<str>	*9
Inquiring about the R3477 series options	:SYSTem:OPTions?	--	<str>[,...]	

*8: In <str1>, the standard name is set. In <str2>, the operating band name is set.
<str1> = "3GPP_UL"
<str2> = {"3GPP_UL_OB01"| "3GPP_UL_OB02"| ...}
To specify 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

*9: In <int>, the error number is returned. In <str>, a character string of the error message is returned.

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	

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	--	--	

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	--	--	

6.5.2 Subsystem-SENSe

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	--	--	

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)

6.5.2 Subsystem-SENSe

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.

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	

6.5.4 Subsystem-MEASure/READ/FETCh

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>,<rea12>,<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> = Upper freq(1): Unit: Hz,
<real2> = Upper Level Abs(1): Unit: dBm,
<real3> = Upper Level Rel(1): Unit: dB,
<int1> = Upper P/F(1): 0/1,
<real4> = Lower freq(1): Unit: Hz,
<real5> = Lower Level Abs(1): Unit: dBm,
<real6> = Lower Level Rel(1): Unit: dB,
<int4> = Lower P/F(1) : 0/1,

[<real> = Upper freq(2), <real> = Upper Level Abs(2), <real> = Upper Level Rel(2), <int> =Upper P/F(2), ...],
...,
[<real> = Upper Freq(n), <real> = Upper Level Abs(n), <real> = Upper Level Rel(n),
<int> = Upper P/F(n), <real> = Lower Freq(n), <real> = Lower level Abs(n),
<real> = Lower Level Rel(n), <int> = Lower 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> = Upper freq(n): Unit: Hz,
<real2> = Upper Level Abs(n): Unit: dBm,
<real3> = Upper Level Rel(n): Unit: dB,
<int1> = Upper P/F(n): 0/1,
<real4> = Lower freq(n): Unit: Hz,
<real5> = Lower Level Abs(n): Unit: dBm,
<real6> = Lower Level Rel(n): Unit: dB,
<int4> = Lower 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

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	*12
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	

*12 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	*13
Saving the settings of this instrument	:MMEMory:STORe:STATe	<int>	–	*14
Loading the settings of this instrument	:MMEMory:LOAD:STATe	<int>	–	*14
Saving the TxTester measurement conditions	:MMEMory:SELect:ITEM:TXTester:SETup	OFF|ON	OFF|ON	

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

*14: 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|OSCReen|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>	*15
Inquiring about the error log	:SYSTem:ERRor:ALL?	–	<int>,<str>	*15
Inquiring about the R3477 series options	:SYSTem:OPTions?	–	<str>[,...]	

*15 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

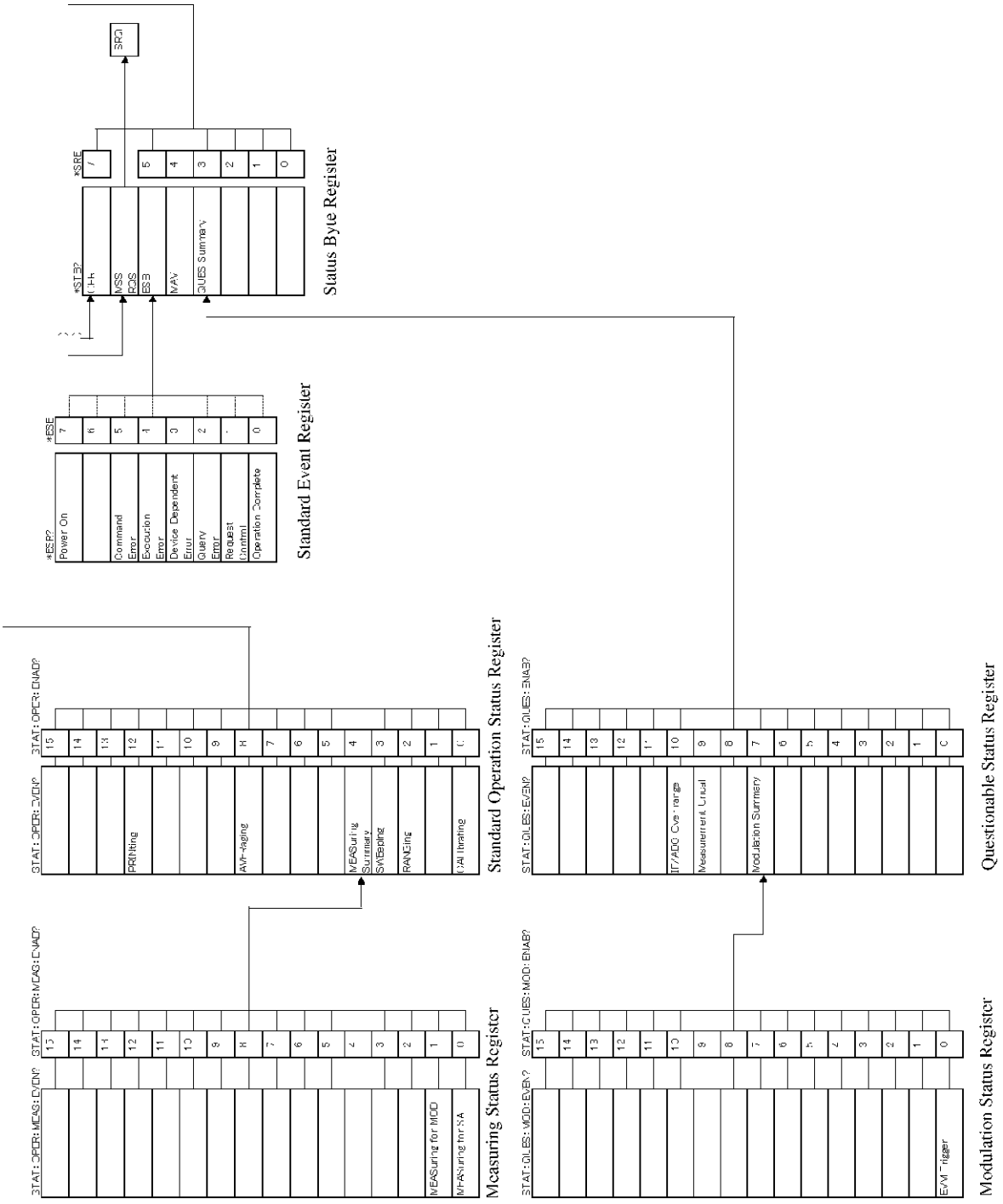


Figure 6-1 Status Registers

7. PERFORMANCE VERIFICATION

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

Test data record sheets are included on the last few pages of this chapter. It is recommended that data from the performance test is kept as a record by using a copy of these sheets.

IMPORTANT: ***Before executing the performance verification, perform the warm-up procedure and all calibration procedures.***

7.1 Test Signal Specifications

The following list shows the test signals that are used for the performance verification.

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

No.	Test signal name	Signal specifications	Test item
1	Base station signal 1 Single carrier	Scrambling Code No.: 0 Transmission channel: TestModel1 DPCH64codes (3GPP Standard: Based on TS25.141 V5.7.0)	RF Input Downlink measurement
2	Base station signal 2 Single carrier	Scrambling Code No.: 0 Transmission channel: TestModel5 DPCH30codes (3GPP Standard: Based on TS25.141 V5.7.0)	RF Input Downlink measurement
3	Base station signal 3 Multi carriers	Scrambling Code No.: 0 Transmission channel: TestModel1 DPCH64codes (3GPP Standard: Based on TS25.141 V5.7.0) Number of carriers: 4 Frequency offset: -7.5 MHz, -2.5 MHz, 2.5 MHz, 7.5 MHz Transmission timing: 0 chip, 512 chip delay, 1024 chip delay, 1536 chip delay Level difference between each carrier: 0 dB	RF Input Downlink measurement
4	Base station signal 4 Multi carriers	Scrambling Code No.: 0 Transmission channel: TestModel5 DPCH30codes (3GPP Standard: Based on TS25.141 V5.7.0) Number of carriers: 4 Frequency offset: -7.5 MHz, -2.5 MHz, 2.5 MHz, 7.5 MHz Transmission timing: 0 chip, 512 chip delay, 1024 chip delay, 1536 chip delay Level difference between each carrier: 0 dB	RF input Downlink measurement

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

No.	Test signal name	Signal specifications		Test item
5	Mobile station signal	Scrambling Code No.: Transmission channel:	1 DPCCH 15 ksps No.0 Q -5.46 dB DPDCH 60 ksps No.16 I 0.00 dB	RF input Uplink measurement
6	QPSK signal	Modulation format: Chip rate: Transmission filter:	QPSK 3.84 Mcps Root Nyquist filter (roll-off: 0.22)	RF input QPSK measurement

7.2 Test Procedures

This section describes each test procedure.

7.2.1 RF Input Base Station Signal Measurement (Downlink)

7.2.1.1 Single Carrier Measurement

Connect the signal source as follows.

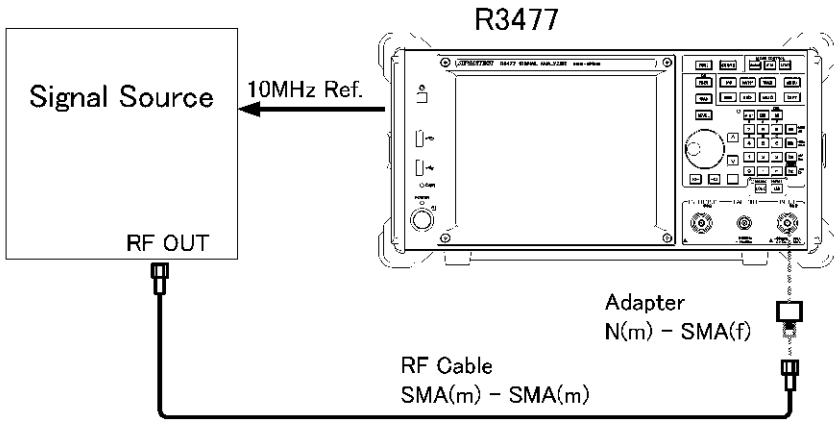


Figure 7-1 Connection Diagram of Signal Source

1. Output base station signal 1 (base station signal 2), which has a carrier frequency of 800 MHz (2 GHz), and a level of -10 dBm (-20 dBm), from the signal source.
2. Set this instrument as follows.

Meas Mode **Code Domain**

Meas Setup **Meas Parameters**

[Meas Band Width]:	Multi Carrier (Single Carrier)
[Setup Carrier]:	1st Carrier
Parameters	
[Carrier Frequency Offset]:	0
[Scrambling Code Define]:	UNDEFINE
[Active CH Detection]:	TestModel1 DPCH64codes (TestModel5 DPCH30codes)
[SCH]:	ON
[Threshold]:	-30 dB
Equalizing Filter:	NOT USE
Code Domain Setup	
[Meas Carrier]:	1st

[Analysis Rate]: 7.5 ksps
[Meas Length]: 1 SLOT

Trigger **Trigger Source** Free Run

FREQ **Center** 800 MHz (2 GHz)

Execute **Auto Level Set**.

3. Press the **SINGLE** button on this instrument. The measurement is performed.
4. Record the measurement results in the test data record sheets.

7.2.1.2 Multi Carrier Measurement

Connect the signal source as follows.

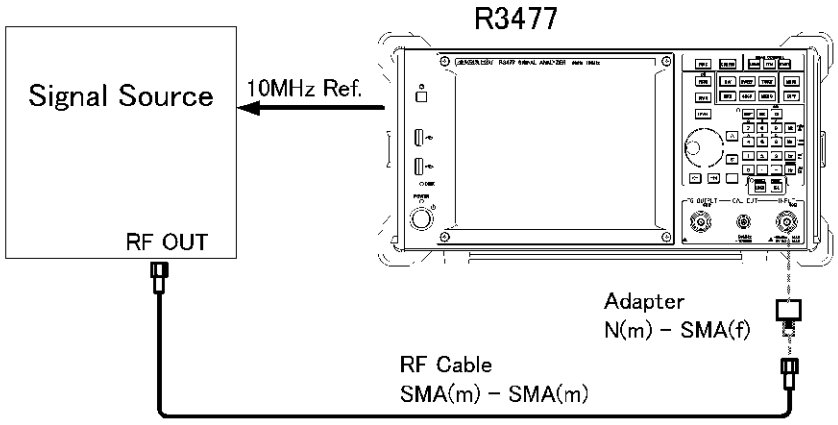


Figure 7-2 Connection Diagram of Signal Source

1. Output base station signal 3 (base station signal 4), which has a carrier frequency of 800 MHz (2 GHz) and a level of -10 dBm (-20 dBm) per carrier, from the signal source.
2. Set this instrument as follows.

Meas Mode **Code Domain**

Meas Setup **Meas Parameters**

[Meas Band Width]: Multi Carrier (Single Carrier)
[Setup Carrier]: 1st Carrier
Parameters
[Carrier Frequency Offset]: -7.5 MHz, -2.5 MHz, 2.5 MHz, 7.5 MHz
[Scrambling Code Define]: UNDEFINE
[Active CH Detection]: TestModel1 DPCH64codes
(TestModel5 DPCH30codes)
[SCH]: ON
[Threshold]: -30 dB
Equalizing Filter: NOT USE

Code Domain Setup
[Meas Carrier]: 1st
[Analysis Rate]: 7.5 ksps
[Meas Length]: 1 SLOT

Trigger **Trigger Source** Free Run

FREQ **Center** 800 MHz (2 GHz)

Execute **Auto Level Set**.

3. Press the **SINGLE** button on this instrument. The measurement is performed.
4. Record the measurement results in the test data record sheets.

7.2.2 RF Input Mobile Station Signal Measurement (Uplink)

Connect the signal source as follows.

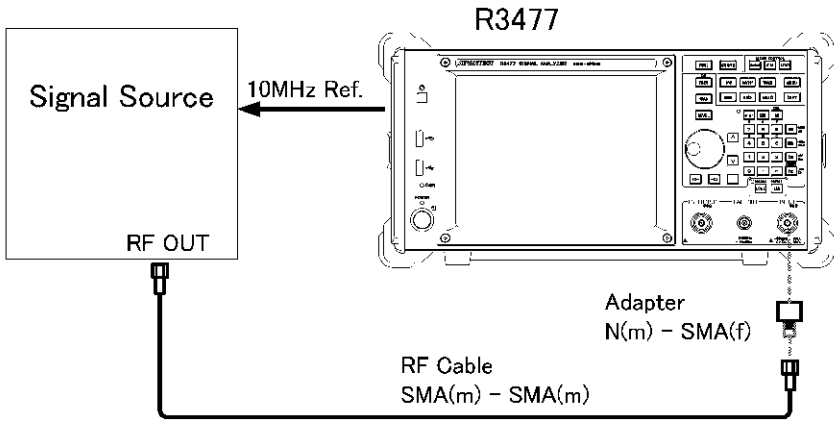


Figure 7-3 Connection Diagram of Signal Source

1. Output a mobile station signal, which has a carrier frequency of 800 MHz (1.9 GHz) and a level of -10 dBm (-20 dBm), from the signal source.
2. Set this instrument as follows.

Meas Mode **Code Domain**

Meas Setup **Meas Parameters**

Parameters
[Scrambling Code No.]: 1
[Excluding chips in slot boundary]: 96 chip
[Threshold]: -30 dB
Equalizing Filter: NOT USE
Code Domain Setup
[Analysis Rate]: 15 ksps
[Meas Length]: 1 SLOT

Trigger	**Trigger Source**	Free Run
FREQ	**Center**	800 MHz (1.9 GHz)

Execute **Auto Level Set**.

3. Press the **SINGLE** button on this instrument. The measurement is performed.
4. Record the measurement results in the test data record sheets.

7.2.3 RF Input QPSK Signal Measurement

Connect the signal source as follows.

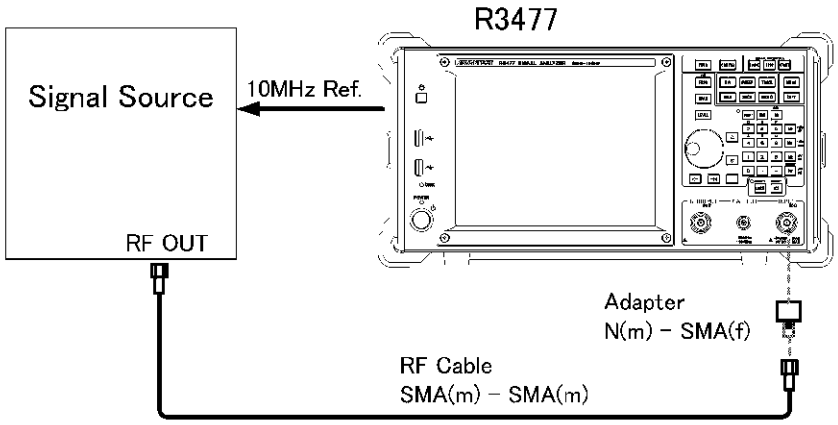


Figure 7-4 Connection Diagram of Signal Source

1. Output a QPSK signal, which has a carrier frequency of 800 MHz (1.9 GHz) and a level of -10 dBm (-20 dBm), from the signal source.
2. Set this instrument as follows.

Meas Mode	**QPSK**	
Meas Setup	**Meas Parameters**	
	[Signal Type]:	QPSK
	[Meas Length]:	2368 chip
	[Root Nyquist Filter]:	ON
	[IQ Origin Offset]:	INCLUDE
Trigger	**Trigger Source**	Free Run
FREQ	**Center**	800 MHz (1.9 GHz)

Execute **Auto Level Set**.

3. Press the **SINGLE** button on this instrument. The measurement is performed.
4. Record the measurement results in the test data record sheets.

7.3 Test Data Record Sheets

Test data record sheets
Model name:
Serial number:

1. Downlink single carrier measurement (carrier frequency: 800 MHz)

Test item	Specifications			Judgment Pass / Fail
	Minimum value	Measured value	Maximum value	
Carrier frequency error measurement	-5.0 Hz		+5.0 Hz	
EVM measurement	None		1.5%rms	
Peak CDE measurement	None		-55 dB	
CDP relative value measurement (to -10 dBc code)	-10.03 dB		-9.97 dB	
Transmission power	-10.8 dBm		-9.2 dBm	

2. Downlink single carrier measurement (carrier frequency: 2 GHz)

Test item	Specifications			Judgment Pass / Fail
	Minimum value	Measured value	Maximum value	
Carrier frequency error measurement	-5.0 Hz		+5.0 Hz	
EVM measurement	None		1.0%rms	
Peak CDE measurement	None		-55 dB	
CDP relative value measurement (to -10 dBc code)	-10.03 dB		-9.97 dB	
Transmission power	-10.8 dBm		-9.2 dBm	

3. Downlink multi carrier measurement (carrier frequency: 800 MHz)

Test item	Specifications			Judgment Pass / Fail
	Minimum value	Measured value	Maximum value	
Carrier frequency error measurement	-20.0 Hz		+20.0 Hz	
EVM measurement	None		2.0%rms	
Peak CDE measurement	None		-50 dB	
CDP relative value measurement (to -10 dBc code)	-10.03 dB		-9.97 dB	
Transmission power	-10.9 dBm		-9.1 dBm	

4. Downlink multi carrier measurement (carrier frequency: 2 GHz)

Test item	Specifications			Judgment Pass / Fail
	Minimum value	Measured value	Maximum value	
Carrier frequency error measurement	-20.0 Hz		+20.0 Hz	
EVM measurement	None		1.5%rms	
Peak CDE measurement	None		-50 dB	
CDP relative value measurement (to -10 dBc code)	-10.03 dB		-9.97 dB	
Transmission power	-10.9 dBm		-9.1 dBm	

5. Uplink measurement (carrier frequency: 800 MHz)

Test item	Specifications			Judgment Pass / Fail
	Minimum value	Measured value	Maximum value	
Carrier frequency error measurement	-5.0 Hz		+5.0 Hz	
EVM measurement	None		1.5%rms	
Peak CDE measurement	None		-40 dB	
Transmission power	-10.8 dBm		-9.2 dBm	

6. Uplink measurement (carrier frequency: 1.9 GHz)

Test item	Specifications			Judgment Pass / Fail
	Minimum value	Measured value	Maximum value	
Carrier frequency error measurement	-5.0 Hz		+5.0 Hz	
EVM measurement	None		1.5%rms	
Peak CDE measurement	None		-40 dB	
Transmission power	-10.8 dBm		-9.2 dBm	

7. QPSK measurement (carrier frequency: 800 MHz)

Test item	Specifications			Judgment Pass / Fail
	Minimum value	Measured value	Maximum value	
Carrier frequency error measurement	-5.0 Hz		+5.0 Hz	
EVM measurement	None		1.5%rms	

8. QPSK measurement (carrier frequency: 1.9 GHz)

Test item	Specifications			Judgment Pass / Fail
	Minimum value	Measured value	Maximum value	
Carrier frequency error measurement	-5.0 Hz		+5.0 Hz	
EVM measurement	None		1.5%rms	

8. SPECIFICATIONS

8.1 Specifications (Downlink)

8.1.1 System for the 3GPP Modulation Analysis (Downlink)

Compliant with:
3rd Generation Partnership Project (3GPP)
Technical Specification
TS 25.211 V5.5.0
TS 25.213 V5.4.0

8.1.2 Performance of the 3GPP Modulation Analysis (Downlink)

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></td></tr>
<tr><td>Single carrier</td><td>TestModel1 DPCH64codes, TestModel5 DPCH30codes</td></tr>
<tr><td>Multi carriers</td><td>TestModel1 DPCH64codes of 4 carriers
TestModel5 DPCH30codes of 4 carriers
<table>
<tr><th></th><th>1st</th><th>2nd</th><th>3rd</th><th>4th</th></tr>
<tr><td>Frequency offset [MHz]</td><td>-7.5</td><td>-2.5</td><td>2.5</td><td>7.5</td></tr>
<tr><td>Transmission timing [chip]</td><td>0</td><td>512</td><td>1024</td><td>1536</td></tr>
<tr><td>Power [dB]</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
</table></td></tr>
<tr><td>Power per carrier</td><td>-10 dBm, -20 dBm</td></tr>
<tr><td>EVM</td><td>0%rms</td></tr>
<tr><td>Measurement mode</td><td>Concise, Code Domain</td></tr>
</table>

Single carrier

Item	Specifications
Carrier frequency error	For center frequencies of 800 MHz and 2 GHz
Measurement range	< ±1 kHz
Measurement accuracy	< ± (reference accuracy × center frequency + 5 Hz)
EVM	
Residual EVM	<1.5%rms for a center frequency of 800 MHz <1.0%rms for a center frequency of 2 GHz
Peak CDE	For center frequencies of 800 MHz and 2 GHz
Measurement accuracy	< -55 dB
CDP relative value error	For -10 dBc code at center frequencies of 800 MHz and 2 GHz
Measurement accuracy	< ±0.03 dB
Transmission power	
Measurement accuracy	< ± (0.2 + frequency response + calibration signal level accuracy) dB Frequency response 50 MHz to 2.5 GHz < ±0.4 dB 9 kHz to 3.3 GHz < ±1.0 dB Calibration signal level accuracy < ±0.2 dB

Multiple carriers

Item	Specifications
Carrier frequency error	For center frequencies of 800 MHz and 2 GHz
Measurement range	< ±1 kHz
Measurement accuracy	< ± (reference accuracy × center frequency +20 Hz)
EVM	
Residual EVM	< 2.0%rms for a center frequency of 800 MHz < 1.5%rms for a center frequency of 2 GHz
Peak CDE	For center frequencies of 800 MHz and 2 GHz
Measurement accuracy	< -50 dB
CDP relative value error	For -10 dBc code at center frequencies of 800 MHz and 2 GHz
Measurement accuracy	< ±0.03 dB
Transmission power	
Measurement accuracy	< ±(0.3 + frequency response + calibration signal level accuracy) dB Frequency response 50 MHz to 2.5 GHz < ±0.4 dB 9 kHz to 3.3 GHz < ±1.0 dB Calibration signal level accuracy < ±0.2 dB

8.2 Specifications (Uplink)

8.2.1 System for the 3GPP Modulation Analysis (Uplink)

Compliant with:
3rd Generation Partnership Project (3GPP)
Technical Specification
TS 25.211 V5.5.0
TS 25.213 V5.4.0

8.2.2 Performance of the 3GPP Modulation Analysis (Uplink)

Conditions

Item	Conditions				
Temperature range	+20 °C to +30 °C				
Signal					
Transmission channel	DPCCH	15 ksps	No.0	Q	-5.46 dB
	DPDCH	60 ksps	No.16	I	0.00 dB
Power	-10 dBm, -20 dBm				
EVM	0%rms				
Measurement mode	Concise, Code Domain				

Item	Specifications
Carrier frequency error	For center frequency of 800 MHz and 1.9 GHz
Measurement range	< ±1 kHz
Measurement accuracy	< ± (reference accuracy × center frequency + 5 Hz)
EVM	For center frequencies of 800 MHz and 1.9 GHz
Residual EVM	< 1.5%rms
Peak CDE	For center frequencies of 800 MHz and 1.9 GHz
Measurement accuracy	< -40 dB
Transmission power	
Measurement accuracy	< ± (0.2 + frequency response + calibration signal level accuracy) dB Frequency response 50 MHz to 2.5 GHz < ±0.4 dB 9 kHz to 3.3 GHz < ±1.0 dB Calibration signal level accuracy < ±0.2 dB

8.2.3 Performance of the QPSK Modulation Analysis

Conditions

Item	Conditions
Temperature range	+20 °C to +30 °C
Signal	
Modulation format	QPSK
Chip rate	3.84 Mcps
Transmission filter	Root Nyquist filter (roll-off: 0.22)
Power	-10 dBm, -20 dBm
EVM	0%rms
Setting	
Measurement length	2386 chips
Measurement mode	QPSK

Item	Specifications
Carrier frequency error	For center frequencies of 800 MHz and 1.9 GHz
Measurement range	< ±1 kHz
Measurement accuracy	< ± (reference accuracy × center frequency + 5 Hz)
EVM	For center frequencies of 800 MHz and 1.9 GHz
Residual EVM	< 1.5%rms

APPENDIX

This section describes the following supplemental information:

A.1 Technical Data

A.2 Error Message List

A.1 Technical Data

A.1.1 Method Used to Calculate Measurement Values

Error Vector Magnitude (EVM)

EVM is defined by Figure A-1 and can be obtained by using the following equation.

$$EVM = \sqrt{\frac{\sum_{i}^{K}\left\{(\mathrm{Im}(i)-Ir(i))^2+(Qm(i)-Qr(i))^2\right\}}{\sum_{i}^{K}\left\{Ir(i)^2+Qr(i)^2\right\}}}\times 100$$

Im(i),Qm(i):	Measurement value
Ir(i),Qr(i):	Reference value
i:	Chip number
K:	Measurement length

Magnitude Error

Magnitude Error is defined by Figure A-1 and can be obtained by using the following equation.

$$MagnitudeError = \sqrt{\frac{\sum_{i}^{K}\left\{\sqrt{\mathrm{Im}(i)^2+\mathrm{Im}(i)^2}-\sqrt{Ir(i)^2+Ir(i)^2}\right\}}{\sum_{i}^{K}\left\{Ir(i)^2+Qr(i)^2\right\}}}\times 100$$

Im(i),Qm(i):	Measurement value
Ir(i),Qr(i):	Reference value
i:	Chip number
K:	Measurement length

Phase Error

Phase Error is defined by Figure A-1 and can be obtained by using the following equation.

$$PhaseError = \sqrt{\frac{\sum_{i}^{K}\left\{\tan^{-1}(Qm(i)/\mathrm{Im}(i)) - \tan^{-1}(Qr(i)/Ir(i))\right\}^2}{K}}$$

Im(i),Qm(i):	Measurement value
Ir(i),Qr(i):	Reference value
i:	Chip number
K:	Measurement length

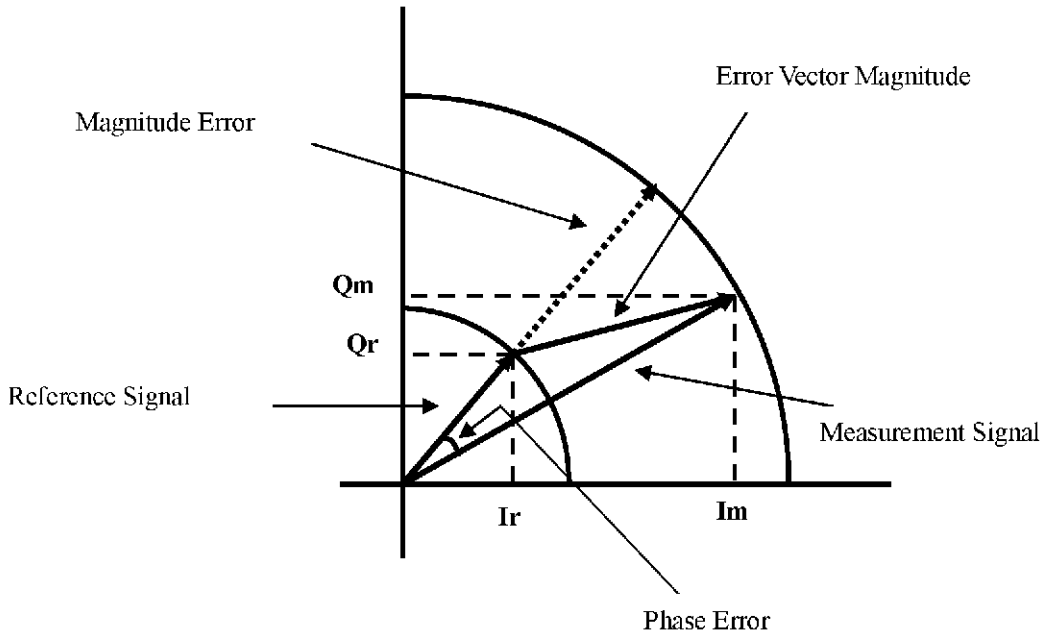


Figure A-1 Error Vector Magnitude, Magnitude Error, Phase Error

Waveform quality (ρ)

The waveform quality can be obtained by using the following equation.

$$\rho = \frac{\left| \sum_{i}^{K} \{\mathrm{Im}(i) + jQm(i)\}\{Ir(i) + jQr(i)\} \right|^2}{\sum_{i}^{K} \left\{ \mathrm{Im}(i)^2 + Qm(i)^2 \right\} \sum_{i}^{K} \left\{ Ir(i)^2 + Qr(i)^2 \right\}}$$

Im(i),Qm(i): Measurement value

Ir(i),Qr(i): Reference value

i: Chip number

K: Measurement length

Peak Code Domain Error (PCDE)

Peak Code Domain Error can be obtained by using the following equation.

$$PCDE = 10Log_{10}\left[\frac{\underset{c}{Max}\left\{ \sum_{h}^{N} \left| \sum_{i}^{M} \{Z(h \cdot M + i) - R(h \cdot M + i)\}\{r_c^*(h \cdot M + i)\} \right|^2 \right\}}{\sum_{i}^{M} |r_c(h \cdot M + i)|^2 \sum_{h}^{N} \sum_{i}^{M} |R(h \cdot M + i)|^2} \right]$$

Z: Measurement value
= Im(i) + jQm(i)

R: Reference value
= Ir(i) + jQr(i)

r_c: C-channel spreading code

h: Symbol number

i: Chip number

M: Number of chips per symbol

N: Number of measurement symbols

Tx Power

Tx Power refers to the transmission power [dBm] per carrier. When calculating the Tx Power, the test signal is filtered to eliminate interference from sources such as the adjacent carrier. A filter that allows signal bands of 4.6848 MHz = 3.84 MHz × 1.22 to pass is used. Therefore, the Tx Power is approximately 0.246 dB larger than the transmission power of the signal that passes through the root Nyquist filter.

Code Domain Power [dBm]

Code Domain Power [dBm] is calculated to the signal which passed along the root Nyquist filter.

A.1.2 IQ Origin Offset (DC Offset)

The 3GPP standard states that the IQ origin offset should be included when calculating the Error Vector Magnitude. Therefore, in this option, the IQ origin offset is included in the calculation. As a result, the larger the IQ origin offset, the larger the Error Vector Magnitude value becomes.

A.1.3 Measurement Length for Carrier Frequency Error

The 3GPP standard states that the carrier frequency error should be calculated over the length of time of one slot. Therefore, in this option, it is also calculated over the length of time of one slot. If the measurement length (**[Meas Length]**) is set to 1 frame or more, the carrier frequency error is measured for each slot and the average, the maximum and the minimum values are displayed.

A.1.4 [Threshold]

A threshold value is used to determine a active channel. A channel that has a larger power than the threshold value is determined to be a active channel. The threshold value is the power ratio to the total power and is set by **[Threshold]**.

A.1.5 The Measurement Result Screen in the Code Domain Mode

The following three types of graph are provided in the Code Domain Mode measurement result screen.

- **All Slot & Code** Displays the results of all slots and all codes.
- **Specified Slot** Displays the results of a specified slot.
- **Specified Code** Displays the results of a specified code.

All Slot & Code

The **All Slot & Code** displays the measurement results of all slots and codes in four separate windows.

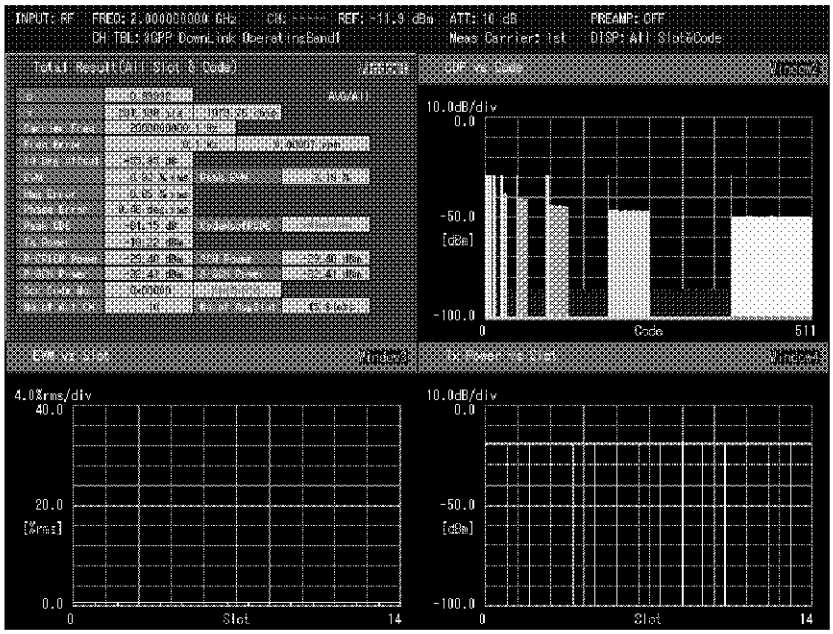


Figure A-2 Results of All Slots and All Codes (Downlink)

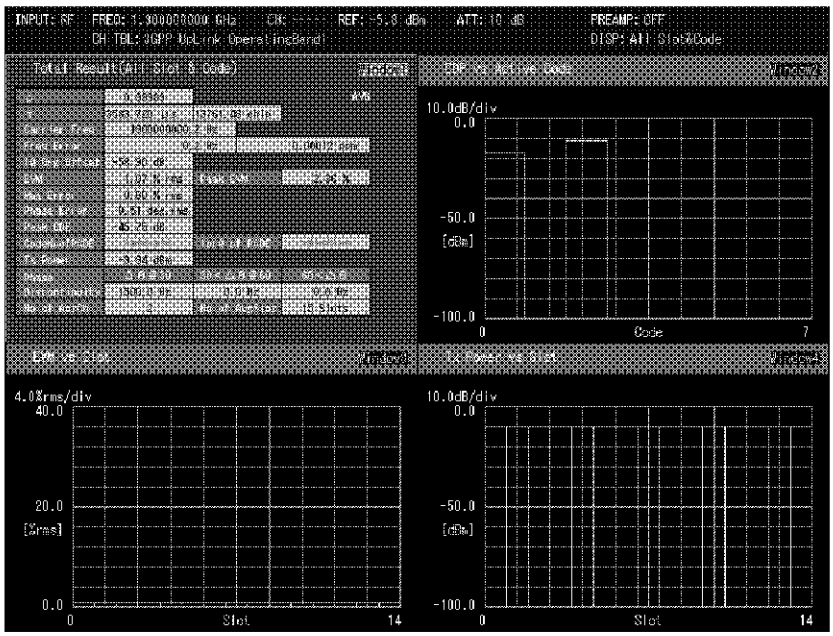


Figure A-3 Results of All Slots and All Codes (Uplink)

Specified Slot

The **Specified Slot** displays the measurement results of a specified slot.

There are two combinations of the separate windows.

- **Specified Slot** — The results of all slots and all codes are displayed in the upper two windows.
  The results of a specified slot are displayed in the lower two windows.
- **Specified Slot & Code** — The results of a specified slot are displayed in the upper two windows.
  The results of a specified slot and a specified code are displayed in the lower two windows.

- **Specified Slot**

This screen displays the results of all slots and all codes in the upper two windows, and the results of a specified slot in the lower two windows. The measurement results of the slot, which is specified by a marker in the upper right window, are displayed in the lower two windows. This screen is useful when evaluating the measurement results of a specific slot that is chosen from the results of all slot measurements.

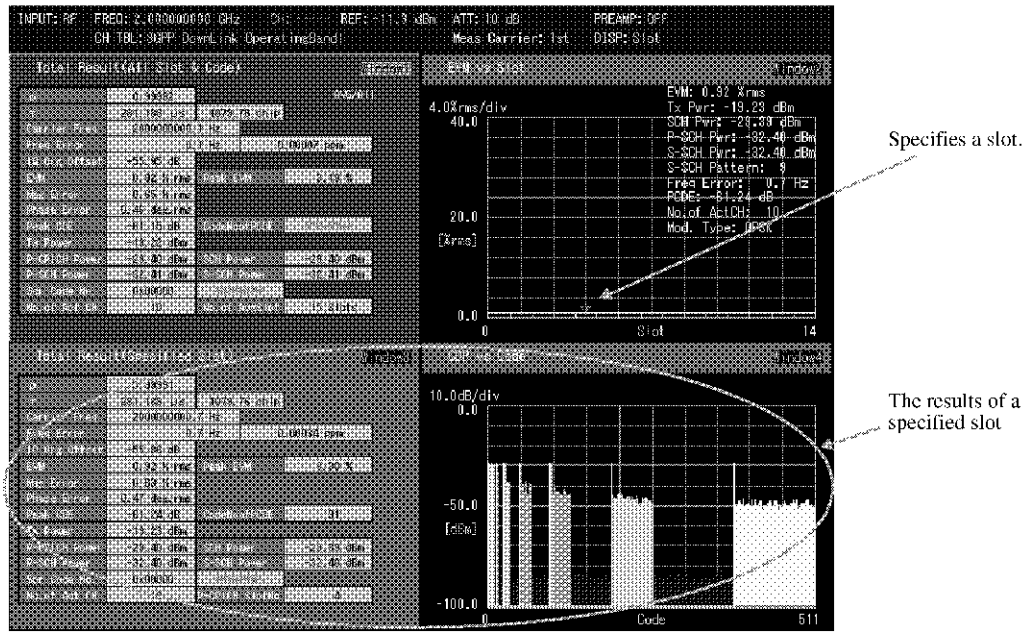


Figure A-4 Specified Slot Screen (that displays the results of all slots and all codes in the upper two windows and the results of a specified slot in the lower two windows (Downlink))

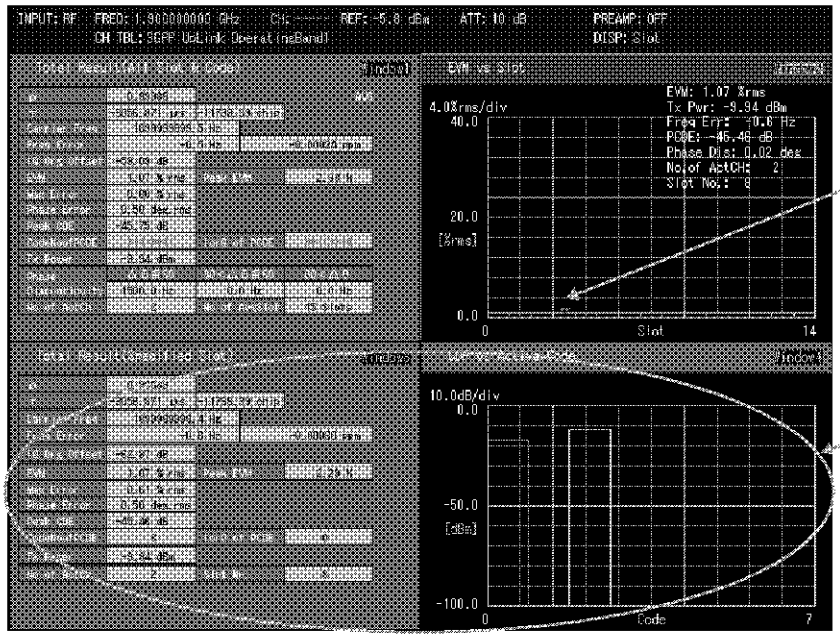


Figure A-5 Specified Slot Screen (that displays the results of all slots and all codes in the upper two windows and the results of a specified slot in the lower two windows (Uplink))

- **Specified Slot & Code**

  This screen displays the results of the slot, which is specified by **Slot No.**, in the upper two windows, and the results of the specified slot and a specified code in the lower two windows.

  The measurement results of the code, which is specified by a marker in the upper right window, are displayed in the lower two windows.

  This screen is useful when evaluating the measurement results of a specific code that is chosen from the results of all code measurements.

A.1.5 The Measurement Result Screen in the Code Domain Mode

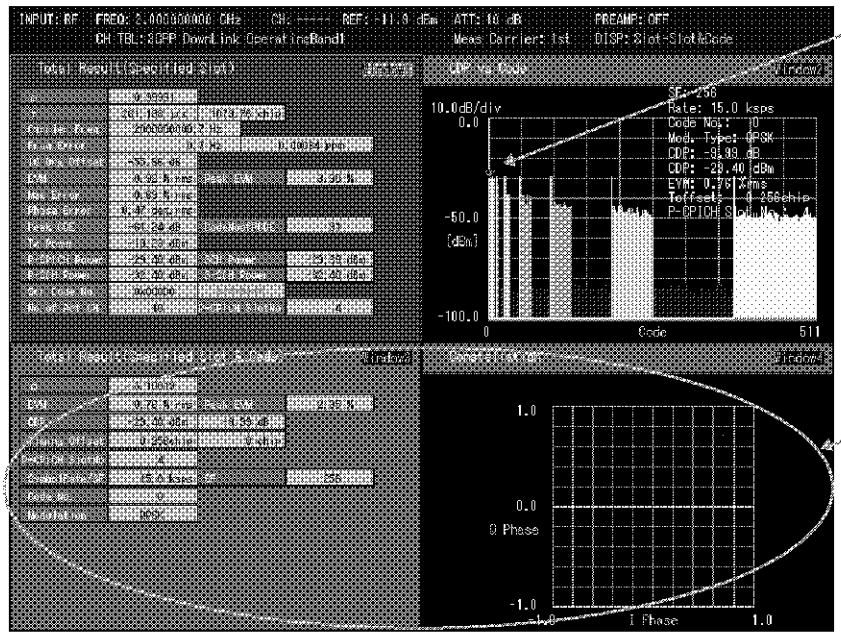


Figure A-6 Specified Slot & Code Screen (that displays the results of a specified slot in the upper two windows and the results of the specified slot and a specified code in the lower two windows (Downlink))

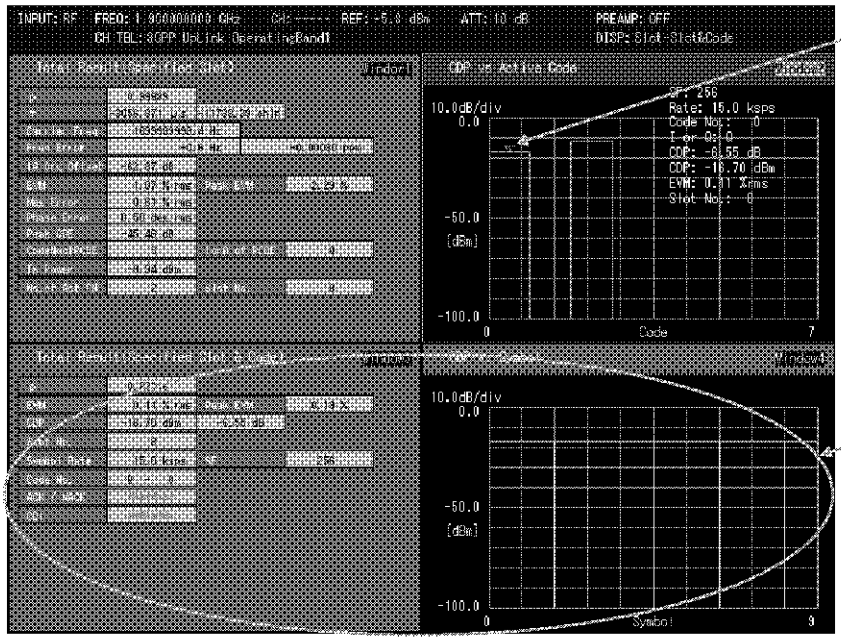


Figure A-7 Specified Slot & Code Screen (that displays the results of a specified slot in the upper two windows and the results of the specified slot and a specified code in the lower two windows (Uplink))

Specified Code

The **Specified Code** displays the measurement results of a specified code.

There are two combinations of separate windows.

- **Specified Code** — The results of all slots and all codes are displayed in the upper two windows.
  The results of a specified code are displayed in the lower two windows.
- **Specified Slot & Code** — The results of a specified code are displayed in the upper two windows.
  The results of a specified code and a specified slot are displayed in the lower two windows.

- **Specified Code**

  This screen displays the results of all slots and all codes in the upper two windows, and the results of a specified code in the lower two windows. The measurement results of the code, which is specified by a marker in the upper right window, are displayed in the lower two windows. This screen is useful when evaluating the measurement results of a specific code that is chosen from the results of all code measurements.

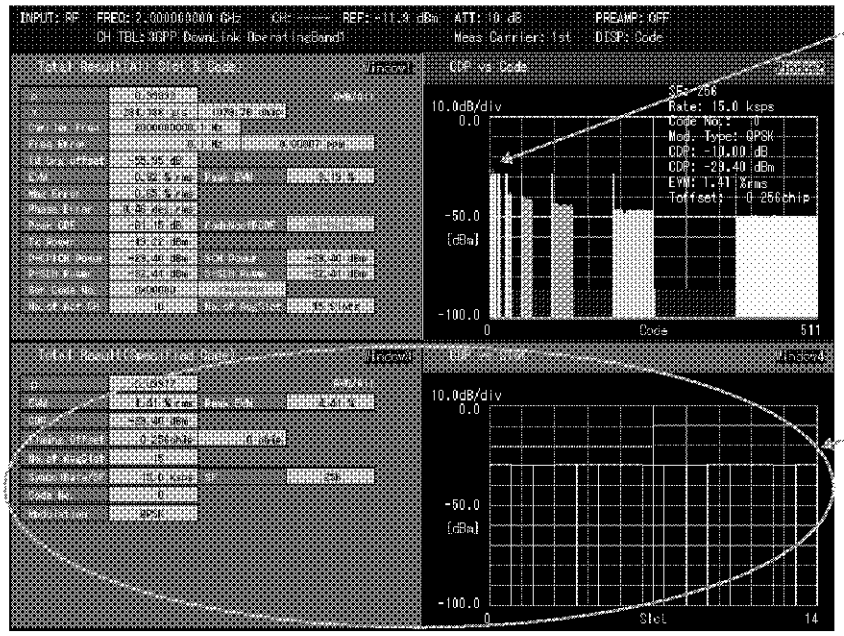


Figure A-8 Specified Code Screen (that displays the results of all slots and all codes in the upper two windows and the results of a specified code in the lower two windows (Downlink))

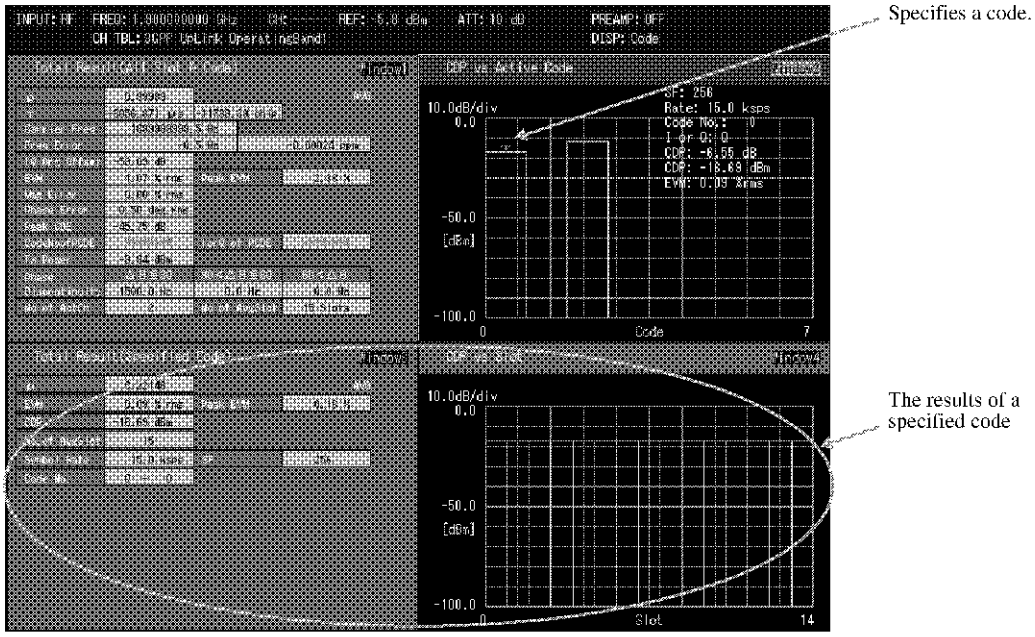


Figure A-9 Specified Code Screen (that displays the results of all slots and all codes in the upper two windows and the results of a specified code in the lower two windows (Uplink))

- **Specified Slot & Code**

  This screen displays the results of the code, which is specified by **Code No.** (Downlink), **Active Code No.** (Uplink) or **Rate Code No.** (Uplink), in the upper two windows, and the results of a specified slot and the specified code in the lower two windows. The measurement results of the slot, which is specified by a marker in the upper right window, are displayed in the lower two windows.

  This screen is useful when evaluating the measurement results of a specific slot that is chosen from the results of all slot measurements.

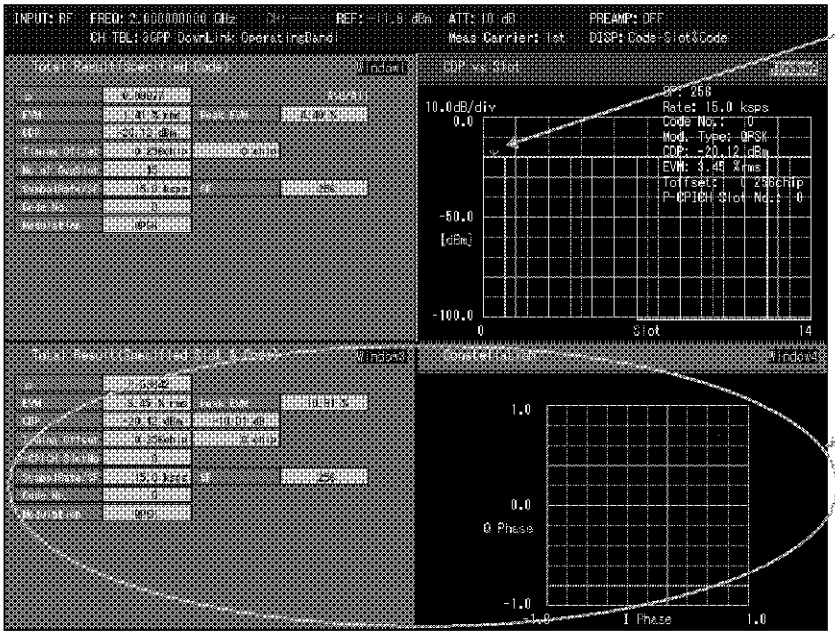


Figure A-10 Specified Slot & Code Screen (that displays the results of a specified code in the upper two windows and the results of a specified slot and the specified code in the lower two windows (Downlink))

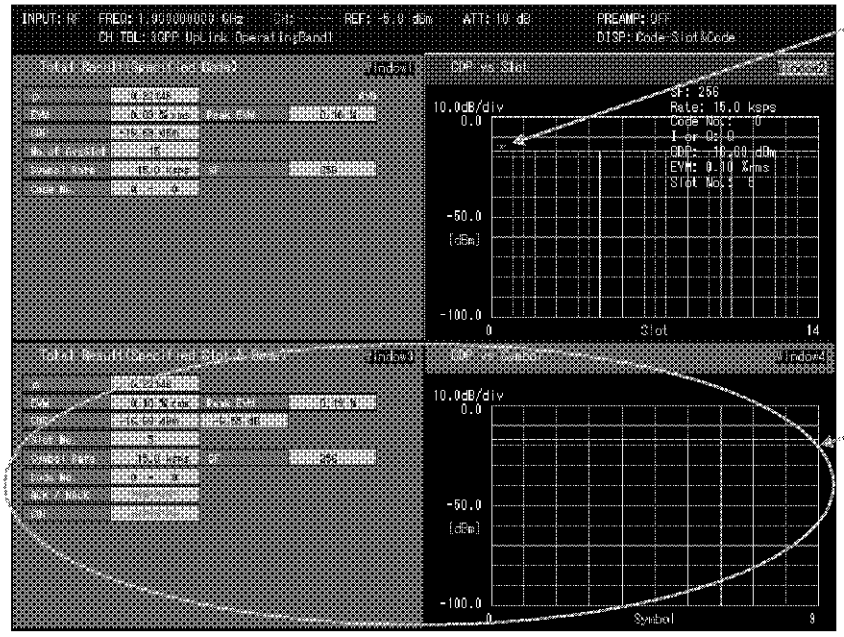


Figure A-11 Specified Slot & Code Screen (that displays the results of a specified code in the upper two windows and the results of a specified slot and the specified code in the lower two windows (Uplink))

A.1.6 Code Domain Power Graph (When Measuring the Base Station Signal)

The graphs of code domain power against the code are available in the Code Domain Mode. The following two types of bar graph are displayed at the same time.

- A bar graph in which the code domain power is analyzed as a active channel
- A bar graph in which the code domain power is analyzed as a symbol rate that is set in **[Analysis Rate]**

- A bar graph in which the code domain power is analyzed as a active channel

  This bar graph displays the code domain power that is calculated as a active channel. The bar graph is displayed in yellow. The active channel information can be determined by using the marker. Alternatively, it can be determined by using the following method:

  - Symbol rate (SF)

    The symbol rate can be determined by the color of a bar of the bar graph for **[Analysis Rate]**, which is situated at the position of a target bar of the bar graph for a active channel.

7.5 ksps (SF512)	Green
15 ksps (SF256)	Cyan
30 ksps (SF128)	Magenta
60 ksps (SF64)	Light blue
120 ksps (SF32)	Orange
240 ksps (SF16)	Dark green
480 ksps (SF8)	Pink
960 ksps (SF4)	Lemon

  - Code number

    Each code number can be determined by the position of a bar of the bar graph and can be obtained by using the following equation.

    [Code number] = [Horizontal axis position] × [Analysis Rate] / [Active channel rate]

- A bar graph in which the code domain power is analyzed as a symbol rate that is set in **[Analysis Rate]**

  This bar graph displays the code domain power that is calculated as a specified symbol rate. The symbol rate to be calculated is specified by the **[Analysis Rate]** of **Meas Parameters**. The color displayed depends on the corresponding active channel rate. The code at the position, where no active channel is provided, is displayed in blue. The number of codes that are displayed differs according to the set symbol rate as shown below:

7.5 ksps (SF512)	512
15 ksps (SF256)	256
30 ksps (SF128)	128
60 ksps (SF64)	64
120 ksps (SF32)	32
240 ksps (SF16)	16
480 ksps (SF8)	8
960 ksps (SF4)	4

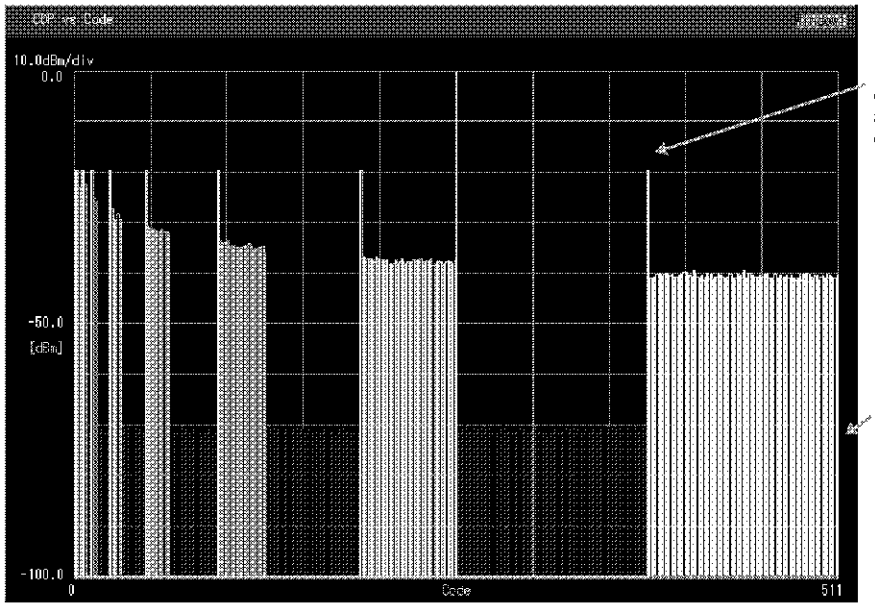


Figure A-12 Code Domain Power Measurement Example

A.1.7 Code Domain Power Graph (When Measuring the Mobile Station Signal)

The graphs of code domain power against the code are available in the Code Domain Mode. These graphs include the following two types of bar graph.

- A bar graph in which the code domain power is analyzed as a transmission channel
- Bar graphs in which the code domain power is analyzed as the symbol rate that is set in **[Analysis Rate]**

- Bar Graph in which the Code Domain Power is Analyzed as a Transmission Channel

  This bar graph displays the code domain power that is calculated as a transmission channel.

  The bar graph displays the following items from the left side:

DPCCH	... 15 ksps	No.0	Q side
HS-DPCCH	... 15 ksps	No.1 or 32 or 64	I side or Q side
$DPDCH_1$	... 15 ksps to 960 ksps	No.(SF/4)	I side
$DPDCH_3$	... 960 ksps	No.2	I side
$DPDCH_5$	... 960 ksps	No.3	I side
$DPDCH_2$	... 960 ksps	No.1	Q side
$DPDCH_4$	... 960 ksps	No.2	Q side
$DPDCH_6$	... 960 ksps	No.3	Q side

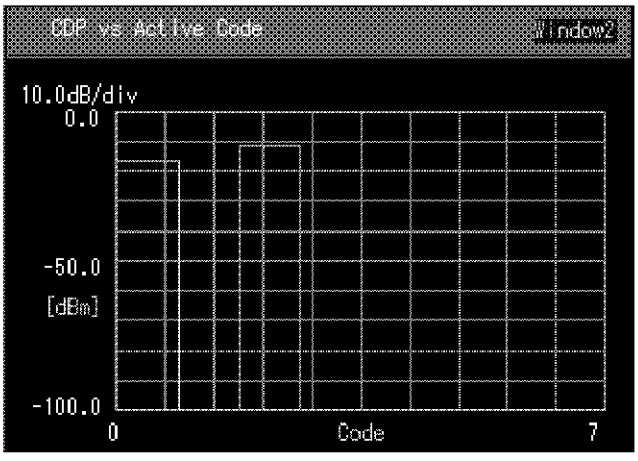


Figure A-13 Code Domain Power Measurement Example of a Transmission Channel

- Bar Graphs in which the Code Domain Power is Analyzed as a Symbol Rate that is set in **[Analysis Rate]**

  These bar graphs display the code domain power that is calculated as a specified symbol rate.

  These graphs include two types: A graph for the I side and a graph for the Q side.

  The symbol rate to be calculated is specified by **[Analysis Rate]** of **Meas Parameters**.

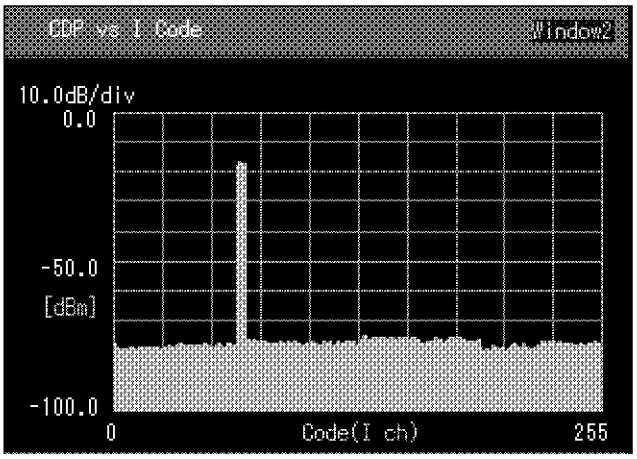


Figure A-14 Code Domain Power Measurement Example on the I Side

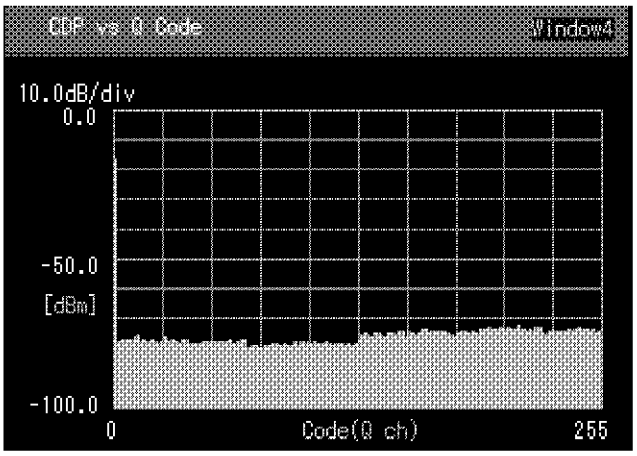


Figure A-15 Code Domain Power Measurement Example on the Q Side

A.1.8 How to Detect the Active Channel Information (When Measuring the Base Station Signal)

When the **[Active CH Detection]** of the **Meas Setup** **Meas Parameters** is set to **[AUTO]** and a measurement is executed, the active channel information is automatically detected. The active channel information detected includes the symbol rate, the code number and the modulation format. For this detection, the power of each code and the pilot symbol that is transmitted for each code are used.

A.1.9 Frequency Characteristics Correction Function

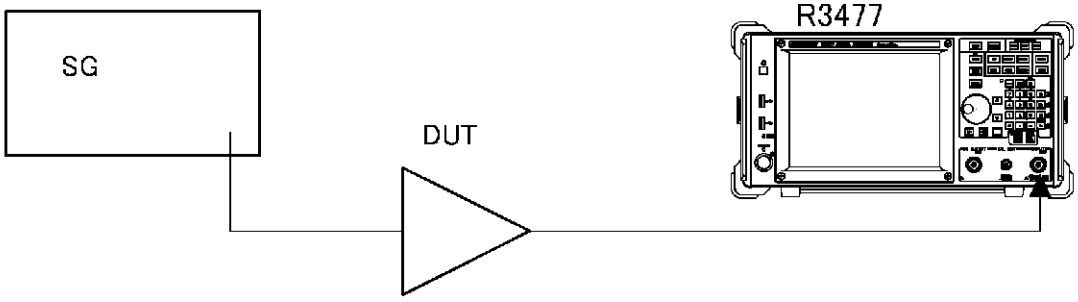
When the **[Make Filter]** button of **Meas Setup** **Meas Parameters** is pressed, the Equalizing Filter is created. The Equalizing Filter is a digital filter that minimizes the Error Vector Magnitude of the signal that is tested. Using this filter allows the frequency characteristics of the signal source to be corrected. By clicking **[USE]** and then executing a measurement, the measurement results, which have passed through the Equalizing Filter, can be obtained.

Use the Equalizing Filter as follows:

1. Connect the SG signal directly to the measuring instrument.

2. Set the **Meas Parameters** of **Meas Setup** and press the **SINGLE** button.
3. Verify that the measurement is performed correctly (EVM<17.5 %rms) and press the **[Make Filter]** button.
4. Connect the DUT (Device Under Test), click **[USE]** and press the **SINGLE** button.

   The amount, by which the DUT caused the Error Vector Magnitude to increase, can be measured.



A.1.10 ACK/NACK,CQI Demodulation (When Setting the Mobile Station Signal)

ACK/NACK and CQI can be demodulated for HS-DPCCH in the Code Domain Mode.

The demodulated result is displayed after converting the data before Channel Coding to decimal.

Displays the demodulated result in the Total Result screen when HS-DPCCH is selected in the **Specified Slot & Code**.

If ACK/NACK and CQI are contained in the multiple slots, the result is displayed in all slots.

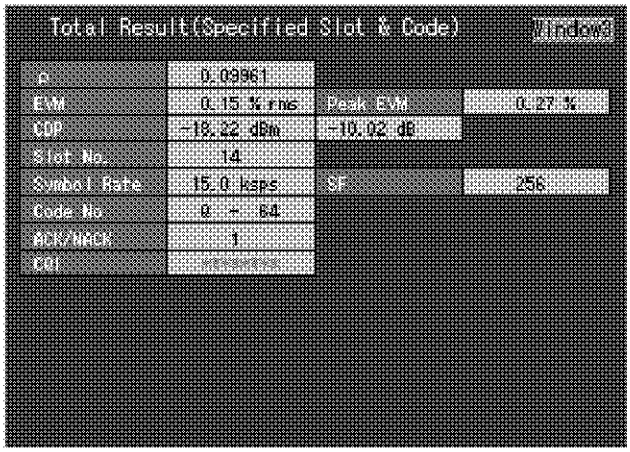


Figure A-16 Example of the ACK/NACK Display

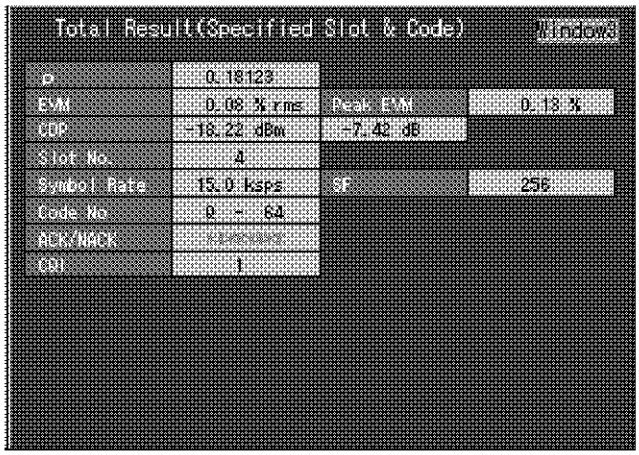


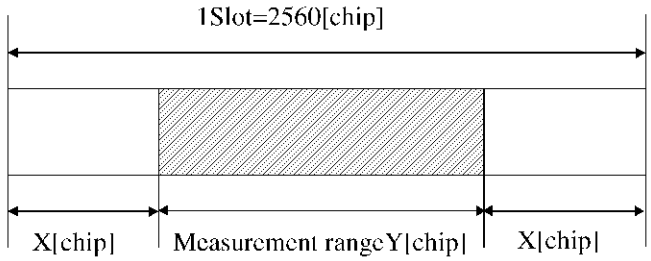
Figure A-17 Example of the CQI Display

A.1.11 A Function Which Can Change the Measurement Range (When the Mobile Station Signal Is Measured)

In the Concise mode and Code Domain mode that are used for the mobile station signal measurement, the number of chips, which is excluded from the measurement range, can be set.

The first and last chips of the slot are excluded by the set number from the measurement range.

[Excluding chips in slot boundary] 0, 1, ..., 96 [chip] The length of the chips that are excluded X [chip]



X: Setting value [chip]

Y: The measurement length[chip]
=2560 - 2 × X[chip]

A.1.12 A Function Which Saves the Demodulation Data (When the Base Station Signal Is Measured)

In the code Domain mode, the demodulation data from the specified one code can be saved.

The demodulation data can be saved by pressing the **Demod Data Save** key in either the following settings:

- When **Specified Slot** is selected from **Meas View**
- When **Specified Code** is selected from **Meas View**

The code, which is set in Specified Code (Active / Rate), Active Code No., and Rate Code No., is saved.

The code of the measurement length (Meas Length) is saved.

In the Downlink signal, the modulation format may vary depending on the slot (HS-PDSCH).

Therefore, the slots numbers, which are categorized by the QPSK and 16QAM modulation formats, are displayed.

The format is as follows:

```
*****Parameters*****
Setting
***** Results *****
Code information to be saved
<<< Demodulated Data >>>
Demodulation data
```

Example 1 When the measurement length is 1FRAME and the measurement channel is DPCH (30 ksps, Code No.9).

```
***** Parameters *****
2004/08/27  08:46:34
Link,Down Link
Input,RF
Center Freq[Hz],2000000000
Freq Offset[Hz],0
Ref Level[dBm],5.0
ATT[dB],0
Preamp,OFF
```

```
Ref Offset[dB],0.0
IQ Inverse,OFF
Meas Carrier,1st
Meas Length,1 FRAME
Carrier Frequency Offset[MHz],0.0
Scrambling Code Define,UNDEFINE
Scrambling Code No.(HEX),********
Scrambling Code No.(DEC),********
Scrambling Code No.(DEC(x16)),********
Scrambling Code Offset,********
Search Mode,SCH
Active CH. Detection,Auto Detection
SCH,ON
Threshold[dB],-30.0
Equalizing Filter,NOT USE
Specified Code,Active
Active Code No.,0
Rate Code No.,0
***** Results *****
Rate[ksps],15.0
SF,256
Code,0
QPSK Slot No.,0,1,2,3,4,5,6,7,8,9,10,11,12,13,14
16QAM Slot No.
<<< Demodulated Data >>>
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
```

A.1.13 A Function Which Saves the Demodulation Data (When the Mobile Station Signal Is Measured)

In the code Domain mode, the demodulation data from the specified one code can be saved.

The demodulation data can be saved by pressing the **Demod Data Save** key in either the following settings:

- When **Specified Slot** is selected from **Meas View**
- When **Specified Code** is selected from **Meas View**

The code, which is set in Specified Code (Active / Rate), Active Code No., Rate Code No., and Specified Rate Code (I / Q), is saved. The code of the measurement length (Meas Length) is saved.

The format is as follows:

```
*****Parameters*****
Setting
***** Results *****
Code information to be saved
<<< Demodulated Data >>>
Demodulation data
```

Example 1 When the measurement length is 1FRAME and the measurement channel is DPCCH (15 ksps, Code No.0, Q side).

```
***** Parameters *****
2004/08/27  08:46:09
Link,Up Link
Input,RF
Center Freq[Hz],1900000000
Freq Offset[Hz],0
Ref Level[dBm],5.0
ATT[dB],0
Preamp,OFF
Ref Offset[dB],0.0
Meas Length,1 FRAME
IQ Inverse,OFF
Scrambling Code No.,1
Excluding chips in slot boundary,96
Threshold[dB],-30.0
Equalizing Filter,NOT USE
Specified Code,Active
Active Code No.,0
Specified Rate Code,********
Rate Code No.,********
***** Results *****
Rate[ksps],15.0
SF,256
Code,0
I or Q,Q
<<< Demodulated Data >>>
1,1,1,1,1,0,0,0,0,0,1,0,0,1,1,0,0,0,1,1,1,0,1,1,0,1,0,0,0,0,1,0,0,1,0,0,0,0,1,1,
1,1,0,1,0,1,0,0,0,0,1,1,1,1,1,0,0,0,1,1,1,1,1,1,0,0,0,0,0,0,1,1,0,1,0,0,0,0,1,1,
1,0,1,1,1,0,0,0,0,0,1,1,1,1,1,1,0,0,1,1,1,0,1,1,0,1,0,0,0,0,1,1,0,1,1,1,0,0,1,1,
1,1,0,1,0,0,0,0,0,0,1,0,0,1,1,1,0,0,1,1,1,0,0,1,1,1,0,0,1,1,1,0,0,1,1,
```

A.1.14 QPSK Mode (When the Mobile Station Signal Is Measured)

The QPSK mode analyzes the measurement signal assuming it is either a QPSK signal or an HPSK signal.

- When Signal Type is **[QPSK]**.

  The measurement signal is analyzed assuming it is a QPSK signal.

  If the measurement length is less than 1280 chips, the carrier frequency error is measured in the range between the trigger and the 1280th chip.

  Therefore, if a burst signal is measured, the carrier frequency error may become larger.

- When Signal Type is **[HPSK]**.

  The measurement signal is analyzed assuming it is an HPSK signal.

  If the measurement length is less than 1280 chips, the range from the trigger to the 1280th chip is used for the rough estimation of the parameter.

  Therefore, any burst signal which is less that 1280 chips cannot be measured.

  The HPSK signal whose I and Q are the same amplitude cannot be measured. Set Signal Type to **[QPSK]** and perform the measurement.

A.1.15 IQ Power Ratio (QPSK Mode)

IQ Power Ratio indicates |(real part of the power) - (imaginary part of the power)| [dB] before Scrambling Code is multiplied.

A.2 Error Message List

This section describes the error messages displayed on this instrument.

The following information is included.

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

Table A-1 shows the error messages that are unique to this option.
For more information on other error messages, refer to Section 9.8, "Error Message List" of the R3477 Series User's Guide.

Table A-1 Error Message List

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 out of 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.
-3234	Incorrect 1st Carrier User Table. Reset the channel SF and Number.	The combination of the code number and SF, which are set in the 1st Carrier User Table, is invalid. Check the settings.
-3235	Incorrect 2nd Carrier User Table. Reset the channel SF and Number.	The combination of the code number and SF, which are set in the 2nd Carrier User Table, is invalid. Check the settings.
-3236	Incorrect 3rd Carrier User Table. Reset the channel SF and Number.	The combination of the code number and SF, which are set in the 3rd Carrier User Table, is invalid. Check the settings.
-3237	Incorrect 4th Carrier User Table. Reset the channel SF and Number.	The combination of the code number and SF, which are set in the 4th Carrier User Table, is invalid. Check the settings.
-3250	Time Out! No Trigger Detected.	A trigger time out error occurred. Check the trigger settings.

ALPHABETICAL INDEX

[Symbol]

[Numerics]

[A]

[B]

[C]

[N]

[O]

[P]

[Q]

[R]

[S]

[T]

[U]

[W]

[X]

[Y]

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   (f) Advantest's incorporation or use of any specifications or designs supplied by Purchaser;

   (g) the occurrence of an event of force majeure, including, without limitation, fire, explosion, geological change, storm, flood, earthquake, tidal wave, lightning or act of war; or

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In order to maintain safe and trouble-free operation of the Product and to prevent the incurrence of unnecessary costs and expenses, Advantest recommends a regular preventive maintenance program under its maintenance agreement.

Advantest's maintenance agreement provides the Purchaser on-site and off-site maintenance, parts, maintenance machinery, regular inspections, and telephone support and will last a maximum of ten years from the date the delivery of the Product. For specific details of the services provided under the maintenance agreement, please contact the nearest Advantest office listed at the end of this Operation Manual or Advantest 's sales representatives.

Some of the components and parts of this Product have a limited operating life (such as, electrical and mechanical parts, fan motors, unit power supply, etc.). Accordingly, these components and parts will have to be replaced on a periodic basis. If the operating life of a component or part has expired and such component or part has not been replaced, there is a possibility that the Product will not perform properly. Additionally, if the operating life of a component or part has expired and continued use of such component or part damages the Product, the Product may not be repairable. Please contact the nearest Advantest office listed at the end of this Operation Manual or Advantest's sales representatives to determine the operating life of a specific component or part, as the operating life may vary depending on various factors such as operating condition and usage environment.

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